

The impact of corporate governance on the cost of equity

Evidence from cement sector of Pakistan

Impact of
corporate
governance

293

Syed Tauseef Ali
*School of Accounting,
Dongbei University of Finance and Economics, Dalian, China*

Zhen Yang and Zahid Sarwar
*School of Business Administration,
Dongbei University of Finance and Economics,
Dalian, China, and*

Farman Ali
*School of Accounting,
Dongbei University of Finance and Economics, Dalian, China*

Received 6 August 2019
Revised 30 September 2019
Accepted 15 October 2019

Abstract

Purpose – In view of organizational inertia, with the occurrence of a major event, though resource rigidity minimizes, however simultaneously, it increases process rigidity, which creates difficulties in motivating managers and dealing with the agency problem. Therefore, keeping in mind the high demand created by the China–Pakistan Economic Corridor and Naya Pakistan Housing Scheme in the cement sector of Pakistan, the purpose of this paper is to investigate the impact of corporate governance (CG) on the cost of equity (COE) in the cement sector, to deal with the problems surging during and after the completion of these projects and highlight further opportunities for the cement sector of Pakistan.

Design/methodology/approach – CG is a qualitative concept therefore, eight proxies have been used to measure it along with the two control variables. This study uses balance panel data of six years from 2012 to 2017, collected from 18 companies of the cement sector of Pakistan. Descriptive statistics have been used to describe the data, correlation matrix to see the nature of the relationship, and Pooled OLS as the estimation technique, while to analyze the data a statistical package 13 has been used. To measure the COE, the Capital Asset Pricing Model (CAPM) has been used.

Findings – Regression results suggest that block ownership, insider ownership and the board size are insignificant, while CEO tenure is negatively and significantly associated with the COE. Non-executive directors, independence and CEO duality are insignificant; however, diversity is positively and significantly associated with the COE. Moreover, the mean value of the COE is 8.22 percent for the cement sector, while the coefficient of determination of the model under study is 74 percent.

Research limitations/implications – This paper is based on the data from the cement sector of Pakistan only. Therefore, this is the reason that these results cannot be generalized on the whole economy of Pakistan.

Practical implications – This study helps in finding out the COE value specific to the cement sector, which will help this sector to evaluate the capital budgeting decision more precisely and accurately than before. Moreover, the association of diversity as positive, while independence as negative with the COE highlights a room for improvement in the implementation of CG codes by SECP. This study also helps to mitigate the impact of inertia, the after-effects of high demand, and managing the agency problem in the cement sector.

© Syed Tauseef Ali, Zhen Yang, Zahid Sarwar and Farman Ali. Published in *Asian Journal of Accounting Research*. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial & non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licences/by/4.0/legalcode>

The authors are very obliged to the Editor in Chief, Dr Iman Harymawan, for his interest in ensuring on-time publication. The authors are also indebted to the two anonymous reviewers for their insightful comments, which helped to enhance the quality of this paper.



Originality/value – This is the first study using CG data collected just after the revised promulgation of CG codes in 2012, along with a wide range of eight proxies measuring CG and its impact on the COE in the cement sector.

Keywords Pakistan, Corporate governance, CAPM, Cost of equity, Cement sector

Paper type Research paper

1. Introduction

This study investigates the impact of corporate governance (CG) on the cost of equity (COE) in cement sector's enterprises, listed on Pakistan stock exchange for a sample period of 2012–2017. To overcome the agency problem, there are two practical methods, one is the incentive mechanism, and the other is a monitoring mechanism. These two methods are used to align the interest of agents with that of principals (Denis, 2001). This study shows how monitoring mechanism helps to alleviate the agency conflict and lowers the COE. Therefore, this study uses eight independent variables (IV) as a proxy for the quality of CG mechanism. While to compute the COE, the Capital Asset Pricing Model (CAPM) has been used (Lintner, 1975; Sharpe, 1964). There are many studies, which highlighted that there is a positive association between the quality of CG and profitability (Bebchuk and Cohen, 2005; Bhagat and Bolton, 2008; Core *et al.*, 2006; Klock *et al.*, 2005; Masulis *et al.*, 2012). There was a need felt by researchers to examine the impact of the quality of CG on firm performance by taking the COE, cost capital and cost of debt as an indirect proxy for performance. However, there are few studies that investigated the impact of CG on the COE (Adiputra *et al.*, 2017; Chen *et al.*, 2009; Huang *et al.*, 2009; Ramly, 2012; Regalli and Soana, 2012; Shah and Butt, 2009; Srivastava *et al.*, 2019; Sukhahuta *et al.*, 2016; Zhu, 2012). However Regalli and Soana (2012) and Shah and Butt (2009) found some contradicting pieces of evidence and stated that increasing the quality of CG also increases the COE.

Shah and Butt (2009) is the only study in the context of Pakistan, which studied the relationship between CG and the COE in listed companies. However, they concluded that as the quality of CG increases, it creates a positive impact on the COE. Regalli and Soana (2012) found that both internal and external CG has a positive impact on the COE. On the other hand, Pham *et al.* (2012) stated that good CG mechanism has not only inverse impact on the COE but also diminishes the information asymmetry as well as the perceived risk of companies. Ramly (2012) found that employing the good CG mechanism helps to decrease the COE. So the results are mixed, some argue that there is a positive relationship, and some argue that there is a negative relationship. Shah and Butt (2009) stated that there is heterogeneity among different sectors of Pakistan and concluded that as the quality of CG increases the cost equity also increases. They not only found that CG has a positive impact on the COE but also found that independence, as well as audit committee independence both, have a positive association with the COE, which needs further investigation. In that study of Shah and Butt (2009), the sample size consisted of 114 non-financial companies listed on Pakistan stock exchange, but 58 out of 114 were taken from the textile sector, which shows a sample bias toward the textile sector.

Another critical point is that COE was found in that study was 29 percent which is much high than the average COE of America that is around 13 percent and higher than other studies as well (Huang *et al.*, 2009; Regalli and Soana, 2012). Shah and Butt (2009) stated that there is heterogeneity among the different sectors of Pakistan. Another important aspect is the sample period selection. Shah and Butt (2009) also highlighted that the reason for the inverse relationship is the sample period, which was taken just following the revised implementation of CG codes in 2002 in Pakistan. Because the CG codes were revised in 2012 in Pakistan; therefore, there is a need to investigate the said relationship after 2012 (Latif and Abdullah, 2015). As the importance of COE highlighted by Sukhahuta *et al.* (2016), this study is very crucial for the cement sector of Pakistan. This study is critical because it will

help cement sector firms to have the COE, specific for the cement sector which will help them intern for company valuation, capital budgeting and investment valuation particular to the cement sector.

COE is an essential and vital part of the cost of capital, while the cost of capital (hereafter COC) itself primarily depends on the efficiency of uses of financing instead of sources of financing (Ross *et al.*, 1996). However, in the absence of other forms of financing, mainly debt COC is the only source of financing and a single source of financing cost. This COC or financing cost plays a very important role in decisions regarding capital budgeting. In capital budgeting decisions, COC is a well-known and widely practically implied discount rate while evaluating capital budgeting decisions. So, lower the COC/discount rate helps in accepting the proposal and helps in enhancing the value of the company and shareholders wealth. Sukhahuta *et al.* (2016) argued that the COC is a crucial variable because it is used in company valuation, capital budgeting and also in investment valuation. On the other hand, if the discount rate is high, it makes the net present value and internal rate of return lower, which results in rejecting even feasible financial projects. This results in low growth and inefficient utilization of the financial resources in the corporations.

Applying the panel data modeling techniques and applying Lagrange multiplier test for Random Effects, Pooled OLS was suggested for estimation. Before the LM test, Hausman specification test suggested using Random Effect Model. However, this study presented results on both estimation techniques, Pooled OLS as well as Random Effects. Results on both the estimation techniques are similar, like significance and coefficient signs. Applying Pooled OLS Model, results suggest that board diversity has a positive and significant relationship with the COE at a 5 percent significance level, while CEO tenure has a negative and significant relationship with the COE with 1 percent significance level. However, block ownership, insider ownership, and board size are negatively and insignificantly associated with the COE. Moreover, independence, non-executive directors (NED), and duality are positively and insignificantly related to the COE.

The first contribution of the study is to explore the impact of CG on the COE, specifically in the cement sector of Pakistan because Shah and Butt (2009) stated that there is heterogeneity among industries. The main important reason to select the cement sector is due to large-scale infrastructure construction and real estate development in Pakistan recent year, along with the Belt and Road Initiative, cement sector has witnessed significant growth and gradually enter into a growth period. It is worthwhile to research the agency problem in cement sector of Pakistan because growing industries are often nagged by inertia. Agency problems in these companies will be more difficult and complicated, and these companies also need guidance on how to motivate and restrain managerial behavior (Hannan and Freeman, 1984). Therefore, this sector needs more strategic care than before because a well-developed cement sector can only meet the high demand not only for this project but also can take care of market demands.

On the other hand, the registration of the Naya Pakistan Housing Scheme has been started. In this project, the government has announced to build 5m housing units for the low-income people of Pakistan. This project is also going to put massive pressure on the cement sector of Pakistan. Meeting the enormous demands created from these two projects is one challenge, but to run and manage the cement sector during and after the end of these two projects is a more challenging task. Therefore, this study is very insightful to overcome the challenges faced during and after these projects.

The second-biggest contribution of the study is its sample period, where the data were collected from 2012 onward. This sample period is vital because the CG codes were revised in 2012 and Latif and Abdullah (2015) also stated that there is a need to investigate its impact before and after the governance codes revised by Security and Exchange Commission of Pakistan (SECP). The Belt and Road Initiative and the rapid growth in the

cement sector after 2012 gave us a new sample to explore the agency problem in the context of Pakistan because the growing industry may be confronted with some organizational problems. It is worthwhile to consider how to improve our CG to seize this opportunity and pursue sustainable development.

The third contribution is that this study takes into account a wide range of CG variables to see its impact on the COE. Furthermore, this study found that diversity and independence have a positive association with the COE. Forth this study is trying to identify the differences in results obtained from cement sector with the study of Shah and Butt (2009) which studied the COE in relation with CG by analyzing 114 non-financial companies of Pakistan.

Remaining of this study is organized into five parts. Section 2 consists of a theoretical framework and hypothesis development; Section 3 contains methods, while Section 4 describes the analysis of data. While Section 5 consists of a conclusion.

2. Theoretical framework and hypothesis development

Price (2018) stated that CG is as old as the history of corporations. This history goes back to the sixteenth and seventeenth century when Hudson's Bay Company, East India Company, Levant Company and others were registered. Thus, the agency problem began with the separation of ownership at the very beginning and need for quality of CG as well. However, the word CG emerged for the first time in 1976 in the Federal register of USA. Jensen and Meckling (1976) also highlighted that directors of companies who are just managing the money of shareholders; it is not well anticipated that they will look after the company with the same caution as partners in a private company do and thus presented the agency theory.

The need for better CG aroused just after the separation of ownership. This agency problem was first highlighted by Smith (1776) and stated that managers are to look after the money of others instead of their own money. Smith argued that these managers could not look after the money as the partners do in a corporation. Berle and Means (1932) also highlighted the importance of ownership. They argued that in large corporation due to disperse ownership, small shareholders could not serve as monitor due to the high cost and low return. This makes the managers take control of the company, serve and protect their well-being. Jensen and Meckling (1976) stated that agents and principal have a dissimilar kind of interests in the corporation. The agency theory provides a foundation for this study. The agency theory talks about the conflicting interests of two stakeholders, i.e. managers and shareholders. Moreover, this theory states that expropriation of ownership is due to diverse and low shareholding, which favors the managers, and thus, they server their interests at the expense of other stakeholders. Increasing the CG quality decreases the agency cost, lower the risk, increases the access to financial resources and lower the COE.

2.1 Ownership

2.1.1 Block ownership. There are two main factors which affect the ownership structure of corporations one is the capital market situation, and other is the regulation environment (Anderson and Marshall, 2007). So, the lack of minority shareholder protection rights and weak capital market leads to concentrated ownership (Anderson and Marshall, 2007). Berle and Means (1932) stated that diverse equity holding has a negative influence on a firm's profitability. Shleifer and Vishny (1986a,b) indicated that ownership concentration positively affects a firm's profitability. They argued that ownership concentration positively influences a firm's profitability because they have the incentive to collect information plus that they have voting power. La Porta *et al.* (2002) also investigated that as block ownership increases firm profitability also increases. Gedajlovic and Shapiro (2002) conducted a study

in Japan and concluded that stock ownership has a positive association with firm profitability. Grossman and Hart (1982) argued that ownership concentration has a great effect on the opportunistic behavior of managers and affect positively firm performance. The study conducted in the USA, by Gedajlovic and Shapiro (2002), and Japan, by Agrawal and Mandelker (1990), found that as ownership concentration increases firm profitability also increases.

A study conducted by Prowse (1992) found no relationship between block ownership on company profitability. In contrast, a few pieces of research documented a negative association between ownership concentration and company profitability (Lehmann and Weigand, 2000; Mudambi and Nicosia, 1998). Moreover, Kurak and Garcia-Cestona (2017) argued that ownership concentration has a negative effect on firm performance, providing that the ownership concentration is below 54.94 percent. However, the negative association between ownership concentration and firm performance turns into positive beyond the 54.94 percent ownership concentration level (Kurak and Garcia-Cestona, 2017). Anwar *et al.* (2019) also investigated a negative associated between ownership concentration and COE. Similarly, Hassan *et al.* (2018) also found a negative and insignificant association between block ownership and COE in non-financial firms listed on Pakistan stock exchange. Another study in Pakistan conducted by Nosheen and Sajjad (2018) found that ownership concentration has negative but insignificant association with the COE:

H1. There is a negative relationship between block ownership and COE.

2.1.2 Inside ownership. Examining the impact of inside ownership on a firm's cost of equity is related to the investigations of Berle and Means (1932) and Jensen and Meckling (1976) who investigated the impact of ownership on firm's profitability. Berle and Means (1932) argued that insider tends to perform less in those companies having small shareholders and diverse ownership. After this study, the most famous study of Jensen and Meckling (1976) argued that the interests of agents and principal are different and managers tend to take full advantage for their benefits at the expense of real owner's interests.

However, aligning the interests of agents with the interests of shareholders by providing the financial and non-financial benefits to managers helps to decrease the agency cost and improves the firm performance. Shleifier and Vishny (1986) stated that firms having substantial shareholder, monitor their managers well, which resultantly reduces the agency cost. Likewise, the managers behave differently when their interests are aligned with that of shareholders, and large shareholding by managers aligns these interests (Gugler *et al.*, 2008). Prowse (1992) also agreed with preceding investigations and argued that as agency problems decreases and firm performance increases in those companies which have concentrated ownership. Different research studies, from diverse regions of the globe, documented a positive association involving ownership structure and company profitability. Mehran (1995) studying the US economy, Welch (2003) studying Australian economy, Oswald and Jahera (1991) investigating in US stock exchange established that as stock ownership increases, the company profitability also increases. Gelb (2000) also found that as inside ownership increases, it results in positive growth in the profitability of the enterprise.

There are also a few types of research studies, which highlighted an inverse association between inside-ownership and profitability of a company. In these studies, Demsetz (1983) investigated the inverse association between company financial efficiency as well as managerial ownership. The reason behind this effect is the opportunistic behavior, which is also called the entrenchment effect. Ang *et al.* (2000) in the US market also stated an inverse relationship involving company profitability and inside ownership. Huang *et al.* (2009) documented that managerial ownership helps to decrease the agency cost and tries to align

the inside owner's interests with that of the shareholders which further helps to reduce the COE. Pham *et al.* (2012) also documented a significant impact of inside ownership on corporate investment. This helps to minimize the company risk; resultantly the investors demand an inferior risk premium that decreases the COE of that firm. Krismiaji and Raharja (2018b) also found an inverse association involving managerial ownership and the COE. On the other hand, Ashbaugh *et al.* (2004) also concluded that as the inside ownership increases, COE also increases. However, Soeroto *et al.* (2016) concluded that inside ownership has no impact on the COE. Moreover, Tran (2014) argued that as managerial ownership increases, the COE decreases, due to the alignment effect, which aligns the interests of inside owners with that of the shareholders. Likewise, Babadi and Salehi (2017) argued that inside ownership has a negative association with the COE. Krismiaji and Raharja (2018a) also argued that inside ownership has a significant and negative impact on the COE. Moreover, a study conducted in Indonesia by Soeroto *et al.* (2016) found that inside ownership has a negative and insignificant association with the COE:

H2. There is a negative relationship between the insider ownership and COE.

2.2 Board characteristics

2.2.1 *Board independence (INED)*. Independent directors on the board are a crucial element that affects its monitoring function. Independent NEDs have no significant dependency for financial and non-financial gains from a company other than their remuneration for directorship. On the other hand, these directors do not depend for their income on a single company; instead, these directors draw their income from many directorship positions of multiple companies. This is the reason that these directors work for the best interest of not only the principals as well as for the best interest of all stakeholders. These directors are valuable in every aspect of a company like being part of different committees, for example, remuneration committee and audit committee.

Improving independence, investors trust and confidence increases in the financial information provided by the company. Thus, it helps to reduce the cost of investors in term of seeking reliable information for investment; resultantly they demand lower required rate of return. A study conducted by Anderson *et al.* (2004) in the US market also stated that independence has an inverse association with debt expense. Ashbaugh *et al.* (2004) documented an inverse association involving independence and the COE. However, Setiany *et al.* (2017) argued the absence of association involving board independence and the COE. Anderson *et al.* (2004) argued that independence has a negative impact on the interest of expense. Talking about the independence on a board, Ashbaugh *et al.* (2004) concluded that as independence increases in audit committee, the COE decreases. He found that as the independence on the audit committee increases, the COE also decreases. While talking about the independence of a board, Ashbaugh *et al.* (2004) found that independence negatively and significantly affects the COE. In contrast, Khemakhem and Naciri (2013) argued that independence has no or positive association with the COE. Shah and Butt (2009) found that INED and audit-committee independence are both positively associated with the COE.

Moreover, Anwar *et al.* (2019) analyzing 26 Asian countries data found that board independence has a negative and significant association with COE. Furthermore, Setiany *et al.* (2017) also investigated the impact of independent NEDs on the COE in Indonesia and found that INED has a negative and insignificant association with the COE. Nosheen and Sajjad (2018) in a study on firms listed on Pakistan stock exchange also found that board independence has negative and insignificant association with the COE.

However, another study from Pakistan conducted by Hassan *et al.* (2018) on non-financial firms found that board independence has a negative and significant impact on the COE:

H3. There is a negative relationship between the board independent NEDs and COE.

2.2.2 Board size. The number of directors on the board have a significant impact on the quality of CG (Jensen, 1993; Lipton and Lorsch, 1992). However, Juran and Loudon (1966) argued that the number of directors on the board has no significant impact on company profitability (Juran and Loudon, 1966). This is very difficult to find an appropriate board size for a firm. However, seven to eight members on the board are assumed optimal and effective for firm performance (Juran and Loudon, 1966). Lipton and Lorsch (1992) argued that a firm with a large board has lower productivity because the larger board do not agree with the CEO. Adams and Mehran (2002) discovered that for some firms to have effective monitoring, larger boards are better for those firms. Forbes and Milliken (1999) argued on the effectiveness of a board and said that large boards face difficulties to coordinate and there are more chances for free riders on larger boards. Shah and Butt (2009) found that board size is negatively related to the COE. Anderson *et al.* (2004) argued that as the number of directors on a board increases, it creates an inverse impact on the interest expense. Likewise, Khemakhem and Naciri (2013) concluded that directors on a board have an inverse impact on the COE, but their result was not significant.

In contrast, few pieces of research studies argue that larger board are effective, enhance performance and monitoring of the board (Zahra and Pearce, 1989). Dalton *et al.* (1999) provided a base of resource dependency for their argument and said that a larger board is required for organizational growth. They argued that growth companies require resources, and larger boards provide expertise and linkage to the external environment. Larger boards benefit from resources dependency theory because they provide more skilled directors and connections, but they suffer from strategic decision-making perspective (Goodstein *et al.*, 1994). Yermack (1996) also documented an inverse association involving board size and profitability and recommended that small boards enhance enterprise value. A study conducted in Pakistan on 167 non-financial firms, Nosheen and Sajjad (2018) found that board size has a negative and significant impact on the COE. However, Hassan *et al.* (2018) also investigated the non-financial firm listed on the Pakistan stock exchange found that board size has negative and insignificant impact on the COE. Another study from Pakistan conducted by Singh *et al.* (2018) found that board size has positive and significant impact on firm performance:

H4. There is a negative relationship between the board size and COE.

2.2.3 Gender diversity. Diversity on board is also an essential factor in CG. Because, diversity affect decision making and firm performance; therefore, institutional investors and shareholders are pressuring the firms to have more diversity on board of directors (Useem, 1993). Rosen and Lovelace (1991) argued that the fraction of female directors is linked to sale growth so, more the female directors, higher the sale growth would be. Adams and Ferreira (2009) also found a direct association involving female directors and profitability. They described that female directors join monitor committees more likely and show more attendance record, than male directors. In contrast to the positive effects of diversity on profitability, few studies argue a negative connection involving board diversity and company performance (Adams and Ferreira, 2009; Almazan and Suarez, 2003).

A study conducted by Ullah *et al.* (2019) on firms listed on Pakistan stock exchange found that gender diversity on the board enhances firm value and this effect is more prominent in non-state owned enterprises than state-owned enterprise. Moreover, a study conducted by Srivastava (2018) in India found that the presence of female directors on the board has a negative association with the COE and has a positive impact on the firm performance. Different studies conducted in different parts for the world studying the impact of gender diversity on firm performance like Ngo *et al.* (2019), in Vietnam, Aggarwal *et al.* (2019) in India and Khan and Abdul Subhan (2019) on PSE 100 index in Pakistan all found that gender diversity enhances firm performance. However, in a study conducted in Malaysia by Razali (2018) found that female directors on the board decrease the firm performance. Therefore, on the bases of above discussion we can draw the following hypothesis:

H5. There is a negative relationship between the board gender diversity and COE.

2.2.4 CEO duality. If the same person holds both the positions of CEO as well as the chairperson of the board, this is termed as CEO duality. While non-duality means that dissimilar persons have two responsibilities. No consensus exists between the researchers regarding CEO duality. Some argue that duality is better for performance while some argue that duality diminishes the performance. Moyer *et al.* (1996) stated that CEO duality causes lower profitability and failure. They argued that duality has inverse effects on long-term operating performance. Dalton and Kesner (1985) explained that CEO duality provides dominance to a CEO, which renders the governance role for the board of directors. Mallette and Fowler (1992) argued that companies which are having non-duality perform better. Dalton and Kesner (1985) found no association involving duality and profitability. Wan and Ong (2005) argued that non-duality improves firm performance because duality creates a different problem like too much control in the hands of a single person. In contrast, Khemakhem and Naciri (2013) concluded that non-duality increases the company COE.

Moreover, Anwar *et al.* (2019) working on 26 Asian countries data found that CEO duality has a positive and significant association with COE. Furthermore, a study conducted by Nosheen and Sajjad (2018) in Pakistan on non-financial firms listed on Pakistan stock exchange found that CEO duality has a negative and insignificant association with the COE of the firm. Moreover, Hassan *et al.* (2018) investigated non-financial firms, quoted on Pakistan stock exchange found that CEO duality has a negative and significant impact on the COE. Another study from Pakistan conducted by Singh *et al.* (2018) found that CEO duality has positive and significant impact on firm performance:

H6. There is a positive relationship between CEO Duality and the COE.

2.2.5 CEO tenure. CEO tenure means the number of years a person serves on his or her position. Being a key position in a firm CEO has a leading role and affects the firm performance to a great extent. So, more the time a CEO serves on their position, more they know about the firm, its managers and employees, strengths, and weakness, and the macro environment. Simsek (2007) argued that to perform better as CEO, they need information, skills, and know-how of the micro and macro environment; therefore, short-term CEO affects firm performance negatively, while long-term CEO accumulates all the qualifications for their position and gather knowledge and information related to the firm environment. However, Hambrick and Gregory (1991) argued that CEO tenure has an inverse association with firm performance because the long-tenured CEO is more interested in their paradigm. They try to avoid sharing that information which harms their benefits and interest. They also lose their interest in their responsibilities, job and ignore a strategic change (Hambrick and Gregory, 1991). Hermalin and Weisbach (1998) pointed about a unique negative aspect

of CEO tenure; they argued that as the CEO stays more in their position, it decreases the independence from the board. Miller (1991) also argued against CEO tenure and concluded that CEO tenure inversely influences company profitability because it creates strong inertia and severe problems within a firm.

A study conducted by Naseem *et al.* (2019) in Pakistan found that as the CEO works more on his and her position the more they tend to be opportunistic and firm performance decreases. CEO tenure also has a negative association with the value of the firm, so as the CEO tenure increase its value decreases (Nguyen *et al.*, 2018). Kaur (2019) also found that long-term CEO, as well as feminine CEO, has a negative impact on firm performance. An interesting result came from the study of Brochet *et al.* (2019), who found that CEO tenure in vibrant industries and especially after a few years, CEO tenure has negative impact on firm value due to lower adaptability of these CEO to the changing environment. Therefore, based on the above discussion we derive the following hypothesis:

H7. There is a negative relationship between CEO tenure and COE.

3. Data and sample

This study is based on the cement sector of Pakistan; therefore, data have been collected for all the firms in the cement sector listed on the Pakistan Stock Exchange. Those companies have been eliminated from the sample for which the data was not available. There are a total of 21 public limited firms in the cement sector. However, due to the non-availability of CG data, our sample shrank to 18 firms. The sample period for this paper is six years, starting from 2012 to 2017.

Mainly data about CG were ascertained from annual financial reports. These financial reports were downloaded from the firm's official websites. Data about stock value were obtained from "Khistocks" and "Business Recorder" websites. Market stock price data was obtained from "Business Insider" website. Three months treasury bill rates were collected from the "State Bank of Pakistan" website. Market returns were calculated from daily data and then annualized while risk free rate was calculated from three months treasury bills and then annualized. For β calculation, daily data for two years before the sample period were collected for 2010 and 2011. A list of the entire 21 companies list is given in Table AVII.

3.1 Methodology

Looking at the qualitative nature of CG, variable literature suggests different proxies to measure CG indirectly. To quantify CG through proxies, one method is applied to take individual factor, and the other method is of scorecard or CG score. This paper uses only the individual factor method to quantify CG. In this study, proxies representing CG are the IV; the COE is a dependent variable whereas firm size (FS) and leverage are two control variables. Proxies for CG are independent NEDs, blocked ownership, insider ownership, board ownership, female directors, CEO duality, NEDs and tenure.

Applying the panel data modeling, this study used Pooled OLS as the estimation technique. *F*-test, *p*-value was above 5 percent, which could not reject the null hypothesis and concluded that Pooled OLS should be used. A result regarding the *F*-test statistics has been presented in Table AVII. Housman specification test suggests to use the Random Effect Model because we could not reject the null hypothesis. Results regarding the Housman specification test has been presented in Table AIV. However, on the other hand, Breusch and Pagan Lagrangian Multiplier test for random effects also could not reject the null hypothesis and suggested to use the Pooled OLS. The result regarding the Breusch and Pagan Lagrangian multiplier test for random effects has been presented in Table AV. So, based on Breusch and Pagan Lagrangian Multiplier test for random effects, Pooled OLS has

been used as the estimation technique. Furthermore, to apply techniques regarding panel data modeling as mentioned above, and to analyze the data, statistical package Stata 13 has been used.

All the variables of the study and their measurement techniques are presented in Table I.

3.1.1 Operationalization of variables. This section provides information related to the variables of interest used in this study and how these variables are measured.

3.1.2 Cost of equity (COE) and Capital Asset Pricing Model (CAPM). The dependent variable, the COE has been measured through the CAPM by following Sharpe (1964), Lintner (1965), Setiany *et al.* (2017) and Bozec and Bozec (2010).

3.1.3 Beta (β). Following Shah and Butt (2009), the β has been measured by the covariance of security and market divided by variance of the market. The equation is shown as below:

$$\beta = \text{Cov}(\text{Security \& Market}) / \text{Var of Market.}$$

3.1.4 Block ownership (BOWN). Following Rad *et al.* (2013) block ownership has been measured as the percentage of equity owned by top 5 major shareholders.

3.1.5 Inside Ownership (IOWN). Following Rad *et al.* (2013), Singhal (2014) and Pham *et al.* (2012), inside ownership has been measured as a proportion of shares owned by insiders.

3.1.6 Non-executive directors (NED). Following Shah and Butt (2009), Singhal (2014), Hasan and Butt (2009) and Pham *et al.* (2012), NED has been measured as the proportion of NED on the board.

3.1.7 Board size (BDS). Following Shah and Butt (2009), Singhal (2014), Hasan and Butt (2009), Pham *et al.* (2012) this paper also measured board size as the total number of board members on the board.

3.1.8 Female directors (FMD). Following Rad *et al.* (2013) and Yasser (2012), this study also measured the board diversity as the proportion feminine directors on the board.

3.1.9 CEO duality (DUALITY). Following Hasan and Butt (2009) and Gul *et al.* (2016), this study also measured CEO duality as a dummy variable with a value of 1 if both the positions were detained by the same person else the value for the dummy variable was 0.

Variable	Description	Type	Measuring technique
COE	Cost of Equity	DV	CAPM
BOWN	Block ownership	IV	The proportion of stocks owned by the top 5 shareholders
IOWN	Insider ownership	IV	The proportion of stocks owned by the insider
NED	Non-Executive Directors	IV	The proportion of non-executive directors on the board
INED	Independent non-executive director	IV	The proportion of independent non-executive directors on the board
BDS	Board size	IV	Total number of board's members
FMD	Female director	IV	The proportion of female directors on the board
DUALITY	Duality	IV	CEO and chairman of the board is one person
TENURE	CEO Tenure	IV	Total number of years that the CEO works in his/her position
LEV	Leverage	Control variable	Leverage = (Long-term liabilities) + (short-term liabilities) / total asset
LN(S)	Firm size	Control variable	Proxy for size, which is the natural log of total assets

Table I.
Definitions of variables

Notes: COE, cost of equity; BOWNS, block ownership; IOWNS, inside ownership; NED, non-executive directors; INED, independent non-executive directors; BDS, board size; FMD, female directors; DUA, CEO duality; CEO TEN, CEO tenure, LEV, Leverage; LNTA, LOG of total assets

3.1.10 *CEO tenure (TENURE)*. Following Rad *et al.* (2013), this study also measured CEO tenure as total numbers of the year he or she served as a chief executive officer in that company.

3.1.11 *Leverage (LEV)*. Following Shah and Butt (2009) and Singhal (2014), leverage was measured as the total long-term liability plus total short-term liability divided by the total assets.

3.1.12 *Firm size (LN(S))*. Following Shah and Butt (2009), Singhal (2014) and Hasan and Butt (2009), this study also measured FS as the natural logarithm of the total assets of the corporation on the balance sheet.

3.2 Model specification

To study the association between CG variables, COE and control variables, the following model is formulated:

$$\begin{aligned} COE_{it} = & \alpha_i + \beta_1(BOWN_{it}) + \beta_2(IOWN_{it}) + \beta_3(NED_{it}) + \beta_4(INED_{it}) + \beta_5(BDS_{it}) \\ & + \beta_6(FMD_{it}) + \beta_7(DUALITY_{it}) + \beta_8(TENURE_{it}) + \beta_9(LN(S)_{it}) + \beta_{10}(LV_{it}) + \varepsilon. \end{aligned}$$

Where NED is the non-executive director, BOWN the block ownership, IOWN the insider ownership, BDS the board size, FMD the female director, Duality the CEO duality, Tenure the CEO tenure, LN the Log of assets, LEV the leverage, and INED the independent non-executive directors.

3.3 Cost of equity

This study uses the CAPM to calculate the COE. Morck *et al.* (1988) surveyed to find out the best practices used by the chief financial officers for the computation of the COE capital. They found that CAPM was the most common and chosen method to measure the COE. This paper also employs the CAPM to measure the COE by following Sukhahuta *et al.* (2016), Shah and Butt (2009) and Soeroto *et al.* (2016). CAPM equation is mentioned as follows:

$$R_i = R_f + MRP \cdot \beta_i,$$

$$R_i = R_f + (R_m - R_f) \cdot \beta_i.$$

Where R_i stands for the expected rate of return on equity; R_f stands for the risk-free rate of return, MRP stands for the Market risk premium, while β_i stands for the β of a company and R_m stands for market return.

In the above equation of CAPM, β is worth mentioning and also needs the explanation of how to find out the value for β . Following Shah and Butt (2009), this study uses the following formula to calculate β :

$$\beta = \text{Cov}(\text{Security \& Market}) / \text{Var of Market}.$$

4. Analysis and results

As discussed in methodology, this investigation is particularly for the cement sector of Pakistan. There are 21 public listed companies in the cement sector of Pakistan. The sample period is of six years starting from 2012 to 2017 while the sample size is of 18 publically listed companies in this sector. To analyze the data about CG variables and its impact on the COE, statistical package Stata 13 has been used.

Descriptive statistics are presented in Table II. The total number of observations is 108. The COE has a mean value of 8.22 percent; however, the maximum value of COE is

Table II.
Descriptive statistics
of cement sector

Variable	Obs	Mean	SD	Min.	Max.
COE	108	8.22	2.027	5.972	12.889
BOWNS	108	62.772	18.305	21.213	93.155
IOWNS	108	17.835	23.473	0	92.853
NED	108	4.278	1.593	0	8
INED	108	1.593	1.347	0	6
BDS	108	7.843	0.968	6	10
FMD	108	0.583	0.908	0	3
DUALITY	108	0.046	0.211	0	1
TENURE	108	3.157	1.698	1	6
LEV	108	47.939	31.326	9.231	181.989
LNTA	108	16.395	1.518	12.191	22.225

Notes: COE, cost of equity; BOWNS, block ownership; IOWNS, inside ownership; NED, non-executive directors; INED, independent non-executive directors; BDS, board size; FMD, female directors; DUA, CEO duality; CEO TEN, CEO tenure; LEV, leverage; LNTA, LOG of total assets

12.9 percent. The average value of block ownership is 62.77 percent, while the average value for inside-ownership is 17.84 percent. The average value for NEDs on the board is 4.3 percent, while the average value for independent NEDs on the board is 1.6. The average value for board size in the cement sector is 7.8 while maximum number of board is 10. Board diversity has the average value of 0.58 while maximum numbers of female directors on the board are 3. The average total years a chief executive officer serves on his or her post are 3.2 years, with the highest number of six years, while the average value of debt financing is 48 percent.

Table III shows the correlation among independent variables. The matrix shows that there is no significantly high correlation between any two independent variables because all correlation coefficients are well below of threshold value of 7 or 10 (Table IV and V).

Table IV represents the results of the dependence of COE on CG variables. Applying the panel data modeling, this study used Pooled OLS as the estimation technique. *F*-test, *p*-value was above 5 percent, which could not reject the null hypothesis and concluded that Pooled OLS should be used. A result regarding the *F*-test statistics has been presented in Table AVI, which can be found in the Appendix. Housman specification test suggested that Random Effect Model is suitable; results regarding the Housman specification test have been presented in Table AIV, which can be found in the Appendix. However, on the other

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) COE	1.000										
(2) BOWNS	0.027	1.000									
(3) IOWNS	0.148	-0.054	1.000								
(4) NED	0.071	-0.045	-0.051	1.000							
(5) INED	-0.257	0.012	-0.269	-0.511	1.000						
(6) BDS	-0.019	-0.017	-0.209	0.369	0.342	1.000					
(7) FMD	0.074	-0.005	0.513	0.055	-0.243	-0.193	1.000				
(8) DULITY	0.194	-0.034	0.068	-0.171	-0.088	-0.224	-0.081	1.000			
(9) TENURE	-0.854	-0.042	-0.181	-0.044	0.335	0.050	-0.008	-0.238	1.000		
(10) LEV	0.381	0.100	0.199	-0.313	-0.102	-0.307	-0.096	0.205	-0.454	1.000	
(11) LNTA	-0.377	0.022	-0.048	-0.178	0.056	-0.232	0.118	0.023	0.377	-0.302	1.000

Notes: COE, cost of equity; BOWNS, block ownership; IOWNS, inside ownership; NED, non-executive directors; INED, independent non-executive directors; BDS, board size; FMD, female directors; DUA, CEO duality; CEO TEN, CEO tenure; LEV, leverage; LNTA, LOG of total assets

Table III.
Correlation matrix

COE	Coef.	SE	<i>t</i> -value	<i>p</i> -value	Sig.
BOWNS	-0.001	0.004	-0.29	0.768	
IOWN	-0.008	0.011	-0.73	0.465	
NED	0.221	0.181	1.22	0.223	
INED	0.274	0.234	1.17	0.240	
BDS	-0.181	0.385	-0.47	0.639	
FMD	0.491	0.196	2.50	0.012	**
DUALITY	0.219	0.464	0.47	0.637	
TENURE	-1.045	0.072	-14.53	0.000	***
LEV	0.002	0.010	0.24	0.808	
LNTA	-0.138	0.179	-0.77	0.441	
_cons	0.078	0.316	0.25	0.806	
Mean dependent var	-0.046		SD dependent var		2.478
Overall <i>r</i> -squared	0.747		Number of obs		107.000
Chi-square	558.687		Prob > χ^2		0.000
<i>R</i> -squared within	0.757		<i>R</i> -squared between		0.454

Notes: COE, cost of equity; BOWNS, block ownership; IOWNS, inside ownership; NED, non-executive directors; INED, independent non-executive directors; BDS, board size; FMD, female directors; DUA, CEO duality; CEO TEN, CEO tenure; LEV, leverage; LNTA, LOG of total assets. ** $p < 0.05$; *** $p < 0.01$

Table IV.
Pooled-OLS panel regression of COE on corporate governance

	(1) COEpool	(2) COEre
BOWNS	-0.001 (0.004)	-0.001 (0.004)
IOWN	-0.008 (0.011)	-0.008 (0.011)
NED	0.221 (0.181)	0.221 (0.181)
INED	0.274 (0.234)	0.274 (0.234)
BDS	-0.181 (0.385)	-0.181 (0.385)
FMD	0.491** (0.196)	0.491** (0.196)
DUALITY	0.219 (0.464)	0.219 (0.464)
TENURE	-1.045*** (0.072)	-1.045*** (0.072)
LEV	0.002 (0.010)	0.002 (0.010)
LNTA	-0.138 (0.179)	-0.138 (0.179)
_cons	0.078 (0.316)	0.078 (0.316)
Obs.	107	107
R^2	<i>z</i>	<i>z</i>

Notes: COE, cost of equity; BOWNS, block ownership; IOWNS, inside ownership; NED, non-executive directors; INED, independent non-executive directors; BDS, board size; FMD, female directors; DUA, CEO duality; CEO TEN, CEO tenure; LEV, leverage; LNTA, LOG of total assets. Standard errors are shown in parenthesis. COE pool means regression results based on Pooled OLS while COE re means regression results based on Random Effect estimation technique. ** $p < 0.05$; *** $p < 0.01$

Table V.
Pooled-OLS & Random-Effects panel regression of COE on corporate governance

hand, Breusch and Pagan Lagrangian Multiplier Test for random effects suggested to use the Pooled OLS, the test results have been shown in Table AV, which can be found in the Appendix. Therefore, based on Breusch and Pagan Lagrangian Multiplier test for random effects, this paper used the Pooled OLS as the estimation technique.

Coefficient of determination, also known as R^2 , has a value of 0.747 percent. This shows that 74 percent of the change in the COE is due to the CG variables. *F*-statistics value is below 5 percent, which shows the overall significance of the model and states that all the variables jointly and combined have a significant impact on the COE. The *T*-statistics and

corresponding p -value show the individual significance of a variable. Observed values of T -statistics from regression, based on Table IV, are explained.

Block ownership (BOWNS) has a negative and insignificant association with the COE with the p -value of 0.768, which is more than the α value of 5 percent. Thus, the sign of block ownership coefficient is negative as hypothesized; however, the association is not significant. Hence, $H1$ has not been accepted. However, this result is contradicting with the study conducted in Pakistan by Shah and Butt (2009), who found a positive and insignificant association between block ownership and the COE. However, the results are in line with the prior studies like Rad (2014), who find a negative and insignificant association between block ownership and COC. Moreover, Kurak and García-Cestona (2017) argued that the ownership concentration has negative effect on firm performance providing that the ownership concentration is below 54.94 percent. Anwar *et al.* (2019) also investigated a negative associated between ownership concentration and COE. Similarly, Hassan *et al.* (2018) also found a negative and insignificant association between block ownership and COE in non-financial firms listed on Pakistan stock exchange.

Inside ownership (IOWNS) has a negative and insignificant association with the COE with a p -value of 0.465, which is more than the α value of 5 percent. Hence, $H2$ has not been accepted. However, Soeroto *et al.* (2016) concluded that inside ownership has no impact on the COE. Moreover, Tran (2014) argued that as managerial ownership increases, the COE decreases, due to the alignment effect, which aligns the interests of inside owners with that of the shareholders. Likewise, Babadi and Salehi (2017) argued that inside ownership has a negative association with the COE.

Independent non-executive (INED) director is positively and insignificantly associated with costing of equity with a p -value of 0.240. Therefore, $H3$ has not been accepted. The results are consistent with the prior researcher of Shah and Butt (2009) conducted in Pakistan.

Board size is negatively (BDS) and insignificantly associated with costing of equity with a p -value of 0.639. Hence, $H4$ has not been accepted, although the sign is negative as hypothesized. However, the results are consistent with prior research work (Hassan *et al.*, 2018; Nosheen and Sajjad, 2018), which also found a negative impact of board size on the COE.

Board diversity (FMD) has positive as well as significant association with the COE with a p -value of 0.012. Hence, $H5$ has been accepted as hypothesized. The result is consistent with prior research of Rad (2014), by finding a positive association between board gender diversity and COC.

CEO duality (DUALITY) has a positive and insignificant association with COE having a p -value of 0.637. Hence, $H6$ has not been accepted.

CEO tenure (TENURE) has a negative and insignificant association with the COE having a p -value of 0.000. However, the results are consistent with prior research work conducted in Pakistan by Hassan *et al.* (2018) and Nosheen and Sajjad, 2018), by finding a negative association with the COE.

5. Discussion and conclusion

This study examines the relationship between the quality of CG and COE in cement sector firms, listed at Pakistan stock exchange. The sample period was of six years, starting from 2012 to 2017. Here the selection of the sample period is worth mentioning because this paper is based on a data attained just after the amendments in CG codes in 2012 by SECP. Moreover, agency theory provided a base to conduct the study and explained that by improving the quality of CG, insider's interests can be aligned with that of shareholders, which further helps to lower the COE.

Regression results suggest that block ownership, inside ownership, the board size, CEO tenure and FS are negatively related to cost equity in cement sector of Pakistan, while NED, independent NEDs, female directors, duality and leverage all have positive impact on the COE.

This study found a positive association between board independence and the COE. Shah and Butt (2009) also found a positive relationship between board independence, audit committee independence and COE in Pakistan. Khemakhem and Naciri (2013) also argued that there is positive or no relationship between board independence and the COE. This positive association points out the weak monitoring by SECP and lack of appointment of these directors based on the set criteria by SECP.

Another important finding of this study, which advances the literature in the context of Pakistan, is the significant positive impact of board diversity on the COE. This study hypothesized a negative relationship between board diversity and COE. These findings are in line with the Rad (2014), who also found a positive association between board diversity and COC in Singapore. Yasser (2012) also stated that board diversity has no effects on a company's profitability and argued that the reason is that these female directors are appointed just to abide the CG codes in Pakistan. Most to the time, these female directors lack the skills required for directorship. The main reason to appoint them on the biases of blood relationship is to use them in the future as rubber stamp directors.

Another important finding of this study is the significant and inverse relationship between CEO tenure and the COE. This implies that as the CEO serves more and more in terms of years on his or her position; it will help to lower the COE of the firm. This result is in line with the Simsek (2007), who argued that to perform better, a CEO requires a set of skills, information, and know-how of internal and external factors. Therefore, more and more the CEO stays on their position, they accumulate more and more these skills, which further assists to lower the COE of the firms.

5.1 *Implication*

This study is quite important not only for practitioners but also for policymakers and the advancement of literature. The most important departing point is the average value of the COE. Mean value for the COE reported by a study conducted in Pakistan by Shah and Butt (2009) is 29 percent while mean value of COE for cement sector of Pakistan reported by this study is 8.22 percent which is closer to other studies (Rad, 2014; Soeroto *et al.*, 2016; Sukhahuta *et al.*, 2016). This is an important contribution of this study because now companies in cement sector have their own specific COE value, which can be used to evaluate any projects with a very precise value, specific to their sector and need. Furthermore, this study finds that board diversity has a positive impact on the COE in the cement sector. So, there is a need to closely monitor the board diversity and the skills and competence they bring to the boards.

Another important implication of this study is related to control of inertia. After a boom in the cement sector, due to huge infrastructure development and being part of One-Belt One-Road more precisely China–Pakistan Economic Corridor. This sector needs more strategic care than before because a well-developed cement sector can only meet the high demand not only for this project but also can take care of market demands. On the other hand, the registration of the Naya Pakistan Housing Scheme has been started. In this project, the government has announced to build 5m housing units for the low-income people of Pakistan. This project is also going to put huge pressure on the cement sector. Meeting the huge demands created from these two projects is one challenge, but to run and manage the cement sector during and after the end of these two projects is a more challenging task. Therefore, this study is very insightful to overcome the challenges faced during and after these projects by improving the quality of CG in this sector.

5.2 *Limitations of the study*

This paper is based on the data from the cement sector of Pakistan only. Therefore, this is the reason that these results cannot be generalized on the whole economy of Pakistan.

These finding and results are specific to the cement sector, and companies in the cement sector will benefit from it only.

5.3 Future research direction

The research gap still exists to investigate the effects of the quality of CG variables on the COE, in the context of Pakistan as a whole economy. Furthermore, to compute the COE, this study used the CAPM Model. Further studies should also use FF three-factor or FF five-factor model to measure the COE.

References

- Adams, R. and Mehran, H. (2002), "Board structure and banking firm performance", Working Paper New York: Federal Reserve Bank of New York, available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=302593 (accessed June 20, 2018).
- Adams, R.B. and Ferreira, D. (2009), "Women in the boardroom and their impact on governance and performance", *Journal of Financial Economics*, Vol. 94 No. 2, pp. 291-309.
- Adiputra, I.M.P., Siregar, S.V. and Wardhani, R. (2017), "Social responsibility disclosure, corporate governance and cost of equity capital", paper presented at the 6th International Accounting Conference (IAC 2017), Atlantis Press.
- Aggarwal, R., Jindal, V. and Seth, R. (2019), "Board diversity and firm performance: the role of business group affiliation", *International Business Review*, Vol. 28 No. 6 (forthcoming).
- Agrawal, A. and Mandelker, G.N. (1990), "Large shareholders and the monitoring of managers: the case of antitakeover charter amendments", *Journal of Financial and Quantitative Analysis*, Vol. 25 No. 2, pp. 143-161.
- Almazan, A. and Suarez, J. (2003), "Entrenchment and severance pay in optimal governance structures", *The Journal of Finance*, Vol. 58 No. 2, pp. 519-547.
- Anderson, H.D. and Marshall, B.R. (2007), "Takeover motives in a weak regulatory environment surrounding a market shock: a case study of New Zealand with a comparison of Gondhalekar and Bhagwat's (2003) US findings", *Review of Quantitative Finance and Accounting*, Vol. 29 No. 1, pp. 53-67.
- Anderson, R.C., Mansi, S.A. and Reeb, D.M. (2004), "Board characteristics, accounting report integrity, and the cost of debt", *Journal of Accounting and Economics*, Vol. 37 No. 3, pp. 315-342.
- Ang, J.S., Cole, R.A. and Lin, J.W. (2000), "Agency costs and ownership structure", *The Journal of Finance*, Vol. 55 No. 1, pp. 81-106.
- Anwar, Z., Khan, M.K. and Danish, R.Q. (2019), "Corporate Governance and Cost of Equity: evidence from Asian Countries", *Journal of Political Studies*, Vol. 26 No. 1, pp. 207-230.
- Ashbaugh, H.S., Collins, D.W. and LaFond, R. (2004), "Corporate governance and the cost of equity capital", working paper, University of Wisconsin-Madison and the University of Iowa, Madison, WI and Iowa City, IA.
- Babadi, S.A. and Salehi, A.K. (2017), "Examining the Relationship between ownership structure and delay in earnings report with the cost of shareholders' equity in firms", *Journal of Economic & Management Perspectives*, Vol. 11 No. 1, pp. 1031-1041.
- Bebchuk, L.A. and Cohen, A. (2005), "The costs of entrenched boards", *Journal of Financial Economics*, Vol. 78 No. 2, pp. 409-433.
- Berle, A. and Means, G. (1932), *The Modern Corporation and Private Property*, Macmillan Press, New York, NY.
- Bhagat, S. and Bolton, B. (2008), "Corporate governance and firm performance", *Journal of Corporate Finance*, Vol. 14 No. 3, pp. 257-273.
- Bozec, Y. and Bozec, R. (2010), "Overall governance and cost of capital: evidence from Canada using panel data", *Journal of Global Business Management*, Vol. 6 No. 1, pp. 1-11.

- Brochet, F., Limbach, P., Schmid, M. and Scholz-Daneshgari, M. (2019), "CEO tenure and firm value", paper presented at the Paris December 2015 Finance Meeting EUROFIDAI-AFFI, Paris.
- Chen, K.C., Chen, Z. and Wei, K.J. (2009), "Legal protection of investors, corporate governance, and the cost of equity capital", *Journal of Corporate Finance*, Vol. 15 No. 3, pp. 273-289.
- Core, J.E., Guay, W.R. and Rusticus, T.O. (2006), "Does weak governance cause weak stock returns? An examination of firm operating performance and investors' expectations", *The Journal of Finance*, Vol. 61 No. 2, pp. 655-687.
- Dalton, D.R. and Kesner, I.F. (1985), "Organizational performance as an antecedent of inside/outside chief executive succession: an empirical assessment", *Academy of Management Journal*, Vol. 28 No. 4, pp. 749-762.
- Dalton, D.R., Daily, C.M., Johnson, J.L. and Ellstrand, A.E. (1999), "Number of directors and financial performance: a meta-analysis", *Academy of Management Journal*, Vol. 42 No. 6, pp. 674-686.
- Demsetz, H. (1983), "The structure of ownership and the theory of the firm", *The Journal of Law and Economics*, Vol. 26 No. 2, pp. 375-390.
- Denis, D.K. (2001), "Twenty-five years of corporate governance research... and counting", *Review of Financial Economics*, Vol. 10 No. 3, pp. 191-212.
- Forbes, D.P. and Milliken, F.J. (1999), "Cognition and corporate governance: understanding boards of directors as strategic decision-making groups", *Academy of Management Review*, Vol. 24 No. 3, pp. 489-505.
- Gedajlovic, E. and Shapiro, D.M. (2002), "Ownership structure and firm profitability in Japan", *Academy of Management Journal*, Vol. 45 No. 3, pp. 565-575.
- Gelb, D.S. (2000), "Managerial ownership and accounting disclosures: an empirical study", *Review of Quantitative Finance and Accounting*, Vol. 15 No. 2, pp. 169-185.
- Goodstein, J., Gautam, K. and Boeker, W. (1994), "The effects of board size and diversity on strategic change", *Strategic Management Journal*, Vol. 15 No. 3, pp. 241-250.
- Grossman, S.J. and Hart, O.D. (1982), *Corporate Financial Structure and Managerial Incentives The Economics of Information and Uncertainty*, University of Chicago Press, Chicago, IL, pp. 107-140.
- Gugler, K., Mueller, D.C. and Yurtoglu, B.B. (2008), "Insider ownership, ownership concentration and investment performance: an international comparison", *Journal of Corporate Finance*, Vol. 14 No. 5, pp. 688-705.
- Gul, S., Rashid, A. and Muhammad, F. (2016), "The impact of corporate governance on Cost of Capital: the case of small, medium and large CAP Firms", *Journal of Business Studies*, Vol. 12 No. 1, pp. 247-272.
- Hambrick, D.C. and Gregory, D.S.F. (1991), "The seasons of a CEO's tenure", *The Academy of Management Review*, Vol. 16 No. 4, pp. 719-742, doi: 10.2307/258978.
- Hannan, M.T. and Freeman, J. (1984), "Structural inertia and organizational change", *American Sociological Review*, Vol. 49 No. 2, pp. 149-164.
- Hasan, A. and Butt, S.A. (2009), "Impact of ownership structure and Corporate Governance on capital structure of Pakistani listed companies", *International Journal of Business and Management*, Vol. 4 No. 2, pp. 50-57, available at: <http://ssrn.com/abstract=1732511>
- Hassan, S., Kayani, G.M. and Ayub, U. (2018), "Corporate Governance and Cost of Equity Capital using DCAPM", *Abasyn University Journal of Social Sciences*, Vol. 11 No. 2, pp. 335-351.
- Hermalin, B.E. and Weisbach, M.S. (1998), "Endogenously chosen boards of directors and their monitoring of the CEO", *American Economic Review*, Vol. 88 No. 1, pp. 96-118.
- Huang, H., Wang, Q. and Zhang, X. (2009), "The effect of CEO ownership and shareholder rights on cost of equity capital", *Corporate Governance: The International Journal of Business in Society*, Vol. 9 No. 3, pp. 255-270.
- Jensen, M.C. (1993), "The modern industrial revolution, exit and the failure of internal control systems", *The Journal of Finance*, Vol. 48 No. 3, pp. 831-882.

- Jensen, M.C. and Meckling, W.H. (1976), "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-382.
- Juran, J.M. and Loudon, J.K. (1966), *The Corporate Director*, American Management Association, cop, New York, NY.
- Kaur, R. (2019), "Do CEO characteristics explain firm performance in India?", *Journal of Strategy and Management*, Vol. 12 No. 3, pp. 409-426, doi: 10.1108/JSMA-02-2019-0027.
- Khan, A.W. and Abdul Subhan, Q. (2019), "Impact of board diversity and audit on firm performance", *Cogent Business & Management*, Vol. 6 No. 1, pp. 1-16, doi: 10.1080/23311975.2019.1611719.
- Khemakhem, H. and Naciri, A. (2013), "Do board and audit committee characteristics affect firms' cost of equity capital", paper presented at the 36th EAA Annual Congress, Paris.
- Klock, M.S., Mansi, S.A. and Maxwell, W.F. (2005), "Does corporate governance matter to bondholders?", *Journal of Financial and Quantitative Analysis*, Vol. 40 No. 4, pp. 693-719.
- Krismiaji, K. and Raharja, A. (2018a), "Corporate governance, accounting information quality, and cost of equity capital an Indonesia' evidence", *Indonesian Journal of Accounting and Auditing*, Vol. 22 No. 1, pp. 1-11.
- Krismiaji, K. and Raharja, A. (2018b), "Corporate governance, accounting information quality, and cost of equity capital an Indonesia' evidence", *Jurnal Akuntansi dan Auditing Indonesia*, Vol. 22 No. 1, pp. 1-12.
- Kurak, M. and García-Cestona, M.A. (2017), "Three essays on innovation in family firms and corporate governance", doctoral thesis, Autonomous University of Barcelona, Autonomous University of Barcelona.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. (2002), "Investor protection and corporate valuation", *The Journal of Finance*, Vol. 57 No. 3, pp. 1147-1170.
- Latif, A.S. and Abdullah, F. (2015), "The effectiveness of corporate governance in constraining earnings management in Pakistan", *The Lahore Journal of Economics*, Vol. 20 No. 1, pp. 135-155.
- Lehmann, E. and Weigand, J. (2000), "Does the governed corporation perform better? Governance structures and corporate performance in Germany", *Review of Finance*, Vol. 4 No. 2, pp. 157-195.
- Lintner, J. (1965), "Security prices, risk, and maximal gains from diversification", *The Journal of Finance*, Vol. 20 No. 4, pp. 587-615.
- Lintner, J. (1975), *The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets Stochastic Optimization Models in Finance*, Elsevier, pp. 131-155.
- Lipton, M. and Lorsch, J.W. (1992), "A modest proposal for Improved Corporate Governance", *Business Lawyer*, Vol. 48 No. 1, pp. 59-76.
- Mallette, P. and Fowler, K.L. (1992), "Effects of board composition and stock ownership on the adoption of 'poison pills'", *Academy of Management Journal*, Vol. 35 No. 5, pp. 1010-1035.
- Masulis, R.W., Wang, C. and Xie, F. (2012), "Globalizing the boardroom – the effects of foreign directors on corporate governance and firm performance", *Journal of Accounting and Economics*, Vol. 53 No. 3, pp. 527-554.
- Mehran, H. (1995), "Executive compensation structure, ownership, and firm performance", *Journal of Financial Economics*, Vol. 38 No. 2, pp. 163-184.
- Miller, D. (1991), "Stale in the saddle: CEO tenure and the match between organization and environment", *Management Science*, Vol. 37 No. 1, pp. 34-52.
- Morck, R., Shleifer, A. and Vishny, R.W. (1988), "Management ownership and market valuation: an empirical analysis", *Journal of Financial Economics*, Vol. 20, pp. 293-315.
- Moyer, R.C., Rao, R.P. and Baliga, B.R. (1996), "CEO duality and firm performance: what's the fuss?", *Strategic Management Journal*, Vol. 17 No. 1, pp. 41-53.
- Mudambi, R. and Nicosia, C. (1998), "Ownership structure and firm performance: evidence from the UK financial services industry", *Applied Financial Economics*, Vol. 8 No. 2, pp. 175-180.

- Naseem, M.A., Lin, J., Rehman, R.U., Ahmad, M.I. and Ali, R. (2019), "Does capital structure mediate the link between CEO characteristics and firm performance?", *Management Decision* (forthcoming).
- Ngo, M.T., Van Pham, T.H. and Luu, T.T.T. (2019), "Effect of board diversity on financial performance of the Vietnamese Listed Firms", *Asian Economic and Financial Review*, Vol. 9 No. 7, pp. 743-751.
- Nguyen, P., Rahman, N. and Zhao, R. (2018), "CEO characteristics and firm valuation: a quantile regression analysis", *Journal of Management & Governance*, Vol. 22 No. 1, pp. 133-151.
- Nosheen, S. and Sajjad, M.F. (2018), "Corporate Governance, Disclosure Quality, and Cost of Equity: evidence from Pakistan", *The Lahore Journal of Business*, Vol. 6 No. 2, pp. 63-91.
- Oswald, S.L. and Jahera, J.S. Jr (1991), "The influence of ownership on performance: an empirical study", *Strategic Management Journal*, Vol. 12 No. 4, pp. 321-326.
- Pham, P.K., Suchard, J.A. and Zein, J. (2012), "Corporate governance and the cost of capital: evidence from Australian companies", *Journal of Applied Corporate Finance*, Vol. 24 No. 3, pp. 84-93.
- Price, N.J. (2018), "What is the history of Corporate Governance and how has it changed?", available at: <https://diligent.com/blog/history-corporate-governance> (accessed June 25, 2019).
- Prowse, S.D. (1992), "The structure of corporate ownership in Japan", *The Journal of Finance*, Vol. 47 No. 3, pp. 1121-1140.
- Rad, S.A. (2014), "The relationship between corporate governance practices and cost of capital in large listed companies of New Zealand and Singapore", doctor of philosophy (PhD) Doctoral, The University of Waikato, Hamilton, available at: <https://hdl.handle.net/10289/8656>
- Rad, S.A., Locke, P.S. and Reddy, D.K. (2013), "The global financial crisis and the role of ownership structure on Cost of Capital", *Asian Journal of Finance & Accounting*, Vol. 5 No. 1, pp. 396-418.
- Ramly, Z. (2012), "Impact of corporate governance quality on the cost of equity capital in an emerging market: evidence from Malaysian listed firm", *African Journal of Business Management*, Vol. 6 No. 4, p. 16, doi: 10.5897/AJBM10.1624.
- Razali, M.W.M. (2018), "The board of diversity and firm performance: Malaysia context", *UNIMAS Review of Accounting and Finance*, Vol. 1 No. 1, pp. 22-37.
- Regalli, M. and Soana, M.-G. (2012), "Corporate governance Quality and Cost of Equity in financial companies", *International Journal of Business Administration*, Vol. 3 No. 2, pp. 1-15, doi: 10.5430/ijba.v3n2p2.
- Rosen, B. and Lovelace, K. (1991), "Piecing together the diversity puzzle", *HR Magazine: on Human Resource Management*, Vol. 36 No. 6, pp. 78-84.
- Ross, S.A., Westerfield, R. and Jaffe, J.F. (1996), *Corporate Finance*, Irwin Professional Publishing, Chicago, IL.
- Setiany, E., Suhardjanto, D., Lukviarman, N. and Hartoko, S. (2017), "Board independence, voluntary disclosure, and the Cost of Equity Capital", *Review of Integrative Business and Economics Research*, Vol. 6 No. 4, pp. 389-399.
- Shah, S.Z.A. and Butt, S.A. (2009), "The impact of corporate governance on the cost of equity: empirical evidence from Pakistani listed companies", *The Lahore Journal of Economics*, Vol. 14 No. 1, pp. 139-171.
- Sharpe, W.F. (1964), "Capital asset prices: a theory of market equilibrium under conditions of risk", *The Journal of Finance*, Vol. 19 No. 3, pp. 425-442.
- Shleifer, A. and Vishny, R.W. (1986), "Large shareholders and corporate control", *Journal of Political Economy*, Vol. 94 No. 3, pp. 461-488.
- Simsek, Z. (2007), "CEO tenure and organizational performance: an intervening model", *Strategic Management Journal*, Vol. 28 No. 6, pp. 653-662.
- Singh, S., Tabassum, N., Darwish, T.K. and Batsakis, G. (2018), "Corporate governance and Tobin's Q as a measure of organizational performance", *British Journal of Management*, Vol. 29 No. 1, pp. 171-190.

- Singhal, A. (2014), "Corporate governance, Cost of Capital and Value Creation: evidence from Indian firms", *IOSR Journal of Economics and Finance*, Vol. 4 No. 6, pp. 36-54.
- Smith, A. (1776), *An Inquiry into the Wealth of Nations*, Strahan and Cadell, London, pp. 1-11.
- Soeroto, W.M., Rachmawati, P.A. and Budiarjo, D. (2016), "The Corporate Governance and Cost of Equity Capital in Indonesia", paper presented at the Djoni Budiarjo, Holiday Inn, Melaka.
- Srivastava, V. (2018), "Women on boards in India: a need or tokenism?", *Management Decision*, Vol. 56 No. 8, pp. 1769-1786, doi: 10.1108/MD-07-2017-0690.
- Srivastava, V., Das, N. and Pattanayak, J.K. (2019), "Impact of corporate governance attributes on cost of equity: evidence from an emerging economy", *Managerial Auditing Journal*, Vol. 34 No. 2, pp. 142-161.
- Sukhahuta, D., Lonkani, R., Tangsomchai, C. and Sampet, J. (2016), "Effect of Corporate Governance on relationship between CEO power and Cost of Equity".
- Tran, D.H. (2014), "Multiple corporate governance attributes and the cost of capital—evidence from Germany", *The British Accounting Review*, Vol. 46 No. 2, pp. 179-197.
- Ullah, I., Fang, H. and Jebran, K. (2019), "Do gender diversity and CEO gender enhance the firm's value?", *Evidence From an Emerging Economy* (forthcoming).
- Useem, M. (1993), *Executive Defense: Shareholder Power and Corporate Reorganization*, Harvard University Press.
- Wan, D. and Ong, C.H. (2005), "Board structure, process and performance: evidence from public-listed companies in Singapore", *Corporate Governance: An International Review*, Vol. 13 No. 2, pp. 277-290.
- Welch, E. (2003), "The relationship between ownership structure and performance in listed Australian companies", *Australian Journal of Management*, Vol. 28 No. 3, pp. 287-305.
- Yasser, Q.R. (2012), "Affects of female directors on firms performance in Pakistan", *Modern Economy*, Vol. 3 No. 1, p. 9.
- Yermack, D. (1996), "Higher market valuation of companies with a small board of directors", *Journal of Financial Economics*, Vol. 40 No. 2, pp. 185-211.
- Zahra, S.A. and Pearce, J.A. (1989), "Boards of directors and corporate financial performance: a review and integrative model", *Journal of Management*, Vol. 15 No. 2, pp. 291-334.
- Zhu, F. (2012), "Differential effects of Corporate Governance on the Cost of Equity and Debt Capital: an international study", available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2160150

Appendix

A serial correlation was checked with “Wooldridge test” for autocorrelation, and it was found that there is autocorrelation problem. Results of autocorrelation are shown in Table AI.

Multicollinearity was checked between the independent variables with the Stata command “Estate VIF,” and there was no multicollinearity in the IV variables. Table AII represents the results related to multicollinearity as follows.

Heteroskedasticity was also checked with the help of “Modified Wald test,” and this test suggested that there is no heteroskedasticity. Results related to heteroscedasticity are shown in Table AIII.

For the cement sector after the robustness tests, different tests were performed to find out which estimation technique is suitable for these data. Whether Fixed Effects Model, Random Effect Model or simple Pooled OLS Model is appropriate. For this purpose “Housman specification test” in Stata 13 recommended that Random Effect Model is appropriate, with a *p*-value of 0.999. So, we cannot reject H_0 , which says a Random Effect estimation technique is suitable. Output related to the Housman specification test is shown in Table AIV.

In this test, the *p*-value for Hausman Specification test is above the threshold value of 5 percent. However, the null hypothesis cannot be rejected, which, suggested that the random effect model is appropriate.

$F(1, 11)$	Prob > F
0.688	0.0000

Note: Wooldridge test in panel data for autocorrelation for cement sector: H_0 – there is no autocorrelation

Table AI.
Variables definition

	VIF	1/VIF
INED	3.165	0.316
NED	3.017	0.331
BDS	2.354	0.425
LEV	1.798	0.556
CEO TEN	1.692	0.591
IOWNS	1.567	0.638
FMD	1.536	0.651
LOG ASST	1.431	0.699
DUALLITY	1.159	0.862
BOWNS	1.027	0.974
Mean VIF	1.875	–

Notes: COE, cost of equity; BOWNS, block ownership; IOWNS, inside ownership; NED, non-executive directors; INED, independent non-executive directors; BDS, board size; FMD, female directors; DUA, CEO duality; CEO TEN, CEO tenure; LEV, leverage; LNTA, LOG of total assets

Table AII.
Multicollinearity results for the Cement sector

$\chi^2 (32)$	Prob > χ^2
8.66	0.9670

Note: Modified Wald test for heteroskedasticity for cement sectors: H_0 – there is no heteroskedasticity

Table AIII.
Correlations of the study

	Coeff.
χ^2 test value	1.408
<i>p</i> -value	0.999

Note: Housman specification test of cement sector: H_0 – random effect model is appropriate

Table AIV.
Corporate governance and COE using Pooled-OLS

Table AV.

Corporate governance and COE using both the Pooled-OLS and Random-Effects

Chibar 2 (01)	Prob > chibar 2
0.00	1.0000
Note: Breusch and Pagan Lagrangian multiplier test for random effects: H_0 – Pooled OLS is appropriate	

Table AVI.

F-test results

F-value	Prob > F
0.64	0.7891

Table AVII.

Cement sector total companies list

Symbol	Company Name	Registrar
ACPL	Attock Cement Pakistan LTD	Technology Trade (Pvt.) LTD
BWCL	Bestway Cement LTD	Technology Trade (Pvt.) LTD
CHCC	Cherat Cement Company LTD	Central Depository Company of Pakistan LTD
DGKC	D.G. Khan Cement Company LTD	Self Handled
DBCI	Dadabhoj Cement Industries LTD	Technology Trade (Pvt.) LTD
DNCC	Dandot Cement Company LTD	Corplink (Pvt.) LTD
DCL	Dewan Cement Limited	BMF Consultants Pakistan (Pvt.) LTD
FCCL	Fauji Cement Company LTD	Corplink (Pvt.) LTD
FECTC	Fecto Cement LTD	Technology Trade (Pvt.) Limited
FLYNG	Flying Cement Company LTD	THK Associates (Pvt.) LTD
GWLC	Gharibwal Cement LTD	Corplink (Pvt.) LTD
JVDC	Javedan Corporation LTD	Central Depository Company of Pakistan LTD
JVDCPS	Javedan Corporation LTD (Preferred Shares)	Central Depository Company of Pakistan LTD
KOHC	Kohat Cement LTD	AZM Computer Services (Pvt.) LTD
LUCK	Lucky Cement LTD	Central Depository Company of Pakistan Limited
MLCF	Maple Leaf Cement Factory LTD	Vision Consulting LTD
PIOC	Pioneer Cement LTD	Corplink (Pvt.) LTD
POWER	Power Cement LTD	Technology Trade (Pvt.) LTD
SMCPL	Safe Mix Concrete LTD	THK Associates (Pvt.) LTD
THCCL	Thatta Cement Company LTD	Noble Computer Services (Pvt.) LTD
ZELP	Zeal Pak Cement Factory LTD	Your Secretary (Pvt.) LTD

Corresponding author

Syed Tauseef Ali can be contacted at: tauseefali_shah3@yahoo.com

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgroupublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com