Corporate governance and cost of equity: the moderating role of ownership concentration levels

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Corporate Governance and Cost of Equity: The Moderating Role of Ownership Concentration Levels

Abstract

Purpose

The study analyzes the influence of corporate governance and ownership concentration levels on the cost of equity. Further, we extend the literature by investigating the moderating effect of ownership concentration levels on the relationship between corporate governance and the cost of equity.

Design/methodology/approach

The study applies panel regression analysis to a sample of 114 active non-financial companies listed on the Pakistan Stock Exchange from 2011 to 2016. Corporate governance was measured through a unique index comprising 30 governance attributes. The cost of equity was measured by applying the capital asset pricing model. Further, we construct three variables for ownership concentration levels, i.e. at 5%, 10%, and 20%.

Findings

Our results indicate that better corporate governance reduces the cost of equity, while ownership concentration at high thresholds would increase the cost of equity. Further, we find that ownership concentration at the 20% threshold moderates the relationship between corporate governance and the cost of equity. Thus, we argue that high ownership concentration would complement a firm's corporate governance mechanisms in reducing the cost of equity.

Originality/value

The study reports novel evidence that ownership concentration at a high threshold moderates the effect of corporate governance on the cost of equity.

Keywords: Corporate governance, ownership concentration, cost of equity, Pakistan.

1. Introduction

The accounting and finance literature has extensively analyzed the relationship between corporate governance and the cost of equity (i.e., Reverte, 2009; Chen et al., 2009; Gupta et al., 2018; Srivastava et al., 2019). It surmises that the quality of corporate governance can reduce the cost of equity due to three factors, i.e. (1) minimization of insiders' expropriation threat (Mazzotta and

Veltri, 2014; Durnev and Kim, 2005), (2) lower monitoring costs (Kano et al., 2021; Chen, Chen, and Wei, 2009), and (3) decline in information asymmetry (Broye et al., 2017; Huang, Dao, and Fornaro, 2016). However, the literature suggests that cross-country differences in corporate governance practices influence the effectiveness of investor protection mechanisms (La Porta et al., 2000; Aguilera and Crespi-Cladera, 2016). Corporate governance practices cannot be consistently applied across firms in different countries as one model does not fit all situations (Mulherin, 2005; Bebchuk and Hamdani, 2009). It implies that countries with different corporate governance practices may affect the cost of equity differently. Thus, the effect of corporate governance on the cost of equity may differ in both developed and emerging markets. Furthermore, differences in ownership concentration across countries may complicate the association between corporate governance and the cost of equity.

Several attempts have been made by previous researchers to exploit the inconclusiveness by incorporating moderating variables such as ownership expropriation (Guedhami and Mishra, 2009), financial development (Gupta et al., 2018), risk factors (Mazzotta and Veltri, 2014), and shareholders rights (Cheng et al., 2006). Nevertheless, the current literature has not examined the moderating effect of ownership concentration on the relationship between corporate governance and cost of equity, especially within the emerging market context, such as Pakistan.

The agency theory implies that conflicts of interest between contracting parties will increase the cost of equity (Mihov and Naranjo, 2019). It is primarily because equity investors expect to be compensated for higher risk due to agency conflicts. Further, the lack of control mechanisms may result in agency conflicts and managerial opportunism (Srivastava et al. 2019); therefore, corporate governance may fail to reduce the cost of equity. Desender et al. (2013) argue that the effectiveness of corporate governance mechanisms also depends upon a firm's ownership structure. Ownership concentration in a firm may act as a control mechanism for protecting the interests of investors (Aguilera and Crespi-Cladera, 2016). Essentially, extensive control mechanisms may strengthen corporate governance practices; thus, the cost of equity is reduced (Huang et al., 2021; Su et al. 2017; Young et al., 2008). Building on these theoretical assumptions and findings, this study analyzes the effect of corporate governance and ownership concentration on the cost of equity of listed Pakistani firms. We also examine whether ownership concentration levels moderate the effect of corporate governance on the cost of equity.

Pakistan offers a unique context for this research. First, the corporate governance environment in Pakistan is considerably different from developed countries due to its unique institutional characteristics such as family ownership concentration and financial reporting practices (Sheikh et al., 2018). Second, the dominance of family firms may provide a different perspective. Claessens et al. (2000), Xu et al. (2020), and Kano et al. (2021) find that different levels of ownership structure in family firms lead to multiple agency problems. Third, the unique findings from Pakistan can serve as a benchmark for similar studies in the future within the Asian context.

This research contributes to the academic literature in several unique ways. First, we analyze whether different ownership concentration levels moderate the effect of corporate governance on the cost of equity. Second, we examine the effect of different ownership concentration levels on the cost of equity. This contrasts with prior studies which tend to use a single level of ownership concentration as a variable. Third, we construct a corporate governance index in the context of Pakistan and analyze its effect on the cost of equity.

Thus, our primary objective is to investigate the moderating role of ownership concentration levels on the relationship between corporate governance and the cost of equity. We follow Gupta et al. (2018) and Srivastava et al. (2019) but have modified it so that it fits well into our research context. We focus on the moderating effect of ownership concentration by testing it at different ownership levels.

The remainder of the paper is structured as follows. The next section provides the literature review and hypotheses development. This is followed by the methodology. Thereafter, the empirical results, discussion, and conclusion are presented.

2. Literature Review and Hypotheses Development

The corporate governance literature is underpinned by the agency theory which suggests that there is a mismatch between shareholders and managerial interests arising from the separation of ownership and control (Jensen and Meckling, 1976; Shleifer and Vishny, 1997). The theory implies that shareholders must monitor managers to protect their interests. In practice, most organizations follow the corporate governance regulations for reducing agency costs and aligning the interests of shareholders and managers. Corporate governance regulations also help in

maintaining the credibility of financial statements by ensuring that firms comply with international standards of good governance (Habib and Jiang, 2015).

In Pakistan, many large business groups are family-dominated with high ownership concentration. These family businesses do not adequately comply with the code of corporate governance. Khan (2014) analyzed listed firms in Pakistan and found that corporate governance practices were not applied with the true spirit. Past studies suggest that in many listed firms, family members were appointed as directors (Arslan and Roudaki, 2017) to comply with the requirement of corporate governance (Arslan and Abidin, 2019). Further, the governance structure in Pakistan is weaker than in developed economies (Akhtar et al., 2018; Wang et al., 2019).

Ownership concentration serves as a monitoring mechanism and may reduce agency conflicts (Su et al., 2017; Desender et al., 2013). The monitoring effect of ownership concentration also reduces the tendency for managers to engage in earnings management and improves the earnings quality of a firm (Nguyen et al., 2015; Kazemian and Sanusi, 2015). On the other hand, several studies have argued that ownership concentration is detrimental to the corporate governance environment and financial performance of a firm (Peng and Yang, 2014). Cho, Chung, and Liu (2019) point out that high ownership concentration in the form of block-holder ownership may interfere with managerial decisions and negatively affect the financial health of a firm.

The existing literature on the impact of corporate governance and ownership concentration on the cost of equity is limited. Most of the previous studies report that firms with good corporate governance have lower costs of equity (Srivastava et al., 2019; Byun et al., 2008; Ashbaugh, Collins, and LaFond, 2004). Huang, Dao, and Fornaro (2016) suggest that to reduce agency conflicts and the cost of equity, organizations must implement stringent corporate governance practices. In addition, ownership concentration creates a strong incentive among shareholders to monitor management behavior (Peng and Yang, 2014).

Heeding the recommendation of Dawson (2014), we develop our hypothesis by stating three arguments. First, we develop the hypothesis related to the relationship between corporate governance and cost of equity. Following that, we develop the second hypothesis between ownership concentration and cost of equity. Meanwhile, the moderating effect is the interaction between the main independent variable (corporate governance) and the moderating variable (ownership concentration) (Brambor et al., 2006; Dawson, 2014). Hence, we develop the third hypothesis, which is about the moderating effect of ownership concentration on the relationship

between corporate governance and cost of equity. The next section will describe and elaborate it in detail.

2.1 Corporate Governance and Cost of Equity

Heeding the recommendation of Dawson (2014), we develop our hypothesis by stating three arguments. First, we develop the hypothesis related to the relationship between corporate governance and cost of equity. Following that, we develop the second hypothesis between ownership concentration and cost of equity. Meanwhile, the moderating effect is the interaction between the main independent variable (corporate governance) and the moderating variable (ownership concentration) (Brambor et al., 2006; Dawson, 2014). Hence, we develop the third hypothesis, which is about the moderating effect of ownership concentration on the relationship between corporate governance and cost of equity. The next section will describe and elaborate it in detail.

Corporate governance mechanisms are important for controlling managerial expropriation and protecting shareholder interests. Firms can reduce their cost of equity by implementing stringent corporate governance practices in three ways. First, corporate governance practices reduce the threat of expropriation by insiders (Mazzotta and Veltri, 2014; Durnev and Kim, 2005). Low expropriation by insiders reduces the risk faced by equity shareholders and the cost of equity. Second, corporate governance practices lower the monitoring cost incurred by outside investors (Kano et al., 2021; Chen, Chen, and Wei, 2009). Generally, investors demand a high return to be compensated for higher risk when the firm incurs greater monitoring costs (Huang, Dao and Fornaro, 2016). Thus, by lowering the monitoring cost for investors, the cost of equity can be reduced. Third, corporate governance mechanisms mitigate the information asymmetry and opportunistic behavior of senior managers (Broye et al., 2017; Huang, Dao, and Fornaro, 2016). Lack of information asymmetry and managerial opportunism in a firm would imply a low cost of equity demanded by shareholders (Srivastava et al., 2019). Thus, we develop the following hypothesis:

H_1: Better corporate governance reduces the cost of equity, ceteris paribus.

2.2 Ownership Concentration and Cost of Equity

The agency theory suggests that when shareholders and managerial interests are aligned through ownership concentration, there is a reduction in agency conflicts (Boubakri et al., 2016). This is

essential because shareholders with concentrated ownership tend to closely monitor managerial behavior so that long-term firm value is maximized (Boubakri et al., 2016). In developing economies, the ownership of businesses remains in family control, which leads to distinctive corporate governance challenges. This family ownership concentration requires a firm's management to include more independent directors on the board and carefully take strategic decisions. Family-controlled businesses also face a higher risk of expropriation by controlling owners, discouraging minority shareholders from contributing to the governance-related policies (Boubakri et al., 2016; Samaha and Azzam, 2015). Ownership concentration also helps to create value for stakeholders while promoting trust and commitment toward sustainable organizational objectives (Samaha and Azzam, 2015; Villalonga and Amit, 2006).

In countries with poor investor protection, ownership concentration also serves to reduce conflicts between controlling and minority shareholders. Low agency conflicts in firms with concentrated ownership imply that these firms have low risk and cost of equity. Prior studies examining the relationship between ownership concentration and cost of equity have found that there is a negative relationship between the two variables (Boubakri et al., 2016; Samaha and Azzam, 2015; Durnev and Kim, 2005). Several studies have examined the relationship between corporate governance and the cost of equity. These studies reveal a significant negative relationship between corporate governance and the cost of equity.

In firms with concentrated ownership, the majority shareholders are usually insiders or family members with uninterrupted access to private information. Consequently, the ownership structure can affect the cost of equity. For example, a high level of ownership concentration could complement governance mechanisms to reduce the cost of equity. Ownership concentration may also mitigate agency problems between shareholders and managers which reduce the cost of equity. Therefore, we hypothesize that high ownership concentration tends to reduce the cost of equity.

H_2: High ownership concentration reduces the cost of equity, ceteris paribus.

2.3 The Moderating Effect of Ownership Concentration

The agency theory suggests that ownership concentration reduces managerial opportunism and agency costs (Jensen and Meckling, 1976). It is argued that ownership concentration also creates incentives for firms to adopt good governance practices. Thus, agency theorists believe that

ownership concentration will enhance corporate governance quality and reduce the cost of equity capital (Su et al., 2017; Peng and Yang, 2014). However, other studies have argued that ownership concentration in the hands of block-holders increases the risk of expropriation of minority shareholders' interests (Samaha and Azzam, 2015; McConnell and Servaes, 1990). This implies that high ownership concentration will adversely affect the quality of corporate governance practices in firms and raise the cost of equity (Bozec and Dia, 2017). Given the two competing viewpoints, we expect that ownership concentration will moderate the association between corporate governance and the cost of equity. Therefore, we formulate the following hypothesis:

H_3: The negative relationship between corporate governance and cost of equity will be moderated by ownership concentration.

3. Methodology

3.1 Data

The sample comprises 114 active non-financial firms listed on the Pakistan Stock Exchange. The observations cover the period from 2011 to 2016. There are two reasons for selecting this time duration for the study. First, major reforms in the code of corporate governance have been made by the SECP in 2012. The post-reform period approximately corresponds with the time duration of the study which enables us to ascertain the effectiveness of CG reforms. Second, data availability was a major concern. We had chosen firms for which the data was available for the given time period. To be included in the sample, a firm was required to have adequate observations for calculating variables in a 6-years time period. The sample dataset comprises 684 firm-year observations which were collected from published annual reports of the listed companies, as a data repository was not available.

The data for several variables such as ROA, ROE, COE, firm size, and leverage was retrieved from the annual reports. CGI was constructed using the indexation approach of Love and Rachinsky (2007), Black et al. (2006), Klapper and Love (2004), Drobetz et al. (2004), and Beiner et al. (2004). The description of variables is provided in Appendix B and their measurement is discussed in the next section.

3.2 Variables Measurement

3.2.1 Cost of Equity

The corporate finance literature contains many models to calculate the cost of equity. Ohlson and Juettner-Nauroth (2005) calculate the cost of equity through the EPS and EPS growth model. Claus and Thomas (2001) use the residual income valuation approach to calculate the cost of equity. However, the Capital Asset Pricing Model (CAPM) is the most widely used method of calculating the cost of equity in practice and the academic literature (Ehrhardt and Brigham, 2008; King, 2009). The CAPM is considered superior to other methods of computing the cost of equity as it considers only systematic risk and ignores unsystematic risk which is essentially non-existent in diversified portfolios. Moreover, empirical studies have validated the CAPM as a reasonable measure of the cost of equity in various contexts.

This study uses the CAPM to measure the cost of equity. Sharpe (1964) and Lintner (1965) were the pioneers of the CAPM. The CAPM has been used in prior research and is also accepted by shareholders, investors, financial analysts, and policymakers for the calculation of COE (Khan, 2016; Pratt and Grabowski, 2008). The CAPM provides the expected return from an investment and implies that 'investments' are anticipated to generate a return that is equal to the market return considering that the risk influence is the same between the assets invested and the market return (Aragon, 1989). While there are many models for computing COE, the CAPM was used as other methods are sensitive to fluctuations in earnings per share and market returns (Pratt and Grabowski, 2008).

According to the CAPM, COE is a function of the risk-free rate, beta coefficient, and market risk premium. In this study, the return on the 3-month T-bills in Pakistan was used as the risk-free rate, while the beta coefficient was computed as the proportion of covariance between firm returns and market returns to the variance of firm returns. Moreover, the market risk premium was the difference between the expected returns of the market and the risk-free rate. The expected return on market was based on the estimated annual returns from the KSE 100 index of the Pakistan Stock Exchange. The CAPM equation is as follows:

$$COE = R_f + \beta(R_m - R_f)$$

Where *COE* refers to the cost of equity; R_f is the risk-free rate of return; R_m is the market rate of return, and β is the beta coefficient.

3.2.2 Corporate Governance Index (CGI)

A corporate governance index is generally considered superior to individual proxies of corporate governance (such as board meetings, board independence, and audit committee independence). Corporate governance indices comprising several attributes have been extensively used in prior studies such as Black et al. (2017), Hodgson et al. (2011), Chen et al. (2007), Love and Rachinsky (2007), Black et al. (2006), Klapper and Love (2004), Drobetz et al. (2004), and Beiner et al. (2004).

Our CGI comprises 30 unique attributes related to ownership structure, board composition, compensation, shareholder rights, and disclosure. In this context, we used 5 attributes related to ownership structure, 10 attributes related to board composition, 4 attributes related to compensation, 6 attributes related to shareholder rights, and 5 attributes related to disclosure. The CGI was constructed with the general rule of summation and has different weights. All the attributes were measured on a ratio scale. A high CGI indicates high compliance with good corporate governance practices. All the attributes of the CGI are relevant to the corporate governance mechanisms in Pakistan. Our CGI is different from Javid and Iqbal (2010) due to the revised code of corporate governance of 2012. The corporate governance index of Javid and Iqbal (2010) comprises 22 governance indicators categorized under 3 main themes, i.e. 8 indicators for board composition and independence, 7 indicators for ownership and shareholding, and 7 indicators for transparency, disclosure, and audit. We follow the latest code of corporate governance items to construct our CGI. Appendix A1 presents the items of our CGI. Further, Appendix A2 presents the summary statistics of the CGI items.

3.2.3 Ownership Concentration

The data for ownership concentration was collected from the pattern of shareholdings section of the annual report. The measurement is constructed by following the procedure from Abdallah and Ismail (2017). The ownership concentration has three different measures with three different thresholds for ownership concentration, which are 5%, 10%, and 20% levels. The major shareholders here are defined as those with significant ownership concentration. Heeding the accounting standard, the first threshold for significant ownership is entity with ownership concentration more than 5%. We list out those major shareholders with ownership concentration

more than 5%, and take the total proportion of shares held by a major shareholder from the list of substantial shareholders in annual report.

The next step is that we take the ratio of the number of shares owned by the major shareholders to the total number of outstanding shares. This ratio is called as ownership concentration. Theoretically, a substantial shareholder (the major shareholders) is the owner with more than 5% portion of ownership. Thus, in practice, many major shareholders owned more than 5%.

The ownership concentration values from the major shareholders with 5% and more ownership is our OC5. Considering the prior literature that suggesting ownership concentration is prevalent in Pakistan (Din et al., 2021; Javid and Iqbal, 2008; Cheema, et al., 2003; La Porta, et al., 1999), we add two more ownership concentration thresholds for robustness reason: 10% (OC10) and 20% (OC20) level. In other words, we redefine the major shareholders by enlarging the ownership threshold. For instance, OC10 is those major shareholders that owned 10% or more ownership. OC20 is those major shareholders that owned 20% or more ownership. Our argument is that by having bigger threshold, it would allow us to ascertain whether ownership concentration levels moderate the impact of corporate governance on the cost of equity.

3.2.4 Control Variables

The empirical finance literature has long explored the factors of cost of equity, and we use those factors as control variables. Consistent with previous studies in the Pakistani context, we choose three firm characteristics as control variables, namely, ROA, leverage, and firm size (e.g., Ali et al., 2019; Ilyas and Jan, 2017; Shah and Butt, 2009).

The data for control variables were also retrieved from the annual reports. While firm age and CAPEX growth are commonly used as control variables, we dropped them due to a concomitant variation issue (no variance due to homogeneity of distribution). Leverage was measured as the total debts to total assets ratio. Leverage was included as a firms' capital structure affects the cost of capital. Moreover, leverage offers tax savings as interest expenses are tax-deductible. High leverage indicates higher risk which increases the cost of equity.

ROA represents the return on assets. One motive for attracting foreign investment is the acquisition of fixed assets. The purchase of assets is generally on credit as the cost is very high. So the high cost of acquiring assets can affect the cost of capital. Firm size (SIZE) was measured as the natural logarithm of total assets. Small-cap firms as compared to large-cap firms are more

diversified with low risk and COE. Consequently, we anticipate that the COE to be negatively associated with SIZE. The variables of the study and their definitions are provided in Appendix B.

3.3 Specification of Models

We specify our estimation model based on previous research such as Ali et al. (2019) and Javid and Iqbal (2010). First, we build the baseline model about relationship between corporate governance affects the cost of equity (COE), following those two empirical researches. The model is presented as follow:

$$COE_{i,t} = \alpha_1 + \beta_1 CGI_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEVERAGE_{i,t} + \beta_4 ROA_{i,t} + \varepsilon_{i,t} \ldots\ldots\ldots\ldots\ldots (1)$$

Note that the main objective of this research is to examine the moderating effect of ownership concentration levels. The statistical inference for the moderating effect is achieved from the interaction between CGI and ownership concentration (CO) for the statistical inference. Following Brambor et al. (2006) and Dawson (2014) procedures, it is crucial to have the main independent variable (in our case is the CGI), the moderator (CO) and the interaction between the two (CGI*CO). Hence, we specify our main estimation model as follow:

$$COE_{i,t} = \alpha_1 + \beta_1 CO_{i,t} + \beta_2 CGI_{i,t} + \beta_3 (CGI * CO)_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LEVERAGE_{i,t} + \beta_6 ROA_{i,t} + \varepsilon_{i,t} \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where *COE* is the cost of equity; *CO* represents the ownership concentration levels. i.e. 5%, 10%, and 20% levels. *CGI* is the corporate governance index; *SIZE* is the firm size. *LEVERAGE* represents firm leverage, while *ROA* is the firm profitability.

3.4 Panel Regression

$$Y_{i,t} = \alpha_1 + \beta_1 X_{i,t} + \varepsilon_{i,t}$$

We follow

It is noteworthy that this research did pre and post-estimation to ensure the rigorness of the model. First, we run the pre-estimation test for our panel regression, such as Breusch Pagan LM test, Chow Test, and Hausman Test. The results conclude that the best estimation approach is the Fixed Effect Model. Then, we run the set of classical linear regression model assumption test (Normality, Heteroscedasticity, Autocorrelation, and Multicollinearity). The results conclude that our panel regression need to take the heteroscedasticity-consistent standard errors as well as Beck and Katz (1995) due to the significance value of the Heteroscedasticity test and autocorrelation. Meanwhile,

the post-estimation is run specifically for the GMM test, which are the Sargan Test and J-test for the overidentifying restriction. The results show two key findings. First, the Sargan test is insignificant and second our AR(2) also shows insignificant correlation between first and second-order error terms. In other words, the post-estimation concludes our GMM model is solid and rigor.

Note that The post-estimation diagnostic checks of GMM estimations indicate that the overidentifying restrictions of our estimation models are valid. Meanwhile, the AR(2) autocorrelation test also shows an insignificant correlation between the first and second-order error terms, affirming our post-estimation conclusion.

4. Results and Discussion

4.1 Descriptive Statistics and Correlations

Table I contains the descriptive statistics of the research variables. The key variables in this research are the cost of equity, ownership concentration, and corporate governance index. For the cost of equity, the mean value is 12.33 which is lower than the average cost of equity value of 21.2% reported by Arslan and Abidin (2019) over the sample period of 2009 to 2015. For the corporate governance index, Table I reports the mean value of CGI as 4.37 (87.4%), which is higher than the reported value of 73.8% by Arslan and Abidin (2019). In terms of ownership concentration, on average, the major shareholders with 5% ownership concentration (OC5) has 61.13% ownership in average. It implies that given the substantial shareholders are defined are those with 5% ownership, the average for the cumulative percentage of shares held was 61.13%. Meanwhile, the mean values of shareholders owned by the majority shareholders was 35.4%, when we shift the ownership threshold into 10% level (OC10). It indicates that when we defined substantial shareholders are those with 10% or higher, the the average for the cumulative percentage of shares held was 35.4%. Intriguingly, when the threshold for substantial shareholders is 20% (OC20), the majority shareholders have 45.29% ownership in average. The explanations for these descriptive findings are in threefold. First, the availability of shares in Pakistani stock exchange is limited. In average, Pakistani listed firms have XX% of their shares traded in the market (CITATION). It allows many investors to reach the threshold 5% easily. However, the nature of the controlling shareholders in Pakistan is more on family firms (Hashmi et al., 2018);

hence, it would be more difficult to have cumulative shares if the threshold is 10%. Those investors with lower than 10% ownership were excluded, and hence, the mean values were 35.4%. Intriguingly, when we shift the substantial shareholders threshold into 20%, the ownership concentration slightly higher into 45.29%. One explanation for this is the family blockholders. OC10% has dispersed controlling shareholders from state, foreign, to family business. OC20% close to ultimate shareholders, which is dominated by family business in Pakistan context. Our descriptive statistics of ownership concentration is similar with the findings from Abdallah & Ismail (2017), where their OC5 and OC10 were 69.3% and 46.5% respectively for GCC listed firms.

Finally, our control variables also have similar descriptive statistics reported by previous studies. For example, the mean value of leverage was 51.73%, which is slightly lower than the reported mean value of 55.6% by Hashmi et al. (2018). The mean value of firm size is significantly different from previous studies. The firms in our sample have a mean value of 10 for firm size, meanwhile, Tariq and Abbas (2013) reported a mean value of 8.10. In terms of ROA, the reported mean values in Table I (5.59), which is slightly lower than the reported ROA of 5.79 from Abdullah et al., (2022) for 150 Pakistani listed firms.

[Please Insert Table I here]

Table II reports the correlations among the variables along with their Variance Inflation Factors (VIF). The correlations between the explanatory variables and the cost of equity provide a preliminary view of their univariate relationship. It reveals that only corporate governance and ownership concentration at 10% and 20% meet the expected sign. Both ownership concentration (at 10% and 20%) and corporate governance are associated with a smaller cost of equity. The remaining variables have small correlations with the cost of equity. Furthermore, all variables have small VIF scores implying that there is no multicollinearity problem.

[Please Insert Table II here]

4.2 Panel Regression Results

4.2.1 Baseline Results

Table III provides the panel regression results corresponding to the baseline models, consisting of 4 columns. Column [1] provides the result for model (1). Further, Columns [2], [3], and [4] provide the results for the ownership concentration levels of 5%, 10%, and 20% respectively. The results suggest that the coefficients of ownership concentration negatively affect the cost of equity (COE), but are only significant at the 10% ownership concentration level (CO10). The 5% ownership concentration (CO5) and 20% ownership concentration (CO20) levels do not significantly affect COE. The findings are consistent with previous studies such as Ashbaugh et al. (2004) and Cheng et al. (2006).

These baseline regression results imply that a certain ownership concentration threshold has a negative impact on COE. For corporate governance, the results suggest that better corporate governance leads to lower COE. In the next section, we provide the results of the interaction model that is used for hypotheses testing.

[Please Insert Table III here]

4.2.2 Full Model Results

Table IV provides the detailed empirical results at three different ownership concentration thresholds: CO5, CO10, and CO20. It serves the inferences for our hypothesis testing. Following Petersen's (2009) recommendation, we estimate our model specifications using three approaches to ensure reliable statistical inference. Columns (1), (4), and (7) are the estimations using the White heteroscedasticity-consistent standard errors of the Fixed Effect regression model. Columns (2), (5), and (8) provide the results from a two-way within-cluster regression model. Finally, the estimations from the robust double-clustered Beck and Katz (1995) panel regression model are provided in Columns (3), (6), and (9). To conserve space, we interpret the two-way within-cluster regression results in detail.

Based on our results, we accept the first hypothesis (*H_1: Better corporate governance reduces the cost of equity, ceteris paribus*). Our results suggest that better corporate governance reduces COE at all CO levels. At the 5% ownership concentration, an increase in CGI leads to a statistically significant decline in COE by 7.408% (β= -7.408, SE=2.896, $p<0.01$). A similar result is also found at the 10% ownership concentration level. An increase in CGI leads to a statistically significant decline in COE by 7.813% (β= -7.813, SE=2.166, $p<0.01$). Further, at the 20% ownership concentration level, we also find that CGI has a negative and statistically significant

effect on COE (β= -7.574, SE=1.310, p<0.01). In economic terms, it implies that a single unit increase in CGI leads to a 7.574% decrease in COE. The negative impact of CGI on COE is consistent with the agency theory. This is because agency theory implies that an improvement in corporate governance quality reduces agency conflicts and the cost of equity. These results are also consistent with the findings of Srivastava et al. (2019), Broye et al. (2017), and Reverte (2009).

With regard to the second hypothesis (*H_2: High ownership concentration reduces the cost of equity, ceteris paribus*), Table IV reports mixed results. In CO5 and CO10 models, ownership concentration does not have a statistically significant effect on COE. However, at the ownership concentration threshold of 20%, we find a positive and statistically significant effect of CO20 on COE (β= 0.041, SE=0.022, p<0.1). This indicates that higher ownership concentration would increase COE. The positive impact of CO on COE is consistent with the type 2 agency problem. Type 2 agency problems increase with ownership concentration and exacerbate conflicts of interests between controlling shareholders and minority shareholders of a firm. Further, type 2 agency problems would increase the cost of equity. The finding is consistent with previous studies such as Boubakri et al. (2016), Aguilera and Crespi-Cladera (2016), Samaha and Azzam (2015), and Durnev and Kim (2005).

To examine the moderating role of ownership concentration levels on the corporate governance-cost of equity relationship, we analyze the interaction term between CO and CGI ($CO*CGI_{i,t}$) and find some interesting results. First, there is no moderating effect at CO5 and CO10. It implies that ownership concentration does not moderate the relationship between corporate governance and cost of equity if ownership concentration is at the 5% or 10% level. Therefore, we argue that ownership concentration needs to reach a certain threshold to significantly moderate the relationship between corporate governance and the cost of equity. This may be because at low ownership concentration levels (such as 5% and 10%), there is a lower incentive for owners to seek a reduced cost of equity as it would only marginally affect shareholders' wealth. Contrarily, at higher ownership concentration thresholds, owners have a greater incentive to improve corporate governance and reduce the cost of equity as it would have significant implications for shareholders' wealth. Second, the moderating effect of ownership concentration only appears when the ownership concentration is at the 20% level.

In a more detail elaboration, we can see that OC20 in Table 3 changed its role on COE from statistically insignificant-negative into significantly-positive. This confirms the principal–principal conflict among large shareholders was reduced by a strong corporate governance (Claessens et al., 2002; Young et al., 2008; CITATION). The control and monitoring level in higher level threshold, like 20% (OC20), restrict managers self-interest; hence, would lead to lower COE.

In this study we find that as level of ownership concentration increase within this range (CO20%), the controlling shareholders endure more of this cost. Therefore, This moderating effect is visible from the statistically significant interactionression model (β= -0.097, SE=0.034, $p<0.01$), two-way within-cluster panel regression model (β=-0.057, SE=0.024, $p<0.05$) and robust double-clustered Beck and Katz (1995) panel regression model (β= -0.057, SE=0.024, $p<0.05$). By and large, our results are align with type 2 agency problem, which indicates that the coefficient of CO20% is positive and significant at higher level of CO. This is because agency theory implies that high ownership concentration would enhance monitoring, reduce conflicts of interests and agency costs. Lower agency costs imply less risk for shareholders and a lower cost of equity. This finding is also consistent with previous studies by Bozec and Dia (2017) and Khan (2016). Thus, we argue that the corporate governance and cost of equity relationship would be affected by high ownership concentration.

[Please Insert Table IV here]

4.3 Endogeneity

One major issue in finance is the concern of endogeneity, which may arise due to the omission of explanatory variables in the regression (Robert and Whited, 2013). This research performs a series of robustness checks to address the concern of endogeneity, and the results are presented in Table 5. First, we re-estimate the model using the one-year lagged variable model proposed by Bellemare et al. (2017). They found that the lagging explanatory variables rule out the form of reverse or simultaneous causality, causing the endogeneity issue. Second, we perform the Generalized Moment of Method (GMM), heeding the advice of Wintoki et al. (2012). The GMM model rules out the endogeneity issue by "internally transforming the data," allowing the number of moment conditions to be greater than the number of parameters. This method combines observed data with the information in population moment conditions to produce estimates of the model's unknown parameters, removing the endogeneity.

The results further corroborate our earlier conclusions. The relationship between CGI and COE suggests that better corporate governance reduces COE at all CO levels. Both approaches (one-lagged and GMM) consistently reveal the negative relationship between corporate governance and COE. In addition, it also shows mixed results for the ownership concentration effects. At the

ownership concentration level of 5% and 10%, there is no significant effect on COE. However, there is a positive and significant effect of CO20 on COE.

Furthermore, the results from both estimation approaches suggest that ownership concentration at the 20% level moderates the relationship between corporate governance and cost of equity. Thus, the negative relationship between CG and COE would be affected by high ownership concentration.

[Please Insert Table V here]

4.4 Moderation Plot

We further examine the moderating effect of ownership concentration by following the suggestion of Dawson (2014). The moderation plot is presented in Figure I. Cost of equity is plotted on the *y*-axis and CGI on the *x*-axis. The two lines represent Low CO20 and High CO20. The Low CO20 is shown by the blue line, while, the High CO20 is portrayed by the orange line.

Figure I depicts that at low corporate governance, the low CO20 has higher COE as compared to high CO20. When firms enhance their corporate governance, both low and high CO20 decrease COE, confirming our regression results. Further, when corporate governance is high, the gap between low CO20 and high CO20 is still large. It implies that CO20 has strengthened the negative effect of corporate governance on COE. Thus, the figure confirms our earlier results.

[Please Insert Figure I here]

5. Conclusion

The lack of transparency in Pakistani firms has been a cause of serious concern which reinforces the need for good governance. Therefore, this study examines how corporate governance and ownership concentration affects the cost of equity. It also investigates whether ownership concentration moderates the influence of corporate governance on the cost of equity. Our results indicate that firms with high quality corporate governance will lead to lesser conflicts of interests and a lower cost of equity. Similarly, firms with high ownership concentration will also experience lower managerial opportunism and cost of equity. Further, we find that ownership concentration at the 20% level moderates the relationship between corporate governance and the cost of equity. These results imply that corporate governance in firms suffers when ownership concentration reaches higher levels. In addition, our findings imply that firms can minimize the risk faced by

equity shareholders by implementing substantive corporate governance mechanisms. Further, firms should carefully re-balance corporate governance mechanisms at high ownership concentration levels to manage the risk faced by shareholders. Our unique corporate governance index will facilitate future researchers to assess corporate governance quality in the Pakistani context by giving adequate weight to board composition, firm-specific attributes, compensation, shareholder rights, and disclosures. The study has some limitations, such as the non-availability of data for other control variables such as firm age. In addition, due to data and time constraints, the study is based on limited sample size and time horizon. Future research may employ a cross-country comparative approach to investigate the issue. Moreover, researchers may also adopt a mixed methods research approach to adequately analyze the role of qualitative aspects of corporate governance and ownership concentration on the cost of equity.

5.1 Theoretical and Managerial Implications

The findings of the study have implications for the agency theory. First, we find that corporate governance and low firm-level ownership concentration reduce the cost of equity of firms. The finding supports the agency theory as it suggests that better corporate governance and high ownership stakes in a firm will mitigate agency problems and the cost of equity. Second, we find that high firm-level ownership concentration moderates the efficacy of corporate governance in reducing the cost of equity. The finding implies that agency theory can be extended by analyzing the interaction of corporate governance and ownership concentration. The interaction of corporate governance and ownership concentration in this study suggests that agency problems and conflict of interests may aggravate when ownership concentration is high. The extension of agency theory will be fruitful for future researchers that examine the nexus between corporate governance, ownership concentration, and the cost of equity, especially in developing South Asian economies.

Furthermore, the findings of the study have implications for managers. First, the results imply that managers can reduce conflicts of interest and the cost of equity by striking a careful balance between corporate governance and ownership concentration. In other words, we argue that corporate governance and ownership concentration will complement each other in reducing conflicts of interest and the cost of equity up to a certain threshold. Theoretically, ownership concentration is an effective tool of corporate governance mechanism to boost firms' performance, in the case of emerging economies where investor's protection is weak (Shleifer and Vishny,

1997). However, in the settings of poor legal protection for investors, concentrated ownership becomes a substitute to resolve agency conflicts between large shareholders and minority shareholders. Consistent with the findings of Durnev and Kim (2005), we find that ownership concentration becomes a substitute of corporate governance in a weak legal environment with poor investor protection. Second, we argue that at high ownership concentration levels, managers may need to introduce more stringent corporate governance mechanisms for managing the cost of equity.

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Appendix A1: Corporate Governance Index Items

Ownership Structure Attributes: Percentage of managerial ownership, Percentage of institutional ownership, Percentage of ownership concentration, Percentage of family ownership, Percentage of block-holder ownership
Board Composition Attributes: Board size, Percentage of outside directors, Percentage of independent directors, Presence of nominee directors, Presence of non-executive chairman, Total number of directorships held by independent directors, CEO duality, Relationship between directors, Performance evaluation by the board, Meetings of the board without management
Compensation Attributes: Disclosure of compensation policies regarding CEO and directors bonuses, Stocks owned by directors and CEO, Loans to senior executives, Disclosure of compensation policies regarding CEO and top executives
Shareholder Rights Attributes: Presence of non-voting or subordinate voting shares, Firm gives profile of directors standing for re-election on the notice of shareholder meetings, Shareholder approves the appointment/removal of the external auditor, Firms discloses minutes of shareholder meetings, Appointment/approval of directors, Election of the board
Disclosure Attributes: Disclosure of fees paid to an outside compensation consultant, Related directors, Directors' biography, Disclosure of directors' age and retirement policies, the Attendance record of directors at committees and meetings.

Appendix A2: Summary Statistics of Corporate Governance Index Items

	Mean	Std Dev	Minimum	Maximum
Ownership Structure				
Percentage of managerial ownership	0.633	0.482	0	1
Percentage of institutional ownership	0.927	0.260	0	1
Percentage of ownership concentration.	0.855	0.352	0	1
Percentage of family ownership	0.769	0.422	0	1
Percentage of block holder ownership	0.914	0.281	0	1
Board composition				
The total number of directors on the Board	0.943	0.232	0	1
Percentage of outside directors	0.833	0.373	0	1
Percentage of independent directors	0.841	0.366	0	1
Presence of nominee directors	0.835	0.372	0	1
Presence of a non-executive chairman	0.956	0.205	0	1
Total number of directorships held by independent directors	0.722	0.448	0	1
Duality structure (position held by the Chairman and the CEO)	0.249	0.433	0	1
Relationship between directors	0.708	0.455	0	1
Performance evaluation of the board	0.953	0.211	0	1
Meetings of the board without management	0.974	0.160	0	1

Compensation				
Disclosure of compensation policies regarding CEO and directors bonuses	0.991	0.093	0	1
Stocks owned by directors and CEO	0.991	0.093	0	1
Loans to senior executives	0.743	0.437	0	1
Disclosure of compensation policies regarding CEO and top executives	0.991	0.093	0	1
Shareholder Rights				
Presence of non-voting or subordinate voting shares	0.177	0.382	0	1
The firm gives a profile of directors standing for re-election on the notice of shareholder meetings	0.996	0.066	0	1
Shareholders approve the appointment/removal of the external auditor	0.984	0.126	0	1
Firm discloses minutes of shareholder meetings	0.977	0.151	0	1
appointment/approval of directors	0.997	0.054	0	1
Election of the board	0.993	0.085	0	1
Disclosure				
Disclosure of fees paid to an outside compensation consultant	0.893	0.309	0	1
Related directors	0.132	0.338	0	1
Directors' biography	0.947	0.223	0	1
Disclosure of directors' ages and retirement policies	0.967	0.180	0	1
Attendance record of directors at committees and meetings	0.961	0.195	0	1

Appendix B: Variable Definitions

Variable	*Definition*
Cost of Equity (COE)	The cost of equity is the shareholders' required rate of return on an equity investment. This study uses the capital asset pricing model (CAPM) to measure the cost of equity.
Corporate Governance (CG)	A corporate governance index is constructed to measure firm-level governance quality with the help of a diverse set of attributes adopted by listed firms. The corporate governance index uses five broad categories (i.e. ownership structure, board composition, compensation, shareholder rights, and disclosure). Each category comprises several unique attributes.
Ownership Concentration (OC)	The ownership concentration variable was measured by dividing the total proportion of shares held by a major shareholder by the total number of shares outstanding. In other words, it is measured by the percentage of shares owned by the largest shareholder. We are using three different variables for ownership concentration, i.e. at 5%, 10%, and 20% levels of ownership concentration.
Return on Assets (ROA)	Return on assets is the ratio of the firm's net income to total assets.

Leverage (LEV)	Leverage was measured through the debt to equity ratio.
Firm Size (SIZE)	Firm size was calculated by taking the natural logarithm of total assets.