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DYNAMIC CAPITAL STRUCTURE IN EMERGING MARKET: ROLE OF PRODUCT MARKET COMPETITION AND CORPORATE GOVERNANCE

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Abstract
This study focuses on the relationship between corporate governance, product market competition, and dynamic capital structure. To explore and analyze the phenomena, annual data of all non-financial sectors of the Pakistan Stock Exchange (PSX) with a minimum of 10 listed firms was analyzed from 2014 to 2023. Variables used in this study include corporate governance as an independent variable, dynamic capital structure as a dependent variable, and product market competition as a moderate variable. Panel data techniques are applied for data analysis. Results show that firms with good governance operating in competitive industries achieve their target leverage, more significant than those with weak governance in competitive sectors. Furthermore, firms with good governance operated in concentrated industries achieved their target leverage, more than firms with poor governance operated in concentrated industries. The study has significant implications for managers and investors.

INTRODUCTION

Firms mainly finance their projects through two sources that is debt and equity. The mix of both is termed a capital structure. The best proportion of both results in a better firm value (Sadiq et al., 2023; Nukala & Rao, 2021; Liao et al., 2015; Baker & Wurgler, 2002; Berger et al., 1997; Myers, 1984; Myers & Majluf, 1984). Companies try to achieve and maintain optimal capital structure with different ratios of debt and equity, each combination showing its costs and benefits. It has a positive impact on the expected return on investment. This indicates that firms re-balance their capital structure to acquire the optimal debt level. Nevertheless, it is done step by step because of market imperfections, like transaction costs, etc. (Antill & Grenadier, 2019; Ippolito et al., 2017; Schroder & Sosman, 2017; Rafiq et al., 2024).

Corporate governance is the assurance of specific practices by the investors or capital providers to enterprises to get their rightful returns (Aguilera et al., 2018; Shleifer & Vishny, 1997). These practices include an enterprise's flow chart showing ownership structure, finances, legal affairs, marketing, human resources, board of directors (BOD), and organogram (Ararat et al., 2017). The essential purpose of corporate governance is the best

utilization of resources to achieve business objectives (Gompers et al., 2003). These practices prevail in both public and privately owned enterprises. Every enterprise faces healthy competition in the market. Investors have to cope with agency costs, which are the inclination of managerial interests that conflict with investors' wealth maximization. Michael Milken mentioned in his article in the Wall Street Journal that capital structure decisions make a difference irrespective of the size. Moreover, management must consider the industrial trend and its current dynamics while making financing decisions that are capital structure (WSJ, 2009). Such statements indicate that industry competitiveness is one of the critical drivers while analyzing capital structure dynamics. Market competition expedites firms to perform well by reducing managerial negligence (Bustamante & Donangelo, 2017; Giroud & Muller, 2010; Fama & French, 1997). However, having assumed this, while attempting to validate the concept that market competition can rationalize managerial carelessness, the relevant theoretical literature, by and large, uncovers pronged effects. Hence, firms with weak governance may maximize their shareholders' wealth by increasing the incentives in the prevalence of market competition. This will result in speedy adjustment towards the optimal capital structure. This may lead to squeezing the gap between firms with more robust and weaker governance structures regarding adjustment speed. Hence, how corporate governance and product market competition affect capital structure's adjustment speed remains a re-searchable question. The study's findings show that greater competition motivates firms with weak governance to trim their managerial negligence. Hence, maximizing their shareholder's wealth increases the speed of adjustment toward the targeted leverage. This further reduces the adjustment gap between firms with poor governance and those with solid governance (Dasgupta et al., 2018; Chhaochharia et al., 2017).

Bebchuk et al. (2009) used the 'E-index' as a proxy for corporate governance to examine the strength of the findings. These findings were found similar to that of the G-index. Though empirical work has been done in the USA, there needs to be more such studies in emerging markets like Pakistan to investigate the relationship between corporate governance and capital structure adjustment speed affected by product market competition. Theoretical literature gives an ambiguous picture of the reduction in managerial slack due to market competition, governance quality, and capital structure adjustment speed. Many economists have agreed that higher market competition leads to higher enterprise performance, reducing managerial costs simultaneously; while investigating the notion, theoretical literature gives a fuzzy picture (Raith, 2003; Scharfstein, 1988). Therefore, it is assumed that enterprises with weaker governance are encouraged to establish sound incentive systems for maximizing their shareholder wealth, which leads to speedy adjustment towards the optimal capital structure and vice versa. This may narrow down the capital structure adjustment speed gap between stronger and weaker governance of the enterprises. Hence, how this happens in emerging markets like Pakistan needs examination. Thus, it is essential to investigate whether or not it creates value for the shareholders in the Pakistani context. Hence, examining whether market competition acts as a substitute or complement for better governance is essential. This study covers this gap. Moreover, the study findings have significant policy implications. Likewise, companies in weak, competitive industries can improve their governance. Lastly, corporate governance can be further reinforced by taking corrective actions in light of this study's findings. The study significantly contributes to the literature in the context of the emerging market of Pakistan, as no prominent work has been done in the context of Pakistani culture. This study also serves as a reference material for future researchers for further research extension. The study suggests and guides practitioners and policymakers to take corrective measures to be efficient and profitable for stakeholders. The flow of the paper includes a literature review, the methodology followed by the study findings, and a conclusion.

2. Literature Review

Rich empirical work is done on corporate governance, capital structure, product market competition, and adjustment speed. As the current study is about the relationship of all of these and the unit of analysis is Pakistan, each is reviewed in light of the literature.

Bebchuk et al., (2009) investigated the comparative significance of the 24 provisions followed by the Investors Responsibility Research Center (IRRC). They are also part of the Gompers, Ishii, and Metrick governance index (Gompers et al., 2003). They projected an index based on six provisions, including staggered boards, limits to the shareholder bylaw amendments, poison pills, golden parachutes, and super-majority requirements for mergers. While analyzing the data from 1990 to 2003, they found that index level is negatively related to the firm's value and returns. The remaining 18 provisions were unrelated to the firm's value and returns.

Furthermore, it was found that during the 1990s, these provisions drove the findings of past studies and had a significant relationship with Tobin's Q. These findings help to understand the relation between governance and firm value. Titman and Wessels (1988) explored the illustrative ability of several theories of optimal capital structure. They stretched empirical research on the capital structure theory in three ways. First, they analyzed many capital structure theories, of which numerous theories were only examined after. Second, the study analyzed different measures for different types of debt, such as short-term, long-term, and convertible debt, instead of measuring the aggregate total debt. Third, factor analysis was conducted to account for the problems while using proxies to measure different variables.

Most managers avoid financial leverage, and the debt level is low until the owners or active monitoring pressurizes management. Debt decreases managerial liberty, meaning management only opts for the optimum level of debt if pressurized. Managerial entrenchment affects a firm's debt level as they mostly avoid it. The debt level is lower when managers have more extended job periods, low and weak incentives, and are not pressured by BODs and other stakeholders (Berger et al., 1997). These findings are consistent with Stulz's (1988) theory that management uses debt to amplify the voting power of the shareholders. Leverage can put managers on track and discipline them to avoid wasting resources. This is why self-interested management avoid more leverage, which pressures them to work, perform well, and meet the targets (Morellec, 2004; Zwiebel, 1996). Morellec et al. (2012) postulated that owner-management conflict is also one of the critical drivers of the capital structure. Moreover, they accented the function of capital market attrition in the dynamic capital structure. Further, they examined the relationship between corporate governance and market exertions. They posit that management considers a reduction in agency cost (disciplinary effect) as a component of the total cost of debt while making corporate financing decisions.

Chang et al., (2015) empirically studied the effects of the quality of corporate governance on the adjustment speed of the optimal capital structure. They have accounted for two effects of leverage (takeover defense and the disciplinary impact) arising from agency theory on adjustment speed to the optimal capital structure. It was found that firms with weak governance and leverage show gradual adjustment to the optimal capital structure. This is because the discipline impression of indebtedness exceeds the goodness of using leverage as a buyout defense means. Moreover, such firms would prefer to reduce their debt to achieve the optimal level, particularly if they foresee a thoughtful coup threat.

Many researchers believe that managerial costs are higher in less competitive industries because of a less incentive system and less maximization of profits compared to the more competitive markets where managerial costs are lower due to higher managerial incentive systems with maximization of profits (Jensen & Meckling; 2019). This mechanism of product market competition reduces cost and is not that simple practically (Valta, 2012; Beiner et al., 2011).

Connell (2007) agreed with the posit of managerial incentives. He observed that managers of companies operating in competitive markets are under tight competition and have less leisure to fiddle with their responsibilities, and enterprises that cannot reduce their costs will perish from the market. Besides all this, later studies have given an ambiguous effect when formalizing the idea that intense market competition hedges managerial costs. Market competition decreases managerial costs because he assumes managers are concerned with achieving targets to save their positions in the organization, which increases their efficiency, but this declines as targets are achieved. Firms decline their profits in higher product competition because of more supply.

Hence, managers strive hard to achieve and retain the targets in the market. This reduced the managerial cost of the firm, and hence, the performance of the firm improved (Levine, 2018; Bloom et al., 2012).

Managers' satisfaction is reversible and tied to their incentives. Market competition leads to an increase in managerial costs (Scharfstein, 1988). So, for managers, just achieving the target is an objective. For them, that is the threshold limit; beyond that, managers again are least interested, and below that level could be better for them. Hence, the impact of market competition on managerial cost needs to be more specific and clear.

Drobetz and Wanzenried (2006) used different adjustment models with panel methodology and analyzed the drivers of dynamic capital structure. They used dynamic models as companies can fluctuate from the targeted capital structure due to adjustment costs. They examined the impact of the firm's specific and macroeconomic variables on the adjustment speed towards the targeted leverage ratio. They investigated data for ten years from 1991 to 2001 of 90 Swiss firms and argued that companies having higher growth rates readily adjust their optimal capital structure. The results disclosed that the speed of adjustment is more significant when the gap is more excellent and economic potency is significant.

Higher market competition reduces the firm's profitability, leading to higher operational costs. Hence, the liquidation probability of the enterprise is high. So, managers work hard to secure the firm by achieving the minimum targets to secure their positions. Therefore, market competition is favorable to the firms not because of reducing the managerial cost in a real sense but rather because the increasing probability of bankruptcy pushes the managers to put their efforts hard to secure both the firm from bankruptcy and their positions with greater incentives (Nickell, 1996).

The fear of bankruptcy does not need to reduce the managerial cost indeed. If market competition decreases the firm's profitability as it reduces the value cost, it will induce the owners to have lesser incentives, thus encouraging the managers to exert less (Brahmana et al., 2020). All this results in increased managerial costs due to higher market competition, leaving the firms in a catastrophic situation. This leaves the effect of market competition on managerial negligence needing clarification.

Raith (2003) examined the effect of market competition on a company's brokers' efforts and pointed out two factors influencing managerial costs when analyzing the fixed number of firms. First, it is easy to grab the market share of a rival firm by the firm having a cost edge with almost the exact pricing of the identical product with greater substitutability in higher market competition. To cope with it, owners will announce good incentives to push the agents to work hard to eliminate or reduce the cost edge of the rival firms. Second, a firm would lose its market pie if competitors offered substituted products with low prices, thus reducing the edge of lower costs. All this will induce the owners to lower the managerial benefits, discouraging them from putting more significant effort into improving the firm's performance. Hence, once again, the influence of market competition on managerial negligence remains ambiguous.

Raith (2003) also noted two critical factors that affect the benefits of agents' efforts when firms can freely enter or exit the market. Firstly, when a product has a higher substitutability for specific firms, the product's price declines and hence the profits, which leads to the winding up of firms and increases the survival struggle for them. Thus, owners are pushed to announce more significant incentives, igniting them to exert more. Conversely, as higher competition reduces the entry costs, the product substitutability increases. In this situation, firms will quickly enter the market, dividing the market share and low production output. This induces owner to announce low incentives for the agents. This discourages them from putting more effort, reducing productivity and profitability. Hence, the function of market competition is neutering managerial efforts.

Boubaker et al., (2018) examined the influence of competitive pressure on companies to opt for debt from a bank or the public. They analyzed the data of 3,675 U.S. companies from 2001 to 2013. They found that competitive pressure due to the product market drives the companies to go for public financing rather than bank debt financing. Moreover, due to the reduction in import tariffs, the

reliance on debt from banks has decreased significantly. Moreover, the effect of competitive pressure on debt choice is more pronounced for firms with greater exposure to competition, higher financial constraints, and weaker governance practices. Finally, the product market competition is associated with long-term maturity debt. The study showed that external governance pressure from the product market acts as an alternate governance mechanism for bank debt monitoring.

Agency theory says that greater market competition, good governance quality, and higher capital structure adjustment speed lead to reduced managerial slack. Many economists have agreed that higher market competition leads to higher enterprise performance, reducing managerial costs simultaneously. Therefore, it is assumed that enterprises with weaker governance are encouraged to establish sound incentive systems for maximizing their shareholder wealth, which leads to speedy adjustment towards the optimal capital structure and vice versa. This may narrow down the capital structure adjustment speed gap between stronger and weaker governance of the enterprises.

On the other hand, the stewardship theory (Donaldson & Davis, 1993; 1991) attests to the integration of these roles, which maximizes shareholder wealth. The above theoretical arguments show agents' motivation against agency theory, called stewardship theory (Donaldson & Davis, 1993; 1991; Barney, 1990). Hence, according to stewardship theory, a manager's performance level depends upon the facilitation provided by the governance and structural mechanism to actions taken by executives. In the era of modernization, every business structure has changed; the shareholders are widely spread, and the managerial setup is separated.

Saad (2010) found a positive association between the code of practices of BOD and the capital structure while analyzing Malaysian public companies. Similarly, Shah et al. (2009) examined the influence of ownership structure and corporate governance on the capital structure of firms of PSX and found a negative relationship between the manager's shareholdings and board size with debt to equity mix. No significant relationship was found between capital structure, CEO chair duality, and the board's structure. However, firm size and ROA were found to have a significant and positive association with capital structure. They concluded that managerial shareholding and corporate governance positively impact capital structure decisions.

Pecking order theory, proposed by Myers and Majluf (1984), is supported by asymmetric information between investors and managers. According to this theory, financing from internal sources is desirable over external ones. This theory proposes that companies first utilize external sources of financing and then go external debt financing followed by equity financing. Companies opting for debt financing give a positive signal about the company's prospects, indicating that it is confident about investing in the new project (Martynova & Renneboog, 2009; Frydenberg, 2004). This theory may prevail because of the agency conflict between management and shareholders (Frank & Goyal, 2007).

Stakeholder's theory asserts that firms have relationships with many constituent groups that always have an interest in the activities and outcomes of a firm (Freeman & Philips, 2002). These groups, among others, include Employees, Customers, Suppliers, Environmentalists, The community as a whole, and owners/stakeholders (Margolis & Walsh, 2003).

A rich discussion with empirical analysis is done in developed countries. Many researchers analyzed the relationship between corporate governance and financing decisions, that is, dynamic capital structure, product market competition, and corporate governance (Boubaker et al., 2018; Chang et al., 2015; Morellec et al., 2012; Bebchuk et al., 2009; Morellec, 2004; Zwiebel, 1996; Titman & Wessels, 1988). However, the impact of the relationship between corporate governance and market competition on the adjustment speed for achieving optimal capital structure needs to be addressed in developing countries like Pakistan.

3. Methodology

The study is quantitative in nature. The study sample includes 193 non-financial firms registered on the PSX covering 11 different sectors. Annual data is extracted from the firms' annual reports from 2015 to 2023. Data sources include the official databases of the firms, PSX, and the State Bank of Pakistan (SBP). Every non-financial sector of PSX, having a

minimum of 10 registered companies, has been included in the sample due to market competition as such competition does not exist in sectors with a number of registered companies and present monopoly or oligopoly instead of competition. Table 3.1 shows these sectors:

Table 3.1: All Non-Financial Sectors:

S. No	Industry	No of Firms
1	Automobile	12
2	Cement	17
3	Chemical	22
4	Engineering	12
5	Food and Personal Care Products	19
6	Pharmaceutical	11
7	Power Generation and Distribution	15
8	Sugar and Allied Industry	26
9	Technology and Communication	11
10	Textile Composite	30
11	Textile Spinning	18
Total Number of Firms	193	

3.1 Variables

This study uses three types of variables: independent, dependent, and moderate. Independent variables measure corporate governance, whereas dynamic capital structure is a dependent variable, and product market competition is a moderate variable.

Dynamic Capital Structure

The capital structure comprises debt and equity. The market value debt ratio is used to calculate the leverage ratio (Chang et al., 2015).

$$MLEV_{i,t} = \frac{D_{i,t}}{D_{i,t} + S_{i,t}P_{i,t}}$$

Whereas $D_{i,t}$ is the book value of the interest-bearing instrument (debt) of firm I at time t, $S_{i,t}$ refers to the outstanding common shares and $P_{i,t}$ is the price per share of firm I at time *t*.

Market leverage is the company's total debt, i.e., short-term and long-term debt divided by its total assets. It shows the company's ability and position to pay its debt by having enough assets in the backup (Frank & Goyal, 2007). It is well known that leverage ratios exhibit significant variation across industries. Textbooks in corporate finance such as Hillier et al., (2019) highlight inter-industry differences in debt ratios. More formal tests are presented in Lemmon et al., (2008).

Product Market Competition

Product market competition has been measured through different suitable proxies. The proxy used for market Competition in this study is the HHI Index. This is achieved by taking the square of the market share of every company and summing the final figures. Herfindahl index gives the company's size about the industry. It also shows the level of competition among them.

$$HHI\ j;t = \sum_{i=1}^{nj} S^2ijt$$

Corporate Governance

The ways through which the capital providers to the company assure themselves of getting returns on their investment (Shleifer &Vishny, 1997). This study will consider factors related to corporate governance, including the size of the board of governors (BOD), Board Independence, Non-executive directors, Female on Board, Audit Committee size, Audit Committee independence, HR Committee, HR Committee Independence, CFO on Board, Institutional Ownership, Family Ownership, and Total Number of Shares.

S.No.	Variable	Formula
1	Board size	Ln(Board size)

2	Board Independence	$\frac{independent\ directors\ on\ the\ board}{,total\ members}$
3	Non executive director	$\frac{nonexecutives\ directors\ on\ board}{total\ board\ members}$
4	Female on Board	1 for female on board 0 for no female on board
5	Audit committee size	Ln(Audit committee size)
6	Audit committee independence	$\frac{independent\ on\ audit\ committee}{audit\ committee\ size}$
7	HR committee size	Ln(HR Committee size)
8	HR committee independence	$\frac{independent\ directors\ on\ the\ HR\ board,}{HR\ committee\ size}$
9	CFO on Board	1 for CFO on board; otherwise, 0
10	Institutional ownership	$\frac{no\ of shares\ held\ by\ institutional\ owners}{total\ no\ of\ shares\ outstanding}$

The following set of variables are treated as control variables.

Firm Size (FS)

Large, more diversified firms face lower default risk (Frank & Goyal, 2009). The size of a company is measured by the market capitalization of the company, which is the total market value of the company.

$$Ln(Total\ asset)$$

Market to Book (MB)

The market-to-book asset ratio is the most common and reliable proxy for growth opportunities. A higher market-to-book ratio, however, may also be influenced by stock mispricing (Frank & Goyal, 2009). MB value is the ratio of market value to the book value of the total assets of a company.

$$MB = Market\ Capitalization\ /\ Total\ Book\ Value$$

Dividend Payout Ratio (DPR)

The dividend is the share of the shareholder in the profitability of the company and can be found as $\frac{Total\ dividend}{Net\ income}$

Profitability

Profitable firms face lower expected costs of financial distress and find interest tax shields more valuable. Thus, the tax and the bankruptcy costs perspective predicts that profitable firms use more debt. In addition, the agency costs perspective predicts that the discipline provided by debt is more valuable for profitable firms as these firms are likely to have severe free cash flow problems (Jensen & Meckling, 2019). In a dynamic trade-off model, leverage can appear negatively related to profitability in the data due to various frictions. Empirically, the response has been to argue that leverage and profitability are negatively related because firms passively accumulate profits (Kayhan & Titman, 2007). Earnings before interest and taxes (EBIT) is used for a profit. The profitability ratio is EBIT divided by total assets.

$$\frac{EBIT}{Total\ Assets}$$

3.2 Statistical Methods

Several statistical approaches have been used to analyze the collected data. These methods include descriptive statistics, like mean, standard deviation, maximum, and minimum, to describe the collected sample data. Correlation analysis was carried out to measure the strength of the linear relationship between these variables. Furthermore, random effect models were used to observe the impact of different variables on corporate governance and the dynamic capital structure effect. The analysis was carried out using the conditions of a highly competitive and less competitive markets with good and bad governance.

3.2.1 Panel Data Econometrics

It is also called longitudinal data. It is a recurring measurement of a data set, of a certain variable over time, as singular companies and countries, which are determined at many points in different time

frequencies like days, months, quarters, or annual pre and post-analysis (Hsiao, 2010). It has many names in the literature, like pooled data, micro-panel data, longitudinal data, event history analysis, and longitudinal data. The name "panel study" was given by Lazarsfeld and Fiske (1938).

The generally accepted model for panel data analysis is as follows:

$$Y_{it} = \beta_0 + \beta_1 x_{it} + u_{it} \ldots, \quad t = 1,2,\ldots,T \quad i = 1,2,\ldots,N \qquad (3.4)$$

Where Y_{it} is the dependent variable, β_0 is the intercept and independent from i and t,β_1 5is the $K \times 1$ vector of the unknown parameter to be estimated, $\square_{it}$ is the $1 \times k$ vector of explanatory variable observations, and u_{it} is the disturbance.

Different estimation methods are used for analyzing panel data, but the general linear model (GLM) is the base of linear panel model estimation. Broadly two approaches for financial panel data analysis are used called fixed effect model (FEM) and random effect model (REM). Kuh (1959), Mundlak (1961), and Hoch (1962) discuss the fixed effects model and its applications in economics. Balestra and Nerlove (1966) introduced the random-effects model.

According to the second assumption, the Intercept varies over individuals, but the slope coefficients are constant over individuals and time. The equation (3.4) looks like as

$$Y_{it} = \beta_{0i} + \beta_1 x_{1it} + \beta_2 x_{2it} + e_{it} \ldots\ldots\ldots\ldots, \qquad (3.5)$$

where Y_{it} is the dependent variable, $\beta_{i\prime s}$ are regression coefficients x_{it} are explanatory variables, and e_{it} is the disturbance term. The equation present in 3.2 is also called the fixed-effect model. Whenever the omitted variables vary across entities and do not change with time, this method is used to control the effect of omitted variables in panel data.

A fixed effect model with varying intercepts can be written by extending the equation (3.5)

$$Y_{it} = \alpha_0 + \alpha_1 D_{1i} + \alpha_2 D_{2i} + \alpha_3 D_{3i} + \beta_1 x_{it} + \beta_2 x_{2it} + e_{it} \ldots\ldots \quad t = 1,2,\ldots,T \quad i = 1,2,\ldots,N \qquad (3.6)$$

Whenever undetected heterogeneity is not correlated with explicators, panel data techniques are not required to create a consistent estimator. Even so, it is necessary to correct between observations of the same individual for the serial correlation. When $E = (X_{it}V_i) \neq 0$, panel data is essential for eliminating omitted variables' biases. Fixed Effects is used to gain panel data. Moreover, if $E = (X_{it}V_i) = 0$, panel data do not crack unique benefits. So, Random Effects are used to correct the serial correlation of panel data.

The fixed effects model assumes each group (firm) has a non-stochastic group-specific component to$y$. Including dummy variables (if any) is a way of controlling for non-observable effects on Y_{it}. But these non-observable effects may be stochastic (i.e. random). The Random Effects Model attempts to deal with this:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + V_i + \varepsilon_{it}$$

Here the non-observable component, v_i, is treated as a component of the random error term. v_ii is the error element that varies between groups but not within groups. ε_{it} is the element of the error which varies over group and time.

3.2 Model Specification

The Hausman test is used in empirical panel data analysis to differentiate between the fixed effect and random effect models. Durbin (1954) and Wu (1973) also used it. For this reason, tests based on the comparison of two sets of parameter estimates are also called Durbin-Wu-Hausman tests, or DWH.

In order to achieve the reduced form of the partial adjustment model, the methodology of Flannery and Rangan (2006) is followed, and an adjustment speed coefficient has to be attained. Firstly, the probability that every company's targeted debt ratio can fluctuate over time will be modeled (Mukherjee & Mahakud, 2010).

The study targeted capital ratio is represented by the fitted value, which is $LEV_{i,t+1,}$ given by Equation (3.1):

$$LEV_{i,t+1} = Gov_{it} + \beta_i X_{it} + \varepsilon_{1i,t+1}$$

Eq. (3.1)

The equation shows that a company's leverage for a time period $t + 1$ is dependent on the quality of corporate governance and other factors of the company (X_{it}). The error term $\varepsilon 1_{i,t+1}$, having zero mean and constant variance, is not correlated with repressors. At the same time, $\beta_{i\prime s}$ are the unknown parametric quantities.

Secondly, it is checked how swiftly companies move from the current debt level towards the new targeted leverage. In the absenteeism of any hurdle, the companies will rapidly move towards their targets, but if adjustment costs prevail, a full-fledged and continuous adjustment may not be fulfilled. In many studies like Fama and French (2002) and Kayhan and Titman (2007), the standard partial adjustment model will be applied:

$$LVRG_{i,t+1} - LVRG_{i,t} = \lambda\left(LVRG_{i,t+1} - LVRG_{i,t}\right) + \varepsilon_{2i,t+1} \quad \text{Eq. (3.2)}$$

In the equation, the error term $\varepsilon_{2i,t+1}$ is not related to the repressors. The proportional deviation from the targeted leverage with adjustment from time t to $t + 1$ is represented by λ.

The speed of adjustment is estimated in one step by combining the above two equations (Flannery & Rangan, 2006). A reduced form of the dynamic capital structure model will be followed:

$$LVRG_{i,t+1} = \lambda\alpha GOV_{it} + \lambda\beta_{it} + (1-\lambda)LVR_{it} + v_{i,t+1} \quad \text{Eq. (3.3)}$$

Where vi, t + 1, the error term, is uncorrelated with the regressors and the coefficient on the lagged leverage ratio is 1 - λ, (where λ is the adjustment speed of the leverage deviating from the next-period target leverage of the firm, which lies between zero and unity). A value of λ = 1 indicates that the firm has fully adjusted for any deviation, while a value of λ = 1 implies the presence of adjustment costs and persistent undesired leverage ratios; provided that λ = 0, then the gap between the desired and actual leverage levels should decrease over time.

Results and Discussion

The analysis was carried out in two sections. The first one consists of descriptive analysis, which includes descriptive statistics mean, standard deviation, minimum and maximum, and correlation. In comparison, the second section of the study consists of models of both fixed and random effects. Statistics of both sections are used to compare based on corporate governance regarding high and less competitive markets. Furthermore, to measure the HHI index $(1-\lambda)$, the data has been coded in the form of dummy variables 0 and 1, where one is given to the lowest competitive, and 0 is given to the middle and highest competitive. The results are described with detailed interpretation.

Table 4.1: Descriptive Statistics of Overall Data

Variables	Obs.	Mean	Std.	Min.	Max.
ML	579	0.0088712	0.0565178	2.73e-08	1
FS	579	15.39858	1.405611	11.84606	17.71489
MTBV	579	0.830957	0.3551532	0.00187	1.118046
EBIT	579	0.094571	0.1193297	-0.2785803	0.3623207
DPR	579	0.2857043	0.3310759	2.302585	5.062595

Note: ML stands for market leverage, FS for firm size, MTBV for Market to book value, EBIT for earnings before interest and taxes, and DPR stands for dividend payout ratio.

Table 4.1 illustrates the descriptive statistics of all the data regarding ML, FS, MTBV, EBIT, and DPR. It has been observed that the data consists of 579 observations, in which the mean value for ML is recorded as 0.0088712 with a standard deviation of 0.0565178. The minimum value for ML is recorded as 2.73e-08, while the maximum is recorded as 1. Similarly, the mean value for FS is recorded as 15.39858, for MTBV 0.830957, for EBIT 0.094571, and for DPR, it is recorded as 0.2857043 with standard deviation 0.0088712, 0.15.39858, 0.830909, 0.094571 and 0.2857043 respectively.

Table 4.2: Descriptive Statistics of Strong Governance under a High Competitive Market

Variable	Obs.	Mean	Std.	Min.	Max.

ML	68	0.0039975	0.0070243	0.0000361	0.0430258
FS	68	15.23687	1.600583	11.84606	17.71489
MTBV	68	0.7718308	0.3803224	0.1006077	1.118046
EBIT	68	0.0811181	0.1008256	-0.278581	0.3623207
DPR	68	0.2600872	0.3379468	-0.924287	0.8547522

Table 4.2 illustrates the descriptive statistics of good governance in the highly competitive market regarding ML, FS, MTBV, EBIT, and DPR. It has been observed that the data consists of 68 observations, in which the mean value for ML is recorded as 0.0039 with a standard deviation of 0.0070. The minimum value for ML is recorded as 0.0000361, while the maximum is recorded as 0.0430258. Similarly, the mean value for FS is recorded as 15.2368, for MTBV 0.7718, for EBIT 0.0811, and for DPR, it is recorded as 0.2600 with a standard deviation of 1.6005, 0.3803, 0.1008, and 0.3379 respectively.

Table 4.3: Descriptive Statistics of Weak Governance under High Competition

Variable	Obs.	Mean	Std.	Min.	Max.
ML	108	0.0241474	0.1122834	2.73e-08	0.0384966
FS	108	15.75451	1.226205	11.84606	17.71489
MTBV	108	0.9174462	0.3741406	0.00187	1.118046
EBIT	108	0.1421373	0.1289918	-0.278581	0.3623207
DPR	108	0.3752001	0.3180142	-0.050817	0.8547522

Table 4.3 presents the descriptive statistics of bad governance in the highly competitive market regarding ML, FS, MTBV, EBIT, and DPR. It has been observed that the data consists of 108 observations, in which the mean value for ML is recorded as 0.0241474 with a standard deviation of 0.1122834. The minimum value for ML is recorded as 2.73e-08, while 0.0384966. Similarly, the mean value for FS is recorded as 15.7545, for MTBV 0.9174, for EBIT 0.1421, and DPR, it is recorded as 0.3752 with standard deviation of 1.2262, 0.3741, 0.1289 and 0.3180 respectively.

Table 4.4: Descriptive Statistics of Strong Governance under a Less Competitive Market

Variable	Obs.	Mean	Std.	Min.	Max.
ML	183	0.0079778	0.0500457	2.17e-07	0.4382445
FS	183	15.60996	1.617657	11.84606	17.71489
MTBV	183	0.9391911	0.2994959	0.00187	1.118046
EBIT	183	0.1187495	0.134035	-.2785803	0.3623207
DPR	183	0.3157911	0.3690652	-.9242872	0.8547522

Table 4.4 describes the descriptive statistics of good governance in a less competitive market regarding ML, FS, MTBV, EBIT, and DPR. It has been observed that the data consists of 183 observations, in which the mean value for ML is recorded as 0.0079778 with a standard deviation of 0.0500457. The minimum value for ML is recorded as 2.17e-07, while the maximum is recorded as 0.4382445. Similarly, the mean value for FS is recorded as 15.6099, for MTBV 0.9391, for EBIT 0.1187, and for DPR, it is recorded as 0.3157 with standard deviation 1.6176, 0.2994, 0.1340, and 0.3690 respectively.

Table 4.5: Descriptive Statistics Weak Governance under a Less Competitive Market

Variable	Obs.	Mean	Std.	Min.	Max.
ML	220	0.0036216	0.0048291	0.0000224	.0384966
FS	220	15.098	1.150099	11.84606	17.71489

MTBV	220	0.716743	0.343577	0.0534495	1.118046
EBIT	220	0.0552664	0.0905537	-0.2785803	0.3623207
DPR	220	0.2246614	0.2882557	-0.9242872	0.8547522

Table 4.5 describes the descriptive statistics of bad governance in a less competitive market regarding ML, FS, MTBV, EBIT, and DPR. It has been observed that the data consists of 220 observations, in which the mean value for ML is recorded as 0.0036216 with a standard deviation of 0.0048. The minimum value for ML is recorded as 0.0000224, while the maximum is recorded as 0. 0384966. Similarly, the mean value for FS is recorded as 15.098, for MTBV 0.7167, for EBIT 0.0552, and for DPR, it is recorded as 0.2246 with a standard deviation of 1.1500, 0.3435, 0.0905, and 0.2282 respectively.

4.1.2 Correlation Analysis

The correlation analysis has been carried out to measure the strength of the linear relationship between the ML, FS, MTBV, EBIT, and DPR in different situations.

Table 4.6: Correlation of Strong Governance under High Competition

Variables	ML	FS	MTBV	EBIT	DPR
ML	1.0000				
FS	-0.0245	1.0000			
MTBV	-0.3059	0.1264	1.0000		
EBIT	0.1396	0.2745	0.2641	1.0000	
DPR	-0.0446	0.2683	0.2542	0.4287	1.0000

Table 4.6 illustrates correlation statistics of good governance in a highly competitive market in the variables ML, FS, MTBV, EBIT, and DPR. It has been observed that both positive and negative relationships are present in the variables. The linear relationship between FS with ML, MTBV with ML, and DPR with ML has been negative, while EBIT with ML has been positive. Similarly, the correlation between MTBV with FS, EBIT with FS, DPR with FS, EBIT with MTBV, DPR with MTBV, and DPR with EBIT are positive. The results are supported by the work of (Choua et al. 2011; Chang et al., 2015; Diri et al., 2020).

Table 4.7: Correlation of Weak Governance under High Competition

Variables	ML	FS	MTBV	EBIT	DPR
ML	1.0000				
FS	0.1013	1.0000			
MTBV	-0.4194	0.0427	1.0000		
EBIT	-0.5426	-0.0430	0.3813	1.0000	
DPR	-0.2755	0.0620	0.1780	0.3442	1.0000

Table 4.7 describes correlation statistics of bad governance in a highly competitive market in the variables ML, FS, MTBV, EBIT, and DPR. It has been observed that both positive and negative relationships are present in the variables. The linear relationship between MTBV with ML, EBIT with ML, and DPR with ML has been negative, while FS with ML has been positive. Similarly, the correlation between MTBV with FS, DPR with FS, EBIT with MTBV, DPR with MTBV, and DPR with EBIT are positive, while EBIT with FS is negative. The results resembles (Januszewski et al., 2002; Choua et al., 2011).

Table 4.8: Correlation of Strong Governance under Low Competition

Variables	ML	FS	MTBV	EBIT	DPR
ML	1.0000				
FS	0.0434	1.0000			

MTBV	-0.4648	0.2348	1.0000		
EBIT	-0.5042	0.0856	0.4525	1.0000	
DPR	-0.2255	0.2554	0.3125	0.5319	1.0000

Table 4.8 illustrates correlation statistics of good governance in a low competitive market in the variables ML, FS, MTBV, EBIT, and DPR. It has been observed that both positive and negative relationships are present in the variables. The linear relationship between MTBV with ML, EBIT with ML, and DPR with ML has been negative, while FS with ML has been positive. Similarly, the correlation between MTBV with FS, EBIT with FS, DPR with FS, EBIT with MTBV, DPR with MTBV, and DPR with EBIT are positive. Chen et al., (2014) support these results.

Table 4.9: Correlation of Weak Governance under Low Competition

Variables	ML	FS	MTBV	EBIT	DPR
ML	1.0000				
FS	-0.1361	1.0000			
MTBV	-0.5188	0.0143	1.0000		
EBIT	0.1881	0.3445	-0.1399	1.0000	
DPR	-0.0408	0.2708	0.1617	0.2884	1.0000

Table 4.9 presents correlation statistics of bad governance in a low, competitive market in the variables ML, FS, MTBV, EBIT, and DPR. It has been observed that both positive and negative relationships are present in the variables. The linear relationship between FS with ML, MTBV with ML, and DPR with ML has been negative, while EBIT with ML has been positive. Similarly, the correlation between MTBV with FS, EBIT with FS, DPR with FS, DPR with MTBV, and DPR with EBIT are positive, while EBIT with MTBV is negative.

4.2 Effect of Good Governance on Dynamic Capital Structure in Competitive Industries (RE)

Using random and fixed-effect models, corporate governance, product market competition, and dynamic capital structure were analyzed. Research suggests that the executive's values and objectives influence a firm's strategic decisions regarding its capital structure (Jiraporn et al., 2012). The agency theory assumes that top management supports those decisions that satisfy a CEO's self-interest (Fama & French, 1997). Managers may increase leverage, which reduces the equity base to consolidate their voting power (Stulz,1988). Where a firm proliferates, there is a trend of high debt-to-equity ratios. Therefore, capital structure is essential for firm growth to achieve strategic objectives and maximize profit. Capital structure and firm performance have attracted much debate, and empirical findings provide mixed results. Studies on capital structure posit that while determining the leverage level, agency conflicts occur between shareholders and managers, negatively influencing firm performance. Corporate competitive strategies determine those strategies used to gain a competitive advantage (Hitt et al., 1996), expand market share (Franko, 1989), and increase firm performance. Because market competition is vital to achieving firm goals, scholars have increasingly studied the link between competitive strategies and governance; for instance, governance structure influences market competition by aligning increments (bonuses) for executives. There is also reason to believe that the executive's teams should affect market competition.

Table 4.10: Effect of Good Governance on Dynamic Capital Structure in Competitive Industries (RE)

Variables	Coefficient	Std.Error	z	P>z
ML	0.357044	0.0959136	3.72	0.000
FS	0.0006681	0.0004577	1.46	0.144
MTBV	0.0004686	0.001525	0.31	0.759
EBIT	-0.012836	0.0069014	4.17	0.000
DPR	-0.0015252	0.0016188	-0.94	0.346
Random-effect GLS regression; Number of observations = 68; R-sq: 0.6553				

Table 4.10 illustrates the random effect model for good governance in a highly competitive market regarding ML, FS, MTBV, EBIT, and DPR. It has been observed that (1- λ) =1-0.357=0.643 has been calculated at 64.3% percent, which shows that those firms with strong governance in the high competition market have an adjustment speed of 64.3% to achieve their target. The coefficient for the overall model has been recorded as 0.6553 or 65.53%. Furthermore, the impact of ML is positive and highly significant, while the impact of EBIT is negative and highly significant. However, the impact of FS and MTBV are recorded as positive, and the impact of DPR is recorded as negative but statistically insignificant (Franko,1989; Hitt et al.,1996; Jiraporn et al., 2012).

Table 4.11: 3 Effect of Weak Governance on Dynamic Capital Structure in Competitive Industries (FE)

Variables	Coefficient	Std.Error	T	P>t
ML	0.3879736	0.0855709	4.53	0.000
FS	-0.0018395	0.0018787	-0.98	0.329
MTBV	0.0019651	0.0016959	1.16	0.249
EBIT	-0.0065438	0.0029246	-2.23	0.038
DPR	0.0001489	0.0009574	0.16	0.877
Constant	0.0281612	0.0282433	1.00	0.321
Fixed-effect (Within) regression Number of observations = 220 R-sq: 0.2477				
F(7, 129) = 5.99 Prob. > F = 0.000				

Table 4.11 describes the results of the fixed effect model for weak governance in the highly competitive market regarding ML, FS, MTBV, EBIT, and DPR. It has been observed that (1- λ) = 1-0.3879=0.6121 has been recorded at 61.21% percent, which shows that those firms with weak governance in the high competition market have an adjustment speed of 61.21% to achieve their target. The coefficient for the overall model has been recorded as 0.2477 or 24.77%. Furthermore, the impact of market leverage (ML) is positive and highly significant, while the impact of EBIT is negative and significant. However, the impact of MTBV and DPR are recorded as positive, and the impact of FS is recorded as negative but statistically insignificant. Overall, the model has been found to be highly significant (Ang et al., 1982; Warner, 1977).

Table 4.12: Effect of weak Governance on Dynamic Capital Structure in Concentrated Industries (RE)

Variables	Coefficient	Std.Error	z	P>z
ML	.4723526	.1855016	2.55	0.014
FS	.0003312	.0004762	0.70	0.487
MTBV	.0010331	.0003363	3.07	0.002
EBIT	.0002281	.0016681	0.14	0.891
DPR	.000665	.0005427	1.23	0.220
Constant	-.0068374	.0123532	-0.55	0.580
Random-effect GLS regression ; Number of observations = 183 ; R-sq = 0.7198				

Table 4.12 shows the results of the random effect model for weak governance in a low-competitive market regarding ML, FS, MTBV, EBIT, and DPR. It has been observed that (1- λ) = 1-0.4723=0.5277 has been calculated at 52.77% percent, which shows that those firms with bad governance in the concentrated market are much closer to almost 53% achieving their target. The coefficient for the overall model has been recorded as 0.7198 or 72%. Furthermore, the impact of ML is positive and significant, while the impact of the MTBV is positive and significant. However, the impact of FS, EBIT, and DPR are recorded as positive but statistically insignificant (Januszewski et al., 2002; Choua et al., 2011).

Table 4.12 shows the results of the fixed effect model for good governance in a low, competitive market regarding ML, FS, MTBV, EBIT, and DPR. It has been observed that (1- λ) = 1-0.4184=5816 has been calculated at 58.16% percent, which shows that those firms with good governance in the

concentrated market have an adjustment speed of 64.3% to achieve their target. The coefficient for the overall model has been recorded as 0.0441 or 4.41%. Furthermore, the impact of ML and MTBV are recorded as positive and highly significant. However, the impact of FS and EBIT are negative, while the impact of DPR is positive but statistically insignificant. Overall, the model has been recorded as significant.

Table 4.12: Effect of Good Governance on Dynamic Capital Structure in Concentrated Industries (FE)

Variables	Coefficient	Std. Error	t	P>t
ML	.4184768	.010456	40.02	0.000
FS	-.0126836	.0741529	-0.17	0.865
MTBV	.0081842	0.0012	6.76	0.000
EBIT	-.0069189	.24439	-0.03	0.978
DPR	.0406858	.0660289	0.62	0.541
Constant	.233454	1.199961	0.19	0.847
Fixed-effect (Within) regression		Number of observations = 108		
R-sq: 0.0441		F(7, 49) = 2.38 Prob. > F = 0.0353		

Conclusion

Companies try to achieve and maintain optimal capital structure with different ratios of debt and equity, each combination showing its costs and benefits. It has a positive impact on the expected return on investment. This shows that firms re-balance their capital structure to acquire the optimal debt level. Nevertheless, it is done step by step using different techniques and approaches. This study was conducted to find the relationship between corporate governance, product market competition, and dynamic capital structure. The data comprised data from 2015 to 2018, and panel data techniques were used. The result shows that firms with good governance and operating in competitive industries achieve their target leverage by 64.3 %(1-0.3570). On the other hand, firms with weak governance operating in competitive industries achieve their target leverage by 61.3%, which is less than 3% (64.3%- 61.3%) from firms with good governance operating in competitive industries. Further, the result portrays that firms with weak governance operating in concentrated industries achieved their target leverage of 52.77% on the other hand, firms with good governance operating in concentrated industries achieved their target leverage of 58.16%, which is 5.39 more than firms with weak governance operated in concentrated industries. Governance and competition are necessary for the firm to achieve its target leverage and hence, focus should be on internal governance and competition. Investors may invest in firms where governance is good and where they operate in competitive industries. The study is limited to PSX. Similar investigations can be carried out in other emerging and developing markets. The data set can be increased and made more diversified for a more comprehensive analysis.

Declaration

This study has not been submitted to any other journal for publication.

Data Availability Statement

Data is available upon request.

Conflict of Inter

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The authors declare no conflict of interest.

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