Corporate Governance and Cost of Capital: Evidence from Pakistani Listed Firms

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Submitted in Fulfilment of the Requirements for the Degree of Doctor of Philosophy in Accounting and Finance

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June 2016

ABSTRACT

This thesis investigates the effectiveness of Corporate Governance (CG) reforms in Pakistan. Using a sample of 160 Pakistani firms from 2003 to 2013 and governance data collected manually from the annual reports, this thesis investigates seven closely related and important corporate issues that are related to the compliance of governance rules. Specifically, it aims to : (i) investigate the degree of CG compliance with 2002 Pakistani Code of CG (PCCG); (ii) determine whether the introduction of 2002 PCCG has improved Pakistani CG practices; (iii) investigate the determinants of CG compliance and disclosure for Pakistani listed firms; (iv) test the nexus between CG compliance with the 2002 PCCG and firms' cost of capital (COC); (v) investigate the impact of different individual CG mechanisms on listed firms COC; (vi) examine how different ownership structures impact on firms' COC; and (vii) analyse relationship between CG structures and Cost of Equity (COE) as well as Cost of Debt (COD) for Pakistani listed firms.

These empirical investigations report some important results. First, the reported findings suggest that Pakistani firms have responded positively to governance disclosure requirements over the eleven year period from 2003 to 2013. The results also show that the introduction of the PCCG in 2002 has improved CG standards by Pakistani listed firms. Second, the reported results related to the determinants of CG compliance demonstrate that significant and positive association between institutional, government and foreign ownership with CG compliance. However, findings relating to the determinants of CG compliance show a negative and significant association between board size and block ownership with CG compliance and disclosure. The study finds no significant relationship between director ownership, audit firm size and the presence of female board members with the constructed Pakistan Corporate Governance Index (*PCGI*). Third, the investigation on the relationship between CG and COC report a significantly negative nexus between *PCGI* and firms' COC. The investigation on the association between ownership structures and COC report a negative and significant nexus between block ownership with firms' COC. Further, a number of robustness analyses performed in this study suggest that the empirical results reported in this study are generally robust to the alternative CG variables, alternative COC variables and potential endogeneity problems.

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ACKNOWLEDGEMENT

In the name of Almighty Allah, the Most Compassionate, the Most Merciful, and May Almighty Allah bless upon our beloved Prophet Muhammad *Sallallahu Alaihi Wasallam.* First and foremost, I would express my deep gratitude to the Almighty Allah for the blessings and honouring me with His guidance in order to complete this thesis successfully.

I am indebted to many people who help and support me throughout this research project. First, I would like to express my gratitude and heartfelt thanks to my distinguished supervisors, Professors Kwaku Opong and Dr Marco Guidi, for their guidance, knowledge, patience, time and support at every stage of my study. Your regular constructive comments and evaluation significantly contributed to the quality of this thesis. Any remaining errors and omissions, however, are my sole responsibility.

Second, my sincere gratitude goes to all members of staff and colleagues in the Accounting and Finance Department at Adam Smith Business School For their constructive comments and suggestions at every stage of my PhD. In particular, I would like to thank Dr Mohamed Isa Elghuweel and Dr Waleed Mohammed Al-Bassam for helping me at the initial stages and constructive feedback throughout of the study. Third, data collection for this study would not have been possible without the help of some people. In particular, I would like to thank Mrs. Gillian MacIver, Anam, Faiza and Rida for helping me in identifying the sources and collecting of data at the initial stages of the study. I would also like to thank the Security and Exchange Commission of Pakistan for giving me access to the financial statements of the listed firms.

Fourth, financial support from the Commonwealth Scholarship Commission, UK is gratefully acknowledged. Last but not the least, I extend my special appreciation to my family-my parents, wives, children, brothers and sisters for their unlimited support, patience and constant encouragement. They shared with me all challenges that I encountered during my journey towards the completion of this study. I apologise, however, to my family for being so busy with my study and ask Almighty Allah to enable me to compensate your sacrifices throughout the period of my study.

I would like also to extend my apology to anyone who assisted in improving the quality and who might have directly and indirectly contributed to this study, but has not been explicitly acknowledged. May Almighty Allah Bless Us All!

AUTHOR'S DECLARATION

I declare that, except where explicit reference is made to the contribution of others, this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Signature _____

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DEFINITIONS/ABBREVIATIONS

ADF	Augmented Dickey-Fuller
BGEN	Board Gender diversity
BIG4	Audit-firm size
BNAT	Board nationality diversity
BOD	Board of directors
BOWNP	Block ownership
BSZ	Size of the board of directors
CE	Capital expenditure
CEO	Chief Executive Officer
CG	Corporate Governance
COC	Cost of Capital
COD	Cost of Debt
COE	Cost of Equity
DOWNP	Director Ownership
FOWNP	Foreign ownership
GOWNP	Government ownership
IDC	Internal auditing and committees
IER	Internal Control, External Auditor and Risk Management
IOWNP	Institutional ownership
LTA	Firm size
LVG	Leverage
NPV	Net Present Value
OLS	Ordinary Least Squares
PCCG	Pakistani Code of Corporate Governance
PCGI	Pakistani Corporate Governance Index
ROA	Return on Assets
ROB	Report on Business
ROE	Return on Equity
SALESG	Firm growth
SECP	Securities and Exchange Commission of Pakistan
SR	Shareholders right
TAD	Transparency and disclosure
WACC	Weighted Average Cost of Capital
W*PCGI*	Weighted Pakistani Corporate Governance Index
β	Systematic risk

CHAPTER ONE

1 INTRODUCTION

The corporate world has witnessed a number of corporate scandals (e.g., Enron, WorldCom and Tyco) that had shaken investors' faith in capital markets. Traditional governance structures were unable to protect shareholders who had been affected by these scandals and corruptions. In this regard, professional organizations and regulatory authorities in developed countries had to reinstate the confidence of investors in capital markets by adopting codes of governance. For instance, USA issued Sarbanes Oxley Act in 2002 with the view to increasing transparency, accountability, and responsibility in the management of companies. Similarly, CG codes have spread around the world and more firms are motivated to practice good CG standards.

The 1997 Asian financial crises was an evolving landscape for Asian policymakers and companies. Several institutional and policy weaknesses were uncovered by these crises and led to numerous economic reforms in the region. Regulations and guidelines have been legislated in developing countries with the support of international organizations such as the World Bank and OECD (OECD, 1999). The Pakistan Stock Exchanges have not been spared these major reforms in the way companies are managed and controlled which have swept across the world in recent times. CG reforms were the most important part of those reforms that were aimed to restore investors' confidence. In this regard, Securities and Exchange Commission of Pakistan (SECP) was established under the SECP act of 1997 as a market regulatory agency in the country and it is responsible for the supervisory functions of the stock exchanges. As it will be discussed further in chapter two, SECP has two main departments under the company law division, namely, Corporatization & Compliance and Enforcements departments. The Corporatization & Compliance department is responsible for administration of the companies Ordinance 1984 or rules made under other relevant laws whereas the Enforcement Department is responsible for regulation and enforcement of laws affecting firms listed on the stock exchange (SECP, 2013).

With respect to adopting CG codes, and as the case with most of developing countries, Pakistan issued its CG code in March 2002 which is regarded as an important development for CG reforms. This CG code has been established by the combined efforts of SECP and Institute of Chartered Accountants of Pakistan (ICAP). The requirements of the code are comprehensively influenced by UK CG style (Tariq and Abbas, 2013). The code has a series of governance provisions that are focused on three main areas including

better disclosure, strengthening of internal control systems and reforms of the board of directors with regards to making it accountable to the stockholders.

The critical question is whether adopting similar CG provisions from developed countries can effectively assist Pakistani firms to increase their firm value by reducing their COC. Prior studies in developed countries report evidence that CG can reduce COC. For instance, Pham *et al*. (2012) argued that corporations with weak legal systems perform poorly during market down turn and thus should be subjected to a high COC over this period. They indicated that when companies have less external monitoring, managers may tend to use unnecessary borrowings that increase the company's market wide risk and, eventually, its weighted average cost of capital (WACC). Hence, the above study including others (e.g., Zhu, 2012; Tran, 2014) suggests that COC is an important factor that affects the firm's value.

A numbers of studies have been conducted to examine the impact of several governance mechanisms on firm behaviour in Pakistan. These studies can be categorized into three main areas. First, prior studies (e.g., Mehar, 2005; Ahmed and Javid, 2009; Afzal and Sehrish, 2010; Afza and Mirza, 2011) have investigated the association between individual CG mechanisms and dividend policy among listed firms. For example, Afzal and Sehrish (2010) found a positive and significant association between board size, individual ownership and firm size, and dividend paid, using a sample of 42 firms from 2005 to 2009. Second, a group of studies (e.g., Ali Shah *et al*., 2009; Butt and Hasan, 2009; Rehman *et al*., 2010) have examined the impact of CG on COE. For instance, Ali Shah (2009) examines the association between limited individual CG variables and COE with a small sample of 119 firms for a period of five years from 2003 to 2007. They report evidence of negative association. Third, previous studies (e.g., Mir and Nishat, 2004; Shaheen and Nishat, 2004; Javid and Iqbal, 2008; Yasser, 2011; Azam *et al*., 2011; Tariq and Abbas, 2013) investigate the influence of CG on financial performance. For instance, Tariq and Abbas (2013) have examined the effect of compliance with the code and financial performance. They report evidence that the high complaint firms have a significant negative relationship with performance (Tariq and Abbas, 2013). The current study is different from these prior studies in several ways. First and distinctively from the above mentioned studies, the current study investigates CG reforms over a longer period from 2003 to 2013 and for 160 listed firms. Second, the current study uses COC rather than either COE or COD in investigating the impact of CG on firms' COC. Finally, current study uses panel data to address and mitigate the endogeneity problems.

In addition to level of compliance and factors influencing the level of CG compliance, this study also investigate the value creating role of CG mechanisms using a different approach to the previous studies (i.e. using individual CG variables and investigating the impact CG on COE only) through COC as value creating variable. The previous studies examine the nexus between individual governance variables and financial performance such as ROA, ROE and Tobin's Q. The current study investigates the relationship between firm-level governance mechanisms and firm-level COC will be investigated by constructing a CG index. Arguably, a better governance environment increases the value of the firm by limiting the expropriation of minority stockholders (Yasser, 2011; Azam *et al*., 2011). It is expected that better compliance with CG code can reduce a company's COC which is basically investors' required rate of return and is based on their perception about the risk-level of the firm. Ultimately, a better governed firm can have a perception of lower risk, lower COC, and hence increased value.

1.1 RESEARCH AIM AND OBJECTIVES

This thesis aims to extend the literature by examining CG reforms that have been followed by Pakistan since 2002. Three important corporate decisions relating to the compliance of governance rules have been investigated in this thesis; namely governance disclosure, determinants of level of compliance with CG standards and the impact of CG on firms' Cost of Capital (COC). This study investigates the extent to which CG reforms in Pakistan have enhanced these corporate policy decisions. Using a sample of 160 Pakistani listed firms from 2003 to 2013, this study aims to achieve the following eight objectives. First, by constructing a CG index, it examines the level of CG compliance with the provisions of 2002 Pakistani Code of Corporate Governance (PCCG) among Pakistani listed firms. Second, it seeks to determine whether 2002 PCCG assisted to increase the CG practices among Pakistani listed firms. Third, this thesis investigates the impact of traditional firm ownership structures and audit/board characteristics on the level of CG compliance and disclosure. Fourth, the study seeks to ascertain whether better governed firms (high level of compliance with 2002 PCCG) tend to have lower cost of capital (COC) than those of poorly governed counterparts (lower level of compliance with 2002 PCCG). Specifically, the thesis examines the nexus between the firm's compliance with 2002 PCCG and COC by applying a researcher's self-constructed Pakistani CG Index (the *PCGI*) containing 70 governance provisions mainly based on the 2002 PCCG. Fifth, this study intends to investigate the impact of ownership structures (e.g., director, block, institutional, foreign and government ownership) on COC among Pakistani listed firms.

Sixth, the thesis aims to examine the impact of audit/board characteristics on firm-level COC. Notably, the current study uses a number of audit/board characteristics to investigate this relationship which has not been examined widely in the literature. For instance, the current study examines the influence of the presence of foreign and female members on the board of directors. It also investigates the impact of big audit firms on sampled firms COC. Finally, the study investigates the impact of different CG structures on both COE (COE) capital and firm's Cost of Debt (COD), individually. This may assist in understanding that how CG practices could have an impact on shareholders and stakeholder.

1.2 MOTIVATIONS

The current study on Pakistan is motivated by the several factors. First, like most countries in the developing world, Pakistani companies have controlling shareholders in the form of family ownership. This provides the controlling shareholders with both the incentive in the case of low cash flow rights and opportunity in the case of high free cash flows to expropriate outsider minority shareholders (Bozec and Laurin, 2008). Similarly, strong CG and investor protection found in the developed countries are believed to be much effective as compared to Asian countries (La Porta et al., 1998; Dyck and Zingales, 2004). Particularly, the Pakistani corporate setting shares some level of similarities and differences with the UK corporate environment. On the one hand, and contrary to the Berle and Means model of separation of ownership and control, Pakistani foremost firms ownership structure bear a resemblance to a concentrated family ownership structure. In this regard, majority shareholders not only hold the control of the firm, but also, are involved in its management. Arguably, this concentrated ownership structure of Pakistani firms is different than those of Anglo-American structure of dispersed ownership. On the other hand, and similar to Anglo-American, the Pakistani legal structure is based on common law. Similarly, and by ignoring this fact of different ownership structures between the countries, Pakistan replicates the UK and South African CG reform initiatives (Ibrahim, 2006). The CG mechanisms formulated by following markets with dispersed ownership structure may not offer the right remedy to the governance issues for a market with concentrated ownership. Therefore, this study may offer interesting and different findings than those from the Anglo-American countries.

Second, the Companies ordinance (1984, XL VII) states that "*the minimum threshold for seeking a remedy from the court against mismanagement and oppression requires that at least twenty percent of the shareholders initiate a compliant. Shareholders representing at least ten percent but less than twenty percent of the company's shares can apply to the*

SECP to appoint an inspector to investigate the company's affairs. Because neither the Companies ordinance nor the Code recognizes shareholders who represent less than ten percent of the company's share (the minority shareholder), no analogous provision exists for these shareholders". Therefore, it is expected that in the Pakistani context with less or no protection for minority shareholders with less than 10% holding, this study offer interesting results by investigating the relationship between ownership structure and COC than those from the developed world.

Third, Pakistan's constitution requires that all laws conform to Islam[1]. Although, the fiduciary duties set by SECP are initially based on Anglo-American common law and *shareholding* model of CG, but more importantly, they must also conform to Islamic business ethics (Ibrahim, 2006). In this regard, strong Islamic notions are incorporated in Pakistani CG code, such as accountability, transparency and responsibility and these can have important implications for the level of CG compliance and disclosure (Abu-Tapajeh, 2009; Ahmad, 2011a). For example, the Islamic models of 'Hesab' and 'Taklif' are related to several theories discussed in this thesis, such as resource dependence, stewardship, and stakeholder theories (Bhatti and Bhatti, 2010). In this regard, the norm of 'Hesab' (account) specifies that the directors as individuals should be trustworthy with resources under their control (Bhatti and Bhatti, 2010). Therefore, directors are answerable to the creator and will be rewarded or punished for their actions (Abu-Tapanjeh, 2009; Ahmad, 2011b). Similarly, the concept of 'Taklif' indicates that the managers, as responsible persons, are the trustees of the firm's resources and should act as guardians and as agents for stakeholders (Rahman, 1998; Iqbal and Mirakhor, 2004, Hearn *et al.*, 2011). Such Islamic values can potentially work as governance mechanisms which can discipline executives and diminish agency problems.

Specifically, it can be said that Shariah law[2] motivates insiders to reliably signal quality information to the stakeholders by offering extensive CG information (Baydoun and Willett, 2000). Consequently and similar to Anglo-American countries, Pakistan is following the traditional *shareholding* model of CG. However, Pakistani executives are expected to be socially responsible as encouraged by the intrinsic Islamic principles.

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[1] *"(Article 2-A of the Annex to the Constitution of the Islamic Republic of Pakistan (the Objectives Resolution) and article 227 of the Constitution of the Islamic Republic of Pakistan 1973 explicitly incorporate Islam into the Constitution. Article 2-A of the Annex states:Wherein the principles of democracy, freedom, equality, tolerance and social justice as enunciated by Islam shall be fully observed; Wherein the Muslims shall be enabled to order their lives in the individual and collective spheres in accordance with the teachings and requirements of Islam as set out in the Holy Quran and the Sunnah. CONST. ISLAMIC REPUB. PAK., Annex, art. 2-A (1985).).*
Article 227 of the Constitution of Pakistan states in part: All existing laws shall be brought in conformity with the Injunctions of Islam as laid down in the Holy Quran and Sunnah, in this Part referred to as the Injunctions of Islam, and no law shall be enacted which is repugnant to such Injunctions. CONST. ISLAMIC REPUB. PAK. art. 227(1) (1973)".

[2] According to Cerimagic (2010), "*Islamic Sharia laws tend to adhere strictly on the principles and values intimated in the Qur'an… The law is there to protect the welfare of all the parties involved. The clearly stated nature of these laws can make business easier and have less risk. A central tenet of Islamic law is that it seeks to provide justice and fairness to both parties.*"

Fourth, of close relevance to the current study is a study conducted by Tariq and Abbas (2013) who investigate the degree of CG compliance with PCCG using a weighted index. They divided clauses of the code into quantifiable units as they believe that all provisions of the code are not equal in importance. They then assigned different weights ranging from 0 to 5 to the clauses to distinguish the importance of each provision for reporting purposes. Their findings suggest that high complaint firms are less profitable than average compared to low compliant firms. There can be several reasons for such an unpredicted finding. For instance, Bozec and Bozec (2011) argued that the rating of CG provisions might significantly be affected by subjective view of analysts which may result in incorrect inference, indicating that CG provisions should be equally weighted. Additionally, they used a sample of 119 firms which may impact on the generalizability of the findings. Therefore, this study re-examine the construction of the CG index using other method such as un weighted CG index based on 2002 PCCG to investigate the relationship between CG compliance and firm value using COC.

Fifth, prior studies have not explored the factors influencing the level of compliance and disclosure with PCCG 2002. In addition to those traditional CG variables, this study examines a number of variables which have not been examined widely before even in the international literature. For example, the study investigates the impact of the presence of foreign and female members on the board as well as government and foreign ownership on the level of CG compliance for Pakistani listed firms.

Sixth, studies in Pakistan on the potential impact of CG on different aspects of corporate performance have mainly focused on financial performance (Mir and Nishat, 2004; Shaheen and Nishat, 2004; Javid and Iqbal, 2008; Yasser, 2011; Azam *et al*., 2011; Tariq and Abbas, 2013), dividend policy (Mehar, 2005; Ahmed and Javid, 2009; Ahmed and Javed, 2010; Afzal and Sehrish, 2010; Afza and Mirza, 2011), earning management (Ali Shah *et al.*, 2009). In contrast, studies investigating the relationship between CG and COC for Pakistani firms are limited and only examine the relationship between CG and COE (e.g., Ali Shah and Butt, 2009; Butt and Hasan, 2009; Rehman *et al*., 2010). For instance, Butt and Hasan (2009) investigated the impact of board size, board composition and CEO duality on leverage and reported mixed results. Similarly, Ali Shah and Butt (2009) investigated the impact of CG on COE and report that for the limited CG variables that they examined, only board size and managerial ownership has a negative relationship with COE whereas board independence and audit committee have a positive relationship with COE. This research differs from prior research on Pakistan in several means. For instance, prior researches have focused on few numbers of governance provisions (e.g.,

Javid and Iqbal, 2008) or on one governance variable. However, this study constructs an index containing 70 provisions categorised in five sub-indices. Also, prior studies (Butt and Hasan, 2009; Shah *et al.*, 2009; Afza and Mirza, 2011; Tariq and Abbas, 2013) have studied less firms than the current research. The current study employs balance *panel* from 2003 to 2013, while prior studies employed unbalance data and for a smaller period of time. Therefore, this study is more comprehensive than prior studies with respect to sample size and the time period covered.

Seventh, using a sample of 19 Pakistani Banks over period of 2005 to 2006, Rehman *et al*., (2010) investigated the impact of several CG mechanisms on COE and report empirical evidence that CG has no role in reducing the COE. As explained above, most of the studies investigated CG mechanisms and firm performance using individual CG variables rather than CG index. There is no study, to the best of my knowledge, that has investigated the relationship between CG and COC with CG index. It can be argued that effective CG mechanisms can minimize the risk of the firm which leads to lower COC for firms. Therefore, this can lead to an increase in the value of the firm. The current study adds to knowledge by providing evidence on the relationship between CG standards and firms' COC.

Finally, Pakistan has adopted the Anglo-American model in order to improve CG standards in its corporate sector. This may raise a critical question as to whether Anglo-American model of CG is appropriate given the differences in culture between Pakistan and those countries. Agency problem is expected to be different in developing countries like Pakistan due to the nature of ownership structures where the conflict of interests is between minority (outsider) and majority (insider) shareholders instead of managers and shareholders as is the case in UK and US (Bozec and Bozec, 2011). For instance, the dominance of family members on a board may diminish the influence of Independent Non-Executive Directors (INED) representations on the board and that is against the spirit of good CG (Butt and Hasan, 2009). They provide evidence supporting the argument that agency problems vary according to the economic conditions, ownership structures, cultural underpinnings, and capital market development. Therefore, family ownership is expected to discourage firms from practicing good CG which may impact negatively on firms' decisions, particularly in emerging markets. Therefore, this study sheds light on whether the adaptation of commonly accepted CG standards as proposed by Anglo-American countries can improve the CG practices in emerging economies like Pakistan.

1.3 RESEARCH QUESTIONS

Given the differences and similarities between developed world and Pakistani CG environment discussed above, this study seeks to answer the following seven research questions. First, what is the level of compliance with the CG provisions of 2002 PCCG by Pakistani listed firms? This research question investigates the extent to which Pakistani listed firms comply with PCCG. Following the literature (e.g., Elghuweel *et al*., 2016; Ntim *et al.,* 2012a), a CG index has been used to investigate the CG compliance for Pakistan. The second research question investigates as to whether the introduction of 2002 PCCG has improved Pakistani CG practices.

The third research question investigates the determinants of CG disclosure with the 2002 PCCG for Pakistani listed firms. The CG literature suggests that the traditional firm ownership structures and audit/board characteristics can be the main determinants of CG disclosure (e.g., Chalevas, 2011). Thus, following the recent CG literature, the ownership structures and audit/board characteristics are investigated in this study. Importantly, this study examines a number of CG variables which have not been widely investigated in the past in Pakistan such as, the presence of foreign and female members on the board and government and foreign ownership.

The fourth research question deals with the association between CG disclosure and the firms' COC. Fifth research question investigates the impact of different individual CG structures (e.g. audit firm size, size of board and board diversity) on firms' COC. Notably, the current study uses a number of audit/board characteristics to investigate this relationship for the first time for Pakistani listed firms. How different ownership structures (e.g. managerial Ownership, Institutional ownership, Government Ownership, Foreign Ownership, and Block Ownership) impact on firms' COC is the sixth research question investigated in the current study. Finally, the seventh research question investigates how different CG structures impact both on Cost of Equity capital (COE) and on a firm's Cost of Debt (COD).

1.4 SUMMARY OF MAJOR FINDINGS

Using the data of 160 Pakistani firms for eleven years from 2003 to 2013, this thesis has examined the level of compliance with *PCGI*, factors influencing the level of compliance and the relationship between CG structure and firm COC. The reported findings relating to the CG disclosure suggest that governance disclosure has improved over the study period with an overall increase of 64.6% over eleven years of the *PCGI*

from 2003 to 2013. The findings of the study also suggest that the introduction of 2002 PCCG has improved CG standards among Pakistani listed firms. The results of the study suggest a positive and significant relationship between institutional ownership, government ownership and foreign ownership with *PCGI*. However, study report significant and negative nexus between board size and block ownership with *PCGI*. Further, the findings report no relationship between director ownership, audit firm size, board diversity on the basis of gender and board diversity on the basis of nationality with level of governance disclosure compliance.

The results on the relationship between CG and COC suggest that there is a negative and statistically significant relationship between *PCGI* and COC. Similarly, a negative and significant association between block ownership with *COC* is reported. The reported results indicate that there is a positive and significant relationship between director ownership, foreign ownership and board diversity with *COC*. However, the relationship between Institutional and government ownership, big4 and board size with COC reports no significant relationship.

1.5 CONTRIBUTIONS OF THE STUDY

Several studies that include Pakistani listed firms in their samples, either examines the nexus between CG disclosure and firm financial performance (Javid and Iqbal, 2006; Javid and Iqbal, 2007; Ali Shah, 2009) using ROA, ROE and Tobin's Q or the relationship between CG disclosure and COE. These studies do not explore whether and to what extent Pakistani firms comply with CG recommendations suggested by the 2002 PCCG, nor do they examine the factors influencing the level of compliance. Distinctively, the current study uses a researcher's self-constructed CG index as a proxy to measure the firm-level CG compliance and disclosure with 2002 PCCG. An analysis of CG literature advocates that a good number of studies have been conducted in developed markets to analyse the effectiveness of CG codes. Therefore, investigating CG compliance and disclosure in different regulatory, cultural, institutional and CG context is essential as it is likely to come up with different findings. In one hand, several researches analysing determinants of CG compliance have been performed in the developed markets with generally similar CG and institutional settings. On the other hand, factors influencing the level of CG compliance and disclosure in emerging markets like Pakistan, where empirical findings are rare, is vital in providing a broader picture of CG compliance and disclosure behaviour.

This study makes numerous contributions and extensions to the extant CG literature. First, using one of the largest manually collected data set on CG in emerging markets

directly from firms' annual reports (i.e., a sample of 160 Pakistani listed firms from 2003 to 2013, with 1760 firm-year observations), this study reports the findings on effectiveness of CG reforms in Pakistan. Precisely, it provides detailed findings on the CG disclosure level with 2002 PCCG. Similar to limited number of prior studies in emerging markets, the introduction of 2002 PCCG facilitates consistency of CG standards; the results recommend that CG practices still differ largely among Pakistani listed firms over the period eleven year examined.

Second, the current study offers evidence that adaptation of commonly accepted CG standards as proposed by UK Cadbury Report 1992 can improve Pakistani firms' value. Though legal enforcement is not as strong as in developed world, the evidence suggests that Pakistani listed firms have complied with PCCG, to some extent, with those provisions largely drawn from UK code. Hence, it can be argued that reliance of emerging markets on Anglo- American model of CG regime to improve their CG practices is justified.

Third, and following the recommendations of CG literature that governance practices may be well investigated with the help of a CG compliance index, the current study offers a researcher's self-constructed CG index that contains five sub indices. With the help of this CG index (the *PCGI*), numerous issues related with CG in Pakistani corporate setting may be investigated. Due to the questionable applicability of weighted and analysts' CG indices, this CG index can help Pakistani policy makers and researchers to conduct additional empirical studies.

Fourth, the current study offers empirical evidence on how traditional ownerships influence the CG compliance level of Pakistani firms, for the first time. Fifth, the present study also provides empirical evidence on how board/audit characteristics can influence the CG compliance level. Specifically, it offers evidence for the first time on how gender and nationality diversity in the board can influence the CG disclosure level. Sixth, the current research offers a multi-theoritical approach to the CG literature that considers most of the relevant theories which can be useful for researchers to examine other CG issues in Pakistan and similar corporate contexts as distinctive features of Pakistani context is likely to result in mixed predictions on CG code's ability to improve CG standards and firms' value by decreasing COC.

Seventh, to study the value creating role of CG mechanisms using an alternative approach (COC) to those which were used in previous literature (ROA, ROE and Tobin's Q), is another contribution to the extent literature as there is a lack of empirical evidence on CG compliance and COC. Finally, this study provides empirical evidence on factors

influencing level of CG compliance and on the nexus of CG-COC by applying alternative variables, estimations and models. Further, analyses have been performed to test whether the main findings of study are robust to alternative variables, firm level characteristics, and endogeneity problems. These analyses includes: alternative CG index (weighed CG index), alternative COC measure (COE and COD), lagged CG structure, fixed or random effect and 2SLS model. Arguably, it has improved the reliability of the findings.

1.6 THESIS ORGANISATION

This study is organised into eight chapters. First Chapter aims to present the objectives of the study, discusses background, explains main motivations, lists out the research questions and summarises the research contributions. Chapter two will define CG in detail including *shareholding* and *stakeholding* models. This chapter will also present a review of Pakistani CG framework. Specifically, the external CG structures including regulatory and supervisory bodies will be discussed. Additionally, it will also shed light on CG framework including CG reforms and listing rules.

Theoretical and empirical review of literature on level of compliance with PCCG, determinant of CG compliance and CG-COC will be carried out in chapter three. Particularly, it is orgnised in four parts. The part one will discuss existing theories related to CG practices and firms' COC. The second part of the chapter reviews the empirical literature on the level of compliance with CG disclosure from both developing and developed countries. The third part will review the existing empirical literature of factors influencing level of CG compliance and the development of the hypotheses tested in the current study. Chapter four will discuss the research design in three sections, namely the sample selection and data sources, research methodology and statistical analysis. Chapter five will discuss the modelling techniques used in the study and the empirical findings will be presented in chapter six. Chapter seven will report the findings based on the robustness analyses and the conclusion of the study will be presented in chapter eight.

CHAPTER 2

2 CORPORATE GOVERNANCE IN PAKISTAN: BACKGROUND AND FRAMEWORK

This chapter aims to define Corporate Governance (CG), provide a brief discussion on CG models established within the international Governance literature and then to present a comprehensive description of CG framework in Pakistan. This chapter is organized as follows. Section 2.1 provides a discussion on definitions of CG. Section 2.2 discusses the different CG models. Section 2.3 presents the CG model in Pakistani context while section 2.4 presents the summary of the chapter.

2.1 DEFINING CORPORATE GOVERNANCE

Corporate governance (CG) has emerged as a new and independent field of study in last three decades (Denis, 2001). It cuts across different disciplines (e.g., finance, accounting, management, economics, law, politics, organizational behaviour). A number of definitions of CG exist in the literature (e.g., Shleifer and Vishny, 1997; OECD, 1999). Although there are many definitions of CG, scholars and researchers categorize these definitions into two types as either "broad" or "narrow". This categorization is based on the degree to which a CG system is concentrating to satisfy shareholders only or all stakeholders. Hence, it can be called narrow if the system of CG is emphasizing only on the shareholders (Sternberg, 2004; West, 2006) and known as broad if it is trying to satisfy the wider interests of various different stakeholder groups (Gillan, 2006).

A narrow CG definition has been given by a number of scholars. For instance, Sheikh and Chatterjee (1995, p.5) defined it as "*a system whereby directors are entrusted with responsibilities and duties in relation to the direction of company's affairs*". Similarly, it is "*…the way in which suppliers of finance to corporations assure themselves of getting a return on their investment*" (Sheifer and Vishny, 1997 p.737). Sternberg (2004, p.28) also defined it as "*ways of ensuring that corporate actions, agents and assets are directed at achieving the corporate objective established by the corporation's shareholders*". It is clearly noted that these definitions are concentrated on shareholder's wealth.

The broad CG definition is been given by Sir Adrian in World Bank Report (1999, p.7) as "*….concerned with holding the balance between economic and social goals and between individual and communal goals….the aim is to align as nearly as possible the interests of individuals, corporations, and society*". Similarly, the OECD (2004, p.11)

definition is "*…a set of relationships between a company's board, its shareholders and other stakeholders. It also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined*". Another definition is "*…the system of check and balance, both internal and external to companies, which ensures that companies discharge their accountability to all their stakeholder and act in socially responsible way in all area of their business activity*", (Solomon and Solomon, 2004, p.14).

As explained above, the literature has mainly defined CG in these two entirely opposing models: the broad and narrow models (e.g., Rossouw *et al*., 2002; Agle *et al*., 2008). A broad CG structure is usually referred to as '*stakeholding*' due to its perception that firms are responsible and accountable to the all stakeholders of whom shareholders are merely one. On the other hand, a narrow CG structure is normally called '*shareholding*' due to its consideration of firms to be primarily responsible and accountable to their shareholders. Fundamentally, these models have legal and country origins. Particularly, Aguilera and Cuervo-Cazurra (2009) have suggested that '*stakeholding*' model tend to be common in Asia and Europe, like Japan and Germany with civil or Scandinavian origin, whilst the '*shareholding'* CG structure is usually found in Anglo-American countries, such as the US and UK with common laws origins. Arguably, Pakistan has an Anglo-Amrican or '*shareholding'* CG structure with common law origin.

2.2 CORPORATE GOVERNANCE MODELS

This section provides a brief discussion on '*shareholding'* and *'stakeholding'* models of CG including the theoretical assumptions, characteristics and criticisms.

2.2.1 The Shareholding Model

According to this model, the purpose of corporation is shareholder value maximization and dominance (Schwartz, 1983). Berle and Means (1932) suggest that the shareholding model involves the separation of ownership and control, and thus, it assumes that the firm must be operating primarily for the interest of its owners. Therefore, there is a serious issue of agency problem where the principals (shareholders) have to appoint agents (managers) to control their business on their behalf. Hence, it is likely to be risky that managers and directors will try to look after their interests rather than that of shareholder (Letza *et al.*, 2004).

In response to agency problems, the shareholding model suggests some solutions in resolving conflicts of interest between principals and agents. Firstly, this model suggests

introducing a code of CG which includes discipline, ethics, fairness, independence, transparency, and independency to control managers and directors behavior (Cadbury, 1992). Secondly, this model recommends that constraint free competition must be encouraged (Letza *et al*, 2004). Third, it emphasizes the bringing in efficient contacts to control and run the affiliation between the labour and owners (Jensen and Meckling, 1976). Finally, Weimer and Pape (1999) propose the reinforcement of the system of managerial incentive by familiarising performance related management reward schemes to align the interests of managers and shareholders. On the other hand, the shareholding model limits external interventions forced on corporations from central authorities and government which may disturb the operations of free market (Hart, 1995).

2.2.2 The Stakeholder Model

According to the stakeholder model, the purpose of a corporation is not only to maximize the wealth of shareholders, but to maximize the firm value to society, i.e. maximize the welfare of stakeholders (Blair, 1995). This model suggests that companies should consider the interest of all stakeholders who may be affected by the firm's operations. Theoretically, governance problems are exaggerated because of the absence of stakeholders' participation in the operations of the public and private corporations (Letza *et al.*, 2004). Like the shareholding model, this model considers the separation of control and ownership as CG problem (Keasey *et al.*, 1997). However, the stakeholder model rejects the hypothesis that only managers and shareholders are important partners in such a relationship (Blair, 1995).

The stakeholder model provides different solutions to CG problems. First, it suggests a move from one-tier to a two tier board structure for achieving a wider representation of the interests of stakeholders (Mallin, 2007). In such a stakeholder governance framework, companies have dual board structure including management and supervisory board. A supervisory board will have a democratic element with representation elected by employees as well as other stakeholders, such as investors, suppliers, and government representatives on behalf of broader segment of society (West, 2009). Usually, management board strategic decisions-making needs to be verified by the supervisory board, which makes it more possible to run the corporations in the best interests of all stakeholders. Second, it emphasizes on building long-term and trust worthy relationship between stakeholders and firms (Letza *et al.*, 2004). Stakeholding model boosts closer contacts among managers, shareholders, suppliers, and creditors to achieve a balance in the interest of stakeholders (Rwegasira, 2000). Finally, the presence of block shareholders from different stakeholders, such as banks, employee union, and government, leads to high

ownership concentration (Rwegasira, 2000). This concentrated ownership provides better monitoring of management that reduces the agency cost.

Stakeholder model has been criticised in several ways. First, it is not suitable with the concept of business, governance and property rights (Letza *et al*., 2004; Solomon, 2010). Second, the definition of stakeholder also seems to be ambiguous. Since, stakeholders are all who can affect or be affected by the business, the number of those people whose interests need to be considered is just countless (Sternberg, 2004).

Third, it is incompatible with the concept of CG. A major CG notion is accountability: the accountability employees to managers; the accountability of mangers to directors, and the accountability of directors to shareholders (Sternberg, 2004; Solomon, 2010). The model advocates that firm should be accountable to the shareholders and stakeholders as well(Letza *et al.*, 2004). Hence, this model regards firms as accountable to everyone. In this regard, King Report (2002) suggests that a firm which is accountable to everyone is basically accountable to no one. Although an exception of this is Ackoff's circularity of accountability within democratic corporations. Finally, the model does not offer operational independent standards by which corporate managers (agents) can be judged.

2.3 CORPORATE GOVERNANCE MODEL IN PAKISTAN

As discussed in section 2.2, the CG regime in Pakistan is mostly influenced by *shareholdering* model of CG where shareholder's interests are paramount (Javid and Iqbal, 2008; Tariq and Abbas, 2013) for the following three reasons. First and like other Anglo-Amrican countries, Pakistan has a common law origin. Second, Pakistani corporate law is based on British India Act of 1913 before the appointment of company Law commission by Pakistani government in 1959 which started working under the name of Corporate Law Authority (CLA) under the ministry of Finance. Finally, Pakistan benefits from the UK and South African CG reform initiatives (Ibrahim, 2006). For investor protection, the Security and Exchange Ordinance (SEO) was issued in 1989 as a basic Securities Law. The Companies Ordinance (CO) sets the rules for regulations and governance of the companies in 1984 based on common law. A new institution, Securities and Exchange Commission of Pakistan (SECP) was established under the SECP Act in 1999. The SECP is responsible for supervisory functions of stock exchanges including issuing securities, brokers, and takeovers.

For this purpose, the first Pakistani Code of CG (PCCG) was presented by the SECP in March 2002. It was an important development for CG reforms in the country. The

code was developed by the joint efforts of SECP and Institute of Chartered Accountants of Pakistan (ICAP) (Javid and Iqbal, 2008). Similarly, the code issued by SECP is intensely influenced by UK governance regulations (Tariq and Abbas, 2013).This influence was likely for these two main reasons. First, being a commonwealth country, Pakistan has a historic link with the UK, as the country was a British colony till its independence in 1947. Second, according to Solomon *et al.* (2003) to attract foreign investments and to be globally competitive, emerging countries tend to adopt commonly accepted CG standards.

The Pakistani CG environment can be classified into external and internal framework. Concisely, external CG refers to the control that is exercised over the corporations from the outside. In Pakistan, the external CG framework comprises of: (i) the Ministry of Finance (MoF); (ii) the Corporate Law Authority (CLA) (iii) the Security and Exchange Commission of Pakistan (SECP); (iv) the State Bank of Pakistan; (v) Karachi Stock Exchange (KSE); (vi) Lahore Stock Exchange (LSE); (vii) Islamabad Stock Exchange (ISE); and The Pakistan Stock Exchange (PSX). The Corporate Law Authority (CLA) was an attached department of the Ministry of Finance which was restructured into SECP in 1997 under the Capital Market Development Plan of the Asian Development Bank (ADB). Similarly, The PSX is the official stock exchange of Pakistan launched on 11 January 2016 after the merger of individual stock exchanges' of Karachi, Lahore and Islamabad. On the other hand, an internal CG refers to the way in which corporations are governed from within. Internal CG mechanisms of Pakistan consist of: (i) Companies Ordinance 1984; (ii) the listing rules; and (iii) the Pakistani Code of Corporate Governance (PCCG). In the next subsections, the external and the internal CG framework of Pakistan are briefly discussed.

2.3.1 The External Corporate Governance System

The external Corporate Governance (CG) framework in Pakistan is shaped by a number of influences. First, it is made up of key enforcement bodies and financial regulators, which are primarily responsible for the implementation and enforcement of corporate regulations. Second, there are legislative laws and instruments that firms have to comply with. The main institutions and regulators that shape the Pakistani external CG framework includes: (i) the Ministry of Finance (MOF); (ii) the Security and Exchange Commission of Pakistan (SECP); (iii) the State Bank of Pakistan; (iv) Karachi Stock Exchange (KSE).

2.3.1.1 The Security and Exchange Commission of Pakistan

The SECP is the successor to the erstwhile of the corporate law authority that was working under MOF. The reorganization process of CLA has been started in 1997 with the plan of Capital Market Development under the Asian Development Bank (ADB). The SECP act was approved by the Assembly in December 1997. In pursuance of that act, the SECP starts operations in January of 1999 as an autonomous body. This act provided financial and administrative independence to the organisation to implement the CG reform program for the capital market.

The SECP was established as a market regulatory agency and it is held responsible for supervisory functions of stock exchanges. It is a vital financial regulatory agency in Pakistan for the regulation of the capital markets and control of corporate entities. Its principal objective is to build an efficient and modern corporate sector with a capital market based on comprehensive regulatory values, in order to boost investment and foster the country economic growth. The SECP has two main departments under the company law division, namely, Corporatization & Compliance and Enforcement department. For instance, Corporatization & Compliance department is responsible for administration of the companies Ordinance 1984 or rules made under other relevant laws whereas Enforcement department is responsible for regulation and enforcement of firms listed on stock exchange (SECP, 2013).The SECP has been made responsible for supervisory functions of stock exchanges including issuing securities, brokers, and takeovers.

2.3.1.2 Pakistan Stock Exchange (PSX)

The PSX is the official stock exchange of Pakistan with trading offices in Karachi, Islamabad and Lahore. By December 23, 2015, 555 companies have been listed on the exchange with the overall market capitalization of $67 billion. The investor consists of 1,886 foreigner institutional financiers and 883 local institutional investors alongside 0.22 million of retail investors. Additionally, there are about 400 brokerage houses that are members of the PSX and 21 asset management firms.

The Karachi Stock Exchange (KSE) Limited was founded on September 18, 1947 in Pakistan and made responsible for listing firms and trading of shares by protecting shareholders' wealth. It was Pakistan's only formal stock market to provide financial information of listed firms to investor and one of the oldest stock exchanges in South Asia. The KSE was cited among 10 best stock markets in the world in 2015. According to *Bloomberg*, the Pakistani benchmark stock market index is the third-best performer in the world since 2009. In June 2015, Khaleej Times reported that since 2009, the Pakistani

equities delivered 26 percent a year for US dollar investors, making Karachi the best-performing stock exchange in the world.

The Lahore Stock Exchange (LSE) was the second main stock exchange afterward Karachi Stock Exchange in the country. The LSE was established in October 1970, under the SEO of 1969 in retort to the requirements of the provincial metropolis of the Punjab province. Initially, it had eighty three members and was based in Lahore. The number of listed firms was 519 since the inauguration. The LSE has 152 associates of which 81 are from corporate, and 54 of them are individual members. In Pakistan, the LSE was the pioneer stock exchange to practice the internet and presently 50% of the transactions are done through the internet. It assisted firms to raise financing from the public and helped investors by providing information to help them make the best investment decision. It was formally inducted into the national PSX on the 11th of January 2016.

Islamabad Stock Exchange (ISE) was the newest of the three stock exchanges of Pakistan and it is located in the capital of Islamabad. The ISE was incorporated as a guarantee-limited company on 25 October 1989 in Islamabad. It had as its main object, the setting up of a trading and settlement infrastructure with an information system and skilled resources that is accessible for a fair and orderly market trading. It also aimed to be ranked with the best in the world. It was licensed as a stock exchange on 7 January 1992 and started trading in July 1992. The ISE was corporatized and demutualized on August 26, 2015 by the Stock Exchanges (Corporatization, Demutualization and Integration) Act, 2012. As a consequence thereof, its name was changed to Islamabad Stock Exchange Limited. With effect from January 11, 2016 the Islamabad Stock Exchange was integrated with the Karachi and Lahore Stock Exchanges Limited to form the Pakistan Stock Exchange Limited.

2.3.2 The Internal Corporate Governance System

The Pakistani internal CG framework comprises of statutory corporate law and codes, including: (i) the 1984 companies ordinance; (ii) the listing rules; and (iii) the 2002 Pakistani Code of Corporate Governance (PCCG).

2.3.2.1 Companies Ordinance 1984

The Companies Ordinance (CO) sets the rules for regulations and governance of the companies in 1984 based on common law. For investor protection, the Security and Exchange Ordinance (SEO) issued in 1989 a basic securities law. The 1984 CO is a comprehensive piece of legislation in Pakistan and according to its own preface, is “*an*

Ordinance to consolidate and amend the law relating to companies and certain other associations". It includes all the legal rules and guidelines for the businesses that are registered with the SECP. This ordinance also provides control and legal assisstance to the business community in Pakistan, with the SECP observance a close check on the corporate and financial entities to assure the interests of stakeholders. The former Companies act of 1913 was in use for the similar purposes.

2.3.2.2 The Pakistani Code of Corporate Governance (PCCG)

As explained above, legislation regulating firms' behaviour has existed in the form of Companies Ordinance 1984. Arguably, CG in Pakistan was formally institutionalized by the issuance of Pakistani code of CG (PCCG) in March 2002. This issuance is regarded an important development for CG practices in the country. In general, PCCG adopted many of the CG standards that had already been advocated by international CG codes. Particularly, Pakistan benefits from the UK and South African reform initiatives (Ibrahim, 2006). The PCCG is based on UK reforms initiatives, thus, Table 2.1 compares and summarises the key CG provisions of PCCG and the UK 1992 Cadbury report for the following main reasons. First, the PCCG is compared with 1992 Cadbury report as the Pakistani CG code is principally drawn from the UK code. Second, both CG codes have similar CG provisions on board characteristics, including, (i) Board Structure; (ii) Board classification as independent, non-executive and executive directors; and (iii) Directors' trainings. Third, despite these similarities, there are differences in few CG provisions between the two codes. For instance Pakistani code requires the disclosure of board size with a minimum requirement of seven members, number of board meetings with a requirement of minimum four meetings annually and disclosure of directors shareholdings among others. Finally and as shown in the table 2.1, the 2002 PCCG is largely similar to the 1992 Cadbury report but the context of the Pakistan is different from the UK. Therefore, it is important to study that either similar CG standards give similar results in different cultural, corporate and social settings. Main elements of 2002 PCCG are further discussed in this subsection.

i. Board of Directors

Similar to the UK code, the PCCG implicitly recognises and pay attention to the significance of effective unitary board of directors' approach. Pakistani listed firms are required to compose their boards of directors mainly from independent non-executive and executive directors. Particularly, the 2002 PCCG encourages the effective representation of minority shareholders by one independent director to represents their interests and at least

one independent director representing financial and non-financial institutions' interests. It also recommends that inclusive of the Chief Executive Officer (CEO), the executive directors should not be more than 75% of the elected directors (2002 PCCG, i). This is consistent with resource dependence theory that independent and experienced non-executive directors may bring independent judgements that may help to acquire resources and add value to the firm.

Due to their immense role and consistent with UK code, the PCCG recognises the importance of the firm's chairperson. It suggests that, preferably, the chairman of listed firms shall be selected among non-executive directors. Respective roles and responsibilities of CEO and chairman should be clearly defined including whether these offices are held by same or separate individual (2002 PCCG, ix). This is in line with agency theory that the CEO is expected to behave opportunistically in order to reap private benefits at the shareholders' expense.

With regards to board sub committees, the code recognises the crucial role of the board to work efficiently and effectively. Similar to UK code, the PCCG suggests that board of firms should have audit and remuneration committees. It is recommended that these committees should be formed with minimum of three members and with a majority of non-executive directors. However, and unlike the UK code, PCCG does not specify the nomination committees and its formations. Further, the PCCG puts emphasis on the important role of the board of directors by recommending that board have a duty to approve financial statements and shall report to the shareholders. Board of directors are also required to establish a sound internal control system which has to be implemented effectively in the firms (PCCG, viii (c)). In addition, the PCCG expressed concerns about the sufficient pool of directors in Pakistan with required knowledge and skills to perform in board room. As a solution, it recommends that the listed firms shall make proper arrangements to train their directors which enable them to perform the affairs of listed firms on shareholders' behalf.

ii. Accounting and Auditing

The 2002 PCCG made several recommendations related to accounting and auditing to be followed by the Pakistani listed firms. With respect to accounting, the PCCG recognises the importance of accounting standards by encouraging firms to prepare their financial reports consistent to the International Accounting Standards (IAS) and adequately disclosed in case of any departure (PCCG, xix (d)). In this regard, the code placed several responsibilities on directors. First, it mandates directors to include statements in the

directors' report prepared under section 236 of Companies Ordinance, 1984. It should include preparation of financial statements that present fairly the state of affairs of firms, maintenance of proper books of account, sound internal control system, ability of firms to continue as a going concern and a statement of no material departure from the best CG practices. Second, it suggests that the financial statements of listed firms shall be published and circulated with directors' review. Third, the code mandates that the trading of shares carried out by the firms' director, CFO, CEO and their spouses shall be disclosed. Fourth, the code mandates the disclosure of board meetings and attendance by each director. Therefore, the board is expected to state the fact and assumptions used in their assessments. It is also expected to assist in generating serious debates in the board meetings in favour of shareholders and firms' value.

With respect to auditing, the PCCG recognise the importance of internal audit functions to insure the integrity of financial reporting. As presented in Table 2.1, the audit committee should have at least three members with a majority of non-executive directors and chairman to contribute in forming an independent judgment. The committee have to meet four times a year and in addition to that on request of head of internal audit or external auditors. The responsibility of committees includes reviewing the quarterly, semi-annually and annual financial statements of the firm before the approval of board of directors. They are also responsible of reviewing management letter to be issued by external auditors and the response of management to that letter. Audit committee is supposed to monitor compliance with best practice of CG and identification of any significant violations. Therefore, the PCCG recognises the crucial role of audit committee that can play in ensuring to produce the accurate and reliable financial reporting.

iii. External Auditor, Internal Control and Risk management

Consistent with the UK code, the PCCG recognises the important role of external auditors as a CG mechanism and makes a number of recommendations. The code requires a firms' board of directors to appoint the external auditors for one year based on audit committee suggestions. It restricts firms to appoint external auditors that have not been given a satisfactory rating by Institute of Charted Accountants of Pakistan (ICAP) or a partner of a firm that is non-compliance with the International Federation of Accountants (IFAC) guidelines on ethics. The PCCG recommends that no listed firm's external auditors should be offered services other than auditing and observe IFAC guidelines in this regard.

Table 2.1: A comparison of Corporate Governance of 2002 PCCG and the 1992 Cadbury Report UK

Board of Directors	**The 2002 Pakistani Code**	**The 1992 Cadbury Report**
Structure of the board	The one tier board	The one tier board
Non-executive director	At least one fourth of the board	Three directors at least
Independent director	Minimum one director	Two directors at minimum
Chairperson	Preferably Non-Executive	Non-Executive director
Duality Role	A narrative that classifies the role of chairman and CEO	Split role of CEO and Chairperson
Board classification	Independent, non-executive and executive directors	Non-executive and executive directors
Directors' training	Provided, especially for newly directors	Provided, especially for newly directors
Board Size	Minimum seven directors	Not specified
Number of board meetings	Four time a year	Not specified
Directors share dealings	Need to disclose information	Not specified
Sub-Committees of the board		
Suggested committees	Internal audit committee	Remuneration, nomination and Audit committees
Remuneration committee	At least three members with the non-executive directors' majority	Made by all or majority of the director should be non-executive
Audit committee	At least three members with the majority of non-Executive directors and chairman	Form by minimum of three with at least two non-executive directors
Nomination committee	Not specified	Made by non-executive directors with a majority
Accounting and Auditing		
Accounting reporting	Accounting standards according to GAAP	Accounting standards according to IASs
Internal Auditing	Establishment of internal auditing function	Establishment of internal auditing function
External Auditor, Internal Control and Risk management		
Internal control effectiveness	Have to establish an internal control system	Have to establish an internal control system
External auditing	Appointment and responsibilities	Appointment and responsibilities
Rotation of external auditors	Maximum three years	Not specified
Function of risk management	No coverage	Coverage with narrow scope
Going concerns of the firms	Have to disclose	Recommended to disclose
Disclosure and Transparency		
Chairman	Have to disclose responsibilities	Clear responsibilities
Executive management	Not covered	Responsibilities and role
Ownership structure	Clear distribution of shareholdings	Clear distribution of shareholdings
Related party transactions	Have to disclose	Not covered
Narrative on compliance	Have to disclose	Disclosure recommended
Board and CEO compensation	Have to disclose	Disclosure recommended

Source: Compiled from the 2002 Pakistani code and 1992 Cadbury Report

The code recommends the rotation of external auditors after every three years in non-financial sector while after every five years in financial sector. According to the PCCG, the external auditors are required to issue management letter to its board of directors within thirty days of audit report. The external auditors are also required to attend the annual general meeting of the firms at least one meeting audit committee a year.

iv. Disclosure and Transparency

Following the UK code, the PCCG recognizes the need of transparent CG disclosures[3] and recommend several provisions. It suggests that firms should disclose the remuneration of top executives and directors in annual financial statements. In addition, the PCCG differs from UK code in several CG provisions. For instance, it is mandatory to disclose the shareholding patterns with aggregate number of shares along with the names of firms, directors or shareholders having more than 10% voting interest in the firm. Further, the code recommends that firms should address the agency nexus by disclosing third party transactions. In this respect, the PCCG requires firms to disclose information regarding transactions that can involve a conflict of interests between principals and agents.

v. Major Achievements and Weaknesses of PCCG

As discussed before, Pakistan embarked upon important regulatory and legal reforms to improve the CG standards. The issuance of PCCG was one of the most important reforms and listed firms are required to comply with its provisions. The code contributed in improving the CG practices by recommending several CG mechanisms. Though the code is less detailed than the UK code, it was the first attempt in Pakistan to offer CG provisions in main areas, such as board of directors, accounting and auditing, internal control system and transparency and disclosure. In spite of the reliance on UK code, the PCCG has some provisions that distinguish it from that of the UK. For instance, the PCCG provides firms with a CG framework that necessitates firms to disclose information of related party transactions. Further, the code also requires firms to disclose the detailed distribution of shareholding with name of holders.

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[3] According to Cambridge dictionary, "*Disclosure is the action of making new or secret information known"*. According to Standard & Poor's (2004), "*transparency involves the timely disclosure of adequate information concerning a company's operating and financial performance and its corporate governance practices. For a well-governed company, standards of timely disclosure and transparency are high. This enables shareholders, creditors and directors to effectively monitor the actions of management and the operating and financial performance of the company. Disclosure is the action of making new or secret information known"*.

Despite the above mentioned achievements, the PCCG also have some weaknesses. First, it fails to recommend that listed firms should institute other committees e.g. CG, remuneration, risk and nomination committees. Presences of such committees are likely to offer more independence to the board and help it to perform its duties efficiently and effectively. Second, the code offers no guidance to enable shareholders to evaluate the efficiency and effectiveness of the boards and its sub-committees and thus shareholders may not be able to identify and differentiate the performance of directors. Third, and importantly, being a Muslim country by law, Pakistani CG code fails to promote Islamic values such as 'Hesab'[4] and 'Taklif'[5] as complementary CG mechanisms. The use of such Islamic values is expected to improve CG practices by increasing directors' responsibilities and independence to protect shareholders' interests. Fourth, the PCCG did not introduce CG provisions related to informal rules which enable firms to minimize the negative impact of these rules and encourage both directors and managers to their official responsibilities than social values. For instance, clear CG provisions about the definition and responsibilities of independent director are likely to mitigate directors' inclination towards personal relationships at the cost of shareholders' interest. Fifth, the code failed to provide CG provisions to diffuse concentrated ownerships. It could encourage firms to disclose more CG information as market is expected to work more efficiently and effectively in a business setting with less concentrated ownership. In this regard, agency problem is expected to be reduced in less ownership concentration. Finally, the PCCG failed to emphasize the social responsibilities of firms and focused mainly on shareholders' interests. For instance, providing more CG provisions regarding society at large is likely to motivate firms to disclose more CG information to attract and win their confidence on firms' operations.

However, in spite of the Pakistani setting and given the PCCG's dependence on the Anglo-American model, the fundamental theoretical prediction is that adopting high governance standards in the form of CG code is generally expected to improve CG practices. Therefore, it requires to be empirically examined in order to find out: (i) the level to which Pakistani firms disclose CG information; (ii) the impact of traditional ownership and audit/board characteristics on level of compliance with the PCCG; and (iii) impact of level of CG compliance on firms' COC.

[4] 'Hesab' specifies that the directors as individuals have been trusted with resources (Bhatti and Bhatti, 2010) and therefore, they are answerable to the creator and will be rewarded or punished for their actions consequently in hereafter (Abu-Tapanjeh, 2009; Ahmad, 2011b).

[5] 'Taklif' is that the managers, as responsible persons, are the trustee of the firms and are likely to act as guardians and as agent of stakeholders (Rahman, 1998; Iqbal and Mirakhor, 2004, Hearn *et al.*, 2011).

2.4 SUMMARY OF THE CHAPTER

This chapter defined Corporate Governance (CG) and presented different CG models as well as discussed the CG regime in Pakistan. First, it defined CG including its broad and narrow definition. Second, it discussed the CG models. Specifically, it explained the '*shareholding*' and '*stakeholding*' models of CG. Third, this chapter shed light on Pakistani CG model. The CG regime in Pakistan is influenced by Anglo-Saxon model, with a particular prominence on protecting shareholders' interest. Specifically, this chapter provided a brief discussion about external and internal CG systems. The external CG system included explanations on Security and Exchange Commission of Pakistan (SECP) and the Pakistan Stock Exchange (PSX) while internal CG system comprised of Companies Ordinance (CO) 1984 and the 2002 Pakistani Code of CG (PCCG). Nevertheless, the primary focus was on the 2002 PCCG. The reason for focusing on 2002 PCCG is because it is the main source for constructing the comprehensive Pakistani CG Index (*PCGI*) used to measure the overall CG standards in Pakistan.

CHAPTER THREE

3 THE REVIEW OF LITERATURE AND HYPOTHESIS DEVELOPMENT

This chapter reviews the most relevant literature on two important firms' decisions, namely corporate governance (CG) disclosure and corporate Cost of Capital (COC). Specifically, it aims to accomplish four main objectives. Therefore, this chapter is organised as follows. Section 3.1 discusses the theoretical literature on CG structures and firm COC. Section 3.2 investigates the existing empirical literature on the level of compliance with CG standards. Section 3.3 sheds light on the determinants of CG compliance and also develops hypothesis. Section 3.4 discusses the empirical literature on CG structures and firm COC and develop hypothesis. Section 3.5 discusses the literature on CG idex while chapter is reviewed in section 3.6.

3.1 THEORETICAL LITERATURE OF CG DISCLOSUREAND COST OF CAPITAL

This section discusses the most relevant theories that underlie CG disclosure and COC decisions by firms. This assists the present study to develop its hypotheses and interpret its findings. In this regard, it has been suggested that there is no single theory that can offer a complete understanding of why and how firms make corporate governance decisions (Carpenter and Feroz, 1992). Recently, there have been calls to use multiple-theoretical approaches to overcome the inability of individual theories to provide adequate explanations in relation to the effect of CG on corporate decisions (Filatotchev and Boyd, 2009). For instance, agency theory was employed extensively by researchers to explain such decisions. However, it focuses only on conflict relationships, e.g. between shareholders and managers, whereas other stakeholders are generally not considered or are of secondary importance. This makes its explanatory power limited. Reliance on its very narrowly defined assumptions to conduct studies may also be problematic. Thus, despite the usefulness of each individual theory in assisting researchers to explain firms' motivations for making their CG decisions, the adoption of multiple-theoretical approach is considered an appropriate method for reviewing the theoretical literature, developing hypotheses and interpreting findings. The multiple-theoretical approach involves the following theories: agency theory, managerial signalling, resource dependence, asymmetric information and stewardship theories. The choice of these theories is based on

their direct links with the concept of CG and prior studies use of these theories, which seems to fit better with the nature of this study. In this section, the relevant theories are discussed in relation to CG and COC.

3.1.1 Agency Theory

It is extensively employed by researchers to examine agency problems. The principal-agent relationship has been the central focus of this theory which has a direct link to CG concept. In this subsection, a brief history of the theory is provided in order to highlight a number of key issues that facilitate understanding of its assumptions in relation to CG.

From agency theory point of view, the root of CG can be traced back in separation of ownership and control by the emergence of new form of business like professional managed companies. Historically, Adam Smith (1776, p.606) stated that, "*The directors of such [joint-stock] companies, however, being the managers rather of other people's money than of their own, it cannot well be expected, that they should watch over it with the same anxious vigilance with which the partners in a private co-partnership frequently watch over their own. Like the stewards of a rich man, they are apt to consider attention to small matters as not for their master's honour, and very easily give themselves a dispensation from having it. Negligence and profusion, therefore, must always prevail, more or less, in the management of the affairs of such a company"*.

A number of scholars have addressed this issue including Berle and Means (1932). There is a major problem when there are large distributions of shareholders with small number of shareholdings. In this situation, shareholders cannot control and monitor managerial decision making. This separation of shareholders (principal) and managers (agent) in terms of ownership and control leads to the critical issue which is called agency costs.

Similarly, Jensen and Meckling (1976) have focused on the nature of contractual relationship between shareholder and mangers and tried to explain and resolve this relationship within the given framework of agency theory. They (1976, p.5) defined agency relationship "*as a contract under which one or more persons (the principal(s)) engages another person (the agent) to perform some services on their behalf which involves delegating some decision-making authority to the agent*".

In similar manner, Shleifer and Vishny (1997, p.741) defined the agency problem as "*the difficulties financiers have in assuring that their funds are not expropriated or wasted on unattractive projects*". This can be in the context of shareholder or debt holders

as both are fund providers and need appropriate return on their investments. In the case of shareholders, the return can be in the form of dividend or capital gain whereas a creditor needs the periodic interest payment and repayment of principal or loan.

Although all the above scholars considered agency problem differently, they emphasise the need to resolve this problem in modern firms. This need has become urgent during the last decades where collapses of renowned firms have shed more light on the risks that are in the contractual relationship of the agent and principal. The following subsections will discuss the agency problem in the context of agency theory in more detail.

3.1.1.1 Agency problem

Agency theory suggests that there are three main types of agency problems: (i) separation of control and ownership; (ii) conflict of interest among shareholders; (iii) and conflict of interest between firms and other contractors including creditors, customers, and employees. Firstly, one of the main agency problems is separation of ownership and control in firms. As companies have a widespread of shareholders, it is not possible that all shareholders can participate in the firm's daily operations. Hence, board of the directors may mitigate this problem. The members of the board are elected by the shareholders to manage the company. Secondly, other than conflict of interest between the principal (shareholders) and agent (Executives/managers), there can be a conflict among shareholders themselves (Shleifer and Vishny, 1997). For instance, if firms have widespread shareholders, the block shareholders will become the agent and the minority shareholders will become the principal. Minority shareholders have no or less opportunities to influence in the firms' management, therefore, they depend on majority shareholders to monitor the management of the firm. According to Shleifer and Vishny (1997), the interest of majority shareholders may differ from those that minority shareholders have. Thus, the majority shareholders may easily expropriate the minority shareholders as they are not part of managerial decision making and have less voting rights.

Finally, the conflict of interests between the firm itself and other contractors (i.e., customers, employees and creditor) is another type of agency problems. Hansmann and Kraakman (2004) indicate that a company can be viewed as an agent in that it behaves opportunistically, e.g. by misleading consumers and expropriating rights of creditors. For instance, companies can expropriate wealth from creditors by investing in very risky projects with high expected returns. In this case, most of the gains will be captured by firms, whereas the cost will be borne by creditors (Jensen and Meckling, 1976). This leads creditors to protect themselves through restrictive covenants and monitoring devices which

at the same time help to create another type of agency problem related to debt (Smith and Warner, 1979). In addition, agency theory suggests that there are three types of agency costs due to conflicts of interest between shareholders and managers (Jenson and Meckling; 1976). Three different types of agency costs identified are (i) monitoring; (ii) bonding; and (iii) residual cost.

First, monitoring the firm managers' behaviour is very difficult to observe in relation to their extraction of pecuniary and non-pecuniary gains from the firm. Monitoring has a cost that is borne by the shareholders to protect their interests. This cost may be incurred through contracts that have specific clauses including compensation (incentive) schemes. Further, monitoring can be improved with the assistance of CG structures. A considerable number of countries have issued CG codes to improve monitoring of managers. For instance, firms listed in UK, are required to comply with the Combined Code on CG and that code contain provisions for monitoring the behaviour of mangers to minimize the agency problem. Similarly, Pakistani Code of CG has several provisions to monitor the executives of the firm such as independent directors, internal control system, and audit committee, among others (Full details are provided in chapter two).

Second, the cost required constructing the monitoring structure and complying with those structures (Jensen and Meckling, 1976) is known as bonding cost. This cost is not only the financial, but may also involve generating important information for the shareholders and markets. Denis (2001) suggested a solution to design a contract in which all future possible events will be mentioned with actions. Mangers may agree to do such a contract but it may not be possible to expect every future possible situation. In addition, shareholders may have no knowledge of what mangers should do to maximize the wealth as shareholders. In fact, managers have expertise and reputation for which they are hired by shareholders.

Third, despite designing bonding and monitoring mechanisms and/or governance structures, there can be still some divergence between the decisions that will actually maximize the shareholders' wealth and actual agents' decisions. Such losses due to divergences in decision making are called residual loss. Conclusively, the sum of agent's bonding expenditures, the principal monitoring expenditures and any other residual loss is termed as agency cost (Jensen and Meckling, 1976).

3.1.1.2 The Agency Relationship in Modern Corporations

As new form of businesses like joint stock companies emerged, agency relationships have become more complicated. This has motivated scholars to address

agency problems associated with those relationships. Early response was given by Smith (1776) followed by Jensen and Meckling (1976) which resulted in the postulation of agency theory. Jensen and Meckling (1976) identify four ways by which managers can decrease the wealth of shareholder which in turn increases managers' own interests. First, agent may expropriate shareholders' residual rights by awarding themselves overgenerous remuneration packages. Second, manager may consume the wealth of company to increase their own utility. Third, manager may go for investment of free cash flows and not pay the dividend even in the absence of availability of attractive projects. Finally, mangers may not work properly for the best interest of shareholders by devoting less time and skills to find new and attracting investment projects.

To decrease (increase) the agency costs resulting from the low (high) variance between agent and principal's interests, agency theory suggests that an internal and external control system in the form of CG mechanisms can mitigate different agency costs (Haniffa and Hudaib, 2006). With regard to monitoring cost, it proposes several internal CG structures such as board of directors, auditing, salaries, stock options, and shareholdings (Eisenhardt, 1989). With reference to bonding cost, contract can be constructed between shareholder and mangers, to hire external independent auditors to audit firm's financial accounts, to appoint independent non-executive directors to provide a functional board that can effectively monitor agents (managers), and managerial shareholdings (Jensen and Meckling, 1976). In addition to internal CG structures, agency theory suggests that external CG measures, such as market for corporate control can be effective. These measures are built on the assumption that there is an efficient market, which ranks managers according to their performance and those with poor managerial performance will be acquired (or merged) and improved (Fama, 1980).

In conclusion, CG structures should increase the firm value by decreasing the agency costs including those monitoring, bonding and residual costs. In this sense, firm value can be increased in two ways. First, firm value can be increased by maintaining good governance in the firm through increasing the future expected cash inflows. This in turn, can increase firm's accounting profit. Second, firm value can be increased by decreasing the firms' COC which is used as discount rate in relation to future cash inflows to calculate the firms' market value.

3.1.1.3 Governance disclosure and Cost of Capital in the context of agency theory

In CG compliance and disclosure perspective, agency theory depends on managerial incentives as the main motivation to describe why and how firms tend to

disclose information on their CG practices. Supporters of this theory argue that CG disclosure contributes to the shareholders wealth. External CG measures that demand more disclosure can decrease information asymmetry and agency cost which leads to a lower managerial expropriation (Jensen and Meckling, 1976; La Porta *et al*., 2002). Internal CG practices can increase information transparency between shareholders and managers. For example, more transparent information can assure shareholders that managers are not investing in wasteful (negative NPV) projects for self-interest (Jensen, 1986). Similarly, additional disclosure increases shareholders confidence that managers are not awarding themselves excessive pecuniary and non-pecuniary benefits (Jensen and Meckling, 1976). Together, internal and external CG arrangements can increase disclosure to reduce imperfect and asymmetric information for shareholders and creditors, which can reduce investors' risk and uncertainty and thus reduced the cost of equity and debt financing.

In relation to COC, agency theory posits that agency cost impact on debt and equity (Jensen and Meckling, 1976). They assume that there are conflict of interests between shareholders, debt holders and managers, especially when the firm is near bankruptcy in what is known as the debt overhang problem.

The debt overhang problem arises due to managers maximizing shareholders wealth when firm is near bankruptcy to the detriment of creditors by investing in excessively risky projects instead of less risky but positive NPV investments. In this regard, most of the profit goes to shareholders while the cost (down tail risk) will be borne by creditors (Jensen and Meckling, 1976). Therefore, creditors go for monitoring devices involving restrictive covenants to protect themselves, is an agency cost in relation to debt (Smith and Warner, 1979). The second agency problem arises due to conflict of interests between shareholders and managers, i.e. between major and minor residual claim. Therefore, it is expected that managers could be involved in excessive perquisite consumptions in the form of pecuniary and non-pecuniary terms.

To mitigate these two agency problems, agency theory suggests that CG mechanisms have a key role to play in this regard. It assumes that agency costs associated with debt and equity can be minimised by two ways: (i) use of debt financing as a CG mechanism to decrease free cash available to managers to reduce managerial expropriation; and (ii) increasing the managerial equity shareholdings in firms to motivate and align the interest of shareholders and managers.

In conclusion, agency theory emphasises the crucial role of CG in corporate decisions. It identifies the causes that result in agency problems and suggests ways of mitigating these conflicts of interests. The main assumption of the theory is the concept

that firms' financing decision can be made by trading off between agency costs (i.e., monitoring and bonding) of debt and equity. Adopting and implementing CG structures by firms, agency theory argues that agency costs related to both debt and equity can be significantly minimised (Mande *et al*., 2012).Therefore, it is expected that better CG practices can reduce the costs of debt and equity, which in turn reduce the COC and increase the firm value as CG has been designed to mitigate agency problems and, in turn, reduce agency costs. For instance, CG reduces monitoring costs associated with providing credible financial information to equity holders (Ajinkya *et al.*, 2005).

3.1.1.4 Agency theory in the Pakistani Setting

The government of Pakistan has taken numerous steps in the last decade to reform the CG in the country. As discussed in chapter two and subsection 2.3, the issuance of Companies Ordinance (CO) in 1984, the Security and Exchange Ordinance (SEO) in 1989, establishment of Securities and Exchange Commission of Pakistan (SECP) in 1999, and the issuance of CG code in 2002 constitute the cornerstone of reforms in the country. Similar to other CG codes around the world, the Pakistani Code of CG (PCCG) expects an increase in accountability, responsibility, and transparency by decreasing conflits between shareholder and directors. Specifically, this is important in Pakistani setting because of the high level of concentrated ownership in Pakistan. This ownership concentration may adversely affect the right of minority shareholders as there may be a conflict of interest between minority and majority shareholders (Baydoun *et al*., 2013). For instance, the majority shareholders have the control to employ directors and managers. Such managers/directors so appointed may look after the interest of those majority shareholders rather than all shareholders and broadly, stakeholders. Additionally, Boytsun *et al.* (2011) argue that the politically associated personalities can be selected to high-ranking positions on the board or management regardless of their capability and experience to accomplish those roles. Arguably, these decisions may adversely impact firms' COC and governance compliance level. Therefore, agency theory is important in the context of Pakistan in developing hypotheses and interpreting the results of current study.

3.1.2 Asymmetric information: Managerial Signalling Theory

Along with agency theory, different theories have been developed to explain the potential impact of CG on firms' decisions. In this regard, Buskirk (2012) argue that the signalling theory is an extension of the agency theory. For instance, Ross (1977) addressed the relationship between information asymmetry and both capital structures decisions and

disclosures. He suggests that if a firm issues debt, it sends a positive and high quality signal to the market as an outsider consider debt as a CG mechanism, and thus, the value of the firm can rise because it sends signals that managers will work hard to pay, not only the interest on the debt, but also, the repayment of the principal amount borrowed or lent. In addition, Leland and Pyle (1977) and Ross (1977) developed a hypothesis that financial policies of the firms and insider ownership help to solve the problem of information asymmetry between external investors and managers.

Information can be asymmetrical either between a firm and its workers or between managers and investors who provide capital (Greenwald and Stiglitz, 1990). They argued that asymmetrical distribution of information between the buyers and sellers of financial instruments may limit access to the equity market and other type of financing for generating capital. Furthermore, because of asymmetrical information between managers and outsider investors, there may also be a capital rationing in the loan market (Greenwald and Stiglitz, 1990).

In decision making process, investors may face the problems of adverse selection and moral hazard. Specifically, more moral hazard and adverse selection refers to a situation where managers may tend to make decisions that conflict with different stakeholder's interests. In this sense, an investor may face a problem in identifying a firm with most capable managers who are acting to increase firm value (Rhee and Lee, 2008; Kapopoulos and Lazaretou, 2007). Different solutions have been proposed to mitigate the problems associated with asymmetric information. For instance, Mishkin (1998) suggested that investors have to choose between two options. Either to consider the potential costs related to adverse selection and moral hazard when they value a firm or take a decision of not investing altogether.

Theoretically, by the good CG practices, a firm can send a signal to investors that the management is working to maximize the shareholder wealth. This can attract potential investors, which may lead to an increase in the firm's share price (Beiner *et al.*, 2006). In a same way as value of equity capital increase, the cost of equity capital may decrease (Black *et al.*, 2006; Chen *et al.*, 2009). Furthermore, the appointment of non-executive directors on the board can signal to investors that a firm has higher CG standards which can lead to a rise in the price of its shares and ultimately can result in a drop in the cost of equity capital (CLSA, 2000; Chen *et al.*, 2009). Similarly, disclosing information in annual reports positively signals to the market about good governance practices which leads to a decrease in information asymmetry. Ultimately, it can raise the share price (Black *et al.*, 2006). Overall, scholars have provided the base that can be used to predict the relationships

between different factors that may affect both CG and firm value, as well as explain the results in different contexts.

3.1.2.1 Signalling Theory in Pakistani Setting

Since the setting up in 2002, the Pakistani code of CG has sought to improve disclosure and transparency which reduces information asymmetry. Specifically, listing rules mandates listed firms to disclose regular information regarding any changes related to ownership structure, board structure, significant business transactions and performance among others. This leads to enhancement in firms' level of financial and non-financial disclosure in financial statement published in annual reports (Javed and Iqbal, 2008; Tariq and Abbas, 2013). In order to secure external financing, firms are expected to increase CG compliance and disclosure to minimise information asymmetry which may assist in attracting funds and decrease funding cost (Hearn, 2011; Morris, 1987).

3.1.3 Pecking Order Theory

Existence of asymmetrical information between managers, creditors and shareholders is the base of pecking order theory. This theory posits that managers and majority shareholders have private and better information about the investment opportunities and future returns than perspective investors and creditors (Myers and Majluf, 1984). It opposes the concept of optimal capital structure in presence of asymmetrical information either between shareholder and creditors or between inside and outside investor. The proponents of this theory suggest that firms usually follow a pecking order in corporate finance where firms prefer internal funding of projects than external, as well as debt financing over equity financing. Myers (1984) argued that this order in selection of debt and equity is due to information asymmetry as creditors are not well informed about the creditworthy situation of the borrower and shareholders are not well informed about the good intention of managers. In this sense, there can be ex-ante problem of adverse selection and ex-post problem of moral hazard because of the presence of asymmetrical information between principal and agent. This was termed by Akerlof (1970) as the 'market of lemons'.

Further, the issuing of equity may lead to a negative signal to investors as a result of asymmetric information (Myers and Majluf, 1984) where investors are expected to finance under-performance firms' with negative NPV investments. In contrast, firms can avoid the under investment problem by issuing debt, which is considered as a positive signal to outsiders (Harris and Raviv, 1991). The issuing of debt reflects the firms' ability

to repay their obligations on time and showing that managers are professional in performing their duties including investing in positive NPV projects. Asymmetric information issues indicate that the selection of equity and debt cannot be made simply by balancing the benefits and costs. Such decisions may be beneficial to the firm if it is taken with consideration of good corporate governance practices. This can limit the problems of asymmetry information which may decrease the cost of capital, and consequently may increase the value of the firm.

3.1.3.1 Pecking Order Theory in the Pakistani setting

As has been discussed in subsection 3.1.2.1, the issuance of 2002 PCCG has sought to improve disclosure and transparency to reduce information asymmetry. Precisely, listing rules requires listed firms to disclose information about any changes in ownership structure, board structure and significant business transactions among others. Therefore, it is expected that information asymmetry can be limited by more CG disclosure among Pakistani listed firms and this can improve the level of confidence of creditors and other stakeholders. In order to secure external financing, firms are expected to increase CG compliance and disclosure to minimise information asymmetry which may assist to attract funds and decrease cost of funding (Morris, 1987; Hearn, 2011). Thus, CG practice can have an impact on the firms' capital structure decision.

3.1.4 Stewardship Theory

Stewardship theory is opposite to the above mentioned theories. It advocates that executive managers are responsible persons (Nicholson and Kiel, 2007). Letza *et al*. (2004) argued that managers should be completely authorized to run business as they are good stewards of the resources. This theory has three assumptions about senior managers' behaviour.

First, the theory assumes that senior managers normally spend their life in governing firms so they can understand the firm better than any other outsider executives and can take better decisions (Donaldson and Davis, 1991). Second, managers have all internal information and knowledge which can help internal executives to make and take better decisions (Donaldson and Davis, 1991). Third, the availability of efficient external and internal market forces can ensure that agency cost is lower because of the managers' fear of future loss of private capital to replace them (Fama and Jensen, 1983). Supporters of this theory suggest that managers should be empowered. For instance, the position of CEO and company chairman should be merged because supporters believe that the value

of the firm can be increased by granting managers with power to take independent and quick decisions because ‘managers must manage’ in relation to running the firm efficiently.

3.1.4.1 Theory of Stewardship in Pakistani setting

The CG code of Pakistan suggests that at least one director on the board has to be independent and non-executive should be one-fourth of the board (PCCG, 2002 p.1 (i.b and i.c)). Additionally, the Pakistani CG code insists on the significance of separating the positions of chairman and CEO (PCCG, ix). Hence, the objective of CG code is to increase the managements’ accountability by increasing monitoring and supervision of managers. It is opposing with the suppositions of theory of stewardship as it suggests that the managerial executives might be responsible personalities and probably not require wide-ranging monitoring of their managerial activities. It can be suitable for Pakistani environment as family ownership is higher in the country and those family owned firms are expected to appoint their relatives as executives and directors. Therefore, and Siebels and Knyphausen-Aufseb (2012) argue that these appointed executives are expected to be trustworthy.

3.1.5 Resource Dependence Theory

It proposes that an internal CG structure, like the board of the directors is not only essential to ensure the monitoring, but also to oblige as a vital link to access critical resources. Non-executive directors are able to provide resources, e.g. experience, independence, knowledge, professional advice, important business contacts, access to political elite and link with external stakeholder (pfeffer, 1973; Haniffa and Cooke, 2002; Haniffa and Hudaib, 2006; Nicholson and Kiel, 2007). It can be argued that good relations and links with outside stakeholders make it easier to have access to resources that can increase the value of firm (Kiel and Nicholson, 2003). This increase in value may result from an increase in cash inflows and, decrease cost including COC.

3.1.5.1 The Theory of Resource Dependency in Pakistani Setting

The members of the board are likely to play a significant role in acquiring capital and other resources. For instance, government can help to provide essential financial resources for the firms with higher government ownership. Similarly, the majority of firms are owned and controlled by families and such owners may manage their own funding in

order to maintain the managerial control of the firms. It may be appropriate in Pakistani corporate environment to have good relations with all stakeholders which make easier access to resources that can increase the value of firm.

To sum up, the multi-theoretical approach has been used in this study due to complex nature of CG. The agency theory is the core upon which the research is based. Furthermore, managerial signalling, information asymmetry, pecking order, resource dependence, and stewardship theories are also used. From finance perspective, all the above mentioned theories are closely relevant to the issues that the current study is going to investigate. Arguably, agency costs can be reduced by adopting an internal CG structures which leads to increase in the value of the firm either by increasing cash flows or by decreasing the COC.

Similarly, information asymmetry theories, like agency theory, suggest that efficient CG structures can increase the firm value. On the other hand, firm value is closely related to the managerial empowerment and trust according to stewardship theory. In contrast, according to resources dependence theory, board of directors and other internal CG structures facilitate the companies' ability to provide easy access to the input resources which can increase the value of the firm by increasing expected future cash inflows or by decreasing the cost of capital.

CG codes issued by countries around the world are based on these theories that CG structures can improve the firm value. This motivation exists behind the empirical research that link CG with firm COC. Several researchers have investigated the impact of CG structures (by using equilibrium variable model and CG index model)[6] on firm value (by using accounting, economic and risk variables) employing empirical econometrics models. For instance, several studies have been carried out to investigate the nexus between CG mechanisms and firm value based on individual CG mechanisms such as board size, board independence, and board diversity among others (e.g., Haniffa and Hudaib, 2006; Guest, 2009). Similarly, other researchers have used CG indices to study the relationship of CG structures and firm performance (e.g., Black *et. al.*, 2006; Henry, 2008; Chen *et al.*, 2009).

Furthermore, the other channel to examine the relationship between CG structures and firm value is to examine firm's COC. Although this relationship has not been investigated extensively, there are a few studies (e.g., Pham *et al.*, 2012; Zhu, 2012). Arguably, prior studies suffer from two main weaknesses. First, they were based on individual CG mechanisms rather than examining CG as a complete system in the form of

[6] Equilibrium variable model uses each CG mechanism as an independent variable such as board size, board independence, and board diversity among others while CG index model uses all related variables in an index altogether.

CG index. Second, their focus was on developed countries where their findings may not be applicable to developing countries because of differences in finance and governance systems. Generally, they report evidence that CG has a key role to play in this regard. Hence, the study contributes to the existing body of CG studies by examining the nexus between CG and COC in a developing country setting.

The second half of this chapter will review the empirical literature on CG mechanisms and firms' COC. It should be noted that the above discussed theories are linked with the empirical literature.

3.2 EMPIRICAL LITERATURE: CG DISCLOSURE

Afterwards the failure of high profile firms such as Tyco, Enron and WorldCom among others, CG codes have been issued globally for the purpose of improving disclosures, corporate accountability and transparency (Aguilera and Cuervo-Cazurra, 2009). Noticeably, codes of CG issued by nation states have increased from 72 in 1999 (Aguilera and Cuervo-Cazurra, 2009) to 409 by the end of April 2014.[7] Generally, these codes were issued based on two main implementation protocols; namely: principle based or rule based. With the view of minimizing compliance cost, following the UK "comply or explain" approach, majority of the countries around the globe have adopted principle based governance approach. Other countries have followed the USA's Sarbanes-Oxley Act, 2002 "one size fits all" rules based approach (Reddy *et. al*., 2010). Although there is no consent on whether principle based or rule based approach of CG practices is superior, equally each method has observed strengths and weaknesses that can affect the failure of success of attaining the anticipated results from code. Importantly, the escalation and widespread acceptability of CG codes, as well as different implementation protocols have motivated researchers to examine the extent to which complying with CGs' provisions could assist firms to arrive at better performance. In particular, a considerable number of researchers have paid close attention to determining the level of compliance with these CG provisions (Bozec and Bozec, 2012; McBulty *et al*., 2013; Griffin *et al*., 2014). This section further seeks to analyse the prior literature on the level of compliance with CG's codes' provisions.

[7] http://www.ecgi.org/codes/all_codes.php (as on 24th April 2014)

3.2.1 Compliance with Corporate Governance Provisions

CG literature shows that compliance with CG's codes' provisions in developed and developing countries are different since differences in corporate setting. This motivates the current study to review previous studies which have been performed in advanced and developing countries with particular focus on Pakistan.

3.2.1.1 Compliance with Corporate Governance Provisions in Developed Economies

Prior literature presents a higher level of CG disclosures in developed countries. For example, Pass (2006) studied 50 UK large listed firms and found that 34% of companies completely observed all CG provisions of 2003 UK combined code while 44% gave acceptable explanation for non-compliance. As the sample was small and only limited to large firms, according to Eisenberg *et al*. (1998) it may limit the generalisation of the study. More recently, Hegazy and Hegazy (2010) examined the level of compliance with 2003 UK Combined code of FTSE 100 in 2008. They found 70% average degree of compliance among UK firms. Further, Hussainey and Najjar (2012) found a high level of CG compliance using a CG Quotient (CGQ) Index. The findings of above studies show that UK companies largely comply with UK combined code and have a higher level of compliance with CG provisions.

In Germany, Cromme (2005) found 75% level of compliance with German governance code in DAX-listed companies. Similarly, Werder *et al*. (2005) found a higher level disclosure with CG standards in a sample of 408 listed firms at Frankfurt Stock Exchange (FSE). In Italy, Allegrini and Greco (2013) studied the level of compliance of Italian listed companies with Italian civil governance code of 2007 by constructing a 60 provision CG index. They reported that the disclosure of code provisions has increased for the Italian companies. By examining the level of CG disclosure and compliance of 742 Canadian listed companies, Salterio *et al.* (2013), found that 39% of the companies were fully complying with all those CG recommendations while 82% of the companies were complying with some.

Conclusively, the developed world shows higher levels of compliance with CG practices. It may be because of strong economic, cultural and legal systems existent in those countries, which are supportive in boosting good CG practices (Aguilera and Cuervo-Cazurra, 2009; Filatotchev and Boyd, 2009; Toledo, 2010; Judge, 2011; Salterio *et al*., 2013).

3.2.1.2 The Level of Compliance with CG Provisions in Developing Economies

Level of compliance with CG provisions widely varies in developing countries (Solomon, 2010) because of the type of government in those countries (Samaha *et al*., 2012). Prior literature shows a lower compliance with CG provisions in developing countries. Krambia-Kapardis and Psaros (2006) examined the compliance with CG code of Cyprus for 2002 by 160 listed companies. They reported evidence that a minor number of Cyprus companies observed CG standards. A possible reason of low level of compliance may be due to the study period as CG code came into effect in the same year of the study.

Al-Moataz and Hussainey (2012) studied the level of compliance with Saudi CG practices by using a CG index consisting of nine CG provisions in 52 listed companies for the year 2006 and 2007. Although, they found 53% level of compliance in the sample of Saudi listed firm, this percentage may not be the accurate representation of CG practices in listed firms because of limited provisions of in the constructed index. A limited 2 year study period and a small sample of 52 listed firms could also have affected the results. In similar setting, Al-Janadi *et al*. (2013) examined the level of compliance with Saudi CG practices by constructing a weighted index for 87 listed companies in year 2006 and 2007. They found that only 42% of sampled companies have disclosed information on their CG practices. As such weighted index requires a high level subjectivity in assessing the quality of CG disclosures (Hassan and Marston, 2010), it may affect the generality and reliability of results (Beattie *et al.*, 2004).

Tsamenyi *et al*. (2007) examined the level of compliance by constructing a CG index for companies in Ghana. They reported 52% level of compliance among the sampled firm. In Egypt, Samaha *et al*. (2012) studied the level of compliance with CG disclosures for 100 Egyptian companies in 2009 to 53 CG provisions. They reported evidence of a lower level of compliance with CG provision among the sampled Egyptian companies.

In Brazil, Schiehll *et al.* (2013) studied the level of compliance for 68 publicly traded companies. They report a limited level of disclosure for ESO plan by those companies. This low compliance to CG should encourage researchers and policy makers in such countries to identify the obstacles that impede the willingness of firms to comply with CG's provisions.

In developing countries, other studies have reported an enhancement in obedience with CG provisions. For example, Alves and Mendes (2004) studied compliance to the 1999 CG codes of Portugal and reported a significant increase in compliance level with CG codes of the country. Similarly, Barako *et al*. (2006) studied the level of compliance with Kenyan CG principles by 54 listed companies. They found an improvement in

compliance level by Kenyan companies. Chalevas (2011) studied the level of compliance to CG standards by Greek companies from 2000 to 2003. He found improvement in level of compliance with CG standards by the sampled Greek companies. Furthermore, Ntim *et al.* (2012a) investigated CG practice in South Africa and impact of South African King report. Their constructed CG index consisted of 50 provisions for a period of five years from 2002 to 2006 inclusive. They found that CG standards have improved from 47% in 2002 to 69% in 2006 since the release of 2002 King II report.

There are number of cross-country studies that have investigated the level of compliance with CG provisions. For instance, Klapper and Love (2004) studied the level of CG disclosures in 14 developing countries and found a wide disparity in firm-level CG disclosures for sampled firms. This variance in CG disclosure may possibly be due to inconsistencies in governance, cultural, legal and social systems in those countries (Bauwhere and Willekens, 2008).

Conclusively, current empirical studies have investigated the levels of CG compliance in developing world needs to be more comprehensive. Prior studies in such countries appear to suffer from serious limitations, such as small sample size, short study period and reliance on limited CG's provisions. The evidence in these past studies indicates that CG compliance levels are generally very low. Researchers also have not investigated the factors that may cause such low compliance levels. This suggests the need for more studies on the determinants of CG compliance and disclosure in the developing country like Pakistan.

3.2.1.3 Compliance with Corporate Governance Provisions in Pakistan

As discussed in chapter two, and after the issuance of 2002 CG code, few studies have been performed to examine the compliance with governance practices in Pakistan (e.g. Javed and Iqbal, 2008; Tariq and Abbas, 2013). For instance, Javed and Iqbal (2007) examined compliance by 50 firms from 2003 to 2005 inclusive that are listed on the Karachi Stock Exchange (KSE). They measured CG by constructing an index consisting of 22 provisions and finds that the CG code may possibly have improved compliance and disclosure by KSE listed firms. Similarly, Javed and Iqbal (2008) examined CG standards of 50 KSE companies from 2003 till 2007 and reported an improvement in CG quality because of SECP's monitoring role. More recently, Tariq and Abbas (2013) studied 119 Pakistani listed firms over a period of eight years from 2003 to 2010 on their level of compliance and disclosure. They used a weighted index consisting of 50 provisions and

report that although the compliance and disclosure level has increased since the issuance of 2002 CG code, in essence compliance with the CG code is minimal.

Briefly, the current study differs in several ways and brings substantive contribution. First, prior research focuses on smaller sample size over a shorter period of time (e.g., Javed and Iqbal, 2007; Javed and Iqbal, 2008). For instance, Javed and Iqbal (2007) use only 50 listed firms and study period is limited to 3 years. In contrast, the current study is examining a balanced *panel* of 160 firms over a longer period of 11 years (2003 to 2013). Second, previous studies using a CG index focuses few provisions of CG code (e.g., Javed and Iqbal, 2007, 2008). For instance, Javed and Iqbal (2008) use only 22 provisions to construct CG index which may not represent the level of compliance with CG code. On the other hand, current study investigates 70 CG code provisions. These provisions are devided in five indices. Finally, prior studies examine the level of compliance by using an ordinal coding scheme to construct CG index (Javed and Iqbal, 2007; Javed and Iqbal, 2008; Tariq and Abbas, 2013). Distinctively, this study is employing the binary coding scheme for the construction of *PCGI* to be used in the analyses.

3.3 EMPIRICAL LITERATURE AND HYPOTHESES DEVELOPMENT: DETERMINANTS OF CORPORATE GOVERNANCE COMPLIANCE AND DISCLOSURE

Prior studies suggest that firms comply with CG codes differently depending on the country involved and that various factors determine compliance. Due to the voluntary nature of most CG codes, researchers continue their examinations to understand the key drivers that encourage/discourage firms in engaging in good CG practices. Identifying and understanding of firms' motivations to comply with CG codes and disclosure of information can help policy makers to improve some CG provisions and introduce new policies. Thus, several studies have been conducted to determine the factors that influence such CG disclosure and compliance. Most of those studies have been conducted in developed world (Bebchuk and Weisbach, 2010; Bozec and Bozec, 2012) whereas limited studies have been conducted in developing countries. Due to limited empirical evidence and differences in corporate settings between developing and developed countries, there is expectation that the findings reported in developed countries may not be applicable to developing countries hence, the current study contributes to the CG literature by examining the determinants of CG disclosure in a developing world with particular focus on Pakistan.

Relying on theories and drawing from previous studies and the Pakistani context, the current study identifies the key determinants that are considered to have significant influence on firm level CG disclosure for Pakistani listed firms. These determinants are categorised into two main types. First, ownership structure variables made up of: director; government; institutional; block; and foreign ownership. Second, board and audit characteristics variables consisting of: board size; board diversity in gender; board diversity in nationality; and audit firm size. The following subsections review the theoretical and empirical literature and set up hypotheses related to each determinant.

3.3.1 Ownership Structures

A greater emphasis on ownership structures and their role in corporate decisions have been underpinned by theories such as agency theory, stewardship theory and resource dependence theory among others. For instance, agency theory assumes that governance practices and disclosures can be enhanced by shareholders as they have the ability to monitor the managers (Jensen and Meckling, 1976; Edmans and Manso, 2011). Past studies are inconclusive in their findings regarding ownership structures and their impact on CG compliance and disclosure. Importantly, most previous studies focus on few types of ownership structures (e.g., block ownership and institutional ownership) and their findings may not provide with a complete understanding of their roles in this regard. In contrast, the Pakistani context offers opportunity to examine the impact of six different types of ownership structures; namely director ownership, institutional ownership, government ownership, block ownership and foreign ownership on firm-level CG disclosure.

3.3.1.1 Director Ownership and Corporate Governance Disclosure

Director ownership is considered as one of the most important ownership factor influencing the level of compliance. From agency theory perspective, Haniffa and Hudaib (2006) argue that the link between CG disclosure and director ownership is not certain. For instance, directors may use inside information to maximise their wealth which may not necessarily be in the best interest of the firm. On the other hand, managerial ownership may result in same safeguard to the insiders and outsiders because of the alignment of interest of shareholders and directors (Samaha et al., 2012; Jensen and Meckling, 1976). Therefore, executives and managers are expected to improve level of CG compliance to maximise the value of the firm.

Empirical evidence supports a significant and negative association between CG compliance and director ownership (e.g., Bauwhede and Willekens, 2008; Samaha *et al.*, 2012). For instance, Bauwhede and Willekens (2008) examined the nexus between CG practices and inside ownership by using a sample of 130 firms from 20 European countries. They report a negative relationship between the variables. In the same way, Hussainey and Al-Najjar (2012) investigated the nexus between managerial ownership and CG disclosure index by using a sample of 130 UK listed firms. They report empirical evidence of a negative relationship between managerial ownership and CG compliance for UK listed firms.

In Pakistani context, this relationship is not studied yet. A good percentage of ownership is owned by the directors in Pakistani firms, therefore it is expected to have an impact on CG disclosures. Thus, in line with the theoretical prediction and negative empirical evidence, director ownership is expected to motivate Pakistani listed firms to disclose less CG information. Therefore, the first null hypothesis proposed is:

H_1 There is a negative relationship between ownership of directors and CG compliance level.

3.3.1.2 Institutional Ownership and CG Disclosure

Agency theory proposes that the monitoring is considered very significant in reducing the conflict of interests between directors and stakeholders in general and shareholders in particular (Jensen and Meckling, 1976; Solomon, 2010). Among stakeholders, institutional investors have the capability of monitoring and helping firms to improve CG compliance (Aggarwal *et al*., 2011; Barako *et al*., 2006). These investors with a significant shareholding are proposed as important CG mechanism for three main reasons (Diamond and Verrecchia, 1991; Donnelly and Mulcahy, 2008). First, having a considerable portion of shareholding and voting power permits them to take necessary actions (Donnelly and Mulcahy, 2008). Second, having resources and capabilities allow them to have more information than minority shareholders (Smith, 1976). Third, with better knowledge and expertise, they can evaluate the firm's decisions and can interpret the disclosed information in annual reports (Chung *et al*., 2002; Bos and Donker, 2004). Additionally, a firm with more external financing needs may tend to disclose more information in order to meet institutional investors' expectations (Bushee *et al*., 2010). In contrast, it has been argued that such investor may not influence firms to disclose CG information (Ruiz-Mallorqui and Santana-Martin, 2009).

According to the literature, evidence of the relationship between institutional ownership and CG disclosure is generally consistent. A considerable number of studies show that CG compliance level is positively associated with the level of institutional investors (e.g., Laidroo, 2009; Chung and Zhang, 2011). For instance, Chung and Zhang (2011) examine the impact of institutional ownership on CG disclosure. They find a positive relationship between the two variables. Similarly, Aggarwal *et al*. (2011) examine a cross country sample of 23 countries. They argue that higher institutional ownership improves CG standards. Additionally, using a sample of 169 firms listed on Johannesburg Security Exchange from 2002 to 2006, Ntim *et al*. (2012a) reports a positive relationship between institutional ownership and CG disclosure. On the other hand, few studies have found different results. For example, by studying 51 Irish listed firms, Donnelly and Mulcahy (2008) find no significant relationship between the two variables.

In Pakistani context, as this relationship of CG disclosure and intuitional ownership has not been studied yet, this study offers evidence on this relationship for Pakistani listed firms for the first time. Thus, consistent with the predictions and overwhelming positive association, institutional ownership is expected to motivate Pakistani listed firms to disclose more CG information. Hence, the second null hypothesis proposed is:

H_2 There is a positive association between CG compliance and institutional ownership.

3.3.1.3 Government Ownership and Corporate Governance Disclosure

Firms' CG disclosure can be influenced by government ownership especially in emerging countries (Al-Moataz and Hussainey, 2012; Cornett, 2010; Shleifer, 1998). In this regard, it is argued that higher government ownership may cause an agency problem (Eng and Mak, 2003). Additionally, government ownership may lead to intervention in firms' operations which may result in poor CG practices (Konijn *et al*., 2011). For instance, government may appoint CEO and directors regardless of experiences and qualifications (Cornett *et al*., 2010; Tsamenyi *et al*., 2007). Arguably, Firms may take the benefit of higher government ownership and raise financing at a preferred rate which may not motivate them to disclose more CG information. In this regard and from resources dependence theory perspective, firms with higher government ownership can easily access financing from government (Eng and Mark, 2003).

On the other hand, theory of stewardship perspective is that the CEOs and directors may not be affected by government ownership as government interests are aligned with

other corporate owners (Siebels and Knyphausen-Aufseb, 2012). Precisely, CEO may seek to improve the firm performance and disclosure to improve and protect their reputation (Conyon and He, 2011). Additionally, Ghazali and Weetman (2006) argue that firms with higher government ownership may be forced to provide more CG information as government is accountable to stakeholders.

Empirically, the relationship between CG disclosure at firm level and government ownership has not been widely examined (Ntim *et al*., 2012a). This suggests that this can be a fertile area of research to investigate the relationship between CG disclosure and government ownership to contribute the international literature. The findings of some prior studies report a positive relationship between CG disclosure and government ownership. For instance, using a sample of 1342 Chinese firms from 2001 to 2005, Conyon and He (2011) empirically found that government ownership enhances CG practices. Similarly, the nexus between government ownership and firm level CG disclosure is investigated by using a sample of 169 firms listed on Johannesburg Security exchange from 2002 to 2006 (Ntim *et al*., 2012a). They report empirical evidence of positive association between government ownership and CG disclosure.

On the other hand, other studies (e.g., Ghazali and Weetman, 2006; Huafang and Jianguo, 2007; Samaha and Dahawy, 2011) examine the relationship of government ownership with CG disclosure and report no significant relationship. For example, Samaha and Dahawy (2011) examine the impact of government ownership on CG disclosure using a sample of 100 firms listed on Egyptian Stock Exchange and report no significant relationship between the two variables. Similarly, Ghazali and Weetman (2006) examine the same relationship using a sample of 87 Malaysian listed firms also report no significant relationship between government ownership and CG disclosures.

In Pakistan, the government dominates in the corporate landscape with a 35% of ownership on average in all companies (World Bank, 2005). Pakistani firms with a considerable percentage of government ownership are probably less motivated to disclose more CG information as these firms are expected to have strong political connections in Pakistan. Therefore, and by considering the Pakistani context, the hypothesis number three is:

H_3 The CG disclosure level and government ownership are positively associated.

3.3.1.4 Block ownership and CG Disclosure

Generally, ownership concentration is common in most developing countries that potentially create severe agency problems between majority and minority shareholders. Therefore, it is more likely that firms with ownership concentration may disclose less to shareholders as their interests may not be aligned with those of minority shareholders. On the other hand, stakeholder theory proposes that block holders[8] can have a positive influence on CG disclosure (Konijn *et al.*, 2011). For instance, Konijin *et al*. (2011) report that block investors may limit excessively large compensations of managers due to their power. In this regard, block holders can have more influence in terms of their abilities to discipline managers than minority shareholders to limit agency costs (Shleifer and Vishny, 1997).

Empirical studies report mixed evidence in the relationship of block holders and CG disclosures. In this regard, a considerable number of prior studies presents a negative nexus between block ownership and CG compliance (Barako *et al.*, 2006; Laidroo, 2009; Samaha and Dahawy, 2011; Ntim and Soobaroyen, 2013). For instance, Ntim and Soobaroyen (2013) report empirical evidence of negative association between block ownership and firm level CG disclosure. On the other hand, a limited number of studies show a positive relationship between block ownership and CG disclosure. For instance, Huafang and Jianguo (2007) report a significant and positive association between block ownership and CG disclosure for Chinese listed firms. Few studies report no significant evidence of relationship between the CG compliance and block ownership. For example, Conyon and He (2011) studied the impact of block holders on shareholders' rights measured by governance disclosure index by using a sample of US. They report no association between the presence of block holder and governance disclosure index.

Given the Pakistani context, firms with the high level of block ownership are expected to disclose less CG information. Thus, the fourth hypothesis proposed is:

H_4 The CG compliance level and block ownership are negatively associated.

[8] Any shareholder having 5% or more of a firm's shares, is considered as block holders (Konijn *et al*., 2011)

3.3.1.5 Foreign Ownership and Corporate Governance Disclosure

Information asymmetry is relatively higher among foreign investors because of language and distance (Huafang and Jianguo, 2007). Thus, it can be argued that they may require greater disclosure to minimise information asymmetry and to better monitor the actions of management (Haniffa and Cooke, 2002). In this regard, firms having foreign investors may disclose more CG information to meet the expectations of foreign investors. Specifically, this can be true for developing countries as they attract foreign investors to improve the efficiency of their capital markets (Huafang and Jianguo, 2007; Elsayed, 2010). In this regard and to support the argument, Leuz *et al*. (2010) report that US investors usually do not invest in countries with lower CG disclosure requirements. Additionally, literature suggests that foreign institutional investors are considered as major promoter and exporters of better CG practices around the world (Aggarwal *et al*., 2011).

Empirically, there is a lack of international evidence on the relationship between foreign ownership and firm-level CG disclosure (Mangena and Tauringana, 2007). This relationship is examined by few studies (e.g., Barako *et al.*, 2006a; Haniffa and Cooke 2002) and report a positive impact of foreign ownership on CG disclosures. For instance, Haniffa and Cooke (2002) report evidence of a positive relationship between CG disclosure and foreign ownership for a sample of 167 firms listed on the Kuala Lumpur Stock Exchange. Similarly, using a sample of 599 Chinese listed firms, Huafang and Jianguo (2007) report empirical evidence of a positive relationship between foreign ownership and CG disclosure.

In Pakistan, ownership is concentrated among principal controlling shareholders including, state, foreign and families (World Bank Report, 2005). The impact of foreign ownership on CG disclosure has not been investigated yet in Pakistan. Therefore, in line with a positive theoretical prediction and empirical evidence, the fifth hypothesis of the current study is:

$\boldsymbol{H_5}$ Foreign ownership and level of CG disclosure are significantly and positively linked.

3.3.2 Audit firm and Board Characteristics

In addition to above ownership variables, other CG mechanisms have been studied in literature to ascertain how and why those variables influence the firm-level CG disclosures. Among those CG mechanisms, audit firm and board characteristics are

considered as important factors (Adelopo, 2011; Nelson, 2014). The relationship has not been examined yet in Pakistan. This research brings the evidence for the nexus between audit firm/board characteristics and CG disclosures among Pakistani firms. The current study investigates a number of audit and board variables, including audit firm size, board size, gender diversity in board, and nationality diversity in the board of directors.

3.3.2.1 Audit Firm Size and CG Disclosure

It is common in most countries where firms are required by national company laws to obtain confirmation from external auditors that the disclosed CG information is fair and true. Similarly, it is mentioned in Pakistani CG code of 2002 (xlvi) that "*all listed companies shall ensure that the statement of compliance with the best practices of corporate governance is reviewed and certified by statutory auditors, where such compliance can be objectively verified, before publication by listed companies*". From agency theory perspective, external auditors may impact the quality and level of CG compliance (Barako *et al*., 2006). This influential power of external auditors may depend on audit firm's characteristics (e.g, fee, tenure and size). It has been reported that big four auditing firms have improved auditing principles (Alsaeed, 2006), as such firms are expected to have very skilled, experienced and qualified auditors. Additionally, big4 are expected to be more independence than their counterpart (Haniffa and Cooke, 2002) and they may pressure firms to disclose more CG information to maintain this reputation (Unag *et al*., 2006).

Empirically, several studies (e.g., Bassett *et al*., 2007; Kent and Stewart, 2008; Omar and Simon, 2011; Nelson, 2014) present a positive nexus between firm-level CG disclosure and audit firm size. For instance, Omar and Simon (2011) report the evidence of a positive relationship between CG disclosure and audit firm size for a sample of 121 firms listed with Amman Stock Exchange. Similarly, Ntim *et al*. (2012a) show empirical evidence that the size of audit firm is positively and significantly related with CG disclosure.

On the other hand, some other empirical researches (e.g., Aly *et al*., 2010; Barako *et al*., 2006a; Alseed, 2006) find no significant relationship between audit firm size and firm-level CG disclosure. For instance, Barako *et al*. (2006a) examine the impact of audit firm size on CG compliance and report no significant relation between the two variables. Similarly, Aly *et al*. (2010) examine the relationship between Big four audit firms and corporate internet reporting using a sample of Egyptian firms and find no significant relationship between the two variables.

In Pakistani context, this relationship has not been investigated yet. In line with a positive theoretical prediction and empirical evidence, it is expected that there will be a positive relationship between audit firm size and firm-level CG disclosure for Pakistani listed firms. Thus, the sixth hypothesis of this study is:

H_6 There is a positive relationship between audit firm size and level of CG disclosure.

3.3.2.2 The Size of the Board and CG Disclosure

Theoretically, the board of directors is considered as one of the most effective CG mechanisms in order to reduce agency cost by monitoring the managerial behaviour (Jesen, 1993). In this regard, shareholders have expectation of more CG disclosure from board memebrs because they are steward and represent shareholders' interests (Davidson *et al*., 1996). Therefore, it is expected that the board of directors may significantly affect the CG compliance and level of disclosure. Among other board characteristics, agency theory considers the size of the board as one of the crucial factors in minimizing agency cost by observing their behaviour (Allegrini and Greco, 2013; Fama and Jensen, 1983). Supporters of this view argue that managerial monitoring have a positive impact on CG disclosures (Ntim and Soobaroyen, 2013). Furthermore, Coles *et al*. (2008) argue that the large number of directors may improve the firms' monitoring and control. Similarly, Haniffa and Hudaib (2006) argue that firms with large board members can enjoy more diversity in terms of skills and experience, which may positively impact on firm disclosure.

In contrast, Jensen (1993) argues that smaller boards are more effective than larger boards in mitigating agency conflicts. In support of this argument, Yermack (1996) suggests that a more board members can cause a reduced harmonization as well as poor communication, which may allow CEO to dominate the board and have an adverse impact on responsibility of management (Jensen, 1993; Lipton and Lorsch, 1992). Arguably, this may weaken the power of board to monitor managers and result in a negative impact on CG disclosure. Therefore, boards with small number of members are likely to impact positively on firms' CG compliance and disclosure due to better co-ordination and communication among directors than board with larger members (Yermack, 1996).

Empirically, most of the prior developing country studies report that CG compliance level and board size are positively associated (Akhtaruddin *et al.*, 2009; Kent and Stewart, 2008;). For instance, Akhtaruddin *et al*. (2009) report empirical evidence that board size is positively associated with level of CG compliance. The potential limitation of

their study can be the adoption of index that is used by developed world and may not consider the contextual differences (Meek *et al*., 1994). Similarly, using a sample of 169 South African listed firms; Ntim *et al*. (2012a) report findings of positive association between the size of the board and CG disclosure.

On the other hand, some prior studies find no significant relationship between the board size and CG disclosure (Arcay and Vazquez, 2005; Cheng and Courtenay, 2006). For instance, Arcay and Vazquez (2005) report empirical evidence that there is no significant relationship between board size and CG disclosure in a sample of 91 Spanish firms in 1999. Similarly, using a sample of 104 Singaporean public firms in 2002, Cheng and Courtenay (2006) report empirical evidence that board size has no significant association with CG disclosure.

In Pakistan, the relationship between CG disclosure and board size has not been documented. The PCCG recommend that the firm's boards should have a minimum of seven members but it does not specify any maximum limit. The average board size is 8.22 members in Pakistani listed firms. To investigate whether board size has any impact on CG disclosure and following the mixed theoretical and empirical arguments, the current study expect either a positive or negative between the firms' board size and CG disclosure. Thus, the seventh hypothesis in the current study is:

H_7 The CG compliance level and firm's board size are significantly associated.

3.3.2.3 Board Gender Diversity and Corporate Governance Disclosure

From resource dependence and agency theories perspective, board diversity improves level of CG compliance and disclosure (Bear *et al*., 2010). Resource dependence theory emphasises on importance of the board's role in ensuring the provision of resources (Pfeffer and Salancik, 1978). Further, Hillman and Dalziel (2003) argue that the board provides a channel to communicate information between the stakeholders and executive which is expected to improve corporate disclosure. Agency theory highlights the role of board members in monitoring managers to protect shareholders' interest (Fama and Jensen, 1983; Eisenhardt, 1989). In this regard, the experience and capabilities enable the board to manage and assess strategies which may improve the firm disclosure. Several studies have been conducted to examine the impact of different types of diversity on the board (e.g., gender, education, race, occupation and age) on different corporate decisions (Rose, 2007; Dezso and Ross, 2012; Ntim, 2014). In the best of researcher's knowledge, the impact of gender diversity on CG disclosure has not been examined. Therefore, it underlines the need

to extend the existing literature to understand the impact of board-gender diversity on CG disclosure.

Theoretically, several studies that have examined the impact of board-gender diversity find that women directors have influence on firms' board (Huse and Solberg, 2006; Admas and Ferreire, 2009; Peni and Vahamaa, 2010; Cater *et al*., 2010). For instance, Admas and Ferreire (2009) argue that the boards with more female member can lead to a greater participation of directors in decision making. Similarly, gender-board diversity may improve CG disclosure as differences in gender can potentially lead to distinctive approaches to information disclosure (Terjesen *et al*., 2009; Cater *et al*., 2010). Additionally, Nielsen and Huse (2010) argue that the absence of female members from the board means that the firm is losing an opportunity to increase the talent pool and board skills that may negatively affect the CG disclosure.

Empirically, several developing country studies have examined the impact of board-gender diversity on different issues and find that women directors have influence on firms' board (Rose, 2007; Bøhren and Strøm, 2010; Dezso and Ross, 2012; Ntim, 2014). Given the positive theoretical prediction and absence of substantive number of developing country empirical studies on the relationship between gender-board diversity and CG disclosure in Pakistan, the eighth hypothesis in this study is:

H_8 There is a statistically significant and positive association between the presence of female on the firm's board and level of CG disclosure.

3.3.2.4 Board Diversity on the basis of Nationality and Corporate Governance Disclosure

Relying on resource dependence theory, firms are likely to gain competitive advantages from directors' characteristics, such as gender, education, age, occupation and race. In this regard, Oxelheim and Rondøy (2003) suggest foreigner board membership as one mechanism that may enhance CG disclosure and practices. This argument is supported by Ramaswamy and Li (2001) who state that "*for firms from emerging economies, there is also the advantage of strategy formulation insights foreign directors might bring along them….. Foreign directors, having been involved in a variety of managerial positions and activities during various stages of their career, possess information and expertise about the intricacies of different strategic approaches, and may be in a unique position to influence strategic management processes in firms that they oversee*".

Furthermore, Choi and Hasan (2005) suggest that foreigner board members can offer three main benefits to the board including: (i) providing more independence to the board than local external directors; (ii) giving effective monitoring; and (iii) adapting advanced foreign corporate strategies. Specifically, Frias-Aceituno *et al*. (2013) argued that the presence of foreigner board members promote firms' information disclosure practices. Ntim and Soobaroyen (2013a) argue that foreigner board members can help firms to have better link with stakeholders by improving information disclosure in addition to enhancing managerial monitoring.

Empirically, the impact of foreigner board members on CG disclosure has not been studied in Pakistan. Most prior studies on corporate disclosure focus on the relationship between the foreign board members and corporate social responsibility (e.g., Khan *et al*., 2013; Ntim and Soobaroyen, 2013a) and find that firms with foreign board members provide more corporate social responsibility information. However, there are few firms in Pakistan that employ foreign members on their boards in key positions. This suggests that the presence of board members with different nationalities have distinctive values and may have important implications for CG compliance and disclosure behaviour. Therefore, it is expected that the presence of non-Pakistani directors on firms' board may motivate firms to disclose more CG information than those with only local directors. Thus, the ninth hypothesis in the current study is:

H_9 There is a statistically significant and positive relationship between the presence of foreigner on the firm's board and level of CG disclosure.

3.4 EMPIRICAL LITERATURE AND HYPOTHESES DEVELOPMENT: CORPORATE GOVERNANCE AND FIRM COST OF CAPITAL

A typical argument is that CG affects the value of firm by increasing future cash flows due to reducing managers and majority shareholders' ability to extract private benefits. Similarly, CG can impact firm value through the firms' COC. That is, it impacts on the discount premium applied to expected future cash flows; this is known as COC effect. In this regard, Hail and Leuz (2006) argue that the valuation effect of CG may reflect the investors' risk premium demand. In their view, better CG disclosure and more transparent firm can reduce the information asymmetries and, thus, lead to a decrease in the uncertainty of firms' future cash inflows. While financing the firm, creditors and shareholders face increase in risk in relation to interest and dividend payments. Outside investors, including minority shareholders and creditors actually face the risk of expropriation by managers and majority shareholders. Therefore, the higher the uncertainty equity and debt investors face regarding their cash flows, the higher the risk premium they will demand. As a result, the firm's COC is likely to increase.

One of the main objectives of CG is to protect outside investors, including both creditors and shareholders, against expropriation by managers or controlling shareholders (La Porta *et al*., 2002). CG mechanisms such as better and timely disclosure, independent non-executive members working on the board of directors and in audit committee, and independent auditors, are expected to reduce the risk of investors and firms' COC in several ways. First, better CG serves to monitor controlling shareholders or manager's actions, and, thus, minimising the risk of expropriation (Chen *et al*., 2009). Second, the better CG can reduce information asymmetry between the controlling shareholders and other outside investors (Verrecchia, 2001), and, hence reduces the uncertainty of future expected cash flows (Clarkson *et al*., 1996). Finally, as suggested by Lombardo and Pagano (2002), better CG disclosure reduces the monitoring cost of outside investors, and, thus, they are likely to demand a lower required rate of return, which can increase firm value.

Prior literature has used two models to investigate the relationship between CG structures and firm COC. One is equilibrium-variable model and the second one is compliance-index. Ideally, strong CG can lower the firms' risk which can result in a decline in the firms' COC. Lower risk is better for both shareholder and creditors point of view. Lower risk with reference to shareholders, will reflect on the discount rate (Cost of Equity) which will be applied to discount the firms' expected future cash flows. Debt

holders also face detrimental managerial excessively risky investments that favour shareholders, especially when the firm is potentially at a risk of default. This is known as the debt overhang problem. Effective CG can decrease risk to debtors, which decreases the Cost of Debt (COD) to the firm and ultimately lowers the overall COC.

In this study, the three main themes of CG structures will be used to develop various hypotheses. First, the firm level CG index (*PCGI*). Second, ownership variables including: (i) director; (ii) institutional; (iii) government; (iv) block; and (v) foreign ownership. Third, the individual CG variables, including: (i) audit firm size; (ii) board size; and (iii) gender diversity in board.

3.4.1 Firm level Corporate Governance Index (*PCGI*) and Cost of Capital

Prior studies (e.g., Bowen *et al*., 2008; Bozec and Bozec, 2011) suggest that it is imperative to study CG mechanisms as an integrated system such as an index instead of examining them as individually since some of those can substitute or complement each other. Regardless of limited number of studies on the relationship between CG and COC, most prior studies have examined individual CG mechanisms rather than firm-level CG indices (Bozec and Bozec, 2011). The current study measures CG by employing the CG index (*PCGI*) based on the 2002 Pakistani code of CG in order to investigate how firm-level CG can influence firms' COC.

Theoretically, CG encompasses different mechanisms that can assure creditors and shareholders of the firm on a return on their investments (Shleifer and Vinshny, 1997). In the case of most developing countries, when firms have controlling shareholders (see Clasessen *et al*., 2000; Faccio and Lang, 2002), CG mitigate agency problems between insiders shareholders and outside investors, including both creditors and minority shareholders. Insider shareholders enjoy the control of the firm's operation by having a large portion of voting rights and therefore may expropriate outside investors, including minority shareholders and creditors (La Porta *et al*., 2002). In this context, good CG practices are intended to safeguard minority shareholders and creditors among other outside investors against the expropriation of controlling shareholders. Arguably, when investors feel protected, they are motivated to participate in capital market more actively, and are more likely willing to pay more for such firms' securities. Thus, firms can enjoy lower cost of raising capital, which in turn raise the firms' value.

Despite limited number of studies on relationship between CG index and firms' COC, studies provide empirical evidence of negative relationship between firm-level CG

and firms' COC (Blom and Schauten, 2008; Chen *et al*., 2009; Bozec and Bozec, 2011). For instance, Bozec and Bozec (2011) examine the effect of CG index on firm-level COC for a sample of 155 Canadian firms listed on S&P/TSX from 2002 to 2005. They report significant empirical evidence that both firms' COD and COE decrease as the quality of CG practices increases. Specifically, they measured firm level CG and report that Canadian firms with higher ROB scores have a lower COC.

In Pakistani context, the relationship between firm-level CG disclosure and COC has not been documented yet to the researcher's knowledge. The current study expects that COC and CG disclosure level are negatively associated following the extant literature and theory. Thus, the tenth hypothesis in the current study is:

H_{10} There is a statistically significant and negative relationship between firm-level CG disclosure and firms' COC.

3.4.2 Ownership Variables

Although a limited number of prior studies have examined the impact of ownership structures on firms' COC, it has been argued that ownership structure can have an impact on firms' COC. In this regard, ownership structures play an important role in mitigating agency cost and reducing information asymmetry between shareholders and debt holders or shareholders and managers (Jensen and Meckling, 1976; Myers and Majluf, 1984; Jensen, 1986). This subsection will briefly set out the central theoretical arguments regarding the link between the ownership variables and firms' COC. The empirical evidence related to each type of ownership structure is also reviewed in order to develop the hypothesis of the study.

3.4.2.1 Director ownership and Cost of Capital

Theoretically, it can be argued that director ownership may worsen the agency problem as outsider and insider can have conflicting interests (Demsetz and Lehn, 1985). In similar vein, it has been claimed that higher director shareholdings are expected to make firms more exposed to collusion between the firms' management and directors (Vafeas and Theodorou, 1998; Konijin *et al*., 2011). From a managerial signalling perspective, Bebchuk and Weisbah (2010) argue that the directors have more information about the firms compared to outsider (minority shareholders and creditors). Therefore, it is more likely that the executives can use the firms' private statistics for the personal interests that shifts risk to rather than share risk with outside shareholders (Demsetz and Lehn, 1985)

which in turn, may increase the information asymmetry problem between directors and outside investors (minority shareholders and creditors). Therefore, it is likely that the firm with higher director ownership can have a higher cost of borrowing and a negative impact on profitability.

In Pakistani context, this relationship has not been documented yet. Therefore, following the negative theoretical arguments and empirical findings, the current study expects that COC impacted positively. Thus, eleventh hypothesis in the current study is:

H_{11} There is a positive and statistically significant association between director ownership and firms' COC.

3.4.2.2 Institutional ownership and Cost of Capital

Institutional investors usually have a greater monitoring power and it has been suggested that they can play a crucial role by forcing managers to make decisions in the best interest of shareholders (Shliefer and Vishny, 1986). In this regard, Crutchley *et al.* (1999) argue that institutional investors can have an impact on firms' capital structure. Theoretically, monitoring can be beneficial to reduce the agency cost by minimising the conflicts of directors and investors (Solomon, 2010; Jensen and Meckling, 1976). Arguably, intuitional investors with a significant shareholding are proposed as important CG mechanism for three main reasons (Diamond and Verrecchia, 1991; Donnelly and Mulcahy, 2008). First, having a considerable portion of shareholding and voting power permits them to take necessary actions (Donnelly and Mulcahy, 2008). Second, intuitional investors have resources and capabilities to have more information than minority shareholders (Smith, 1976). Third, with better knowledge and expertise, they can evaluate the firm's decisions and can interpret the disclosed information in annual reports (Chung *et al*., 2002; Bos and Donker, 2004). Thus, it is expected that institutional ownership can increase firm value by decreasing firm's COC.

A limited number of studies only provide evidence on the relationship between institutional ownership and one component of COC (Piot and Missonier-Piera, 2009; Bhoraj and Sengupta, 2003). For instance, Piot and Missonier-Piera (2009) examine the relationship between firms' COD and institutional ownership among other factors on firm-level CG disclosure for a sample of 102 French firms listed on SBF 120 index from 1999 to 2001. They report significant empirical evidence that firms' COD decrease as the institutional equity ownership increases in the firm. Similarly, using a sample of over 1000 bond issues from 1991 to, Bhoraj and Sengupta (2003) examine the effect of institutional

shareholding on firm-level bond rating and bond yield. They report that lower bond yield and better bond ratings when percentage of institutional shareholding increases.

In Pakistani context, this association has not been documented. This study expects a negative and significant relationship between the institutional shareholding and firm COC. Thus, the twelveth hypothesis in the current study is:

***H*$_{12}$** Institional ownership and firms' COC are significantly negatively associated.

3.4.2.3 Government ownership and Cost of Capital

From resources dependence theory perspective, firms with higher government ownership can easily access financing from government (Eng and Mark, 2003). Arguably, firms may take the benefit of higher government ownership and raise financing at a preferred rate which can minimise the overall firm's COC and, in turn may increase the firm value. Similarly, Siebels and Knyphausen-Aufseb (2012) argue that government ownership may not effect the managers due to its aligned interests with other corporate owners. Specifically, executives may strive for improvement in the firm performance to improve and protect their reputation (Conyon and He, 2011). In contrast, Eng and Mak (2003) argue that higher state-owned firms may origin the agency problem. In this regard, government ownership may cause intervention in firms' operations which may bring about poor CG practices (Konijn *et al*., 2011). For example, government may employ directors and CEO irrespective of qualification (Cornett *et al*., 2010; Tsamenyi *et al*., 2007). In other words, this may create additional information asymmetry problem between controlling and outside investors which may result in an increase in firm COC.

Few extant studies that exist only provide evidence on the relationship between government ownership and one component of COC. For instance, Borisova and Megginson (2011) examine the effect of government ownership on firm-level COD. They report significant empirical evidence that decrease in government ownership results in an increases in the cost of debt.

The current study expects a negative association between the government and COC. Therefore, thirteenth hypothesis in current study is:

***H*$_{13}$** Firms' COC and government ownership are significantly and negatively associated.

3.4.2.4 Block ownership and Cost of Capital

Theoretically, it may impose some risk on minority shareholders as agency conflicts says that excess control causes agency cost. In this regard, Bechuck *et al.* (2000) argues that minority shareholders' rights may be expropriated by majority shareholders. The dominance of majority shareholders in publically traded firms demonstrates the willingness to accept risk by minority shareholder. Bozecc *et al*. (2014) argues that such risks are accepted by minority shareholder on the basis of compensation. High risk results in higher COC for firms (i.e., higher COD and COE). Arguably, higher COC means higher rate of return for investors which can be a form of compensation to them. Hence, it can be argued that block ownership are expected to have a more direct link with COC rather than financial performance and firm value, particularly as value is not only affected by risk but also by the firm's growth opportunities (Hail and Leuz, 2006).

Empirical studies reports mixed evidence in the relationship of block holders and firm-level COC. For instance, Bozec *et al*. (2014) report significant empirical evidence of positive relationship between excess control and weighted average COC. Similarly, Elston and Rondi (2006) report empirical evidence that concentrated inside ownership is significantly and positively associated with firm COC for Italian firms while having no significant relationship between the variables for German firms. In contrast, Pham *et al*. (2007) report significant empirical evidence of negative relationship between concentrated ownership and weighted average COC.

In Pakistan, the relationship between block ownership and COC has not been documented. In line with the mixed empirical results, the current study expects a significant association between the block ownership and firm COC based on theoretical arguments outlined above. Thus, the fourteenth hypothesis in the current study is stated below:

H_{14} There is a statistically significant association between block ownership and firms' COC.

3.4.2.5 Foreign ownership and Cost of Capital

A firm's choice of issuing debt or equity to finance their activities can be affected by foreign investors. Theoretically, information asymmetry is relatively higher among foreign investors because of language and distance (Huafang and Jianguo, 2007). Higher foreign ownership may lead to debt financing as a governance mechanisms, thus, may

force firms to issue debt over equity (Le and Phung, 2013). Additionally, firms may prefer debt rather than equity as they may take the advantage of foreign investors' relationship and reputation to have easy access to international capital markets, which will usually provide lower cost of borrowing and thus, lower COC.

There are evidence of negative nexus between foreign ownership and COC (e.g. Chen *et al*., 2014) who report that a firm's COD decrease as the foreign ownership increases. In Pakistani context, the association between foreign ownership and firm-level COC is not documented. Following negative theoretical predictions and the empirical literature, the current study expects a negative and significant relationship between the foreign ownership and firm-level COC. Thus, the fifteenth hypothesis in the current study is stated as:

***H*$_{15}$** Firms' COC and foreign ownership are significantaly and negatively associated.

3.4.3 Corporate Governance variables

Limited numbers of past studies have investigated how CG can influence firms' COC (Bozec and Bozec, 2011). This subsection will briefly set out the central theoretical argument that links CG variables and firms' COC. The empirical evidence is also reviewed in order to develop the hypothesis. Following the prior studies and due to data limitations, this study limits it hypotheses to the following individual CG variables, including audit firm size, board size, and gender diversity in the board.

3.4.3.1 Audit firm size and Cost of Capital

Theoretically, external auditors have been suggested as one of the most effective CG mechanisms that can reduce agency cost by reducing information asymmetry between shareholders and managers (Jensen and Meckling, 1976; Watts and Zimmerman, 1983). In this regard, the quality of external auditor is important in reducing information asymmetry and this can be influenced significantly by audit firm size (DeAngelo, 1981). Big audit firms are expected to provide better audit quality than those of smaller firms because of more resources, experience, and reputation as quality auditors (DeAngelo, 1981; Uang *et al*., 2006). Arguably, big4 audited firms may have less problems of information asymmetry and as such the big audit firms can influence these firms to disclose more information to earn the confidence of outside investors, which in turn is expected to decrease the firms' COC. In this regard, literature suggests that engaging with high reputation auditors can

contribute to the efficient resolution of contracting problems that leads to risk shifting by producing reliable and valuable information on ex-post investment decisions (Jensen and Meckling, 1976; Watts and Zimmerman, 1986).

Few studies provide evidence of the relationship between audit firm size and one component of COC (e.g., Pittman and Fortin, 2004; Beatty 1989; Balvers *et al*., 1988). For instance, Pittman and Fortin (2004) studied the link between auditor choice and debt pricing of firms that went public from 1977 to 1988. They report that choosing a big auditor, which can reduce monitoring costs by improving the reliability of annual reports and financial statements enable firms to lower their cost of debt. Similarly, Balvers *et al*. (1988) and Beatty (1989) report that auditor with high reputation enable firms to reduce uncertainty. Additionally, Diamond's (1989) predicts that firm decrease their cost of debt and, hence, COC by developing their reputation.

In Pakistan, the relationship between audit firm size and COC has not been documented yet. For first time, this study offers evidence on this relationship for Pakistani listed firms. Following the negative theoretical and empirical evidence, the current study expects a negative and significant relationship between the audit firm size and firm COC. Thus, the sixteenth hypothesis in the current study is as follows:

H_{16} There is a statistically significant and negative relationship between audit firm size and firms' COC.

3.4.3.2 Board size and Cost of Capital

Theoretically, board of directors is considered as one of the most effective CG mechanisms, which can mitigate different type of agency problems by ensuring that firm operates competitively and efficiently (Jensen and Meckling, 1976; Jensen, 1993). Precisely, it has been argued boards with more members can raise cost of managerial activities that can have an adverse affects the value of the firm and may increase cost of funding (Yawson, 2006). Resource dependence theory proposes a negative relationship between board size and firms' COC. In this regard, Goodstein *et al*. (1994) suggest that large board can improve firm value as firms can access critical resources. In the same way, it is argued that a large board have ability to appeal highly experienced and qualified directors that can result in btter decisions. Additionally, large board can signal the presence of wide stakeholders' representation (Pfeffer, 1973; Ntim and Soobaroyen, 2013). Hence, more board members may improve communication between majority shareholders and other investors, which can increase the firm value by decreasing the firms' COC through

lower COD that leads to lower COE due to low likelihood of asymmetry information and excessive risky investment decisions that shifts risk between investors.

Although there is a lack of empirical evidence on relationship between board size and firm's overall COC, the impact of board size have been investigated either on firms' COE or COD (e.g., Bozec and Bozec, 2011; Shah and Butt, 2009). For instance, Bozec and Bozec (2011) examine the effect of CG index on firm-level COC in a sample of 155 Canadian firms listed on S&P/TSX from 2002 to 2005. They report significant empirical evidence that both firms' COD and COE decrease as the quality of CG practices increases. Similarly, using a sample of 114 firms listed on Karachi Stock Exchange from 2003 to 2007, Shah and Butt (2009) examine the effect of board size on firm's COE. They report empirical evidence that suggests board size is significantly and negatively associated with COE. Thus, the seventeenth hypothesis in the current study is:

H_{17} Firms' COC and size of the board are significantly and negatively associated.

3.4.3.3 Gender Diversity in the board and Cost of Capital

With respect to the impact of board-gender diversity on different types of managerial decisions, several studies have examined the impact of different types of diversity on the board (e.g., gender, education, race, occupation and age) on different corporate decisions (Rose, 2007; Dezso and Ross, 2012; Ntim, 2014). Admas and Ferreire (2009) argue that the boards with more female members can lead to a greater participation of directors in decision making. Further, gender-board diversity may improve communication between different stakeholders and, hence, can reduce risk shifting and thus COC. Additionally, Nielsen and Huse (2010) argue that the absence of female members from the board means that the firm is losing an opportunity to increase the talent pool and board skills that may negatively affect the firm value and increase COC.

Empirically, several studies have examined the impact of board-gender diversity on different issues and find that women directors have influence on firms' board (Rose, 2007; Bøhren and Strøm, 2010; Dezso and Ross, 2012; Ntim, 2014). The current study expect a negative and significant relationship between the gender diversity on the board and firm COC. Thus, the eighteenth hypothesis in the current study is:

H_{18}: Firms' COC and gender diversity are significantly and negatively associated. .

3.5 CG DISCLOSURE MEASUREMENT: LITERATURE ON CG INDICES

CG literature suggests that CG mechanisms should be examined collectively rather than individually (Ntim *et al.,* 2012). In response to this, researchers use CG indices as a method to examine CG mechanisms by relying on national CG codes (e.g., Al-Malkawi *et al*., 2014) or international CG codes (e.g., Cheung *et al.*, 2007; Hooghiemstra, 2012;). Following previous studies (e.g., Elghuweel *et al*., 2016; Ntim *et al*., 2012a), this study employs an index in order to examine CG practices in Pakistan. This section discusses the literature related to self-constructed versus analysts' ratings indices and ordinal coding scheme versus binary coding scheme.

In this study, a self-constructed CG Index based on Pakistani CG code will be used to measure the level and determinants of compliance with CG provisions of the PCCG. The *PCGI* is also used to examine its impact on the COC. The adoption of self-constructed CG index as a methodological approach is justified in subsection 3.5.1. Briefly, the use of *PCGI* is suitable as (i) it is directly applicable to Pakistani context; (ii) the *PCGI* is designed to incorporate most of the CG aspects that have been suggested by literature; and (iii) there is no theoretical guidance which offers a criterion for the selection of indices to be used in the study. Furthermore, it is consistent to many recent researches (e.g., Tariq and Abbas, 2013; Hooghiemstra, 2012) that investigated the level and determinants of CG compliance by relying on national (e.g., King Report II, 2002) codes in constructing their CG indices (Hooghiemstra, 2012). The *PCGI* contains 70 CG provisions (See Table 4.3) covering five broad aspects. The *PCGI* is constructed from the PCCG 2002. The listing rules were also used as additional source in order to develop a comprehensive index. Table in appendix 1 explains each provisions and the source included in the *PCGI*.

3.5.1 Self-Constructed versus Analysts' Ratings Indices

According to the literature, CG disclosures are measured by two commonly used indices (Bozec and Bozec, 2012; Bhagat and Bolton, 2008). First, self-constructed indices developed by researchers using national CG standards. Prior studies (e.g., Tariq and Abbas, 2013; Price *et al*., 2011) utilize national CG codes to examine different issues related to the relationship between CG and corporate policy decisions. Second, analysts' ratings indices offered by independent professional organizations based on general CG principles. Such CG indices have been used by some studies (Toledo, 2010; Henry, 2008; Clacher *et al*., 2008) to investigate the extent to which CG is able to enhance firms' policy decisions.

Both measures have strength and weaknesses. First, analysts' ratings indices are reliable, as constructed by professionals whereas self-constructed indices may not be as reliable as the researcher constructs the index by himself (Francis *et al*., 2008; Hasan and Marston, 2010). Second, analysts' ratings indices are less labour-intensive than researchers' constructed indices and can be used for a large number of firms (Beattie and Thomson, 2007). Finally, unlike researchers' self-constructed indices where the annual reports are regarded as the main data source, the indices developed by analysts use several reports including: (i) quarterly reports; (ii) firms' announcements; (iii) investors relations; and (iv) annual reports among others (Healy and Palepu, 2001; Alsaeed, 2006).

Despite the advantages of analysts' ratings indices, the current study uses the researcher's self-constructed index to measure firms' CG disclosures for the following reasons. First, as most of the analysts' ratings indices are developed by international professional organisations, by following developed nations' CG principles. Additionally, many of these analysts' ratings indices may not be used due to changes in CG regulations. Second, analysts' ratings indices normally cover certain CG aspects, such as shareholding patterns and board characteristics (e.g., Chung and Zhang, 2011; Yermack, 1996) while the Pakistani CG index (*PCGI*) is constructed to incorporate all of the CG aspects that have been suggested by the literature. The *PCGI* comprise of 70 CG provisions categorised into five main elements, namely, board of directors, internal auditing and committees, shareholders right, transparency and disclosure, and internal control, external auditor and risk management. Third, there is no theoretical guidance which offers a criterion for the selection of indices to be used in the study (Hassan and Marston, 2010). Fourth, adopting researcher-constructed indices is in line with prior studies (e.g., Tariq and Abbas, 2013; Samaha *et al*., 2012; Price *et al.*, 2011), which in turn enables the current study to compare its results with those of past studies.

3.5.2 Choice between ordinal and binary coding schemes

According to literature (Beattie *et al*., 2004), there are two commonly used schemes for scoring indices: (i) ordinal coding scheme; and (ii) binary coding scheme. In the first scheme, a weight is assigned to each provision based on its importance and the degree of information related to it; hence, CG indices coded by this scheme are called weighted CG index. Such indices can be developed with the help of surveys from experts about both the importance of each provision and the level of disclosure of that particular provision (Hassan and Marston, 2010; Beattie *et al*., 2004). For instance, if a firm does not disclose any information about a specific CG provision it is assigned 0, if firm discloses qualitative

information only it is assigned 1, and if it discloses quantified information about that specific provision, a score of 2 is assigned. Obviously, the rating of a particular provision and weighting of disclosure vary among the researchers (e.g., Shah *et al*., 2009; Tariq and Abbas, 2013). In the second scheme, a score of 1 is assigned to a particular provision if it is disclosed, 0 otherwise; hence, indices scored by this scheme are known as un-weighted index.

Despite the advantages and drawbacks in both schemes, the current study relies on binary coding scheme to code the *PCGI*. This choice was made for five main reasons. First, there is no theoretical suggestion offering guidelines on how to choose between the two schemes. In this regard, binary coding scheme is considered preferable because it avoids making a bias towards any specific CG provision as it can be the case of ordinal coding scheme (Botosan, 1997; Owusu-Ansah, 1998).

Second, it is considered an appropriate method as the *PCGI* is designed to measure whether a particular provision is disclosed or not. Unlike the ordinal coding scheme, it only scores the absence or presence of a CG provision because the current study does not examine the quality of CG. Instead, it examines the level of CG compliance and disclosure and how this may drive firms' COC. For instance, a CG provision related to directors' independence necessitates only assigning a score of 1 if at least one member of the board is independent and 0 otherwise; therefore, a use of such scheme is considered to be an appropriate approach.

Third, unlike the ordinal coding scheme, binary coding scheme is often less biased as there is no personal judgment is required to assign the weights to any particular provision (Hassan and Marston, 2010). In support of this method, Tsipouri *et al*. (2004) state that binary coding scheme prevents the subjectivity of researchers where different provisions may be weighted differently. This should increase the reliability of *PCGI* as it can be easily replicated by another researcher.

Fourth, binary coding scheme is widely used by recent CG literature (e.g., Allegrini and Greco, 2013; Samaha *et al*., 2012) which enables current study to compare its results with those studies. This is especially true in developing countries where researchers face a problem in finding a professional CG organisation that helps in assigning weights to CG provisions. Finally, due to the fact that there is no theoretical foundation to give weights to different CG provisions, the present study takes two steps to mitigate the problems associated with binary coding scheme. The first step was to minimize the inequality between the weights of different provision where all the possible provisions were included

in the *PCGI* (Beattie *et al*., 2004). In the second step, the *PCGI*'s provisions were classified into five indices.

3.6 SUMMARY OF THE CHAPTER

This chapter offered an empirical and theoretical review of literature of nexus between firms' COC and CG disclosure level. The chapter was divided into five main sections. First, it discussed the most relevant theories that underlie CG disclosure and COC decisions by firms. In this regard, the study adopted a multiple-theoretical approach which involves agency theory, managerial signalling, resource dependence, asymmetric information, trade-off theory, and stewardship. This assisted the present study to develop its hypotheses and interpret its findings. Second, the literature was reviewed with respect to level of CG compliance and disclosure with CG codes. Literature has been discussed with respect to developed and developing countries in general and with respect to Pakistan in particular. The literature suggested that there is a difference in the CG compliance level between the developing and developed countries. Literature suggested that economic, cultural and legal system may attribute this difference in the level of compliance.

Third, this chapter reviewed the literature of factors influencing level of compliance with CG codes and developed hypothesis related to each determinant. These factors are categorised into two main types. First, ownership structure variables made up of: director; government; institutional; block; and foreign ownership. Second, board and audit characteristics variables consisting of: board size; board diversity in gender; board diversity in nationality; and audit firm size. The fourth section examined the literature of CG-COC relationship and developed hypothesis for PCGI, ownership structure and board/audit characteristics with COC. The fifth section discussed the literature related to self-constructed versus analysts' ratings indices and ordinal coding scheme versus binary coding scheme. In this study, self-constructed index and binary coding scheme are being used to construct the *PCGI* and the reasons of selection are discussed in detail.

The next chapter discusses the sample selection, data sources, methods of study and robustness analyses of the current study investigating level of compliance and disclosure with 2002 PCCG, factor influencing level of CG compliance with 2002 PCCG and the nexus between CG and COC.

CHAPTER FOUR

4 RESEARCH DESIGN

This chapter provides detailed discussion of the research design and methodological issues in the study. Specifically, it aims to attain the subsequent three objectives. Firstly, this chapter discusses sample and data sources used in the study. Secondly, it provides a comprehensive description of the research methodology used in this study. Thirdly, it discusses the sensitivity analyses that are employed. Therefore, 4.1 discusses sample selection and data sources. Section 4.2 discusses the research methodology. Section 4.3 will discuss a number of statistical tests performed before and after examining the study hypothesis while section 4.4 summarise the chapter.

4.1 SAMPLE SELECTION AND DATA SOURCES

The criteria for selecting sample, data sources employed and sampling limitations are discussed in this subsection.

4.1.1 Sample Selection Procedure

The sample used in analysing the CG compliance level Pakistani CG index (*PCGI*) and its impact on Cost of Capital (COC) is made up of Karachi Stock Exchange (KSE) listed firms. A total of 579 firms were listed on KSE[9] on December 31, 2014. Table 4.1 describes the sample for this study.

Table 4.1 also shows the industrial composition of firms listed on the KSE. The listed firms are grouped into eleven major sectors. The composition is made up of automobile and engineering, cement, chemical, electricity, financial, food, oil and gas, pharmaceutical, textile and general industrial. *Panel A* of Table 4.1 shows that the Pakistani market is dominated by chemical, cement, financial, food and textile industries as these industries represents 76% of the entire KSE listed firms while the remaining five industries presents only 24% of KSE listed firms.

[9] Karachi Stock Exchange can be found on http://www.khistocks.com.

Table 4.1: Sample selection procedure

Panel A: Industries of all listed Firms on the KSE as on 31 December 2014	***Firms in Industry***	***Percentage of firms(%)***
Automobile and engineering	26	4.49
Cement	36	6.22
Chemical	35	6.04
Electricity and Electronics	24	4.15
Financial	137	23.66
Food and Beverages	56	9.67
Household	33	5.70
Misc	30	5.20
Oil and gas	14	2.42
Pharmaceutical	9	1.55
Textile	179	30.92
Total population	*579*	*100.00*
Less: Financial Industry	*(137)*	23.66
Total KSE listed non-financial firms	*442*	*76.34*
Panel B: Industries of Firms to be sampled	***No of firms***	***Firms' percentage (%)***
Automobile and engineering	26	5.88
Cement	36	8.14
Chemical	35	7.92
Electricity and Electronics	24	5.43
Food and Beverages	56	12.67
Household	33	7.50
Misc.	30	6.80
Oil and gas	14	3.17
Pharmaceutical	9	2.04
Textile	179	40.50
Firms available for sample	442	100%
Minus: Missing data firms	(282)	63.80
Total samples firms with full data	160	36.20%
Panel C: Industries of Final sampled firms	***No. of Firms in final sample***	***Percentage of firms (%)***
Automobile and engineering	19	11.88
Cement	24	15.00
Chemical	18	11.25
Electricity and Electronics	9	5.63
Food and Beverages	19	11.88
Household	8	5.00
Misc.	14	9.00
Oil and gas	13	08.13
Pharmaceutical	7	4.38
Textile	29	18.13
Total	160	100.00%

In this study, the financial industry is not included in the final sample for three main reasons. First, financial firms have a different capital structure than those of non-financial firms which may have impact on firm value (Lim et *al*., 2007; Shah and Butt, 2009). Second, financial firms have been suggested to be heavily regulated. In the case of Pakistan, financial firms are required to comply with more regulations than their industrial counterparts. This is expected to have different impact on financial firm values from those of non-financial firms. Third, financial firms are excluded in line with previous studies in

order to make the results comparable with prior studies (e.g., Haniffa and Hudaib, 2006; Mangena and Chamisa, 2008; Tariq and Abbas, 2013).

Panel B of Table 4.1 shows the industrial composition of all remaining 442 firms (76.33% of entire KSE population) that were available for possible inclusion in the sample. This is further discussed in the following subsections.

4.1.2 Criteria for Selecting the Sample

To be included in the sample of this study, a firm has to meet two conditions. First, the firms' eleven year annual reports from 2003 to 2013, inclusive, must be available. Second, its corresponding eleven year financial and stock market information had to be available. The above criteria were specified for the four main reasons.

First, the majority of KSE listed firm's annual reports became publically available in 2003 with required CG information after the issuance of Pakistani CG code in 2002. This makes it possible to gather data from 2003 when the code was effectively implemented and firms started to publish their annual reports. Second, the sample ends in 2013 as it was the most recent year with available data at the time of data collection. Third, these criteria permit the current study to benefit from panel data characteristics. In this regard, there are several benefits associated with panel data approach including : (i) panel data has both time series and cross-sectional observations that allow contrast and facilitate the testing of more realistic behavioural models (Hsiao, 1985; Gujrati, 2003); (ii) unlike either cross-sectional or time series data, panel data permits the present study to collect a large number of observations, which decreases the problem of multicollinearity and also increase the degree of freedom (Gujrati, 2003; Wooldridge, 2009); (iii) differently from both cross-sectional and time series data, panel data allows the researcher to control for firm's heterogeneity in individual variables (Wooldridge, 2009; Ntim *et al*., 2012b); and (iv) it provides a way to minimize statistical problems in general and those related to CG in particular, such as endogeneity (Larcker and Rusticus, 2007; Ntim *et al*., 2012b). Further, use of panel data method is consistent with previous CG (e.g., Bhagat and Bolton, 2008; Ntim *et al*., 2012a) and COC (e.g., Pham *et al*., 2012; Soha, 2011) studies where this study would be able to compare its results to prior studies. Fourth, the above criteria facilitate meeting the conditions for using a balance panel data analysis which favours the inclusion of only firms with consecutive years of data (Cheng *et al*., 2006; Ntim *et al*., 2012a).

Under the above mentioned criteria *panel C* of Table 4.1 presents 160 firms for the period 2003 to 2013 with 1760 firm-year observations that met the selection criteria. The final sample includes firms from all 10 sectors of KSE listed firms. The textile and cement remain the largest sectors with 29 (18.13%) and 24 (15%) firms out of a total of 160 firms

respectively. By contrast, Pharmaceutical and Electricity are the smallest sectors with 7 (4.38%) and 9 (5.63%) firms respectively whereas the share of the remaining sectors range from 8% to 13% of sampled firms. Generally, the distribution of the sample is consistent with the industrial composition of all firms available at the time of collecting the data. This allows the current study to be more able to generalize its results where each sector has been fairly presented. For instance, Electricity and Electronics sectors make up 5.43% and 5.63%, respectively of the final sample.

A sample of 160 listed firms with 1760 firm year-observations over 2003 to 2013 is considered to be large enough to make significant contributions to the extent literature. The final sample is different from prior studies in Pakistan in two main aspects. First, the present study's sample is considered as large enough used in Pakistani study on CG. For instance, in examining the relationship between CG and dividend payment, Afzal and Sehrish (2010) employ only 42 listed firms. More recently, Tariq and Abbas (2013) use 119 listed firms to study the nexus between compliance level and firm value. With particular reference to the current study, Shah *et al*. (2009) use a sample of 114 in their examination of the influence of CG on cost of equity. Thus, literature shows that the number of firms included in prior Pakistani studies' samples is less than in the current study's sample. Arguably, this limits the prior studies' findings. In contrast, using a sample of 160 listed firms enables the present study to improve the examination of Pakistani CG level and determinants, including the impact on COC.

Second, and apart from differences in number of firms, the sample time period used by previous studies in Pakistan are discernibly far shorter than the present study time period. For instance, Afzal and Sehrish (2010) and Shah *et al*. (2009) document their empirical evidence based on only five-year period. The longest time period examined in past Pakistani studies on CG is by Tariq and Abbas (2013)' who employ sample from 2003-2010. In contrast, the current study investigates Pakistani CG reforms over the 2003-2013 period, which is far longer period and more recent compared with previous studies on Pakistan. Therefore, the current study is the most recent and extensive time period that has been investigated within the Pakistani context in relation to CG in general and the impact of CG on COC in particular.

A balance panel data of 1760 firm-year observations is regarded as one of largest data sets that can be used in studies in developing countries to examine issues that are related to CG variables given the fact that these variables are extracted manually from annual reports which is considered a highly labour-intensive activity (Hussainey *et al*., 2003; Beattie *et al*., 2004). Despite great efforts that have been made to extend the sample,

practical limitations like data availability, funding and time restrict the sample size but ensure that the research is accomplished within the planned time frame of a PhD study.

4.1.3 Data and Source

There are three types of data are being used in this study including: (i) CG variables; (ii) Financial variables; and (ii) Stock Market variables. First, using content analysis approach, CG variables were manually collected from the annual reports of the sampled firms. These annual reports were collected from different sources: Rest of world of World Filings of the Perfect Information Database, companies' website and *KSE* website. Firms' annual reports that were not available in the above sources were obtained from *SECP* head office in Islamabad, Pakistan.[10] Second, the data on financial variables of 130 firms were collected from Datastream while the data for the remaining 30 firms were collected from *Balance Sheet Analyses* of State Bank of Pakistan's publication. Sampled firms monthly stock prices, Government of Pakistan T-Bill rates and Market indices variables constitute the third type of data used in this study which were collected from Datastream. Missing or in-sufficient data related to Company's monthly stock prices, Government of Pakistan T-Bill rates and Market indices data were collected from the website of business recorder.[11]

4.2 RESEARCH METHODOLOGY

The methodology of the study is discussed in this section. As discussed in chapter one, the objective of this study is to answer three main research questions. First, what is the level of compliance with governance provisions contained in 2002 Pakistani code of CG (PCCG) and to what extent has the introduction of PCCG improved CG practices in Pakistani context? Second, it investigates the factor that determine the CG compliance level with provisions contained in PCCG? Third, what is the association between CG mechanisms and COC of Pakistani listed firms?

[10] For the missing annual reports of the sample, researcher visited Pakistan and accessed those reports from SECP head office Islamabad, Pakistan. The coding for those reports had been done with in premises of SECP for a period of one month.

[11] http://www.brecorder.com

4.2.1 The coding steps and sources of Pakistani Corporate Governance Index (*PCGI*)

As discussed in section 3.5, a self-constructed CG Index based on Pakistani CG code will be used to measure the level and determinants of compliance with CG provisions of the PCCG. The *PCGI* is also used to examine its impact on the COC. The adoption of self-constructed CG index and binary coding scheme as a methodological approach is justified in section 3.5. The *PCGI* is constructed from the PCCG 2002. The listing rules were also used as additional source in order to develop a comprehensive index. Table in appendix 1 explains each provisions and the source included in the *PCGI*.

Following prior literature (e.g., Elghuweel *et al*., 2016; Ntim *et al.,* 2012), this study employs governance index in order to examine CG practices in Pakistan. This subsection discusses data sources of Pakistani CG index, the validity and reliability of CG index.

4.2.1.1 Data Sources of Pakistani CG Index (*PCGI*)

Hassan and Marston (2010) demonstrate that companies provide information in different ways which include: (i) annual reports;(ii) analyst presentations; (iii) conference calls; (iv) interim reports; (v) investor relations; (vi) press releases; (vii) prospectus; and (viii) websites among other sources. Among these resources, this research depends on annual reports of the firms as a source to manually extract CG information. In particular, the reliance on those reports in constructing the *PCGI* was due to the following reasons.

First, annual reports are considered by prior studies as a significant reporting document in examining different empirical issues. Knutson (1992, p.22) says that "*the annual report is the major reporting document and every other report is in some respect subsidiary or supplementary to it*". Second, annual report provides both quantitative and qualitative data. This allows the present study to obtain both the CG and financial data which cannot be found in other data sources, especially CG variables. Third, it has been argued that disclosure level in firm's annual reports is positively associated with the disclosure disclosed through other means (Botosan, 1997). Fourth, annual reports are primarily addressing shareholders' interests since managers are accountable to them (Alsaeed, 2006). This increases the credibility of annual reports (Samaha *et al*., 2012). Fifth, the KSE listing rules, specifically Article 35(Xl), mandate the listed firms to provide annual reports audited by external auditors. This makes the annual reports highly reliable source to collect CG information. Sixth, reliance on annual reports is in line with recent

studies (Al-Jandi *et al*., 2013; Tariq and Abbas, 2013), which in turn, improves the comparability with these studies.

4.2.1.2 Validity, Reliability and Coding Procedure of self-constructed Index (*PCGI*)

There are two methodological concerns that have to be addressed while using a researcher's self-constructed index, namely validity and reliability. This subsection discusses a number of steps that were carried out by the current study to ensure that *PCGI* is a valid and reliable tool.

Saunders *et al*. (2007, p.614) defined the validity as "*the extent to which data collection methods accurately measure what they were intended to measure*". Thus, an index can be considered as valid, if it reflects what the researcher intended (Omar and Simon, 2011). Hassan and Marston (2010) argue that there are three main types of validity which are: criterion- related validity, construct validity, and content validity. Sekaran (2003, p. 206) defined criterion-related validity as "*established when the measure differentiates individuals on a criterion it is expected to predict*". Construct validity is instrument' measurement while content validity is about the adequacy and representation of indices' items (Sekaran, 2003).

The validity of *PCGI* was improved by applying following measures related to criterion, construct, and content validity. First, the Pakistani CG index is developed by researcher himself rather than using analysts' ratings. The *PCGI* largely depends on 2002 PCCG that enables this index to reflect accurate CG practices among Pakistani listed firms. Second, the construction of index was guided by CG literature to cover all important areas. For instance, in line with several past studies, the current study paid close attention to the board of directors. Third, the validity of *PCGI* is enhanced by reviewing it twice before finalising it: (i) once *PCGI* is constructed from PCCG, each provision was discussed in detail with researcher's supervisors who are expert in CG. This enabled the researcher to utilise their suggestions in refining the *PCGI*; and (ii) the draft of *PCGI* was further discussed in annual doctoral conferences.[12] The *PCGI* has improved on the basis of comments received from those academics and experienced researcher from the field of CG. This improves the criterion and content validity of the *PCGI*; hence, *PCGI* is considered a valid instrument.

The second methodological concern, however, is reliability. Hassan and Marston (2010) state that reliability "*concerns the ability of a measurement instrument to reproduce consistent results on a repeated measurement (some refer to it as the stability of the*

[12] It was presented at the 2014 British Accounting and Finance Doctoral Colloquia, and Scottish Doctoral Colloquia.

measurement instrument over time)". Literature shows that reliability can be assessed by two measures namely: consistency and stability (Sekaran, 2003).

With respect to consistency, it is defined as "*an indicator of how well the different items measure the same issue. This is important because a group of items that purports to measure one variable should indeed be clearly focused on that variable*" (Litwin, 1995). Following the prior literature (e.g., Gul and Leung, 2004), the current study employes Cronbach's alpha[13] (Cronbach, 1951) to measure internal consistency of *PCGI*.

Table 4.2: Cronbach's Alpha Reliability test for Pakistani Corporate Governance Index (*PCGI*)

Sub-Indices of *PCGI*	Cronbach's Alpha if item deleted	Cronbach's Alpha Based on Standardized Items
The board of directors	0.951	0.964
Internal auditing and committees	0.949	
Shareholders right	0.950	
Transparency and disclosure	0.945	
Internal Control, External Auditor and Risk Management	0.940	

The Cronbach's alpha value can be from zero to one; the higher the coefficient alpha, the higher the reliability of the measurement. According to Allegrini and Greco (2013), the Cronbach's alpha value above 0.80 proposes that this instrument is consistent. As shown in Table 4.2, the coefficient alpha value (based on standardise data) for five subcategories of *PCGI* is 96.4% which indicates that the constructed index is highly reliable. Table 4.2 show that all "Cronbach's Alpha if item deleted" are lower than the "Cronbach's Alpha Based on Standardized Items" which means that the exclusion of any sub-index can significantly harm the reliability of the *PCGI*.

With regards to stability, it is a case where the researcher should be able to obtain the same results over time by using the same measuring procedure (Hassan and Marston, 2010). In line with previous literature (e.g., Omar and Simon, 2011; Samaha *et al*, 2012), this study uses test-retest approach to measure the stability of the index. In doing so, three steps have been taken to achieve *PCGI*'s stability. First, before starting the coding of *PCGI*, all contents of each sampled firms' annual reports were read carefully. This helped the researcher to be aware of the activities of firms, which was helpful to identify the applicable and non-applicable CG provisions (Omer and Simons, 2011). This allowed the researcher to make sure that all *PCGI* provisions are applicable to all sampled firms. Second, firm wise coding was performed for whole sample in the first round. For instance, each firm was coded for the 11 year period starting from 2003 to 2013 before the next firm

[13]Cronbach's alpha is one of the most popular tests to measure internal consistency by measuring the correlation between the items and showing how well the sub items complement each other in the measurement of different aspect of a variable (Litwin, 1995).

was coded. This assisted to improve the consistency and accuracy in coding. Third, the coding of all sampled firms was double checked to identify if any mistake has been made in the first round coding.

Table 4.3: The Pakistani CG index provisions

Pakistani Corporate Governance Index				
Section	**No.**	***PCGI* Provision**	**Range of Scores**	**Total Provisions**
I.	**Board of Directors**			**18**
	1	Whether firm discloses the categorization[14] of directors in annual report	0-1	
	2	Whether at least one member of the board is independent	0-1	
	3	Whether firm has a director representing minority shareholders	0-1	
	4	Whether at least one fourth of the board is non-executive	0-1	
	5	Whether the firm discloses the director's membership in other boards of listed companies in their annual report	0-1	
	6	Whether the directors of firms have not more than seven/ten positions simultaneously	0-1	
	7	Whether board Chairman is a Non-Executive director	0-1	
	8	Whether there is a clear narrative that classifies the role of chairman and CEO	0-1	
	9	Whether the CEO position is separate from the chairman position	0-1	
	10	Whether firm disclose the directors' orientation course	0-1	
	11	Whether the board meetings are disclosed in annual reports	0-1	
	12	Whether at least board meet 4 time in a year	0-1	
	13	Whether the name of the directors is born on the register of National Tax Payers is disclosed	0-1	
	14	Whether non defaulter information about directors is disclosed in annual report	0-1	
	15	Whether no involvement of directors in brokerage business is disclosed in annual report	0-1	
	16	Whether firm discloses that the statement of ethics and business practices is prepared and circulated	0-1	
	17	Whether firm discloses that the fiduciary powers are exercised by the board of directors	0-1	
	18	Whether firm discloses future outlook in annual reports	0-1	
II.	**Committees and Auditing**			**14**
	19	Whether firm has a Remuneration or HR Committee	0-1	
	20	Whether Committee has at least three members with a majority of non-executive directors	0-1	
	21	Whether firm discloses the numbers of different committees meetings held during the year	0-1	
	22	Whether it publishes the attendance of meetings by each member	0-1	
	23	Whether firm discloses the names of the members of the committees of the board in each annual reports	0-1	
	24	Whether the names of audit committee are discloses in annual reports	0-1	

[14] Categorization of directors in term of Independent, Non-Executive or Executive

Table 4.3: The Pakistani CG index provisions

Pakistani Corporate Governance Index				
Section	**No.**	***PCGI* Provision**	**Range of Scores**	**Total Provisions**
	25	Whether minimum members of Audit Committee is at least three	0-1	
	26	Whether Non-Executive director is the Chairman of the audit Committee	0-1	
	27	Whether Non-Executive directors are in the majority in audit Committee	0-1	
	28	Whether audit Committee members do arrange meetings four times in one years and this information is available in annual reports	0-1	
	29	Whether The Head of Internal audit Committee and a Representative of External Auditors attended Audit Committee meetings and this information is discloses in annual reports	0-1	
	30	Whether Audit Committee Review of quarterly, Half-yearly and annual financial statements prior to the approval of Board of Director and discloses in annual reports	0-1	
	31	Review of Management letter issued by external auditors and discloses in annual reports	0-1	
	32	Whether audit committee appointed a secretary and this information is discloses in the annual reports	0-1	
III.	**Shareholders Right**			**6**
	33	Whether firm issued a notice of AGM about the meeting to shareholders	0-1	
	34	Whether firm issued a notice of AGM at least 21 days before the meeting date	0-1	
	35	Whether firm held AGM within three/four[15] months following the close of its financial year,	0-1	
	36	Whether firm held AGM within the same town as company has registered office	0-1	
	37	Whether the notice of the AGM specify the date, place, time, and the business to be transacted,	0-1	
	38	Whether the notice of the AGM specify that shareholder can participate personally or through proxy	0-1	
IV.	**Transparency And Disclosures**			**14**
	39	Whether firm discloses its ownership structure in annual reports	0-1	
	40	Whether firm discloses the name wise detail of shareholdings of directors, CEO, their spouse and minor children's	0-1	
	41	Whether firm discloses the shareholdings of ten percent or more voting rights	0-1	

[15] According to Companies Ordinance 1984, till 2008 this period was 4 month and then changed to 3 months. Data is collected accordingly.

Table 4.3: The Pakistani CG index provisions

Pakistani Corporate Governance Index				
Section	**No.**	***PCGI* Provision**	**Range of Scores**	**Total Provisions**
	42	Whether it is discloses that firm is a going concern entity and explanation if not	0-1	
	43	Whether firm discloses its outstanding taxes and other charges with reason in annual reports	0-1	
	44	Whether firm discloses the operations, cash flows and change in equity in annual reports	0-1	
	45	Whether firm discloses the last six years financial and operating performance in annual reports	0-1	
	46	Whether firm discloses operating results and significant deviation from last year, if any and reasons explained in annual reports	0-1	
	47	Whether firm discloses the trade of shares of companies carried out by directors, executives, their spouses and minor child	0-1	
	48	Whether firm discloses Mission, Vision and Corporate strategies in annual reports	0-1	
	49	Whether it provides an encouraging declaration on compliance with the PCCG[16] in reports	0-1	
	50	Whether firm discloses the reason of a bonus share (if any) or not paying dividend	0-1	
	51	Whether the firm discloses evidence of every contract in which parties are firm and its directors or any other executive is or was materially interested and clear statement in case of no such transaction	0-1	
	52	Whether firm discloses the detail of payment in form of remunerations in annual reports to the board of directors	0-1	
V.	**Internal Control, External Auditor And Risk Management**			**18**
	53	Whether firm discloses that there is an effective and sound internal control system established, implemented, and monitored by the BoD	0-1	
	54	Whether firm provides a description about the actual and potential risk of the company	0-1	
	55	Whether firm provides a clear description of risk management policies in annual report	0-1	
	56	Whether auditor reports provide a narrative that internal control system has been reviewed by the auditor	0-1	
	57	Whether auditor reports provide a narrative financial reports have been reviewed by the auditor	0-1	
	58	Whether the reports are ratified by the firms' board and sign up by the authorised executives, CEO and CFO earlier to circulation to the	0-1	

[16] PCCG stands for Pakistani Code of Corporate Governance.

Table 4.3: The Pakistani CG index provisions

Pakistani Corporate Governance Index				
Section	**No.**	***PCGI* Provision**	**Range of Scores**	**Total Provisions**
		shareholders		
	59	Whether firm discloses that proper book of accounts are maintained in annual reports	0-1	
	60	Whether firm discloses appropriate accounting policies applied in preparation of accounting estimations and financial statements in annual reports	0-1	
	61	Whether firm discloses that financial statements are according to IAS	0-1	
	62	Whether External Auditors have Satisfactory rating under the Quality Review Program by Institute of Charted Accountants of Pakistan and this information is discloses	0-1	
	63	Whether Compliance with International Federation of Accountants Gridlines on code of ethics is published in annual reports	0-1	
	64	Whether Auditor perform duties according to IFAC, no management role and this information is discloses in annual reports	0-1	
	65	Whether external auditor of the company attends the annual general meeting and this information is discloses in annual reports	0-1	
	66	Whether Statutory Auditors of company Reviews the Corporate Governance Compliance Statement and disclose this information in annual reports	0-1	
	67	Whether half yearly financial statements with statutory auditor's review information discloses in annual reports	0-1	
	68	Whether Annual audited financial statements not later than four month from close of financial year discloses in annual reports	0-1	
	69	if Compliance with relevant Statutory Requirements is determined by external auditors and discloses in annual reports	0-1	
	70	Whether if external auditors are Monitoring Compliance with Best Practices of Corporate Governance and Identification of Violence if any discloses in annual reports	0-1	
Five Sections		**Total Corporate Governance Provisions**		**70**

4.2.2 Determinants of Corporate Governance Compliance and Disclosure Model

The current study aims to examine the factor influencing the level of CG compliance for Pakistani listed firms. The Table 4.4 presents factors employed in the study to test hypothesis developed in subsection 3.2.3. Drawing from theories, empirical studies and Pakistani context, factors under investigation include: ownership structure, CG variables and general firm characteristics. Subsection 4.2.2.1 explains the dependent

variable. Subsection 4.2.2.2 explains the independent variables, while the subsection 4.2.2.3 presents the control variables used in this model.

Table 4.4: Detail of variable in determinants of CG compliance

Dependent Variable	
PCGI	Pakistani CG Index (*PCGI*) consists of 70 provisions from PCCG, which takes a binary number of 1 in case the CG provision is published in reports of company, otherwise 0.
Explanatory variables	
DOWNP	Percentage of shares owned by directors to the total shares held by firm.
IOWNP	Percentage of shares owned by institutions to the total shares held by firm.
GOWNP	Percentage of shares owned by government to the total shares held by firm.
BOWNP	Percentage of shares owned by shareholders with at least 5% of total shares to the total shares held by firm.
FOWNP	Percentage of shares owned by foreigner to the total shares held by firm.
BIG4	1 if firm is audited by one of the big-four[17] audit firms, 0 otherwise.
BSZ	The total number of directors on the board of firm at the time of AGM.
BGEN	1 if firm has a female board member, 0 otherwise.
BNAT	1 if firm has a foreign board member, 0 otherwise.
The Control Variables	
LTA	It is measured as the log of total assets of the company.
ROE	Earnings before interest and tax to total equity of the firm.
SALESG	Sales in this year menus sales in the previous year divided by sales in the previous year.
LEVG	Total book value of debt to total book value of assets.
CETA	Percentage of total capital expenditure to the total assets of the firm.
INDUSTRY	In this study a dummy variable is employed for each of the ten industry.
YERDUMY	In this study a dummy variable is employed for each of the eleven year.

4.2.2.1 The Pakistani CG Index (*PCGI*)

The Pakistani CG index (*PCGI*) is employed as the main dependent variable in this study. The *PCGI* is the collection of 70 broad set of CG provisions contained in the 2002 Pakistani CG code. Distinctively, it is different from past research (e.g., Haider *et al.*, 2013) in two main aspects. Firstly, unlike the previous studies (e.g., Butt and Hasan, 2009; Ali Shah and Butt, 2009; Haider *et al*., 2013) that focuses mainly on individual CG measures, such as, board characteristics, *PCGI* covers all CG aspects (see Table 4.3). Second, unlike some past studies that rely on international CG codes to construct their CG indexes (e.g., Al-Malkawi *et al*. 2014), the current study constructs its index based on Pakistani CG code. The *PCGI* has been constructed by using a binary code scheme and data is taken from annual reports. In this method of scoring, value '1' is awarded to a CG provision if it has been published in the firms' annual report and otherwise '0'.

4.2.2.2 Independent variables: CG Mechanisms

The literature shows that there are two main types of CG variables that influence the level of CG disclosure namely; ownership structure and board/audit characteristics (Ntim and Soobaroyen, 2013a; Allegrini and Greco, 2013; Chalevas, 2011). In this regard,

[17] Big-four are Deloitte & Touche, Ernst & Young, KPMG and PricewaterhouseCoopers.

and unlike considerable number of prior studies who restrict their analyses to limited CG variables, the current study employs large number of CG variables in its investigation for the determinants of CG disclosure. These factors are: (i) ownership structure that consists for five types of ownership: director ownership (DOWNP), institutional ownership (IOWNP), government ownership (GOWNP), block ownership (BOWNP), foreign ownership (FOWNP) and (ii) board and audit variables include[18]: audit firm size (BIG4), board size (BSZ), gender diversification (BGEN) and nationality diversification (BNAT). As discussed in section 3.3, the choice of the above variables were based on theory past empirical literature and availability of data. Additionally, Table 4.4 shows how these variables were measured.

4.2.2.3 The Control Variables

In addition to ownership structure and CG variables, prior studies provide evidence that some firm characteristics have impact on CG compliance and disclosure. Hence, this study includes firm size, leverage, growth, profitability, capital expenditure, as well as year and industry factors as control variables. The inclusion of these variables was to take account of their effects and mitigate some statistical issues, such as endogeneity problem. Although this study includes the most common firm attributes that have been used by previous studies, the choice of these were restricted by the data availability. Each control variable is defined in Table 4.4 and the reason for including in the model on the basis of theoretical argument and empirical literature is explained in the following subsection.

(i) Firm Size (LTA)

Size of the firm is one of the important factor which can influence good CG practices (Samaha *et al*., 2012). Generally, firm size is considered to be positively associated with CG disclosure. In this regard, a number of theoretical studies support the view that the larger firms disclose more CG information. For instance, Agency theory predicts that larger firms have complexity in their capital structure which causes a greater agency problem (Jensen and Meckling, 1976; Chow and Wong-Boren, 1987; Bebchuk and Weisbach, 2010). Thus, such firms are expected to enhance CG compliance to minimise asymmetric information (Eng and Mark, 2003; Jensen and Meckling, 1976). Similarly, resource dependence theory argues that the large firms are motivated to disclose more CG information in order to secure required resources (Pfeffer and Salancik, 1978).

[18] Audit committee characteristics are not used as explanatory variable in the regression model as the characteritics of audit committee are coverd by the 2002 PCCG and hence included in *PCGI.*

Additionally, Firth (1979) recognizes three main reasons that larger firms are expected to disclose more information. First, as large firms rely more on stock market for capital financing, they may disclose more information in order to raise capital at low cost. Second, such firms may disclose more CG information as they can afford the cost of collection and publication of information. Third, small firms may disclose less CG information, as it may affect their competitiveness in the market with those large firms.

With regard to empirical literature, a considerable number of studies (e.g., Sharma, 2014; Allegrini and Greco, 2013; Elzahar and Hussainey, 2012; Omar and Simon, 2011) report significant and positive nexus between the size of the firm and CG compliance. For instance, Allegrini and Greco (2013) studied the factors that may influence the CG disclosure by constructing a CG disclosure index. Following prior studies, the current study measure the size of firm by calculating the log of total assets of the firm and labelled as LTA.

(ii) Leverage (LVG)

Theoretical and empirical literature shows that firm's capital structure can have a significant impact on its corporate decisions. Theoretically, high debt in firm capital structure may increase the agency costs (Jensen and Meckling, 1976). Both shareholder and creditors can have concerns with such firms. For instance, shareholders may want to ensure that managers will not expropriate their wealth by investing in wasteful projects. Similarly, creditors want to ensure that the firm can meet its debt obligations (Smith and Warner, 1979). In this regard, firms may disclose more CG information to mitigate these concerns of shareholders and creditors. In addition to agency theory, Legitimacy and resource dependence theories also proposes that the more leveraged firms may disclose more CG information to insure the creditors about their performance and to secure their resources.

Empirically, there is no consensus on the relationship between leverage and firm level CG disclosure. For instance, a number of empirical studies (e.g., Omar and Simon, 2011; Sharma, 2014) have reported a positive and significant association betwen leverage and firm level CG compliance. For instance, Omar and Simon (2011) examined Jordanian listed firms and have reported significant and positive relationship between leverage and firm level CG disclosure. On the other hand, a few studies (e.g., Adelopo, 2011; Mallin and Ow-Yong, 2011) have reported a significant and negative relationship between leverage and firm level CG disclosure. For instance, Adelopo (2011) examined 63 listed firms of Nigerian Stock Exchange and have reported a significant and positive relationship

between leverage and firm level CG disclosure. Some other studies (Alkhtaruddin *et al*., 2009; Elzahar and Hussainey, 2012; Allegrini and Greco, 2013) have reported insignificant association of leverage and firm level CG disclosure. For instance, Alkhtaruddin *et al*. (2009) examined 105 listed firms on Bursa Malaysia and reported an insignificant and negative relationship between leverage and firm level CG disclosure. Following prior studies (Allegrini and Greco, 2013; Samaha *et al*., 2012), leverage is measured as the ratio of total debt to total assets and labelled as LVG.

(iii) Growth (SALESG)

Theoretically, firm growth is considered as an influential factor in CG disclosure and is predicted to have a positive relationship with CG disclosure. For instance, agency and signalling theory predicts higher information asymmetry and agency cost in firms with higher growth and investment opportunities (Jensen and Meckling, 1976; Jensen, 1986; Gaver and Gaver, 1993). This may lead such firms to disclose more CG information to deal with information asymmetry issues. Similarly, Legitimacy theory argues that firm with higher growth may disclose more CG information to attract funds despite higher bankruptcy risk associated with their activities. Therefore, more CG disclosure is expected by such growing firms in order to attract financing at lower cost (Collett and Hrasky, 2005; Khurana *et al*., 2006).

Empirically, several researcher (Laidroo, 2009; Ntim and Soobaroyen, 2013a; Ntim and Soobaroyen, 2013b) found a significant and positive relationship between the growth of the firm and CG compliance and disclosure. Following the previous literature (e.g., Ntim *et al*., 2012a), growth is calculated by the this year sales minus last year sales divided by the last year sales and labelled as SALESG in the current study.

(iv) Profitability (ROE)

Theoretically, literature shows that profitable firms disclose more CG information than those are less profitable. For instance, both agency and signalling theory argue that managers of profitable firms can have an incentive to disclose more information to justify and maintain their compensation and position. In this regard, several prior studies (Wallace and Naser, 1995; Haniffa and Cooke, 2002) reported that profitable firms are motivated to disclose more CG information to distinguish their firms from those less profitable firms. Similarly, legitimacy theory predicts that profitable firm's managers are expected to disclose more information in order to legitimise their continued presence as stewards (Ntim

and Soobaroyen, 2013). In contrast, profitable firms may not disclose CG information in order to avoid some cost and protect their competitiveness (Huafang and Jianguo, 2007).

Empirically, a number of prior studies (Omar and Simon, 2011; Nitm *et al*., 2012a; Samaha *et al*., 2012) supports this positive theoretical prediction. For instance, by examining Egyptian firms, Samaha *et al*. (2012) reported a positive and significant association between profitability and the level of CG disclosure. On the other hand, several researcher (Hossain and Hammami, 2009; Elzahar and Hussainey, 2012; Allegrini and Greco, 2013) have reported an insignificant relationship between firm profitability and level of CG disclosure. Following the literature, profitability is calculated by dividing operating profit to firm total equity and labelled as ROE in the current study.

(v) Capital Expenditure (CE)

It has been suggested that the capital expenditure (CE) is associated with firms' growth (Pfeffer, 1972; Pearce and Zahra, 1992). Firm growth suggests the need for increase in capital expenditure. It requires additional monitoring from the board of directors and better accountability to protect the wealth of shareholders (Conyon and He, 2011). Thus, increased CE is expected to improve CG compliance and disclosure. Empirically, prior CG literature suggests that there is a weak nexus between CG disclosure and capital expenditure (Ntim and Soobaroyen, 2013). However, significant association between CG disclosure and capital expenditure is postulated in this study based on theory. Capital expenditure is measured by dividing the capital expenditure with the firms' tolal assets.

(vi) *Industry and Year Dummies*

It is widely recognised that CG practices may differ industry wise and with time. For instance, industries are significantly different from each other in different ways including, the line of business, capital structure, complexity of operations, ownership structures, and corporate governance practices (Lim *et al*., 2007). In this regard, Deutsche Bank (2002) argued that CG standards differ across the industries. Similarly, Henry (2008) argued that CG practices changes across the firm over time. For instance, Shabir and Padget (2005) reported a positive association of time with CG code by examining 350 listed firms of UK. Thus, to capture this potential unobserved heterogeneity and following the prior studies (Black *et al*., 2006, Henry, 2008; Ntim *et al*., 2012; Bozec *et al*., 2014), the current study employs dummy variables for ten different industries and for eleven years.

4.2.2.4 Model Specification

This study employs multiple linear regression analysis and uses Ordinary Least Square (OLS), where the *PCGI* is regressed on independent variables to test the above hypotheses. Following prior studies, and with the assumption of linearity, the ordinary least square is estimated as follows:

$$PCGI_{it} = \alpha_0 + \beta_1 DOWNP_{it} + \beta_2 IOWNP_{it} + \beta_3 GOWNP_{it} + \beta_4 BOWNP_{it} + \beta_5 FOWNP_{it} + \beta_6 BIG4_{it} + \beta_7 BSZ_{it} + \beta_8 BGEN_{it} + \beta_9 BNAT_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (1)$$

Where:

Subscript i and t	represent firms and time respectively
PCGI	Pakistani CG Index
α	Constant term
DOWNP	Percentage of shares owned by directors
IOWNP	Percentage of shares owned by institutions
GOWNP	Percentage of shares owned by government
BOWNP	Percentage of shares owned by shareholders with at least 5%
FOWNP	Percentage of shares owned by foreigner
BIG4	Audit firm size
BSZ	Board size
BGEN	Board diversity on the basis of gender
BNAT[19]	Board diversity on the basis of nationality
CONTROLS	Control variables includes: firm size (LTA), profitability (ROE), sales growth (SALESG), leverage (LEVG), Capital expenditure (CETA) industry, and year dummies.
ε	Error term

4.2.3 Corporate Governance Mechanisms and Firm COC

This study also investigates the impact of CG disclosure on firms' COC. Table 4.5 shows the detail of all variables employed in the current study to examine the hypothesis developed in subsection 3.4. Drawing from theories, empirical studies and Pakistani context, factors under investigation include: ownership structure, CG variables and general firm characteristics. COC is used as proxy for firm value which is in line with literature (e.g., Bozec and Bozec, 2011; Pham *et al*., 2012). Specifically, subsection 4.2.3.1 explains the dependent variable. Subsection 4.2.3.2 explains the independent variables, while the subsection 4.2.3.3 presents the control variables used in this model.

[19] Board diversity on the basis of nationality is used in this model as an explanatory variable but not in the second model of CG and COC due to its usage as alternative CG variable in robustness analysis of the model (see subsection 7.2.6).

4.2.3.1 The Dependent Variable: Cost of Capital (COC)

Finance literature shows that Weighted Average COC is used to measure firms' COC. For instance, in interviews of 27 highly regarded U.S. firms, Bruner *et al*. (1998) reports that 89% of the CFO use WACC to compute the discounted cash flows of their firms. Similarly, Meier and Tarhan (2007) found that 71% of respondents use WACC to discount the estimated cash flows in their survey of 127 firms. Bierman (1993) find in a survey of Fortune 500 firms that 93% of 74 respondents use WACC to discount the estimated cash flows. Supporting evidence is also provided by UK and Australian companies. Truong *et al*. (2007) used a sample survey to analyse the capital budgeting practices in Australian listed firms and found that firms normally discounting their cash flows of all divisions by same rate of WACC. More recently, Bozec *et al*. (2014) argue that firms estimated cash flows should be discounted by COC using WACC as firms have several sources of capital to fund their projects.

Therefore, the current study examines firms' COC by using WACC that is in line with previous literature (e.g., Pham *et al*., 2012; Bozec and Bozec, 2011) that use WACC to examine different issues related to capital structure. Following prior studies (e.g., Bozec *et al*., 2014), COC is calculated based on the following equation (a):

$$COC = D/(D+E)(1-T)Kd + E/(D+E)Ke.....(a)$$

Where:

COC	Weighted Average COC is based on target weights of debt and equity with respect to their cost
D	indicate market value of debt
E	indicate market value of equity
K_d	indicate cost of debt (before tax)
K_e	indicate cost of equity

In the next subsections, both Cost of Debt and Equity capital are further discussed in order to demonstrate how they were calculated. Two main issues are discussed, namely the models that have been used by prior literature to calculate Cost of Debt and Equity capital and the reason for choosing a particular model.

Table 4.5: Summary of Variables used in Corporate Governance Mechanisms and Firm COC Model

Dependent Variable	
COC	Weighted Average COC is computed using after-tax cost of debt and cost of equity by using weights of total debt and total equity to total market capitalization of the firm.
Independent Variables	
PCGI	Pakistani Corporate Governance Index (*PCGI*) consists of 70 provisions from PCCG, which takes a value of 1 if a particular CG provision is disclosed in annual reports of company, 0 otherwise.
DOWNP	Percentage of shares owned by directors to the total shares held by firm.
IOWNP	Percentage of shares owned by institutions to the total shares held by firm.
GOWNP	Percentage of shares owned by government to the total shares held by firm.
BOWNP	Percentage of shares owned by shareholders with at least 5% of total shares to the total shares held by firm.
FOWNP	Percentage of shares owned by foreigner to the total shares held by firm.
BIG4	1 if firm is audited by one of the big-four[20] audit firms, 0 otherwise.
BSZ	The total number of directors on the board of firm at the time of AGM.
BGEN	1 if firm has a female board member, 0 otherwise.
The Control Variables	
LTA	Natural log of total book value of assets of the firm.
ROE	Earnings before interest and tax to total equity of the firm.
SALESG	This year sales menus last year sales to last year sales.
LEVG	Total book value of debt to total book value of assets.
β	Three years monthly stock returns are used to calculate beta of firm by using a regression of stock return to market returns.
INDUSTRY	In this study a dummy variable is employed for each of the nine industry.
YEARDMY	In this study a dummy variable is employed for each of the eleven year.

(i) Cost of Equity Capital

Investors are often interested in the Cost of equity (COE) capital as it is regarded as the required rate of return for them, but its estimation is more challenging as it is not a directly observable variable. In this regard, several models have been suggested in the literature to calculate the cost of equity capital. The most common models include: (i) Gordon growth model (1956); (ii) Gordon model (1959); (iii) Capital Assets Pricing Model (1964); (iv) Linter Model (1965); (v); three factor pricing model (1995). As is the case in many finance issues, there is no consensus among researchers about the best model that should be used (Fama and French, 1997).

[20] Big-four are Deloitte & Touche, Ernst & Young, KPMG and PricewaterhouseCoopers.

Thus, the current study employs Capital Assets Pricing model to calculate Cost of equity capital which in line with many past studies (Bozec *et al*., 2014). There are four main reasons for choosing this model. First, there is no theory suggesting which model should be used as a best proxy to calculate cost of equity capital. Second, Kester *et al*. (1999) conducted an international survey of six Asian Pacific Countries and Australia. The result of the survey shows the popularity of the use of CAPM to calculate the COE, which was used by the 73% of surveyed firms. Similarly, Graham and Harvey (2001) report US evidence that the adoption of CAPM to calculate the COE for capital budgeting has been widespread. Recently, Truong and Partington (2007) conducted a survey in Australia and found that Capital Assets Pricing model (CAPM) is the most popular model used in estimating the COE. Third, CAPM has been used by past studies (Bozec *et al*., 2014) in examining the relationship between CG and COC, which in turn enable the current study to compare its results with prior studies. Finally, data limitation forces the present study to rely on this model. Therefore, cost of equity capital is calculated using the following CAPM equation (b):

$$K_e = R_f + \beta(R_m - R_f) \quad \text{.....(b)}$$

Where

K_e	Is the cost of equity capital and is calculated by Sharp (1964) model.
R_f	Represent risk free rate of return. In this study, the three monthly Government of Pakistan Treasury yield prevailing at the date are used.
β	Three years monthly stock returns are used to calculate beta of firm by using a regression of stock return to market returns following (Ali Shah, 2009; Bozec *et al*., 2014).
R_m	Stands for market return and calculated by using KSE index.

Once cost of equity capital was calculated, the next step is to calculate the cost of debt capital.

(ii) Cost of Debt Capital

As explained in subsection 4.2.3, COC can be measured through calculating both cost of equity and debt. Several different proxies have been used in the literature to measure the cost of debt (COD). There are three common methods of calculating cost of debt, namely yield spread, credit rating and interest rate on the firm's debt calculated from financial statements. The present study employs interest rate on the firm's debt as method to calculate cost of debt as no theory offers the best way to calculate cost of debt. In this regard, Francis and Pereira (2005) suggest that this proxy of cost of debt is closely

associated to the firm's disclosure practices and by following Pittman and Fortin (2004) considerable number of other researchers used this proxy. Further, using of this method consistent to prior literature (e.g., Zhu, 2009; Piot and Missonier-Piera, 2007; Soha, 2011; Zhu, 2012).

4.2.3.2 The independent Variables

As indicated earlier, the third central research question that is going to be examined in this study is either better-governed firm employ lower COC compared with those of poor-governed. Thus, dependent variable is COC that is regressed on *PCGI*, ownership structures and board/audit characteristics. Briefly, and as discussed in subsection 4.2.1, the *PCGI* is the collection of 70 broad set of CG provisions contained in the 2002 code of CG for Pakistan. Similarly, ownership structure and board/audit characteristics[21] are included in the study's examination to further investigate the extent to which traditional ownership structures and board attributes have influence on COC. The theoretical/empirical foundation of these variables and their measurements were discussed earlier.

4.2.3.3 The Control Variables

In addition to ownership structure and CG variables, prior studies provide evidence that some firm characteristics have impact on firm COC. Hence, this study includes firm size, profitability, growth, leverage, and beta, as well as year and industry factors as control variables. The inclusion of these variables is to take account of their effects and mitigate some statistical issues, such as endogeneity problem. Although this study includes the most common firm attributes that have been used by previous studies, the choice of these are restricted by the data availability. Each control variable is defined below and its reason for inclusion in the model is explained below.

(i) *Size of the Firm (LTA)*

Unlike small firms, large companies are normally more diversified which reduce firm potential risk and ultimately it may decrease the firm COC. Empirically this relationship is supported by Botosan and Plumlee (2005). On the other hand, because of complex operations, higher regulatory and political costs, and cost of compliance with code, as well as agency problem, the size of the firm is likely to be positively related with better corporate governance (Beiner *et al*., 2006). Botosan (1997) argued that larger firm may enjoy lower cost of external capital or/and receive a higher market valuation. Haniffa

[21] Audit committee characteristics are not used as explanatory variable in the regression model as the characteristics of audit committee are covered by the 2002 PCCG and hence included in *PCGI.*

and Hudaib (2006) also find a positive relationship between firm size and return on equity (ROE). Therefore, this study expects significant and positive association between LTA and return on equity (ROE).

(ii) *Profitability*

Profitability is one of the firm characteristic that has been identified as one of the most influential factors on corporate policy decisions as profitable firms have adequate internal funds, their financing behaviour may not be the same as less profitable firms. Therefore, profitability is considered as a determinant for firms when they are looking for additional or new financing. Theoretically, it is expected that more profitable firms can issue debt than equity for the following three reasons. First, firms with surplus earnings are likely to use their internal funds for their capital investment. If additional financing will be required, then financing will be raised through debt as a second choice (Myers, 1984; Myers and Majluf, 1984). Second, debt financing offers profitable firms with a worthwhile CG instrument that permits them to diminish the agency costs related with free cash flow available to managers (Jensen, 1986). Third, firms with surplus earnings are expected to issue more debt than less profitable firms to in order to make benefit from tax shields (Modigliani and Miller, 1963). Finally, due to their surplus earnings that help them to pay their financial obligations well in time, profitable firms are favoured by creditors, which motivate firms to issue debt rather than equity (Peterson and Rajan, 1994; Elliott *et al.*, 2008).

In contrast, more profitable firms are expected to issue equity rather than debt. Previous studies offer evidence that profitable firms offer more comprehensive information (e.g., Samaha *et al.*, 2012; Ntim *et al.*, 2012; Akhtaruddin *et al.*, 2009). This suggests that profitable firms are less prone to asymmetric information, which may encourage them to issue equity rather than debt as new financiers would prefer to finance such firms where there is no need to gather expensive information. Empirically, a negative nexus is reported in the literature (Zhu, 2009). Therefore, it is expected that there will be a negative relationship between firm COC and performance.

(iii) *Firm Growth (SALESG)*

Growth is the other variable which needs to be controlled and it will be measured by market value to book value of equity. Theoretically, growing firm at a faster pace may be more valuable as probably they can have a better performance in the future (Klapper and Love, 2004). In a same way, firms with better growth opportunities will need to raise external capital. This will encourage such firms to adopt good corporate governance

practices to attract capital and to minimize the COC (Beiner *et al*., 2006). On the basis of above discussion and following the prior literature (Henry, 2008; Ntim *et al*, 2012), it is expected that there will be a a negative relationship between firm growth and firm COC.

(iv) *Leverage (LVG)*

Despite Modigliani and Miller (1958) theory of capital structure irrelevance, a widespread theoretical and empirical literature has developed. This literature strongly suggests that a firm's capital structure have an impact on the profitability of the firm (Modigliani and Miller, 1958; Myers, 1984). Negative relationship between profitability and leverage (Bevan and Danbolt, 2004) can be explained in two theoretical viewpoints: agency and tax. From agency view point, it is argued that higher level of leverage may improve performance by decreasing the agency problem. Debt financing can also improve firm performance because of the bringing of extra monitoring mechanism by the creditors (Agrawal and Knoeber, 1996). From tax viewpoint, a highly levered firm can generate a better financial performance because of interest payment and tax deductibility of interest payments (Modigliani and Miller, 1963). On the other hand, the risk of financial distress in the form of bankruptcy and credit risk by having higher level of credit may minimize the ability of firm to pursue attractive investment opportunities (Myer, 1977). On the basis of above discussion and in line with the previous corporate governance research (Klapper and Love, 2004; Bhagat and Bolton, 2008; Ntim *et al.*, 2012), leverage is controlled for. However, on the basis of mixed theoretical and empirical evidence, it is expected that leverage (LVG), which is equal to total debt to market value of equity will be significantly related with firm COC.

(v) *Beta (β)*

Theoretically, literature shows that a firms risk can have a significant impact on its financing cost. It has been argued that as uncertainty increases, investors demand higher rate of return. Thus, it is expected that Cost of Equity (COE) capital is likely to increase with increased risk (Johnson, 1999). In this regard, beta is regarded as most widely accepted measure of risk (Fama and French, 1992). Based on theoretical perception, a positive relationship is expected between COC and market beta for Pakistani firms. Empirically, literature (e.g., Bozec *et al*., 2014; Shah, 2009; Botosan, 1997) suggests a positive relationship between beta and firms' COC.

Three years monthly stock returns for sampled firm and market index are used to calculate beta for firms in the sample. Following the literature (e.g., Bozec *et al*., 2014;

Shah, 2009; Botosan, 1997), beta is estimated by market model via regression of stock return of firm *i* at time *t* on the returns of market index.

Beta is estimated by the following equation (c):

$$R_{it} = \alpha + \beta R_{mt} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (c)$$

Where:

i and *t* subscript	represent firm and time respectively
R_i	Stands for firms' stock return I for a period of 36 month
α	Constant term
R_m	Stands for market return and calculated by using KSE index.
ε	Error term

(vi) *Industry Dummies (INDM)*

Industries are significantly different from each other in different ways including, line of business, capital structure, complexity of operations, ownership structures, and corporate governance practices (Lim *et al*., 2007). On the other hand global and economic developments may also impact in a different way on each industry. For example, manufacturing and industrial firms heavily depend on energy for production. In this case, any increase in prices of petroleum products may have negative impact on profitability of manufacturing and industrial firms because of increase in cost of production but may have a positive impact on Oil and Gas firm's financial performance. A study conducted in emerging markets by Deutsche Bank (2002) argued that corporate governance standards differ across the industries. In line with previous studies (Black *et al*., 2006, Henry, 2008; Ntim *et al*., 2012; Bozec *et al*., 2014) and to capture this potential unobserved heterogeneity at industry level, a dummy variable will be used for different industries.

(vii) *Year Dummies (YRDM)*

Henry (2008) argued that corporate governance practices change across the firm over time. Using a sample of 350 listed firms of UK, Shabir and Padget (2005) report significant and positive association of time with code of CG compliance. Similarly, different economic states may affect the profitability and risk of the firm in a different way. On average, during the economic boom period, firms are likely to perform better than a recession period. Changes in government regulations, policies of tax and change in technology may affect the firm financial performance, firm level of risk and corporate governance structure in a different ways over the time. Finally, prior research on corporate governance, COC and firm financial performance have also controlled for year (Henry,

2008, Ntim *et al*., 2012, Bozec *et al*., 2014). On the basis of above discussion, to control the probable unobserved firm level heterogeneity over the period of ten years, ten dummies will be included in the model.

4.2.3.4 Model Specification

Due to a number of reasons, such as funding, accessibility, and time, a quantitative approach is adopted in this study rather than either qualitative or mixed approach. Following the prior studies, and wish the assumption of linearity, the Ordinary Least Square (OLS) regression equation to be estimated is as follows:

Model 2

$$\begin{aligned} COC_{it} = {} & \alpha_0 + \beta_1 PCGI_{it} + \beta_2 DOWNP_{it} + \beta_3 IOWNP_{it} + \beta_4 GOWNP_{it} \\ & + \beta_5 BOWNP_{it} + \beta_6 FOWNP_{it} + \beta_7 BIG4_{it} + \beta_8 BSZ_{it} \\ & + \beta_9 BGEN_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

Where:

I and t subscript	represent firm and time respectively
COC	Cost of Capital calculated by Weighted Average Cost of Capital
PCGI	Pakistani CG Index
α	Constant term
DOWNP	Percentage of shares owned by directors
IOWNP	Percentage of shares owned by institutions
GOWNP	Percentage of shares owned by government
BOWNP	Percentage of shares owned by shareholders with at least 5%
FOWNP	Percentage of shares owned by foreigner
BIG4	Audit firm size
BSZ	Board size
BGEN	Board Gender Diversity
CONTROLS[22]	It includes: firm size (LTA), profitability (ROE), sales growth (SALESG), leverage (LEVG), beta (β), industry, and year dummies.
ε	Error term

4.3 Statistical Analysis

The current study uses Ordinary Least Square (OLS) as a main estimation technique to estimate regression coefficient. To esnure that OLS is an appropriate estimation method, a number of statistical tests are applied pre and post analysis. Thus, subsection 4.3.1 discusses tests related to the OLS assumptions while subsection 4.3.2 discusses the robustness tests.

[22] Unlike model 1, capital expenditure is not used as a control variable in this model due to its usage as alternative CG variable in robustness analysis of this model (see subsection 7.2.6) while beta is used in this model as risk is positively associated with COC.

4.3.1 The OLS Assumptions

Before applying OLS the following assumptions were tested to make sure that OLS is the proper estimation to use. These assumptions include: autocorrelation, heteroscedasticity, linearity, multicollinearity, and normality. These assumptions have been tested using different statistical tests. First, Breusch-Godfrey Serial Correlation LM test is used to deduce the presence of autocorrelation. Second, the White general test is performed to investigate the extent to which the used model is heteroskedastic. Third, explanatory variables are winsorised at 1% and 99% level to mitigate the problem of outliers. Fourth, multicollinearity has been investigated by constructing a matrix of correlation for all variables. Finally, normality of residual is tested using standardised skewness and kurtosis statistics. The results of all these tests are reported in section 6.1 of chapter 6.

4.3.2 Robustness tests

In addition to the testing of OLS assumptions, as indicated in subsection 4.2.4.1, a series of statistical tests was performed to ascertain the level that the results of this analysis are robust to different theoretical and statistical issues. These were included robustness of results against the: (i) potential endogeneity problems, (ii) alternative CG proxy, (iii) alternative COC measures, and (iv) the differences in the firms' characteristics that remains same over time.

4.3.2.1 Endogeneity problems

Endogeneity is a statistical problem that can arise from measurement errors, simultaneity and omitted variables (Wooldridge, 2009; Lacker and Rusticus, 2010). The presence of such problem may question the validity of empirical results (Larcker and Rusticus, 2010). Thus, the current study has sought to mitigate this issue by applying other solutions to ascertain whether the present study's findings are seriously affected by the presence of endogeneity problem. Both non-econometrics and econometrics solutions are briefly discussed below.

With respect to non-econometrics solutions, the current study uses three approaches to mitigate endogeneity problems. First, it employs an eleven year panel data to examine its hypotheses. It has been suggested that panel data can assist in reducing effects of endogeneity problems (Larcker and Rusticus, 2007). Second, the measurement error, as one cause of endogeneity, is mitigated by using self-constructed index rather than using analysts' rating (see subsection 4.2.1.2) CG measurement (Lacker *et al*., 2005). Finally,

and as discussed in subsection 4.2.3.3, a number of control variables were included in the model to mitigate this problem that may result from omitted variables. Hence, it is believed that the above solutions are likely to limit the potential effects of endogeneity.

With regard to econometrics solutions, accounting and CG literature suggest that two-stage least square (2SLS) and lagged structure models are commonly used by researchers to address endogeneity problem. Following this suggestion in literature, Durbin-Wu-Hausman endogeneity test is used first to investigate the presence of endogeneity problem (Lacker and Rusticus, 2008). The subsequent subsections discuss how Durbin-Wu-Hausman endogeneity test, 2SLS and lagged structure model are performed.

(i) Durbin-Wu-Hausman Endogeneity Test

It has been suggested that endogeneity test on key independent variables should be conducted to ascertain whether endogeneity exists or not (Lacker and Rusticus, 2008). Consistent with previous studies, the Durbin-Wu-Hausman Endogeneity test is adopted to test the presence of endogeneity. This test is performed in two stages. First, and as shown in equation 3 and 4, the *PCGI* was regressed on control variables either in the first model (factors influencing firms' CG compliance and disclosure) or in its second model (the impact of CG on COC), and the predicted values from the regressions were saved as *P-PCGI* for the first model and *P-PCGII* for the second model. The first stage of Durbin-Wu-Hausman test is is performed using the following equation:

$$PCGI_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \qquad (3)$$

Where the *PCGI* refers to Pakistani Corporate Governance Index and *CONTROLS* variables remain the same in equation 3[23] as explained in equation 1.

Similarly, the first stage of Durbin-Wu-Hausman that is related to model two is performed using the following equation:

$$PCGI_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \qquad (4)$$

[23] As equation (3) and (4) belongs to different regression models, both have a different set of control variables. Equation (3) belongs to the factor influencing level of compliance while equation (4) belongs to the CG and COC model.

PCGI stands for the Pakistani corporate governance Index and the *CONTROLS* variables remain same in equation 4 as explained in equation 2.

In the Second stage of Durbin-Wu-Hausman test, the *PCGI* was regressed on *P-PCGI* and control variables in case of model 1 as specified in equation below:

$$PCGI_{it} = \alpha_0 + \beta_1 P - PCGI_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (5)$$

Where *PCGI* denotes to Pakistani Corporate Governance Index, *P-PCGI* denotes the predicted values from regression of equation 3, and *CONTROLS* variables were the same as in equation 1.

In the case of model 2, and as specified in equation 6, the COC was regressed on *PCGI*, *P-PCGII* and control variables as follows:

$$COC_{it} = \alpha_0 + \beta_1 PCGI_{it} + \beta_2 P - PCGII_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (6)$$

Where *PCGI* denotes to Pakistani corporate governance index, *P-PCGII* denotes the predicted values from the regression of equation 4, and *CONTROLS* variables will remain the same as explained in equation 2.

Once Durbin-Wu-Hausman test is performed, the current study will be able to accept or reject the null hypothesis of no endogeneity. The guidance of this examination suggests that if the coefficient of *P-PCGI* or *P-PCGII* is significant, which rejects the null hypothesis of no endogeneity; it means that endogeneity problem exists (Larcker and Rusticus, 2010). Thus, in the presence of endogeneity it is advisable to investigate the extent to which the main results are affected by this problem. As explained below, two methods are widely used by researchers to address this issue, namely 2SLS and lagged structure model.

(ii) Two-stage least square (2SLS)

As explained earlier, if Durbin-Wu-Hausman test shows that the coefficients of *P-PCGI* and *P-PCGII* are significant in model 1 and 2, then the present study will use the 2SLS technique to find out how far the results are biased and inconsistent because of endogeneity problems. The following subsections will discuss how the 2SLS technique will be applied with respect to model 1 and 2.

With regard to model 1, each of nine CG variables will be regressed over control variables and the predicted values for each individual CG variable will be saved in the first stage as specified in the following equations.

$$DOWNP_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (7)$$

$$IOWNP_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (8)$$

$$GOWNP_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (9)$$

$$BOWNP_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (10)$$

$$FOWNP = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (11)$$

$$BIG4_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (12)$$

$$BSZ_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (13)$$

$$BGEN_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (14)$$

$$BNAT_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (15)$$

In second stage, equation 1 will be re-estimated by replacing the ten CG variables with their predicted values as follows:

$$\begin{aligned} PCGI_{it} = {} & \alpha_0 + \hat{\beta}_1 DOWNP_{it} + \hat{\beta}_2 IOWNP_{it} + \hat{\beta}_3 GOWNP_{it} + \hat{\beta}_4 BOWNP_{it} \\ & + \hat{\beta}_5 FOWNP_{it} + \hat{\beta}_6 BIG4_{it} + \hat{\beta}_7 BSZ_{it} + \hat{\beta}_8 BGEN_{it} \\ & + \hat{\beta}_9 BNAT_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \end{aligned} \quad (16)$$

With regard to model 2, the *PCGI* is assumed to be exogenous in equation 2, in which case OLS may be biased and inconsistent. In the first stage, the *PCGI* will be regressed on four alternative CG variables, Nationality diversity in board, board non-executive members, meetings of board members and firms' capital expenditure. The alternative CG variables' selection is based on literature (e.g, Ntim *et al*., 2012; Pham *et al*., 2012; Ntim *et al*., 2013; Tariq *et al*., 2014) and availability of data. The equation below specifies this regression where the predicted value of *PCGI* and residuals will be saved as P-*PCGI*II and R-*PCGI*. The current study will consider the P-*PCGI*II as a valid

instrumental variable if P-*PCGI*I is significantly associated with *PCGI* and insignificantly related to R-*PCGI*. This decision will be taken based on correlation matrix that includes *PCGI, P-PCGII,* and *R-PCGI*.

$$PCGI_{it} = \alpha_0 + \beta_1 BNAT_{it} + \beta_2 NEXD_{it} + \beta_3 BMF_{it} + \beta_4 CE_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (17)$$

Where *PCGI* denotes Pakistani corporate governance index, and BNAT, NEXD, BFM, and CE are known as board nationality diversity, the percentage of non-executive directors in the firm board, the board frequency of the meetings, and the capital expenditure, respectively. The CONTROLS remain similar to the explanation of equation 2.

In second stage, and once the P-*PCGI*I is considered as a valid instrumental variable, equation 2 will be re-estimated using *P-PCGII* instead of *PCGI* as follows:

$$\begin{aligned} COC_{it} = {} & \alpha_0 + \beta_1 P-PCGIII_{it} + \beta_2 DOWNP_{it} + \beta_3 IOWNP_{it} + \beta_4 GOWNP_{it} \\ & + \beta_5 BOWNP_{it} + \beta_6 FOWNP_{it} + \beta_7 BIG4_{it} + \beta_8 BSZ_{it} \\ & + \beta_9 BGEN_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \end{aligned} \quad (18)$$

The analyses of 2SLS that relate to both models 1 and 2 will be presented and discussed in details in sections 7.1 and 7.2 of chapter seven, respectively.

(iii) The Lagged Structure

The current study further addresses endogeneity problem by employing lagged structure model that takes into account a time lag in CG disclosure practices, as well as a lagged CG disclosure practices and COC. Following prior literature (e.g., Ntim *et al*., 2013; Larcker and Rustics, 2010), all independent and control variables in models 1 and 2will be lagged by one period as indicated in equations below.

$$\begin{aligned} PCGI_{it} = {} & \alpha_0 + \beta_1 DOWNP_{it-1} + \beta_2 IOWNP_{it-1} + \beta_3 GOWNP_{it-1} + \beta_4 BOWNP_{it-1} \\ & + \beta_5 FOWNP_{it-1} + \beta_6 BIG4_{it-1} + \beta_7 BSZ_{it-1} + \beta_8 BGEN_{it-1} \\ & + \beta_{90} BNAT_{it-1} + \sum_{i=1}^{n} \beta_i CONTROLS_{it-1} + \varepsilon_{it-1} \end{aligned} \quad (19)$$

$$\begin{aligned} COC_{it} = {} & \alpha_0 + \beta_1 PCGI_{it-1} + \beta_2 DOWNP_{it-1} + \beta_3 IOWNP_{it-1} + \beta_4 GOWNP_{it-1} \\ & + \beta_5 BOWNP_{it-1} + \beta_6 FOWNP_{it-1} + \beta_7 BIG4_{it-1} + \beta_8 BSZ_{it-1} \\ & + \beta_9 BGEN_{it-1} + \sum_{i=1}^{n} \beta_i CONTROLS_{it-1} + \varepsilon_{it-1} \end{aligned} \quad (20)$$

The analyses of lagged structure model for models 1 and 2 will be presented and discussed in details in sections 7.1 and 7.2 of chapter seven, respectively.

4.3.2.2 Alternative governance mechanisms

As discussed in chapters 2 and 4, the *PCGI* contains five sub-indices in which each sub index vary in number of provisions, hence, differs in weights gained by each individual sub index. Specifically, the *PCGI* assigns a weight of 25%, 20%, 8.5%, 20%, and 25% for board of directors, internal auditing and committees, shareholders' right, transparency and disclosure, and internal control, external auditor and risk management, respectively. In this regard, using of the un-weighted CG index to examine CG quality has been criticised in literature as all CG provisions are equally important. Thus, the current study addresses the suggestion in the literature of using a weighted CG index can bring different results of the study. This allows the study to make sure whether its actual results are robust to the use of weighted index. Following prior studies (Beiner *et al*., 2006), each sub-index will be equally weighted by assigning 20% of weight, labelled as Weighted Pakistani Corporate Governance Index (*WPCGI)*. In doing so, the *PCGI* will be replaced by *WPCGI* in equation 1 and 2 to check the level at which the robust with *WPCGI*. These regressions are specified by equations 22 and 23 below.

$$\begin{aligned} WPCGI_{it} = {} & \alpha_0 + \beta_1 DOWNP_{it} + \beta_2 IOWNP_{it} + \beta_3 GOWNP_{it} + \beta_4 BOWNP_{it} \\ & + \beta_5 FOWNP_{it} + \beta_6 BIG4_{it} + \beta_7 BSZ_{it} + \beta_8 BGEN_{it} \\ & + \beta_9 BNAT_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \end{aligned} \quad (21)$$

$$\begin{aligned} COC_{it} = {} & \alpha_0 + \beta_1 WPCGI_{it} + \beta_2 DOWNP_{it} + \beta_3 IOWNP_{it} + \beta_4 GOWNP_{it} \\ & + \beta_5 BOWNP_{it} + \beta_6 FOWNP_{it} + \beta_7 BIG4_{it} + \beta_8 BSZ_{it} \\ & + \beta_9 BGEN_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \end{aligned} \quad (22)$$

The results of these analyses for models 1 and 2 are reported and discussed in section 7.1 and 7.2 of chapter seven, respectively.

4.3.2.3 Alternative COC measures

As discussed in subsection 4.2.3.3, the main findings are based on WACC as a main measurement to calculate COC. Thus, the current study employs alternative proxies

for COC in order to account for the possibility that the main findings are sensitive to different proxies. In particular, and consistent with prior literature (e.g., Pham *et al*., 2012), cost of equity (COE) and cost of debt (COD) will be used as alternative COC's measurements. The relationship between *PCGI* and COC will be analysed again with the help of COE and COD rather COC as stated bellow.

$$\begin{aligned} COE_{it} = {} & \alpha_0 + \beta_1 PCGI_{it} + \beta_2 DOWNP_{it} + \beta_3 IOWNP_{it} + \beta_4 GOWNP_{it} \\ & + \beta_5 BOWNP_{it} + \beta_6 FOWNP_{it} + \beta_7 BIG4_{it} + \beta_8 BSZ_{it} \\ & + \beta_9 BGEN_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \end{aligned} \quad (23)$$

$$\begin{aligned} COD_{it} = {} & \alpha_0 + \beta_1 PCGI_{it} + \beta_2 DOWNP_{it} + \beta_3 IOWNP_{it} + \beta_4 GOWNP_{it} \\ & + \beta_5 BOWNP_{it} + \beta_6 FOWNP_{it} + \beta_7 BIG4_{it} + \beta_8 BSZ_{it} \\ & + \beta_9 BGEN_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \end{aligned} \quad (24)$$

These analyses are further discussed in section 7.2 of chapter seven.

4.3.2.4 Fixed-Effect vs Random-Effect Model

As discussed in subsection 4.2.4.2, the current study employs OLS to conduct its analyses where firms' characteristics can differ among firms, but remain same over the time, which may not be captured by OLS estimation. This may lead to bias in the results. Thus, it is advisable to check the extent to which the main results are sensitive to firms' characteristics by employing either fixed or random effect model. The Hausman test will be applied to select between the fixed effect and random effect models. To perform this test OLS regression will be estimated by using Random effect model. Once regression is estimated, the output of Hausman test will be ascertained to assist in deciding either to use the random or fixed effect morel. The null hypothesis of this test is that random effect is appropriate than fixed effect analysis and alternate hypothesis is that fixed effect better suites this data to capture the effect of firms' characteristics that differ among firms, but remain same over the time. As shown below, equation 1 and 2 will be re-estimated accordingly.

$$\begin{aligned} PCGI_{it} = {} & \alpha_0 + \beta_1 DOWNP_{it} + \beta_2 IOWNP_{it} + \beta_3 GOWNP_{it} + \beta_4 BOWNP_{it} \\ & + \beta_5 FOWNP_{it} + \beta_6 BIG4_{it} + \beta_7 BSZ_{it} + \beta_8 BGEN_{it} \\ & + \beta_9 NAT_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \end{aligned} \quad (25)$$

$$COC_{it} = \alpha_0 + \beta_1 PCGI_{it} + \beta_2 DOWNP_{it} + \beta_3 IOWNP_{it} + \beta_4 GOWNP_{it} + \beta_5 BOWNP_{it} + \beta_6 FOWNP_{it} + \beta_7 BIG4_{it} + \beta_8 BSZ_{it} + \beta_9 BGEN_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (26)$$

The results of these analyses will be reported and discussed in section 7.1 and 7.2 of chapter seven.

4.4 SUMMARY OF THE CHAPTER

The research design of the study was comprehensively discussed in this chapter. Specifically, the chapter aimed to attain the subsequent three objectives. Firstly, it discussed sample and data sources used in the study. Firms' annual reports, KSE website, business record and DataStream are used as main sources of data for the study. Following the sample selection criteria, final sample consists of 160 firms for the period 2003 to 2013 with 1760 firm-year observations including firms from 10 sectors of KSE listed firms.

Secondly, it provides a comprehensive description of the research methodology used in this study. In this regard, the level of compliance with 2002 PCCG will be investigated using descriptive statistics of *PCGI* while for analysing the determinents of CG disclosure and relationship between CG and COC will be analysed by OLS regression. Third, it discussed the sensitivity analyses that are employed in the study. In this regard, a number of statistical tests will be performed before and after examining the study hypothesis including tests related to the OLS assumptions and robustness tests.

CHAPTER 5

5 DESCRIPTIVE STATISTICS

This chapter discusses the descriptive statistics of variables employed. Specifically, this chapter aims to attain the subsequent three main objectives. First, it discusses the descriptive statistics related to the level of disclosure with *PCGI* based on all provisions. It helps in answering the question of level of compliance with 2002 PCCG. Additionally, the analysis of CG compliance level of sub-indices and industries are discussed to ascertain the potential factors that influence the disclosure level of *PCGI*. The second main objective of this chapter is to pursue to conclude that the introduction of PCCG has helped to improve the CG standards in Pakistani settings. The third objective of this chapter is to present the descriptive statistics of dependent, independents and control variables employed in this study.

Therefore, the following section is organised in two sections. Section 5.1 discusses the descriptive statistics of *PCGI* while section 5.2 summarises the chapter.

5.1 DESCRIPTIVE STATISTICS OF THE PAKISTANI CG INDEX (the *PCGI*)

This section discusses the descriptive statistics of level of disclosure with PCCG to explore the answer of (i) what average compliance level with 2002 PCCG is?; (ii) to what extant has the introduction of 2002 PCCG improved CG practices among Pakistani firms?. In addition, CG literature suggests that firm characteristics, industry type may impact the compliance and disclosure level with CG provisions (Eng and Mark, 2003; samaha *et al*., 2012; Ntim and Soobaroyen, 2013; Allergrini and Greco, 2013). Hence, following the literature, the current study performed a comprehensive analysis of industry type on the level of CG compliance and disclosure. This analysis can provide assistance to conclude whether CG score is explainable by the firm characteristics.

The rest of the chapter is further devided into five parts. Subsection 5.1.1 explains the level of compliance with *PCGI* based on full sample of 160 firms. Subsection 5.1.2 reports the compliance level with *PCGI* with sub-indices. Subsection 5.1.3 presents the compliance level with *PCGI* with industry type. Subsection 5.1.4 reports the descriptive statistics related to the determinants of level of compliance model while subsection 5.1.5 presents the descriptive statistics related to the CG and COC model.

5.1.1 Descriptive Statistics of *PCGI*

The Pakistani CG index (*PCGI*) is constructed to examine the compliance and disclosure level for the sample of balanced *panel* of 160 Pakistani listed firms for 11 years from 2003 to 2013. The *PCGI* consists of 70 CG provisions, which were mainly derived from the 2002 PCCG. Table 5.1 presents the level of compliance and disclosure with each CG provision for the eleven years among Pakistani listed firms.

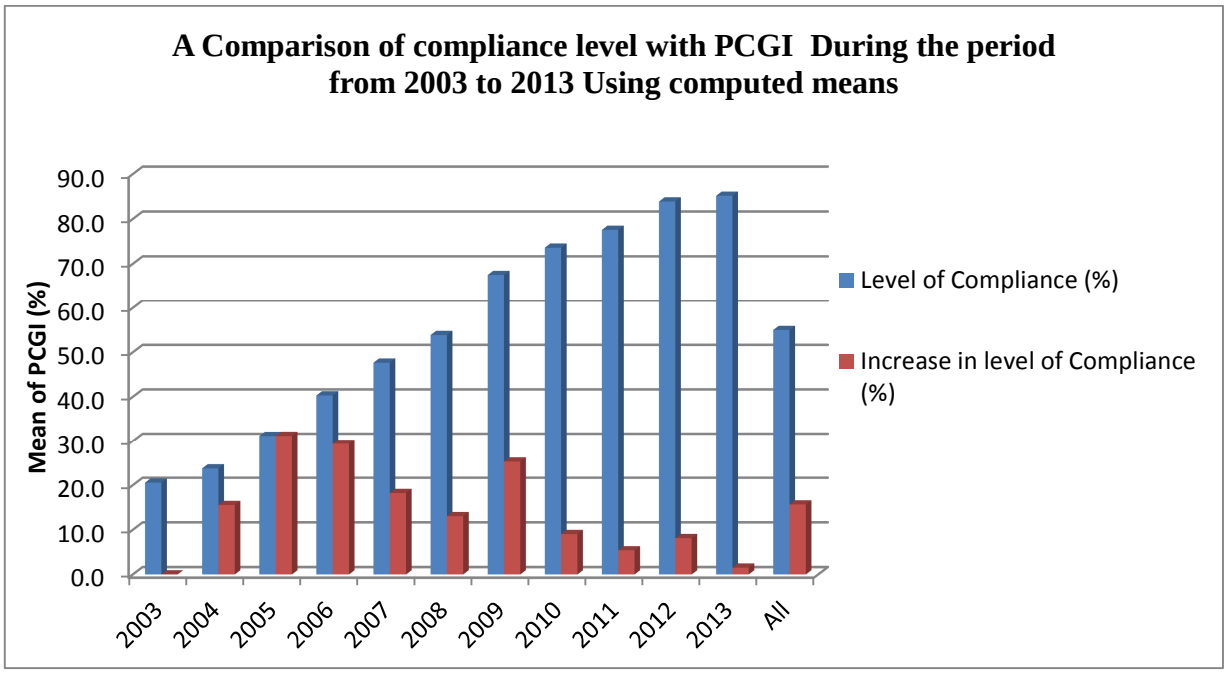

Figure 5.1: The compliance level with the *PCGI* based on the full sample

Two important findings can be concluded from the descriptive statistics of *PCGI*. First and as shown in Figure 5.1, the CG compliance level with *PCGI* is significantly enhanced over the period of eleven years from 2003 to 2013[24]. The findings of row 3 of table 5.1 shows that the mean score of *PCGI* has increased from 20.6% in 2003 to 85.2% in 2013 with an overall increase of 64.6% in eleven years. This improvement in level of compliance and disclosure is consistent with studies conducted in other emerging countries (e.g., Akkermans *et al.*, 2007; Ntim *et al.*, 2012a). Similarly, Table 5.1 shows that the overall mean of level of compliance and disclosure with *PCGI* is 55% for eleven years

[24] The level of compliance is calculated using the yearly average of *PCGI*. Year wise increase in level of compliance is also presented in this figure.

which is also consistent with the prior studies conducted in other emerging countries (Tsamenyi *et al*., 2007; Garay and Gonzalez, 2008; Adelopo, 2011; Ntim *et al*., 2012a; Albu and Girbina; 2015). For instance, Tsamenyi *et al*. (2007) reported an average of 52% CG compliance level. Similarly, Albu and Girbina (2015) provide the empirical evidence that a good percentage of Romanian listed firms disclose high levels of CG information.

The improvement in compliance level and disclosure is traced back in early 2000 CG reforms in Pakistan. As discussed in Chapter Two, Pakistani policy maker has established Security and Exchange Commission of Pakistan (SECP) in late 1990s to bring CG reforms in the country. In 2002, SECP introduced important CG regulations known as Pakistani Code of Corporate Governance (PCCG). Noticeably, the introduction of PCCG has improved the CG standards in the country. Such increase in level of disclosure may decrease the information asymmetry (Alshehri and Solomon, 2012; Al-Nodel and Hussainey, 2010; Al-Abbas, 2009). Therefore, the progress can demonstrate suitability of embracing a UK style of CG standards in Pakistani setting.

Second, the findings of last column of table 5.1 show that the levels of compliance with each CG provision in each of the eleven year are significantly varied. The level of compliance and disclosure with *PCGI* ranges from 4.4% compliance with the CG provision of whether the appointment of secretary by audit committee has been disclosed, to 82.6% of compliance with the CG provision of whether the director's detailed remuneration has been disclosed in annual reports.

The lower level of compliance with the CG provision of the appointment of secretary by audit committee may be due to the following reasons: (i) audit committees may appoint secretary but not disclosing this information in annual reports; (ii) they may intentionally avoid to report such information in order to avoid the influence by informal rules such as personal relationships; (iii) firms may consider such discloser less important or additional information after disclosing the audit committee members in annual reports. The higher level of compliance with the CG provision of director's detailed remuneration may be due to the fact that Pakistani companies ordinance 1984 mandates every firm to disclose the director's detailed remuneration.

Table 5.1: The compliance level with the PCCG provisions for the Pakistan (%)

	Pakistani Corporate Governance index (70 Provisions)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
	Yearly average of the level of compliance	**20.6**	**23.8**	**31.2**	**40.3**	**47.7**	**53.9**	**67.5**	**73.6**	**77.6**	**83.9**	**85.2**	**55.0**
	1. Board and Directors												
1	Directors Categorization	55.6	56.9	59.4	65.0	68.1	71.3	78.8	83.1	86.3	95.6	96.9	**74.3**
2	Board Composition (Ratio of Independent Directors)	15.0	15.6	15.6	16.9	16.9	19.4	16.9	19.4	21.3	40.0	52.5	**22.7**
3	Director Representing Minority Shareholders	29.4	30.6	31.9	34.4	39.4	41.3	45.0	50.0	51.3	53.8	57.5	**42.2**
4	Board Classification (Ratio of Non-Executive Directors)	65.6	67.5	68.8	75.0	76.9	81.3	86.9	90.6	95.6	98.1	98.1	**82.2**
5	The Membership of Directors in Other Boards	46.3	47.5	50.0	56.3	62.5	66.9	75.0	80.6	84.4	85.6	85.0	**67.3**
6	Maximum Directorship in Other Boards of Listed Companies	52.5	54.4	56.9	63.8	69.4	73.8	85.0	89.4	92.5	94.4	95.0	**75.2**
7	Non-Executive Chairman of the Board	38.1	38.8	40.6	45.0	48.1	53.8	59.4	63.8	66.9	70.6	73.1	**54.4**
8	Clear Definition of Respective Role of Chairman and CEO	18.8	18.1	18.8	22.5	24.4	27.5	30.6	34.4	36.3	38.1	40.0	**28.1**
9	CEO Duality Role	31.9	31.9	33.1	37.5	39.4	42.5	45.0	48.8	48.8	51.9	53.1	**42.2**
10	Orientation Courses for the Directors	5.6	8.1	11.3	16.3	21.9	26.3	37.5	43.1	46.3	54.4	56.3	**29.7**
11	Board Meeting Disclosure	56.9	56.9	61.3	69.4	74.4	80.0	88.8	91.9	96.3	97.5	97.5	**79.1**
12	Board Meeting Frequency	50.6	50.6	56.3	63.8	70.6	75.6	85.0	90.0	94.4	96.3	96.3	**75.4**
13	National Tax Payer Director	13.8	20.6	30.0	41.9	50.6	58.8	81.3	88.8	93.8	97.5	96.9	**61.3**
14	No Defaulter Director in the Board	12.5	19.4	29.4	41.3	50.6	58.8	80.6	88.1	93.1	97.5	97.5	**60.8**
15	Directors and their Spouses involvement in Brokerage Business	11.3	17.5	26.9	36.9	46.9	54.4	75.0	82.5	87.5	93.1	93.1	**56.8**
16	Statement of ethics and Business Practices	10.6	15.6	26.3	37.5	46.9	55.6	75.0	83.8	88.1	93.1	93.8	**56.9**
17	Power and duties of BOD	15.0	19.4	29.4	41.9	50.6	59.4	81.3	89.4	94.4	97.5	96.9	**61.4**
18	Future outlook	27.5	31.3	40.6	50.6	57.5	66.3	81.9	88.1	90.0	91.3	90.0	**65.0**
	2. Committees & Auditing												
19	Existence of R&HR Committee	3.8	3.8	6.9	8.1	8.8	12.5	16.3	17.5	23.8	74.4	80.6	**23.3**
20	Committee Composition	1.9	2.5	5.0	6.3	6.9	10.6	13.8	15.0	21.9	72.5	79.4	**21.4**
21	Committee Meetings held During the Year	1.9	2.5	5.0	5.0	6.3	10.0	11.9	13.8	18.8	67.5	76.3	**19.9**
22	Committee Meeting Attended by each Directors	1.9	2.5	3.8	4.4	5.0	10.6	11.9	13.1	18.1	63.8	73.1	**18.9**
23	The Names of the Members of the Committees of the Boards	3.1	3.1	5.6	6.9	8.1	11.9	15.0	16.9	22.5	73.8	80.6	**22.5**

	Pakistani Corporate Governance index (70 Provisions)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
24	Existence and Disclosure of Audit Committee Members	29.4	33.8	41.3	51.9	61.3	67.5	85.6	93.8	96.9	98.8	99.4	**69.0**
25	Minimum Members of Audit Committee	20.6	23.8	30.6	43.1	54.4	61.3	81.3	90.0	93.8	96.9	96.9	**63.0**
26	Non-Executive Chairman of the Committee	14.4	18.1	26.3	38.1	47.5	55.0	73.1	80.6	85.0	88.8	92.5	**56.3**
27	Majority of Non-Executives in Audit Committee	15.0	18.8	29.4	41.9	51.9	58.8	78.1	85.0	90.0	94.4	95.0	**59.8**
28	Minimum Meetings of Audit Committee in a Financial Year	14.4	18.1	27.5	39.4	50.6	56.9	76.3	83.8	88.8	93.1	94.4	**58.5**
29	CFO, Internal and a Rep of External Auditors attendance	16.3	19.4	27.5	36.9	47.5	53.1	72.5	81.3	86.3	88.8	89.4	**56.3**
30	Review of financial statements prior to the approval	13.1	16.3	26.3	36.9	46.9	53.8	73.1	83.1	86.3	88.1	88.1	**55.6**
31	Review of Management letter issued by external auditor	5.6	6.3	12.5	16.9	23.1	27.5	40.6	48.8	52.5	55.6	58.8	**31.6**
32	Appointment of Secretary by Audit Committee	1.3	0.6	1.9	3.1	3.8	5.0	5.0	5.6	5.6	7.5	9.4	**4.4**
	3. Right Of Shareholder And Annual General Meeting												
33	Notice of the AGM to the shareholders	18.1	21.3	32.5	41.9	52.5	60.0	80.0	87.5	93.8	96.3	96.3	**61.8**
34	Well in Time Notice of AGM	16.3	19.4	30.0	39.4	49.4	57.5	78.8	85.6	93.8	96.3	96.3	**60.2**
35	AGM with in a Period of Four Months	16.3	19.4	29.4	40.0	49.4	58.1	78.8	86.9	93.8	96.3	96.3	**60.4**
36	AGM in Same Town as Registered Office of the Company	14.4	18.1	28.1	37.5	46.9	55.0	75.6	83.8	89.4	93.8	93.1	**57.8**
37	Notice of the Meeting with Specifying the Details	13.8	16.9	27.5	38.1	48.8	57.5	78.8	86.9	93.8	95.6	96.3	**59.4**
38	Right of Shareholder to Appoint a Proxy for AGM	13.1	17.5	27.5	39.4	50.0	58.8	79.4	88.1	93.8	95.6	95.6	**59.9**
	4. Transparency And Disclosures												
39	Disclosure of Ownership Structure	26.3	28.8	38.1	50.0	58.8	66.9	81.9	90.6	95.6	97.5	97.5	**66.5**
40	Directors, CEO and Children's' Ownership Disclosure	18.8	19.4	26.9	37.5	45.0	52.5	65.0	72.5	76.3	78.1	78.1	**51.8**
41	Shareholding Ten Percent or More Voting Rights	23.8	26.9	37.5	48.1	56.9	66.9	80.6	87.5	89.4	85.6	85.0	**62.6**
42	Going Concern Disclosure in Annual Reports	31.3	35.6	45.0	52.5	61.9	69.4	84.4	89.4	91.9	93.8	93.8	**68.1**
43	Outstanding Taxes and Other Charges are disclosed	11.9	15.0	20.0	25.0	30.0	32.5	40.0	43.1	43.1	44.4	45.6	**31.9**
44	Presentation of Operations, Cash Flows, Change in Equity	14.4	18.1	25.6	38.1	47.5	54.4	66.3	73.1	75.6	80.0	81.3	**52.2**
45	Key Operating and Financial Data of Last Six Years	9.4	13.8	24.4	37.5	48.8	56.9	76.9	86.9	89.4	93.8	93.8	**57.4**
46	Significant Deviation from Last Year Operating Results	4.4	5.0	6.9	10.6	15.0	18.1	21.9	23.1	25.0	26.3	27.5	**16.7**
47	Trades of Share by Directors and Other Executives	5.6	8.8	9.4	13.1	16.9	22.5	30.0	30.6	31.9	33.1	35.0	**21.5**
48	Disclosure of Objectives and Corporate Strategy	12.5	16.9	26.9	40.0	51.3	59.4	78.8	86.9	90.0	95.0	95.0	**59.3**
49	Statement on Compliance with the Code of CG	14.4	20.0	31.3	45.0	55.0	63.1	81.9	91.3	94.4	97.5	97.5	**62.8**
50	Disclosure of Dividend Policy	38.1	37.5	51.3	64.4	69.4	73.1	86.9	92.5	95.0	98.1	98.1	**73.1**
51	Disclosure of Detail of Related Party Transaction	43.1	40.6	51.9	62.5	69.4	73.1	81.9	83.8	88.1	89.4	89.4	**70.3**

	Pakistani Corporate Governance index (70 Provisions)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
52	Director's Detailed Remuneration Disclosure	65.0	67.5	74.4	79.4	80.6	82.5	87.5	90.0	92.5	94.4	95.0	**82.6**
	5. Internal Control, External Auditor And Risk Management												
53	Effectiveness of Internal Control System	19.4	26.3	36.3	50.6	59.4	66.9	81.9	90.6	92.5	96.3	96.3	**65.1**
54	Disclosure of Firm Risk in Annual Reports	27.5	32.5	41.9	55.6	62.5	68.8	83.8	91.3	93.8	96.3	96.9	**68.2**
55	Risk Management Policies by the BOD	16.3	20.0	30.6	45.6	55.6	65.0	83.8	90.6	93.8	96.9	97.5	**63.2**
56	Auditor review of Internal Control System	13.1	18.8	30.0	43.1	54.4	63.1	81.9	90.0	94.4	96.3	97.5	**62.0**
57	Auditor Review of Firm Financial Reports	15.0	20.0	31.3	45.6	56.3	63.8	84.4	91.3	95.6	97.5	97.5	**63.5**
58	Approval of Firm Financial Reports	19.4	25.0	38.1	52.5	60.0	67.5	85.6	91.9	95.6	98.1	98.1	**66.5**
59	Proper Book of Account Maintained	38.8	46.3	52.5	60.6	68.1	72.5	86.9	93.1	96.3	98.1	98.1	**73.8**
60	Appropriate Accounting Policies Applied	34.4	42.5	49.4	57.5	66.3	71.3	85.6	92.5	96.3	98.1	98.1	**72.0**
61	Financial Statements According to IAS	28.1	31.9	42.5	52.5	63.1	70.6	85.6	92.5	96.3	98.1	98.1	**69.0**
62	External Auditor's Satisfactory Rating by ICAP	21.3	25.6	35.6	48.1	60.0	67.5	81.9	89.4	93.8	95.6	95.6	**64.9**
63	Compliance with IFAC Gridlines on Code of ethics	20.6	26.9	35.0	48.1	58.1	64.4	81.3	89.4	94.4	96.3	96.9	**64.7**
64	Auditor Duties According to IFAC	15.0	19.4	29.4	44.4	55.0	62.5	81.3	90.0	94.4	96.9	96.9	**62.3**
65	Attendance of AGM by external Auditor	9.4	13.8	23.1	33.8	45.6	51.9	70.6	76.9	83.1	85.6	87.5	**52.8**
66	Statutory Auditor's Review of CG Compliance Statement	10.6	16.9	27.5	42.5	55.0	63.8	83.1	88.8	93.8	96.3	96.3	**61.3**
67	Half yearly financial statements with auditor's review	14.4	20.0	30.0	44.4	53.1	61.9	81.3	88.1	92.5	95.0	95.0	**61.4**
68	Annual audited financial statements within four month	12.5	20.0	29.4	43.8	53.8	61.3	80.0	88.1	95.0	97.5	97.5	**61.7**
69	Determination of Compliance with Statutory Requirements	12.5	16.9	28.1	40.6	49.4	58.1	75.6	85.6	91.9	95.6	96.3	**59.1**
70	Monitoring Compliance with Best Practices of CG	1.3	4.4	11.3	18.1	20.6	25.6	32.5	38.1	43.8	46.9	51.9	**26.8**

5.1.2 Descriptive Statistics of *PCGI* for Sub-Indices

The CG provisions which construct the *PCGI* consists of five sub-indices, that are: the board of directors (BOD) with 18 provision, internal auditing and committees (IDC) with 14 provisions, shareholders right (SR) with 6 provisions, transparency and disclosure (TAD) with 14 provisions, Internal Control, External Auditor and Risk Management (IER) with 18 provisions. There is a substantial degree of dispersion in aggregate level of compliance based on sub-indices. The main interpretations are précised below.

First, the sample firms show a higher compliance level with the provisions related to the internal control and risk management, right of shareholders and board of directors. Specifically, 62.14% of listed firms complied with the provisions related to internal control and risk management, 59.92% of listed firms complied with the provisions related to shareholder's rights and 57.49% of listed firms complied with the provisions related to board of directors. However, a greater degree of dispersion have been noticed in internal control and risk management (with a minimum value to 26.76% to a maximum of 73.75%) and board of director's (with a minimum value to 22.67% to a maximum of 82.22%) sub-indices with respect to shareholders' rights (with a minimum value to 57.78% to a maximum of 61.82%) sub index.

As discussed in Chapter two, the possible explanation of higher level of dispersion in level of compliance with the provisions of 'internal control and risk management' and board of directors' sub-indices is largely due to the absence of good CG practices prior to governance reforms. For instance, as shown in *panel B*, D and F of Table 5.2, the standard deviation of board of directors (18%) and internal control and risk management (10.3%) is much higher than the shareholders' rights (1.32%). Hence, these results lead to the conclusion that the introduction of 2002 PCCG has had a positive impact on Pakistani firms to engage more CG practices as the overall *PCGI* score for the period 2003 is significantly lower than for the period of 2013. On the other hand, the lower dispersion in level of compliance may be due to the nature of provisions of shareholders' rights which have been previously imposed by regulatory bodies, such as SECP to protect shareholders' interests.

Table 5.2: Summary of Descriptive Statistics of Determinant of level of compliance with *PCGI* and sub-indices (%)

	Y2003	Y2004	Y2005	Y2006	Y2007	Y2008	Y2009	Y2010	Y2011	Y2012	Y2013	ALL
Panel A *: Pakistani Corporate Governance Index (PCGI)*												
Mean	20.56	23.76	31.17	40.31	47.66	53.88	67.50	73.60	77.57	83.88	85.16	55.00
Median	15.00	19.38	29.38	41.88	50.63	58.75	78.75	86.88	90.94	94.38	95.00	60.60
T-test	.60	.01	-.59	-1.34	-1.67	-1.80*	-1.99**	-2.05**	-2.09**	-1.85*	-1.83*	-1.61
Maximum	65.63	67.50	74.38	79.38	80.63	82.50	88.75	93.75	96.88	98.75	99.38	82.61
Minimum	1.25	0.63	1.88	3.13	3.75	5.00	5.00	5.63	5.63	7.50	9.38	4.43
Std. Dev.	15.37	15.13	15.46	17.25	18.82	19.69	24.20	25.99	26.37	20.95	19.72	18.03
Provisions	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00	70.00
Panel B : Board of Directors												
Mean	30.94	33.37	38.13	45.31	50.83	56.25	67.15	72.53	75.94	80.35	81.63	57.49
Median	28.44	30.94	32.50	41.88	50.63	58.75	76.88	83.44	87.81	93.13	93.44	61.02
T-test	2.50**	1.98*	1.02	-0.14	-0.93	-1.26	-2.02*	-2.27**	-2.36**	-2.20**	-2.29**	-0.96
Maximum	65.63	67.50	68.75	75.00	76.88	81.25	88.75	91.88	96.25	98.13	98.13	82.22
Minimum	5.63	8.13	11.25	16.25	16.88	19.38	16.88	19.38	21.25	38.13	40.00	22.67
Std. Dev.	19.36	18.08	17.00	17.49	17.89	18.54	22.22	23.04	24.14	22.16	20.17	18.00
Provisions	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00
Panel C : Committees and Auditing												
Mean	10.18	12.10	17.81	24.20	30.13	35.31	46.74	52.01	56.43	75.98	79.55	40.04
Median	9.38	11.25	19.38	26.88	35.00	40.31	56.56	64.69	68.75	81.25	84.38	43.64
T-test	-2.96***	-3.68***	-4.42***	-4.92***	-4.76***	-4.88***	-4.43***	-4.27***	-4.29***	-3.46***	-3.02***	-4.5***
Maximum	29.38	33.75	41.25	51.88	61.25	67.50	85.63	93.75	96.88	98.75	99.38	69.03
Minimum	1.25	0.63	1.88	3.13	3.75	5.00	5.00	5.63	5.63	7.50	9.38	4.43
Std. Dev.	8.68	10.32	13.17	18.23	22.81	24.30	32.64	36.01	35.83	23.87	23.04	21.47
Provisions	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
Panel D: Shareholder Right												
Mean	15.31	18.75	29.17	39.38	49.48	57.81	78.54	86.46	93.02	95.63	95.63	59.92

Table 5.2: Summary of Descriptive Statistics of Determinant of level of compliance with *PCGI* and sub-indices (%)

	Y2003	Y2004	Y2005	Y2006	Y2007	Y2008	Y2009	Y2010	Y2011	Y2012	Y2013	ALL
Median	15.31	18.75	28.75	39.38	49.38	57.81	78.75	86.88	93.75	95.94	96.25	60.06
T-test	-.78	-1.20	-1.08	-1.67	-1.37	-1.09	-.14	-.02	.41	.45	.36	-.53
Maximum	18.13	21.25	32.50	41.88	52.50	60.00	80.00	88.13	93.75	96.25	96.25	61.82
Minimum	13.13	16.88	27.50	37.50	46.88	55.00	75.63	83.75	89.38	93.75	93.13	57.78
Std. Dev.	1.89	1.58	1.92	1.53	1.83	1.67	1.51	1.56	1.79	0.97	1.25	1.32
Provisions	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Panel E: Transparency and Disclosures												
Mean	22.77	25.27	33.53	43.13	50.45	56.52	68.84	74.38	77.01	79.06	79.46	55.49
Median	16.56	19.69	29.06	42.50	53.13	61.25	79.69	86.88	89.38	91.56	91.56	60.94
T-test	.96	.33	.02	-.55	-.93	-1.13	-1.70*	-1.86*	-2.10**	-2.14**	-2.25**	-1.26
Maximum	65.00	67.50	74.38	79.38	80.63	82.50	87.50	92.50	95.63	98.13	98.13	82.61
Minimum	4.38	5.00	6.88	10.63	15.00	18.13	21.88	23.13	25.00	26.25	27.50	16.70
Std. Dev.	16.90	16.16	17.98	18.99	19.08	19.39	22.00	23.93	24.69	25.14	24.57	19.43
Provisions	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00	14.00
Panel F: Internal control and risk management												
Mean	18.30	23.72	33.44	45.97	55.35	62.57	79.27	86.56	90.94	93.40	93.99	62.14
Median	15.63	20.00	30.94	45.63	55.94	64.06	81.88	90.00	94.06	96.25	96.88	63.35
Maximum	38.75	46.25	52.50	60.63	68.13	72.50	86.88	93.13	96.25	98.13	98.13	73.75
Minimum	1.25	4.38	11.25	18.13	20.63	25.63	32.50	38.13	43.75	46.88	51.88	26.76
Std. Dev.	9.20	9.98	9.52	9.52	10.31	10.45	12.29	12.62	12.14	11.94	10.79	10.03
Provisions	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00	18.00

Notes: The table presents descriptive statistics of average level of compliance with sub-indices of *PCGI* from 2003 to 2013. *Panel* A, B, C, D and E reports the t-test using Independent sample t-test of compare means based on *Internal control and risk management* for the equality of mean values. The asterisk*** denotes the significant level at 1%, asterisk** denotes the significant level at 5% and asterisk* denotes the significant level of mean difference at 10%.

Second, the sample firms show an average compliance level with the provisions related to the transparency and disclosure with an overall level of compliance of 55.49% for the study period from 2003 to 2013 with a minimum of 16.70% to a maximum of 82.61% level of compliance. Similar to other sub-indices, transparency and disclosure index also show as moderate increase in level of compliance for the period of study with an average of 22.77% in 2003 to 55.49% in 2013. Third, sample firms show a lower level of compliance with the provisions related to the committees and auditing with an overall level of compliance of 40.04% for the study period from 2003 to 2013 with a minimum of 4.43% to a maximum of 69.03% level of compliance. However, in 2003 the transparency and disclosure, was the index with lowest average level of compliance (10.18%) which significantly increased to 79.55% till 2013.

Finally, the overall findings of *PCGI* in *panel* A of Table 5.2 show a substantial degree of dispersion in level of compliance. The overall mean score ranges from 4.43% to 82.61%, with an average of 55% complying with 70 CG provisions for the period of 2003 to 2013. The standard deviation of *PCGI* is 18.03%, shown that there is a relative dispersion in compliance level with the *PCGI* provisions among the Pakistani listed firms. Conclusively, the overall level of compliance for the firms has considerably increased for the period from 2003 (20.56%) to 2013 (85.16%). This wide variability and gradual increase in level of compliance with CG provisions among the sampled firms is expected to result from the following factors.

First, the high scores of some provisions are influenced by some prior government regulations in addition to PCCG, such as Pakistani Companies Ordinance act and Stock Exchange listing Rules. For instance, in order to ensure fair remunerations to directors, companies' ordinance requires firms to disclose director's detailed remuneration. Therefore, a significant number of sampled firms comply with the provision of director's detailed remuneration (82.6%). Second, the lower scores of some provisions may be because of absence of better CG standards before the state reforms, such as PCCG. It may also be related to the weakness of the Pakistani external CG framework, including SECP and KSE, in encouraging firms to engage in good CG practices. Third and as shows in Table 5.1 and Table 5.2, the level of compliance with almost all the provisions gradually improves from one year to the next. For instance, the overall level of compliance with *PCGI* from 2003 to 2013 is as follows: 20.56%, 23.76%, 31.17%, 40.31%, 47.66%, 53.88%, 67.50%, 73.60%, 77.57%, 83.88%, and 85.16%. As it has been reported in the literature (e.g., Elzahar and Hussainey, 2012; Ntim *et al*., 2014), this may be due to the fact that the firms take time to comply with all CG provisions.

Table 5.3: Descriptive statistics of Level of compliance based on industrial group

	Mean	Median	T-test	Maximum	Minimum	Std. Dev.
Panel A : PCGI	***55.00***	***60.09***		***84.32***	***4.43***	***19.90***
Y2003	20.56	15.00	-4.21***	65.63	1.25	15.37
Y2004	23.76	19.38	-1.41	67.50	0.63	15.13
Y2005	31.17	29.38	-0.37	74.38	1.88	15.46
Y2006	40.31	41.88	4.03***	79.38	3.13	17.25
Y2007	47.66	50.63	-0.56	80.63	3.75	18.82
Y2008	53.88	58.75	1.63	82.50	5.00	19.69
Y2009	67.50	78.75	4.88***	88.75	5.00	24.20
Y2010	73.60	86.88	6.64***	93.75	5.63	25.99
Y2011	77.57	90.94	3.02***	96.88	5.63	26.37
Y2012	83.88	94.38	3.23***	98.75	7.50	20.95
Y2013	85.16	95.00	3.17***	99.38	9.38	19.72
Panel B : Auto	***49.59***	***55.96***		***80.88***	***0.00***	***20.93***
Y2003	8.18	6.90	-9.29***	58.62	0.00	10.95
Y2004	10.20	6.90	-7.10***	58.62	0.00	9.90
Y2005	18.77	17.24	-4.88***	75.86	0.00	13.45
Y2006	29.21	31.03	0.37	75.86	0.00	15.17
Y2007	45.27	51.72	-1.17	75.86	0.00	19.73
Y2008	50.59	58.62	0.70	79.31	0.00	21.55
Y2009	64.48	75.86	3.84***	86.21	0.00	27.58
Y2010	73.00	86.21	5.84***	93.10	0.00	30.94
Y2011	77.14	91.38	2.65***	96.55	0.00	31.70
Y2012	85.52	96.55	3.34***	96.55	0.00	25.38
Y2013	83.10	93.10	2.38**	93.10	0.00	23.91
Panel C : Cement	***61.09***	***70.27***		***99.24***	***1.89***	***28.33***
Y2003	28.75	20.83	-1.11	95.83	0.00	25.95
Y2004	29.35	22.92	0.42	95.83	0.00	25.82
Y2005	40.71	41.67	2.26**	100.00	0.00	25.15
Y2006	49.40	54.17	5.61***	100.00	0.00	25.80
Y2007	58.15	66.67	1.86*	100.00	0.00	27.53
Y2008	61.37	70.83	3.04***	100.00	0.00	28.81
Y2009	75.42	95.83	5.53***	100.00	0.00	34.46
Y2010	78.27	100.00	6.50***	100.00	4.17	34.40
Y2011	78.99	100.00	2.93***	100.00	4.17	33.34
Y2012	85.00	100.00	3.17***	100.00	4.17	26.21
Y2013	86.55	100.00	3.23***	100.00	8.33	24.17
Panel D: Chemical	***57.15***	***63.64***		***91.41***	***2.53***	***22.18***
Y2003	18.97	11.11	-4.30***	88.89	0.00	19.21
Y2004	27.30	22.22	-0.15	88.89	0.00	17.89
Y2005	38.81	38.89	2.12*	88.89	0.00	17.83
Y2006	48.89	55.56	6.39***	88.89	5.56	20.01
Y2007	53.41	61.11	0.91	88.89	5.56	21.35
Y2008	59.37	66.67	3.09***	88.89	5.56	20.45
Y2009	66.98	77.78	4.78***	94.44	5.56	23.85
Y2010	74.68	88.89	6.82***	94.44	5.56	26.53
Y2011	74.60	88.89	2.32**	94.44	0.00	27.39

Continuation: Table 5.3

	Mean	Median	T-test	Maximum	Minimum	Std. Dev.
Y2012	82.14	94.44	2.59**	94.44	0.00	24.75
Y2013	83.49	94.44	2.43**	94.44	0.00	24.68
Panel E: Electricity	***66.09***	***75.76***		***100.00***	***0.00***	***29.54***
Y2003	26.67	22.22	-1.56	100.00	0.00	28.21
Y2004	39.84	33.33	3.17***	100.00	0.00	26.25
Y2005	59.68	66.67	6.77***	100.00	0.00	28.20
Y2006	67.94	77.78	9.25***	100.00	0.00	30.94
Y2007	66.67	77.78	3.54***	100.00	0.00	30.62
Y2008	67.30	77.78	4.23***	100.00	0.00	30.55
Y2009	77.94	100.00	6.20***	100.00	0.00	33.12
Y2010	78.73	100.00	6.91***	100.00	0.00	32.14
Y2011	77.94	88.89	2.88***	100.00	0.00	30.36
Y2012	81.90	100.00	2.37**	100.00	0.00	28.07
Y2013	82.38	88.89	2.08**	100.00	0.00	26.45
Panel F: Food	***50.14***	***52.87***		***100.00***	***0.48***	***27.55***
Y2003	16.77	2.63	-3.96***	100.00	0.00	28.33
Y2004	17.29	2.63	-2.57**	100.00	0.00	28.76
Y2005	23.31	10.53	-2.28**	100.00	0.00	26.82
Y2006	31.73	28.95	0.96	100.00	0.00	24.96
Y2007	39.77	36.84	-2.40**	100.00	0.00	23.80
Y2008	39.77	36.84	-2.07**	100.00	0.00	23.67
Y2009	64.96	78.95	3.88***	100.00	0.00	28.42
Y2010	73.53	89.47	5.75***	100.00	0.00	32.62
Y2011	75.11	94.74	2.20**	100.00	0.00	32.90
Y2012	84.29	100.00	3.00***	100.00	0.00	26.35
Y2013	85.04	100.00	2.71***	100.00	5.26	26.39
Panel G: Houshold	***60.32***	***65.91***		***100.00***	***0.00***	***26.59***
Y2003	17.14	0.00	-3.76***	100.00	0.00	29.50
Y2004	32.68	25.00	1.27	100.00	0.00	26.94
Y2005	40.18	37.50	2.15**	100.00	0.00	24.44
Y2006	49.11	50.00	5.78***	100.00	0.00	24.11
Y2007	50.71	50.00	0.22	100.00	0.00	23.88
Y2008	65.18	75.00	4.17***	100.00	0.00	25.70
Y2009	73.93	87.50	6.16***	100.00	0.00	26.56
Y2010	81.61	100.00	7.89***	100.00	0.00	29.92
Y2011	81.96	100.00	3.74***	100.00	0.00	29.84
Y2012	85.36	100.00	3.27***	100.00	0.00	25.97
Y2013	85.71	100.00	2.93***	100.00	0.00	25.56
Panel H: Misc	***47.35***	***51.95***		***70.13***	***3.90***	***17.75***
Y2003	18.16	14.29	-5.51***	42.86	0.00	11.39
Y2004	16.94	14.29	-4.55***	42.86	0.00	8.08
Y2005	21.12	21.43	-4.42***	50.00	0.00	9.53
Y2006	33.27	35.71	1.75*	64.29	0.00	16.04
Y2007	29.49	28.57	-5.87***	50.00	0.00	13.75
Y2008	45.00	50.00	-0.87	64.29	7.14	16.69

Continuation: Table 5.3

	Mean	Median	T-test	Maximum	Minimum	Std. Dev.
Y2009	55.61	64.29	1.99**	85.71	7.14	22.25
Y2010	67.24	78.57	5.14***	85.71	7.14	25.55
Y2011	74.18	85.71	2.27**	92.86	7.14	26.54
Y2012	75.61	85.71	1.06	92.86	7.14	23.53
Y2013	84.18	92.86	2.77***	100.00	7.14	21.92
Panel I: Oil & Gas	***53.16***	***56.29***		***97.90***	***0.00***	***22.25***
Y2003	24.73	19.23	-2.48**	92.31	0.00	20.28
Y2004	30.44	30.77	0.83	92.31	0.00	19.97
Y2005	26.81	23.08	-1.65	92.31	0.00	20.07
Y2006	34.84	30.77	1.98**	100.00	0.00	21.35
Y2007	46.15	46.15	-0.92	100.00	0.00	21.28
Y2008	47.03	46.15	-0.25	100.00	0.00	21.46
Y2009	67.69	76.92	4.93***	100.00	0.00	24.17
Y2010	70.55	76.92	5.95***	100.00	0.00	25.56
Y2011	74.40	84.62	2.36**	100.00	0.00	25.35
Y2012	81.10	92.31	2.42**	100.00	0.00	23.05
Y2013	80.99	92.31	1.91*	100.00	0.00	22.21
Panel J: Pharma	***47.46***	***54.55***		***97.40***	***0.00***	***22.24***
Y2003	33.06	42.86		85.71	0.00	19.54
Y2004	27.76	28.57		85.71	0.00	18.18
Y2005	32.24	28.57		100.00	0.00	18.79
Y2006	28.16	28.57		100.00	0.00	18.36
Y2007	49.80	57.14		100.00	0.00	25.48
Y2008	47.96	57.14		100.00	0.00	23.08
Y2009	47.96	57.14		100.00	0.00	23.21
Y2010	46.33	57.14		100.00	0.00	22.48
Y2011	63.88	71.43		100.00	0.00	27.27
Y2012	71.22	85.71		100.00	0.00	25.22
Y2013	73.67	85.71		100.00	0.00	23.03
Panel K: Textile	***49.59***	***55.96***		***80.88***	***0.00***	***20.93***
Y2003	8.18	6.90	-9.29***	58.62	0.00	10.95
Y2004	10.20	6.90	-7.10***	58.62	0.00	9.90
Y2005	18.77	17.24	-4.88***	75.86	0.00	13.45
Y2006	29.21	31.03	0.37	75.86	0.00	15.17
Y2007	45.27	51.72	-1.17	75.86	0.00	19.73
Y2008	50.59	58.62	0.70	79.31	0.00	21.55
Y2009	64.48	75.86	3.84***	86.21	0.00	27.58
Y2010	73.00	86.21	5.84***	93.10	0.00	30.94
Y2011	77.14	91.38	2.65***	96.55	0.00	31.70
Y2012	85.52	96.55	3.34***	96.55	0.00	25.38
Y2013	83.10	93.10	2.38**	93.10	0.00	23.91

Notes: This table presents the descriptive statistics of level of compliance with *PCGI* based on industry type from 2003 to 2013. Std. Dev. denotes standard deviation, Auto represents automobile industry and Misc denotes miscellaneous firms which are from the industries other than the above mentioned. *Notes: Panel* A to I and K reports the t-test using independent sample t-test of compare means based on *pharma industry* for the equality of mean values. The asterisk*** denotes the significant level at 1%, asterisk** denotes the significant level at 5% and asterisk* denotes the significant level of mean difference at 10%.

5.1.3 Descriptive statistics of *PCGI* based on Industrial Group

It has been suggested in the CG literature that the level of compliance and disclosure differ across the industrial groups (Elzahar and Hussainey, 2012; Krafft *et al*., 2013; Ntim *et al*., 2014). Therefore, the current study seeks to determine whether different industrial groups can explain the variability in level of CG compliance and disclosure with *PCGI*. The full sample is categorised into ten industries, as provided by DataStream and Karachi Stock Exchange (KSE). These includes: automobile, cement, chemical, electricity, food, household, misc, oil and gas, pharma and textile industries. Generally, the statistics of *panel* A, B, C, D, E, F, G, H, I, J and K of Table 5.3 suggests that the overall mean scores of the *PCGI* is significantly varied among Pakistani listed firms across firm industry. These findings are further explained below.

Table 5.3 and figure 5.2 show the level of compliance with the *PCGI* based on 10 industrial groups across the eleven years from 2003 to 2013. The following three main observations can be drawn. First, both Table 5.3 and figure 5.2 show that the firms in automobile, cement, chemical, electricity, food, household, misc, oil and gas, pharma and textile industries complied with 49.59%, 61.09%, 57.15%, 66.09%, 50.14%, 60.32%, 47.35%, 53.16%, 47.46%, and 49.59% of *PCGI*, respectively. It can be observed that the firms in cement (61.09%), electricity (66.09%), and household (60.32%) industries tend to comply more with the *PCGI* than those in other industrial groups. Firms in chemical (57.15%), food (50.14%), oil and gas (53.16%) industries appears to have an average level of compliance with *PCGI.* On the other hand, the firms in automobile (49.59%), misc (47.35%), pharma (47.46%) and textile (49.59%) industrial groups appear to have lower level of CG compliance and disclosure with *PCGI*. These findings are in line with Hussainey and Al-Nodel (2008), they reported that there is a substantial difference in CG disclosure among industries.

Second, similar to the results of overall *PCGI,* the level of compliance and disclosure in all industrial groups has increased over the sampled period. For instance, as shown in Table 5.3, the level of compliance by the sampled firms in automobile and engineering, cement, chemical, electricity, food, household, misc, oil and gas, pharma and textile are 8.18%, 28.75%, 18.97%, 26.67%, 16.77%, 17.14%, 18.16%, 24.73%, 33.06% and 8.18% in 2003, compared with 83.10%, 86.55%, 83.49%, 82.38%, 85.04%, 85.71%, 84.18%, 80.99%, 73.67% and 83.10% in 2013. This increase in level of compliance over time, confirming the suggestions of CG literature that compliance with CG practices takes time.

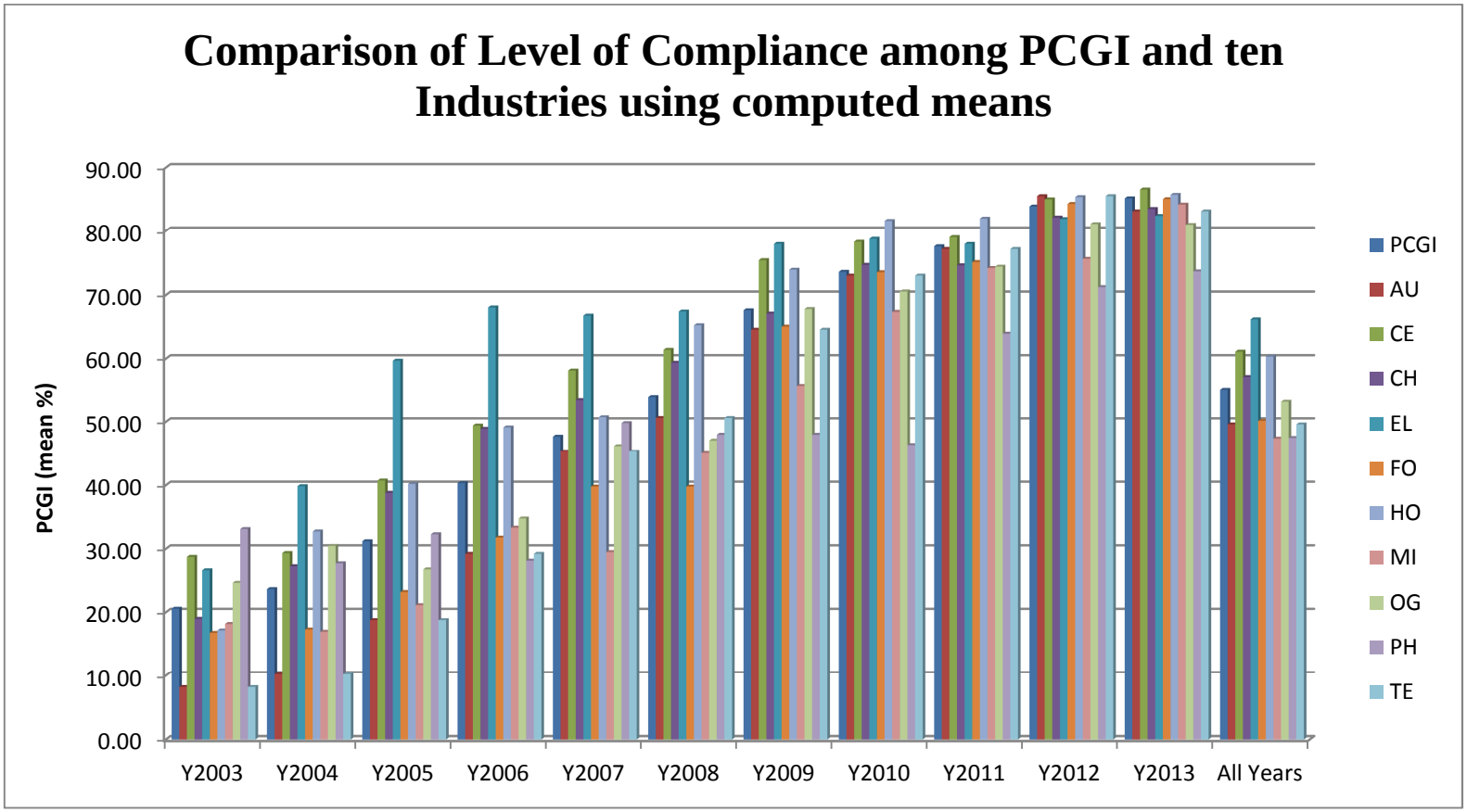

Figure 5.2: The levels of CG compliance and disclosure by industrial groups

5.1.4 Descriptive statistics of Level of compliance

As shown in Table 5.4, this subsection presents and discusses the descriptive statistics of determinants of level of compliance. It is divided into further three subsections. Subsection 5.1.4.1 discusses the summary of descriptive statistics related to the dependent variable. Descriptive statistics of independent variables are discussed in Subsection 5.1.4.2, while descriptive statistics related to control variables are discussed in Subsection 5.1.4.3.

Table 5.4: Descriptive statistics of Level of compliance Model

Variables	Observations	Mean	Median	Std. Dev.	Maximum	Minimum
Panel A *: Dependent variable*						
PCGI	1760	54.230	74.648	33.572	97.183	0.000
Panel B : Independent variables						
DOWNP	1760	20.879	9.001	24.811	98.371	0.000
IOWNP	1760	10.699	5.543	14.674	95.471	0.000
GOWNP	1760	6.397	1.741	12.564	95.023	0.000
BOWNP	1760	55.451	55.220	26.727	99.806	0.000
FOWNP	1760	9.967	0.000	21.624	93.187	0.000
BIG4	1760	0.551	1.000	0.498	1.000	0.000
BSZ	1760	8.220	8.000	1.683	17.000	6.000
BGEN	1760	11.398	0	23.376	1	0
BNAT	1760	4.2621	0	8.9820	1	0
Panel C : Control variables						
LTA	1760	16.017	15.641	2.082	21.304	12.636
ROE	1760	0.146	0.103	0.225	0.692	-0.212
SALESG	1760	0.163	0.127	0.388	1.655	-0.728
LVG	1760	30.605	25.853	30.491	147.877	0.000
CE	1760	27.877	3.9809	224.87	4203.641	4.03E-05

Notes: *PCGI* denotes the Pakistani Corporate Governance Index, DOWNP represents director ownership, IOWNP represents institutional ownership, GOWNP represents government ownership, BOWNP represents block ownership, FOWNP represents foreign ownership, BIG4 represents the audit firm size, BSZ represents the size of the board of directors, BGEN represents board diversity on the basis of Gender, BNAT represents board diversity on the basis of Nationality, LTA represents firm size as log of total assets, ROE represents return on equity as measure of profitability, SALESG represents growth opportunities, LVG represents leverage and CE represents capital expenditures to total assets.

5.1.4.1 Descriptive Statistics of Dependent Variable (*PCGI*)

After a detailed discussion on *PCGI* in the above subsections and as shown in *panel* A of Table 5.4, this subsection discusses in brief the descriptive statistics for dependent variable. The minimum of *PCGI* is 0.00 and maximum is 97.18 while the mean score of index is 54.23 for 1760 firm year observations. There is a relatively large variation in the CG compliance among Pakistani listed firms, as shown by standard deviation of 33.57. The findings are in line with the previous CG literature (e.g, Ntim *et al*., 2012a; Henry, 2008) indicating that CG standards improve over time.

5.1.4.2 Descriptive Statistics of independent variables

As shown in *panel B* of Table 5.4, this subsection discusses the descriptive statistics for explanatory variables. A number of observations are listed below. First, the mean of director ownership is 20.88%, with a minimum of 0% and maximum of 98%. The average of director ownership is relatively high among Pakistani listed firms from both developing and devolved countries. For instance, Samaha *et al*. (2012) reports 9% of director ownership in Egyptian firms. Similarly, Henry (2008) report 6% of director ownership in Australian firms. Second, the mean of institutional ownership is 10.70% with a minimum of 0 and a maximum of 95%, revealing that there is a substantial variation in this variable. However this average of institutional ownership is consistent with some of the previous studies. For instance, Aggarwal *et al*. (2011) report an average institutional ownership of 8%, 8% and 9% in Greece, Hong Kong and New Zealand, respectively. On the other hand, Chung and Zhang (2011) report over 50% of institutional ownership among US firms.

Third, the average government ownership is 6.39% with a minimum of 0 and a maximum of 95%, revealing that the Pakistani government relatively holds a high percentage of firms' share and is expected to have an impact on the willingness of firms to comply with CG provisions. Fourth, the average of block ownership is 55.45%, with a minimum of 0 and a maximum of 99.80%, revealing a higher level of ownership concentration among Pakistani listed firms. The high level of block ownership may suggest a low CG compliance and disclosure, as it is expected that market for control may not be working well as compared with low concentration of ownership. Fifth, the foreign ownership has a mean of 9.97%, with a minimum of 0, and a maximum of 93%, with a standard deviation of 21.62%. This may suggest that the presence of foreign ownership can

have an important role in improving the CG standards among Pakistani listed firms. This is supported by correlation coefficient, showing a positive correlation with *PCGI*.

Sixth, an average of 55% of sampled firms uses the services of big audit firms. This average is relatively lower than other emerging countries. For instance, Barako *et al*. (2006) find that the 75% of Kenyan firms are audited by the one of the big audited firms. It is expected that firms audited by big audit firms, may improve their levels of CG compliance and disclosure because of the reputation of audit firms. Seventh, the average of board is 8.22%, with a range from 6 to 17. This is in line with PCCG requirements that board members should be at least 7. It is also in consistent with the Lipton and Lorsch's (1992) recommendation that board should have between 8 and 9 members in order to be efficient. Further, this average of board size is in line with some of the prior studies. For instance, Akhtaruddin *et al*. (2009) investigating CG compliance and disclosure in Malaysia, reports empirical evidence of board average to be 7.97.

Eighth, gender as a measure of board diversity has an average of 11.40%, representing the female directors' portion in the board among Pakistani listed firms. This may suggest that the presence of female board members on firms' board may improve the level of compliance and disclosure among Pakistani listed firms because of diversity in the board room. Finally, nationality as a measure of board diversity has an average of 4.26%, representing the foreigner directors' portion in the board among Pakistani listed firms. Although the percentage of foreign director is low in board room, there presence on firms' board may help to improve the CG disclosure level in Pakistan because of nationality diversity, skills and exposure in the board room.

5.1.4.3 Descriptive Statistics of Control Variables

As shown in *panel C* of Table 5.4, the summary descriptive statistics of control variables related to the determinants of the level compliance are discussed in this subsection. First, firm size measured by the natural log of firms' total assets range from 12 to 21, with an average of 16. Second, firm profitability measured by return on equity, range from a minimum of -21% to a maximum of 22%, with an overall average of 14.6%. Third, firm growth measured by sales growth in sampled firm having an average of 16%, with a range from -72% to 38%, showing a high level of variation among the sampled firms. This variation in firms' growth can be repercussions of the global economic recession (2008) during the study period (Mangena *et al*., 2012). Fourth, the average value of leverage is 30% which is slightly higher than other developing countries. For instance, Al-Nodel and

Hussainey (2010) and Barako *et al*. (2006) find average leverage value of 25% and 27% for Saudian and Kenyan firms, respectively. Finally, the capital expenditure has an average value of 27.87% shows an average level of capital expenditure to total assets which may have a negative impact on level of CG disclosure and compliance among the listed firms.

Table 5.5: Descriptive statistics of Cost of Capital

Variables	Observations	Mean	Median	Std. Dev.	Maximum	Minimum
Panel A *: Dependent variable*						
COC	1760	0.209	0.156	0.276	0.976	-0.470
COD	1760	0.196	0.072	0.258	0.700	0.000
COE	1760	0.255	0.212	0.303	0.932	-0.307
Panel B : Independent variables						
PCGI	1760	54.230	74.648	33.572	97.183	0.000
DOWNP	1760	20.879	9.001	24.811	98.371	0.000
IOWNP	1760	10.699	5.543	14.674	95.471	0.000
GOWNP	1760	6.397	1.741	12.564	95.023	0.000
BOWNP	1760	55.451	55.220	26.727	99.806	0.000
FOWNP	1760	9.967	0.000	21.624	93.187	0.000
BIG4	1760	0.551	1.000	0.498	1.000	0.000
BSZ	1760	8.220	8.000	1.683	17.000	6.000
BGEN	1760	11.398	0	23.376	1	0
Panel C : Control variables						
LTA	1760	16.017	15.641	2.082	21.304	12.636
ROE	1760	0.146	0.103	0.225	0.692	-0.212
SALESG	1760	0.163	0.127	0.388	1.655	-0.728
LVG	1760	30.605	25.853	30.491	147.877	0.000
β	1760	0.590	0.567	0.564	2.106	-0.529

Notes: COC denotes the Cost of Capital, COD denotes the Cost of Debt, COE denotes the Cost of Equity, *PCGI* denotes the Pakistani Corporate Governance Index, DOWNP represents director ownership, IOWNP represents institutional ownership, GOWNP represents government ownership, BOWNP represents block ownership, FOWNP represents foreign ownership, BIG4 represents the audit firm size, BSZ represents the size of the board of directors, BGEN represents board diversity on the basis of Gender, BNAT represents board diversity on the basis of Nationality, LTA represents firm size as log of total assets, ROE represents return on equity as measure of profitability, SALESG represents growth opportunities, LVG represents leverage and β represents Beta, a measure of risk.

5.1.5 Descriptive statistics of CG and Cost of Capital

As shown in Table 5.5, this subsection presents and discusses the descriptive statistics of CG and COC. The summary of descriptive statistics related to the dependent variables is prsented in subsection 5.1.5.1. Descriptive statistics of independent variables are discussed in Subsection 5.1.5.2, while descriptive statistics related to control variables are discussed in Subsection 5.1.5.3.

5.1.5.1 Descriptive Statistics of Dependent Variables

As shown in *panel* A of Table 5.5, this subsection discusses the descriptive statistics for dependent variables; namely weighted average cost of capital (COC), cost of debt (COD) and cost of equity (COE). COC has an average of 20.9% for the 1760 firm year observations. There is a relatively large variation in the COC among Pakistani listed firms, as shown by standard deviation of 27.6%. Additionally, COD has a lower average than the COC with 19.6% while COE has a relatively high average than both COD and COC with 25.5% for the sampled firms over time.

5.1.5.2 Descriptive Statistics of Independent Variables

As shown in *panel B* of Table 5.4, this subsection discusses the descriptive statistics for explanatory variables. A number of observations are listed below. First, the minimum of *PCGI* is 0.00 and the maximum is 97.18, while the mean of index is 54.23 for 1760 firm year observations. It considered relatively large disparity with respect to CG disclosure among Pakistani listed firms, as shown by standard deviation of 33.57. This is consistent with the prior CG literature (eg., Henry, 2008; Ntim *et al*., 2012a) indicating that CG standards improves over time. Hence, it may help to decrease the firms' COC and improve the value. Second, the mean of director ownership is 20.88%, with a minimum of 0% and maximum of 98%. The average of director ownership is relatively high among Pakistani listed firms from both developing and devolved countries. For instance, Samaha *et al*. (2012) reports 9% of director ownership in Egyptian firms. Similarly, Henry (2008) report 6% of director ownership in Australian firms.

Third, the mean of institutional ownership is 10.70% with a minimum of 0 and a maximum of 95%, revealing that there is a substantial variation in this variable. However this average of institutional ownership is consistent with some of the previous studies. For instance, Aggarwal *et al*. (2011) report an average institutional ownership of 8%, 8% and 9% in Greece, Hong Kong and New Zealand, respectively. On the other hand, Chung and

Zhang (2011) report over 50% of institutional ownership among US firms. Fourth, the average government ownership is 6.39% with a minimum of 0 and a maximum of 95%, revealing that the Pakistani government relatively holds a high percentage of firms' share and is expected to have an impact on the firms' cost of borrowing.

Fifth, the average of block ownership is 55.45%, with a minimum of 0 and a maximum of 99.80%, revealing a higher level of ownership concentration among Pakistani listed firms. The high level of block ownership may bring a positive change in firms' COC. Sixth, the foreign ownership has a mean of 9.97%, with a minimum of 0, and a maximum of 93%, with a standard deviation of 21.62%. This may suggest that the presence of foreign ownership can have an important role in decision of firms' borrowing and on its cost among Pakistani listed firms. Seventh, an average of 55% of sampled firms uses the services of big audit firms. This average is relatively lower than other emerging countries. For instance, Barako *et al*. (2006) find that the 75% of Kenyan firms are audited by the one of the big audited firms. It is expected that firms audited by big audit firms, may decrease the firms' cost of borrowing because of the reputation of audit firms.

Eighth, the average of board is 8.22%, with a range from 6 to 17. It is in line with PCCG requirements that board members should be at least 7. It is also in line with the Lipton and Lorsch's (1992) recommendation that board should have between 8 and 9 members in order to be efficient. Further, this average of board size is in line with some of the prior studies. For instance, Akhtaruddin *et al*. (2009) investigating CG compliance and disclosure in Malaysia, reports empirical evidence of board average to be 7.97. Finally, gender as a measure of board diversity has an average of 11.40%, representing the female directors' portion in the board among Pakistani listed firms. Although the percentage of women in board is lower as compared to men, there presence on the firms' board may have an impact on firms COC among Pakistani listed firms because of diversity in the board room.

5.1.5.3 Descriptive Statistics of Control Variables

As shown in *panel C* of Table 5.5, the summary descriptive statistics of control variables related to the determinants of the level of disclosure and compliance are discussed in this subsection. First, firm size measured by the natural log of firms' total assets range from 12 to 21, with an average of 16. Second, firm profitability measured by return on equity, range from a minimum of -21% to a maximum of 22%, with an overall average of 14.6%. Third, firm growth measured by sales growth in sampled firm having an average of 16%, with a range from -72% to 38%, showing a high level of variation among the sampled firms. This variation in firms' growth can be repercussions of the global

economic recession (2008) during the study period (Mangena *et al*., 2012). Fourth, the average value of leverage is 30% which is slightly higher than other developing countries. For instance, Al-Nodel and Hussainey (2010) and Barako *et al*. (2006) find average leverage value of 25% and 27% for Saudian and Kenyan firms, respectively. Finally, the beta has an average value of .59 shows a lower level of systematic risk which may have a positive impact on sampled firms' COC among the listed firms.

5.2 SUMMARY OF THE CHAPTER

This chapter discussed the descriptive statistics of variables employed in this study. The variables are used in examining the nexus among the level of CG disclosure, factor influencing the level of CG disclosure and firms' COC. Particularly, this chapter meant to attain three main objectives. First, it presented a detailed discussion of the descriptive statistics of the *PCGI*. Second, it investigated whether the introduction of the 2002 PCCG has helped in improving the level of CG compliance and disclosure. Third, this chapter presented the descriptive statistics of the CG mechanisms, financial proxies, and control variables used in the study.

Therefore, this chapter was divided into three sections. The descriptive statistics of PCGI are discussed in subsection one. The minimum value of *PCGI* is 0.00 and maximum is 97.18, while mean of index is 55% for the 1760 firm-year observations over eleven years. Further, the reported findings suggest that the mean score of *PCGI* has improved from 20.6% in 2003 to 85.2% in 2013 with an overall increase of 64.6% in eleven years. This suggests that the introduction of the PCCG in 2002 has improved CG standards among Pakistani listed firms. The second subsection provided a summary of descriptive statistics of variables used in factor influencing level of compliance while third subsection discussed the descriptive statistics of CG and COC related variables.

CHAPTER 6

6 EMPRICAL FINDINGS AND DISCUSSION

This chapter discusses the OLS assumptions, presents the empirical findings and sheds light on the third and fourth main research questions investigated in this thesis. Specifically, this chapter seeks to achieve the following three main objectives. First and as indicated in chapter four subsections 4.3.1, the OLS assumptions must be met before performing the main analysis. Therefore, this chapter discuss a number of statistical tests that have been conducted to address the OLS assumptions before discussing empirical findings. Second, it presents the findings of the determinants of level of CG compliance (the third research question). Thirdly, this chapter presents empirical findings obtained from analysis related to impact of CG on Cost of Capital (the fourth main research question).

Therefore, the following section is organised in five sections. Section 6.1 discusses the OLS assumptions. Section 6.2 presents and discusses the empirical findings of determinants of CG disclosure. Subsection 6.3 presents and discusses the findings of the CG and Cost of Capital (COC) while subsection 6.4 summarises the chapter.

6.1 ORDINARY LEAST SQUARE (OLS) ASSUMPTIONS

As explained in subsection 4.3.1, the OLS assumptions must be met in order to ensure that OLS is the best suitable estimation model to perform analysis. Therefore, this section performs a number of procedures and statistical tests to examine the OLS assumptions, including stationarity, autocorrelation, heteroscedasticity, linearity, multicollinearity, and normality.

Specifically, subsection 6.1.1 discussed Breush-Godfrey test results to detect the issue of autocorrelation. Subsection 6.1.2 presents the White general test results to investigate for the presence of heteroscedasticity. Subsection 6.1.3 presents Augmented Dickey-fuller test to ensure that whether series have unit roots or not. Subsection 6.1.4 presents Correlation coefficient, Tolerance statistics (TOL) and Variance Inflation Factor (VIF) results to address the issue of multicollinearity. Subsection 6.1.5 examines the normality while Subsection 6.1.6 presents a summary of all the above tests.

Table 6.1: Augmented Dickey-Fuller test statistic: Level of Compliance Model

Variables	Intercept and Trend
PCGI	-7.830379***
DOWNP	-9.088151***
IOWNP	-13.2249***
GOWNP	-10.50811***
BOWNP	-9.481476***
FOWNP	-7.696139***
BIG4	-9.509141***
BSZ	-10.73628***
BGEN	-12.41666***
BNAT	-7.253226***
LTA	-10.72749***
ROE	-15.17192***
SALESG	-14.74593***
LVG	-12.74636***
CE	-13.66088***

Notes: *PCGI* denotes the Pakistani Corporate Governance Index, DOWNP represents director ownership, IOWNP represents institutional ownership, GOWNP represents government ownership, BOWNP represents block ownership, FOWNP represents foreign ownership, BIG4 represents the audit firm size, BSZ represents the size of the board of directors, BGEN represents board diversity on the basis of Gender, BNAT represents board diversity on the basis of nationality, LTA represents firm size as log of total assets, ROE represents return on equity as measure of profitability, SALESG represents growth opportunities, LVG represents leverage and CE represents capital expenditures. The asterisk*** denotes the significant level at 1%, asterisk** denotes the significant level at 5% and asterisk* denotes the significant level at 10%.

6.1.1 Augmented Dickey-Fuller test statistic

Before applying any test, the researcher has to make sure weather series are stationary[25]or not (Cizek *et al*., 2005). Brooks (2007) argue that it is important to know as non-stationary data may result in spurious findings; stationarity can affect series properties and behaviour. Therefore, the current study performs Augmented Dickey-Fuller unit root test to check the stationarity of each variable used in the study. The results of ADF test regarding the level of compliance model are presented in Table 6.1 while the test results regarding CG and COC are presented in Table 6.2. The null hypothesis of the unit root test is "the series is non stationary". As results show in Table 6.1 and 6.2, that all series of all variables in both models are stationary as null hypothesis of unit root is rejected at 1% level of significance.

[25]Brooks (2007, pp.318) defined stationary series as "*one with a constant mean, constant variance and constant autocovariances for each given lag*".

Table 6.2: Augmented Dickey-Fuller test statistic: CG and COC Model

Variables	Intercept and Trend
PCGI	-7.830379***
DOWNP	-9.95537***
IOWNP	-10.88153***
GOWNP	-9.48334***
BOWNP	-9.481476***
FOWNP	-8.337197***
BIG4	-9.509141***
BSZ	-10.98531***
BGEN	-12.41666***
BNAT	-7.253226***
LTA	-10.72749***
ROE	-13.49742***
SALESG	-45.74593***
LVG	-13.2795***
CE	-15.70336***
β	-14.51896***

Notes: *PCGI* denotes the Pakistani Corporate Governance Index, DOWNP represents director ownership, IOWNP represents institutional ownership, GOWNP represents government ownership, BOWNP represents block ownership, FOWNP represents foreign ownership, BIG4 represents the audit firm size, BSZ represents the size of the board of directors, BGEN represents board diversity on the basis of Gender, BNAT represents board diversity on the basis of Nationality, LTA represents firm size as log of total assets, ROE represents return on equity as measure of profitability, SALESG represents growth opportunities, LVG represents leverage, CE represents capital expenditures and β represents the systematic risk. The asterisk*** denotes the significant level at 1%, asterisk** denotes the significant level at 5% and asterisk* denotes the significant level at 10%.

6.1.2 Breush-Godfrey test results to detect the issue of autocorrelation

In addition to stationarity test, this study carried out a number of statistical procedures to address the OLS assumptions. Although serial correlation is a problem of time series data, the current study performed Breusch-Godfrey Serial Correlation LM test to find out weather data has a problem of autocorrelation. In this regard, Brooks (2007) argued that the issue of serial correlation may violate the assumption of OLS as standard error estimates can be biased downward with respect to the true standard errors.

Table 6.3: Breusch-Godfrey Serial Correlation LM Test: Level of Compliance Model

F-statistic	572.2646***	Prob. F(2,1724)	0.0000
Obs*R-squared	702.2314***	Prob. Chi-Square(2)	0.0000

The asterisk*** denotes the significant level at 1%, asterisk** denotes the significant level at 5% and asterisk* denotes the significant level at 10%.

The results of Breusch-Godfrey Serial Correlation LM test regarding factor influencing level of compliance model are presented in Table 6.3 while the test results regarding CG and COC are presented in Table 6.4. The null hypothesis of a Breusch-

Godfrey Autocorrelation LM test is that series has no serial correlation. The F-statistics and Chi-Square values presented in Table 6.3 and 6.4 indicates the presence of autocorrelation as the null hypothesis of no serial correlation is rejected at the level of 1% in both models.

Table 6.4: Breusch-Godfrey Serial Correlation LM Test: CG and COC Model

F-statistic	16.65574***	Prob. F(2,1721)	0.0000
Obs*R-squared	33.41949***	Prob. Chi-Square(2)	0.0000

The asterisk*** denotes the significant level at 1%, asterisk** denotes the significant level at 5% and asterisk* denotes the significant level at 10%.

6.1.3 White general test results about the presence of heteroscedasticity

The results of heteroscedasticity (White) test regarding level of compliance model are presented in Table 6.5 while the test results regarding CG and COC model are presented in Table 6.6. The null hypothesis of white test is that "model has no heteroscedasticity".

Table 6.5: Heteroscedasticity (White)Test: Level of Compliance

F-statistic	2.249772***	Prob. F(489,1270)	0.0000
Obs*R-squared	816.9327***	Prob. Chi-Square(489)	0.0000

The asterisk*** denotes the significant level at 1%, asterisk** denotes the significant level at 5% and asterisk* denotes the significant level at 10%.

The F-statistics and Chi-Square values presented in Table 6.5 and 6.6 show that the model is heteroskedastic as the null hypothesis of no heteroscedasticity is rejected at the 1% level in both, factor influencing level of compliance model as well as in CG and COC models.

Table 6.6: Heteroscedasticity (White)Test: CG and COC

F-statistic	3.096811	Prob. F(597,1162)	0.0000
Obs*R-squared	1080.738	Prob. Chi-Square(597)	0.0000

The asterisk*** denotes the significant level at 1%, asterisk** denotes the significant level at 5% and asterisk* denotes the significant level at 10%.

6.1.4 Variance Inflation Factor (VIF) and Tolerance statistics test results

Multicollinearity is another problem of data which needs to be addressed before using OLS as the main analysis. Therefore, it has been tested whether the independent variables are highly correlated or not.

Table 6.7: VIF and TOL tests of Multicollinearity: Level of Compliance Model

Variable	VIF	TOL
DOWNP	1.725345	0.579594
IOWNP	1.151600	0.868357
GOWNP	1.294599	0.772440
BOWNP	1.169994	0.854705
FOWNP	1.474339	0.678270
BIG4	1.579938	0.568525
BSZ	1.309453	0.763735
BGEN	1.229473	0.813357
BNAT	1.692271	0.590922
LTA	1.981672	0.504624
ROE	1.110816	0.900239
SALESG	1.134062	0.881786
LVG	1.287387	0.776767
CE	1.702091	0.587513

Notes: *PCGI* denotes the Pakistani Corporate Governance Index, DOWNP represents director ownership, IOWNP represents institutional ownership, GOWNP represents government ownership, BOWNP represents block ownership, FOWNP represents foreign ownership, BIG4 represents the audit firm size, BSZ represents the size of the board of directors, BGEN represents board diversity on the basis of Gender, BNAT represents board diversity on the basis of Nationality, LTA represents firm size as log of total assets, ROE represents return on equity as measure of profitability, SALESG represents growth opportunities, LVG represents leverage and CE represents capital expenditures. The asterisk*** denotes the significant level at 1%, asterisk** denotes the significant level at 5% and asterisk* denotes the significant level at 10%.

There are a number of statistical procedures which have been suggested and used in the literature; namely Variance Inflation Factor (VIF), Tolerance statistics (TOL), Spearman's non-parametric coefficient and Pearson's parametric correlation coefficients.

Table 6.8: VIF and TOL tests of Multicollinearity: CG and COC Model

Variable	VIF	TOL
PCGI	2.173552	0.460076
DOWNP	1.865372	0.536086
IOWNP	1.705482	0.586345
GOWNP	1.88512	0.53047
BOWNP	2.250901	0.444267
FOWNP	2.134915	0.468403
BIG4	1.967211	0.508334
BSZ	1.56979	0.637028
BGEN	1.295119	0.77213
BNAT	1.841184	0.543129
LTA	3.141247	0.318345
ROE	1.2339	0.810438
SALESG	1.450928	0.689214
LVG	1.485586	0.673135
CE	2.240649	0.446299
β	1.471602	0.679532

Notes: *PCGI* denotes the Pakistani Corporate Governance Index, DOWNP represents director ownership, IOWNP represents institutional ownership, GOWNP represents government ownership, BOWNP represents block ownership, FOWNP represents foreign ownership, BIG4 represents the audit firm size, BSZ represents the size of the board of directors, BGEN represents board diversity on the basis of Gender, BNAT represents board diversity on the basis of Nationality, LTA represents firm size as log of total assets, ROE represents return on equity as measure of profitability, SALESG represents growth opportunities, LVG represents leverage, CE represents capital expenditures and β represents the systematic risk. The asterisk*** denotes the significant level at 1%, asterisk** denotes the significant level at 5% and asterisk* denotes the significant level at 10%.

Correlation matrix, VIF and TOL tests have been used in this study to investigate that either variables have a problem of multicollinearity. It can be a serious problem if the correlation coefficient between two variables is greater than 80%, VIF exceeds ten and TOL is near to zero (Gujrati, 2003). For determinants of factors model, Table 6.7 shows that the minimum value of TOL is .50 and maximum value of VIF is 1.98, suggesting no problem of multicollinearity among variables. Similarly, Table 6.9 indicating the highest correlation coefficient between LTA and CE is .604, suggesting no serious problem of multicollinearity. Hence, there is no major violation of the OLS assumptions due to multicollinearity.

Table 6.9: Correlation matrix of dependent and independent variables: Level of Compliance Model

	PCGI	DOWNP	IOWNP	GOWNP	BOWNP	FOWNP	BIG4	BSZ	BGEN	BNAT	LTA	ROE	SALESG	LVG	CE
PCGI	1														
DOWNP	-0.007	1													
IOWNP	0.023	-.198**	1												
GOWNP	0.017	-.197**	0.041	1											
BOWNP	.067**	.110**	-0.021	-.157**	1										
FOWNP	-0.003	-.289**	0.007	-0.036	.127**	1									
BIG4	.062**	-.370**	.049*	.146**	-0.029	.254**	1								
BSZ	0.023	-.251**	.122**	.201**	-.106**	-0.015	.279**	1							
BGEN	0.001	.289**	-.094**	-.122**	.050*	-.092**	-.152**	-.097**	1						
BNAT	0.017	-.440**	.101**	-0.038	.122**	.428**	.390**	.121**	-.185**	1					
LTA	.161**	-0.046	.056*	.074**	0	-.085**	.054*	.083**	-.130**	.066**	1				
ROE	-.101**	.122**	0.025	-0.016	-0.007	0.006	-.114**	-.061**	-0.019	-.074**	-.195**	1			
SALESG	0.031	.058*	-0.016	-0.013	0.014	-0.012	-0.028	-0.001	0.01	-0.007	.101**	.077**	1		
LVG	0.017	.228**	0.001	-.131**	.057*	-.207**	-.203**	-.181**	.057*	-.133**	-0.037	-.050*	0.015	1	
CE	-0.003	.066**	.048*	.063**	-0.041	-.100**	0.003	.089**	-.082**	0.026	.604**	-.093**	.090**	.056*	1

Notes: *PCGI* denotes the Pakistani Corporate Governance Index, DOWNP represents director ownership, IOWNP represents institutional ownership, GOWNP represents government ownership, BOWNP represents block ownership, FOWNP represents foreign ownership, BIG4 represents the audit firm size, BSZ represents the size of the board of directors, BGEN represents board diversity on the basis of Gender, BNAT represents board diversity on the basis of Nationality, LTA represents firm size as log of total assets, ROE represents return on equity as measure of profitability, SALESG represents growth opportunities, LVG represents leverage and CE represents capital expenditures. The asterisk*** denotes the significant level at 1%, asterisk** denotes the significant level at 5% and asterisk* denotes the significant level at 10%.

Table 6.10: Correlation matrix of dependent and independent variables: CG and COC Model

	COC	*PCGI*	DOWNP	IOWNP	GOWNP	BOWNP	FOWNP	BIG4	BSZ	BGEN	BNAT	LTA	ROE	SALESG	LVG	β
COC	1.000															
PCGI	-0.13**	1.000														
DOWNP	-0.015	-0.010	1.000													
IOWNP	-0.013	0.027	-0.163**	1.000												
GOWNP	0.015	0.011	-0.194**	0.277**	1.000											
BOWNP	-0.08**	-0.08**	-0.027	0.531**	0.336**	1.000										
FOWNP	0.079	-0.012	-0.265**	0.254**	0.264**	0.464**	1.000									
BIG4	0.046	0.062**	-0.373**	0.092*	0.149**	0.066	0.248**	1.000								
BSZ	0.003	0.025	-0.251**	0.232**	0.184**	0.087**	-0.006	0.278**	1.000							
BGEN	-0.009	0.001	0.275**	-0.018	-0.077	0.081*	-0.022	-0.15**	-0.09**	1.000						
BNAT	0.028	0.017	-0.435**	0.165**	-0.002	0.169**	0.408**	0.390**	0.122*	-0.18**	1.000					
LTA	-0.120**	0.161**	-0.036	0.108*	0.071**	0.076	-0.054	0.054*	0.086**	-0.13**	0.066**	1.000				
ROE	-0.039	-0.048*	0.171**	0.006	-0.076**	0.012	-0.083	-0.18**	-0.07**	0.06**	-0.139**	-0.115**	1.000			
SALESG	-0.042	0.031	0.051**	-0.017	-0.017	-0.023	-0.033	-0.028	-0.002	0.010	-0.007	0.101**	-0.004	1.000		
LVG	-0.153**	-0.015	0.200**	-0.034	-0.089**	-0.014	-0.139**	-0.18**	-0.14**	0.09**	-0.128**	-0.091**	0.129**	-0.003	1.000	
β	0.320**	0.072*	-0.067*	-0.028	-0.001	0.010	-0.024	0.061*	0.014	0.005	0.033	0.089**	0.019	-0.021	-0.035	1.000

Notes: *PCGI* denotes the Pakistani Corporate Governance Index, DOWNP represents director ownership, IOWNP represents institutional ownership, GOWNP represents government ownership, BOWNP represents block ownership, FOWNP represents foreign ownership, BIG4 represents the audit firm size, BSZ represents the size of the board of directors, BGEN represents board diversity on the basis of Gender, BNAT represents board diversity on the basis of Nationality, LTA represents firm size as log of total assets, ROE represents return on equity as measure of profitability, SALESG represents growth opportunities, LVG represents leverage, CE represents capital expenditures and β represents the systematic risk. The asterisk*** denotes the significant level at 1%, asterisk** denotes the significant level at 5% and asterisk* denotes the significant level at 10%.

For CG and COC, Table 6.8 shows that the minimum value of TOL is .318 and maximum value of VIF is 3.141, suggesting no problem of multicollinearity among the variables. Similarly, Table 6.10 shows that the highest correlation coefficient between IOWNP and BOWNP is .531, suggesting no serious problem of multicollinearity. Hence, there is no major violation of the OLS assumptions due to multicollinearity.

6.1.5 Normality Test

Finally, it has been suggested that the data has to be normal distributed in order to apply the OLS. Therefore, the current study uses skewness and kurtosis statistics to test the normality assumption. In this regard, the critical values for accepting skewness and kurtosis statistics for normal data are three and zero, respectively (Gujarati, 2003). The statistics (results are not reported here) show that the variables depart from the normal distribution in some cases and therefore, the study accepts the null hypothesis of non-normality of data.

6.1.6 Summary

The current study has attempted to test the OLS assumptions before using it in regression analysis. As shown above, data is non stationary, have serial correlation and no problem of multicollinearity. However, the result shows that data have a problem of non-normality and heteroscedasticity. In this regard, current study has attempted to minimise non-normalities in the variables by using different kinds of transformations such as square root, rank and natural log. The distributions of transformed variables could not generate good skewness and kurtosis statistics, showing that the actual variables are better normally distributed than the transformed variables.

As the behaviour of OLS has been well researched in multiple circumstances, Brooks (2007) argue that it is better to stick with the OLS estimation rather than using another method that does not require a normality assumption. Further, he indicates that various forms of heteroscedasticity may lead to non-normality in financial data. It can be argued that the effect of non-normality is expected to be less severe as the White test has been used in the current study to correct for heteroscedasticity. In addition to White test, Brooks (2007) also suggest that in case of a sufficiently large sample as is being used in this study, the violation of normality assumption is expected to be virtually inconsequential. Therefore, after employing all the above tests and procedures, it is concluded that the OLS is the appropriate statistical estimation to perform the study's main analyses.

6.2 EMPIRICAL FINDINGS: DETERMINANTS OF CORPORATE GOVERNANCE DISCLOSURE

Following the discussion of the descriptive statistical summaries and Ordinary Least Squares (OLS) assumptions in Chapter 5, this subsection presents the findings of CG compliance and disclosure for Pakistani listed firms. In particular, Table 6.12 reports the OLS results. The *F-Stat* is statistically significant at 1% level for ownership, board characteristics and control variables. This means that the null hypothesis that there is no relationship between these variables and the *PCGI* is rejected. The adjusted R^2 is 0.49, indicating that 49% of variability in the *PCGI* is jointly explained by these variables. Overall, the analysis of the explanatory variables suggests that, board size, government, institutional, foreign and block ownership have significant relationships with the *PCGI*. In contrast, director ownership, audit firm size, gender and nationality diversity in the board have no statistical significance with the *PCGI*.

Table 6.11 presents the summary of hypotheses on the factors that influence the level of CG compliance. Table 6.12 presents the findings of multivariate regression showing the overall impact of nine independent variables including the five ownership structures investigated in the study and four audit firms/board characteristics on *PCGI*. Generally, the findings of a positive and significant relationship between institutional, government and foreign ownership with CG compliance and disclosure are in line with formulated hypotheses, while a negative nexus between board size and block ownership with CG compliance and disclosure are also consistent with formulated hypotheses and prior empirical literature. In contrast, this study report that audit firm size and board diversity on the basis of gender with *PCGI* show no significant relationship.

Table 6.11: Summary of hypothesis and Findings: Factors Influencing level of Compliance

Dependent Variable: Pakistani Corporate Governance Index (*PCGI*)					
CG mechanisms	H. No	H. Sign	Sign of Result	Statistical Significance of Result	Conclusion (H.)
Director ownership	1	-	+	Insignificant	Do not reject
Institutional ownership	2	+	+	Significant (1%)	Reject
Government ownership	3	+	+	Significant (1%)	Reject
Block ownership	4	-	-	Significant (1%)	Reject
Foreign ownership	5	+	+	Significant (1%)	Reject
Audit firm size	6	+	+	Insignificant	Do not reject
Board size	7	+/-	-	Significant (5%)	Reject
Board diversity on the basis of gender	8	+	-	Insignificant	Do not reject
Board diversity on the basis of nationality	9	+	+	Insignificant	Do not reject

Note: Column 1 presents the nine variables that are represented the nine tested hypotheses. Columns 2 to 6 present information related to hypotheses one to nine with regard to the *PCGI*. H stands for hypothesis.

6.2.1 Empirical Findings of Explanatory Variables

In this subsection, the empirical findings of explanatory variables including ownership variables and audit/board characteristics are discussed in relation with the formulated hypotheses and prior CG literature.

6.2.1.1 Empirical Findings of Ownership Variables

Panel A of Table 6.12 presents the findings of the determinants of CG disclosure. First, the coefficient on director ownership is positive and statistically insignificant in relation to level of CG compliance and disclosure. From agency theory viewpoint, McConnell and Servaes (1990) argue that the board of directors are expected to maximise their wealth using insider information merely for self-serving interest, and not essentially for the interests of the firm. This results in poor CG practices and low level of CG compliance and disclosure. On the other hand, stewardship theory suggests that the board of directors' interests are in line with external shareholders (Davis *et al.*, 1997). Thus, Samaha *et al.* (2012) suggests that the board of directors are expected to improve CG standards for the better competitive position of their firms.

Table 6.12: The OLS regression findings of CG Compliance Determinants

Dependent Variable: *PCGI*				
Variable	Expected Sign	Coefficient	Std. Error	t-Statistic
Panel A: CG variables				
DOWNP	-	0.035	0.028	1.252
IOWNP	+	0.095***	0.023	4.099
GOWNP	+	0.298***	0.040	7.484
BOWNP	-	-0.02***	0.006	-3.230
FOWNP	+	0.075***	0.023	3.276
BIG4	+	0.857	0.952	0.900
BSZ	+	-0.463**	0.207	-2.237
BGEN	+	-0.588	1.290	-0.456
BNAT	+	0.056	0.815	0.068
Panel B: Control variables				
LTA		1.523***	0.266	5.716
ROE		-3.59***	1.298	-2.767
SALESG		0.865	1.632	0.530
LVG		0.009	0.013	0.695
CE		0.000***	0.000	-3.305
CEMENT		6.350***	1.966	3.230
CHEMICAL		3.352	2.114	1.585
ELECTRICITY		8.719**	3.567	2.444
FOOD		-4.86***	1.032	-4.712
HOUSHOLD		4.751**	2.063	2.302
MISC		-8.37***	0.656	-12.751
OIL___GAS		-8.19***	1.110	-7.379
PHARMA		-9.448**	3.702	-2.552
TEXTILE		-4.224**	2.064	-2.046
Y_02_DUM		2.525***	0.713	3.544
Y_03_DUM		10.021***	0.548	18.288
Y_04_DUM		18.868***	0.766	24.639
Y_05_DUM		26.051***	0.487	53.537
Y_06_DUM		31.951***	0.685	46.645
Y_07_DUM		45.275***	0.589	76.805
Y_08_DUM		51.421***	0.587	87.622
Y_09_DUM		55.255***	0.706	78.276
Y_10_DUM		61.663***	0.585	105.440
Y_11_DUM		63.393***	0.519	122.045
Constant		-0.891	5.058	-0.176
Adjusted *R-square*	0.486		Sample: 2003 2013	
F-statistic	51.412		Cross-sections included: 160	
Prob(*F-statistic*)	0.000		Total *panel* (balanced) observations: 1760	

Notes: Variables are defined as follows. Pakistani Corporate Governance Index (*PCGI*), director ownership (DOWNP), institutional ownership (IOWNP), government ownership (GOWNP), block ownership (BOWNP), foreign ownership (FOWNP), audit firm size (BIG4), size of the board of directors (BSZ), board diversity on the basis of Gender (BGEN), board diversity on the basis of Nationality (NTL), firm size as log of total assets (LTA), profitability (ROE), growth opportunities (SALESG), leverage (LVG) and capital expenditures (CE). Parameter estimates are obtained by OLS estimation (Panel Least Squares). Year 2003 and AUTO industry has been excluded from the analysis in order to avoid dummy variable trap. The asterisks *, ** and *** denote the 10%, 5% and 1% level of significance respectively.

Second, the coefficient on institutional ownership is positive and statistically significant at 1% level in relation to level of CG compliance and disclosure. This finding shows that Pakistani firms with higher level of institutional ownerships are likely to comply with more CG standards than those with less or no institutional ownership. From agency theory viewpoint, Aggarwal *et al*. (2011) suggests that the presence of institutional ownership ensures some degree of accountability and this potentially influence firms to adopt better CG practices, either directly by influencing managements by using their voting rights or indirectly by their decisions to buy or threaten to sell their shares. Similarly, this finding is consistent with the prediction that institutional investors demand for high level of CG compliance and disclosure in order to spend less time in monitoring managers (Barako *et al*. 2006a). Additionally, this positive relationship between institutional ownership and level of CG compliance is consistent with the expectation that institutional investors are less likely to invest in firms with lower level of CG compliance and disclosure due to high monitoring cost (Bushee *et al*., 2010). This finding of positive relationship between institutional ownership and level of CG compliance and disclosure is consistent with CG literature (Barako *et al*., 2006a; Laidroo, 2009; Bushee *et al*., 2010; Chung and Zhang, 2011; Ntim *et al*., 2012a).

Third, the coefficient on government ownership is positive and statistically significant at 1% level, suggesting that there is a positive relationship between the government ownership and level of CG compliance and disclosure. This finding shows that Pakistani firms with higher level of government ownerships are likely to comply with more CG regulations than those firms with less or no government ownership. The agency theory literature suggests that the firms with government ownership are expected to disclose more CG information since there is less divergence between shareholders and government interest. Further, this is consistent with the view that the government being a shareholder considers itself accountable to society and thus, is expected to put pressure on firms to disclose more CG information (Ghazali and Weetman, 2006). This positive effect of government ownership suggests that the government ownership serves as an alternative CG mechanism which motivates firms to disclose more CG information. Empirically, this finding is in line with the CG literature of developing countries. For instance, Conyon and He (2011) and Ntim *et al*. (2012a) report positive and significant relationship between government ownership and level of CG compliance and disclosure in China and South Africa, respectively.

Fourth, unlike the institutional and government ownerships, the coefficient between block ownership and firm-level of CG compliance is negative and statistically significant at 1% level. This finding shows that Pakistani firms with higher level of block ownerships are expected to have less compliance with CG provisions than those with lower block ownership. This negative association between CG disclosure level and block ownership is consistent with theoretical prediction. In this regard, block shareholders may influence the management to disclose less CG information as their interest may not necessarily align with minority shareholders (Shleifer and Vishny, 1997; Laidroo, 2009).

This issue is more evident in the emerging markets such as Pakistan due to the weak legal system in protecting minority shareholders. In this regard, the Companies ordinance (1984, XL VII) states that "*the minimum threshold for seeking a remedy from the court against mismanagement and oppression requires that at least twenty percent of the shareholders initiate a compliant. Shareholders representing at least ten percent but less than twenty percent of the company's shares can apply to the SECP to appoint an inspector to investigate the company's affairs. Because neither the Companies ordinance nor the Code recognizes shareholders who represent less than ten percent of the company's share (the minority shareholder), no analogous provision exists for these shareholders*". Similarly, Allegrini and Greco (2013) argued that in the absence of strong external CG mechanisms, firms' management tend to work for the interest of large shareholders to the detriment of minority shareholders.

Further, this finding supports the expectation that block holders do not want to disclose more CG information as it may affect their ability to expropriate minority shareholders. This is expected to be the case in emerging countries where the conflict of interest is likely to be between minority shareholders and block holders rather than between shareholders and managers (Shleifer and Vishny, 1997; Aleves, 2012). Empirically, this finding is consistent with several studies on emerging economies (Alsaeed, 2006; Laidro, 2009; Samaha and Dahawy, 2011). For instance, Alsaeed (2006) report the level of CG compliance and block ownership are negatively associated in Saudi Arabian firms.

Finally, the coefficient on foreign ownership is positive and statistically significant at 1% level in relation to CG compliance and disclosure. This finding shows that Pakistani firms with higher level of foreign investors are likely to provide additional CG information than those with less or with no foreign investors. Theoretically, this positive relationship between foreign ownership and firm-level of CG compliance and disclosure is consistent with information asymmetry and imperfect information issues. Due to language and

distance obstacles, foreign investors may require more disclosures in order to reduce asymmetric information. This in turn motivates firms to comply with CG standards that improves transparency and makes it attractive for foreign investors (Huafang and Jianguo, 2007). This is consistent with the viewpoint that foreign investors usually prefer not to invest in the countries with poor CG disclosure requirements (Leuz *et al*., 2010). Empirically, the finding of this positive relationship between foreign ownership and firm-level of CG disclosure is consistent with prior emerging market literature (e.g., Barako *et al*., 2006; Manegena and Tauringana, 2007).

6.2.1.2 Empirical Findings of audit firm/board characteristics

In addition to ownership variables, the current study investigates the impact of audit firm size and board characteristics, such as board size and board diversity on the level of compliance and disclosure among Pakistani listed firms.

First, the coefficient on audit firm size is positive but statistically insignificant, indicating that there is no significant relationship between audit firm size and firm-level of CG compliance and disclosure. From agency theory and stakeholder theory perspective, external auditors can influence the quality and level of CG disclosure (Barako *et al*., 2006). This influential power of external auditors may depend on audit firm's characteristics (e.g., fee, tenure and size). It has been reported that large audit firms (big four) have better auditing standards (Alsaeed, 2006), as such firms are expected to have highly trained, qualified, and experienced auditors (Barako *et al*., 2006). However, in Pakistani context, the finding shows no significant relationship between audit firm size and level of CG compliance and disclosure. This can be due to the other factors that may negate auditors influence. For example, ownership concentration dominated by family shareholding and informal rules that impact on auditing firms making them less influential in getting the CG standards approved in the Pakistani listed firms. Particularly, managers may be significantly influenced by these informal rules; local customs, tribalism and family are more priority than formal rules and CG mechanism (Metcalfe, 2007; Boytsun *et al*., 2011). Empirically, this finding is consistent with prior studies (e.g., Alsaeed, 2006; Barako *et al*., 2006a; Aly *et al*., 2010).

Second, the coefficient on board size is negative and statistically significant at 5% level. This indicates that small boards tend to increase the level of CG compliance and disclosure more than larger boards for Pakistani firms. Theoretically, Jensen (1993) argues that larger board is less effective than smaller board in mitigating agency conflicts. For instance, Yermack (1996) suggests that a large number of directors can lead to poor co-

ordination and communication among directors, which may allow a Chief Executive Officer (CEO) to dominate the board which can adversely affect the accountability of management and directors (Lipton and Lorsch, 1992; Jensen, 1993). Arguably, this may weaken the power of the board to monitor managers and can result in a negative impact on CG disclosure. Therefore, boards with small number of members are likely to impact positively on firms' CG compliance and disclosure due to better co-ordination and communication among directors than large boards (Yermack, 1996). Empirically, this finding is in contrast to some other studies that indicate positive association (Kent and Stewart, 2008; Akhtaruddin *et al*., 2009; Ntim *et al*; 2012a; Allegrini and Greco, 2013), but it is consistent with other studies (e.g., Arcay and Vazquez, 2005; Cheng and Courtenay, 2006). However, this negative relationship in Pakistani context may be due to the large size of board (minimum of seven members are required by 2002 PCCG) imposed by PCCG which may not suite every firm.

Finally, the gender and nationality diversity in board indicate no significant association with CG compliance level. These results indicate that the presence of female and foreign directors on firms' board do not impact on Pakistani listed firms to offer more CG information. Theoretically, these findings are contrary to the prediction that having directors with distinctive values due to gender and cultural differences may improve level of CG disclosure. However, these results are in line with empirical findings by Adelopo (2011) that foreign directors among Nigerian firms do not influence boards to increase CG compliance and disclosure.

6.2.2 Empirical Findings of Control Variables

A number of control variables have been included in the analysis to minimize the impact of omitted variables problem that could lead to potential endogeneity. Following the CG literature (e.g., Upadhyay *et al*., 2014; Ntim *et al*., 2014; Mangena *et al*., 2012), firm size (LTA), profitability (ROE), firm growth (SALESG), leverage (LVG) and capital expenditure to total assets (CETA) were included as control variables in addition to industries and year dummies. *Panel B* of Table 6.12 presents the empirical findings of these variables.

First, the coefficient on size and capital expenditure is positive and statistically significant at the 1% level. This suggests that larger firms are likely to disclose more CG information than medium or smaller Pakistani listed firms. This finding is consistent with prior CG literature (e.g., Allegerini and Greco, 2013; Samaha *et al*., 2012; Elzahar and

Hussainey, 2012). Similarly, firms with higher capital expenditures disclose more CG information than firms with lower or no capital expenditures.

Second, the results reported in Table 6.12 shows statistically insignificant relationship between firm growth and leverage with firm level CG compliance and disclosure. The coefficient on sales growth is positive but insignificant, suggesting that firms with more growth and investment opportunities do not improve the CG standards. This finding is in line with prior CG literature (e.g., Ntim *et al*., 2012a). Similarly, the coefficient on leverage is positive, but statistically insignificant with *PCGI*, indicating that the level of firms' leverage have no impact on level of CG compliance and disclosure. This insignificant relationship is consistent with previous CG literature (e.g., Elzahar and Hussainey, 2012; Samaha *et al*., 2012; Allegrini and Greco, 2013).

Third, *Panel B* of Table 6.12 shows a significant and negative relationship between firms' profitability and level of CG compliance and disclosure. This may be due to the possibility that profitable firms may not provide additional information because less information permits them to avoid some legal costs (e.g., Tax) and protect their competitiveness (Prencipe, 2004; Huafang and Jianguo, 2007).

Finally, as shown in *Panel B* of Table 6.12, all year dummies and most of the industries dummies are statistically significant with the level of compliance and disclosure. In particular, all year dummies have a positive and statistically significant relationship at 1% level with compliance and disclosure. This finding is in line with descriptive statistics indicated in chapter 5 and CG literature (Chalevas, 2011; Ntim *et al*., 2012a), which find that the level of compliance and disclosure with CG standards improves over time. On the other hand, the relationship between level of compliance and CG standards differs across the industries. For instance, this it is positive and significant in chemical, electricity and household industries while negative and significant in food, misc, oil and gas, pharmaceutical and textile industries. However, this relationship is positive but insignificant in chemical industry. These findings are also consistent with prior CG literature (e.g., Hussainey and Al-Nodel, 2008; Elzahar and Hussainey, 2012; Ntim *et al*., 2012a) that the level of compliance and disclosure with CG standards differ across the industries.

6.3 EMPIRICAL FINDINGS: CORPORATE GOVERNANCE AND COST OF CAPITAL

This subsection presents and discusses the findings of ownership structures, board/audit characteristics and their impact on Cost of Capital (COC). The study aims to answer its fourth main research question which is whether better governed firms (high level of compliance and disclosure with CG standards) tend to have lower COC than those

of poorly governed counterparts (lower level of compliance and disclosure with CG standards). The Weighted Average Cost of Capital (COC) is used as dependent variable in this study. The nine independent variables include the researcher self-constructed Pakistani Corporate Governance Index (*PCGI*) as a proxy of CG standards, five ownership structures and three audit firms/board characteristics.

Table 6.13 presents the summary of hypotheses related to the regression analysis of the relationship between CG standards and COC. The results of multivariate regression showing the overall impact of nine independent variables including *PCGI*, five ownership structures and three audit firms/board characteristics on firms' COC are presented in Table 6.14. Generally, the findings of a negative and significant relationship between *PCGI* and block ownership with firms' COC are in line with formulated hypotheses while a positive and significant relationship between director ownership and firms' COC is consistent with the hypotheses. Contrary to the formulated hypotheses, foreign ownership and board gender diversity are positively associated with firm-level COC. Additionally, this study report no significant nexus between Institutional ownership, government ownership, audit firm size and board size with COC.

Table 6.14 presents the findings of multivariate regression showing the overall impact of nine independent variables including *PCGI*, five ownership structures and three audit firms/board characteristics on firms' COC. The reported *F-statistic* is 60.19 and is statistically significant at 1% level suggesting that the model is appropriate and that all the parameters are jointly significant. The adjusted *R-square* is 0.54 suggesting that about 54% of variability in the firms' COC is explained by these nine CG variables.

Table 6.13: Summary of hypothesis and Findings: Corporate Governance and Cost of Capital

Dependent Variable: Cost of Capital					
CG mechanisms	H. No	H. Sign	Sign of Result	Statistical Significance of Result	Conclusion (H.)
PCGI	1	-	-	Significant (5%)	Reject
Director ownership	2	+	+	Significant (5%)	Reject
Institutional ownership	3	-	+	Insignificant	Do not reject
Government ownership	4	-	+	Insignificant	Do not reject
Block ownership	5	+/-	-	Significant (1%)	Reject
Foreign ownership	6	-	+	Significant (1%)	Reject
Audit firm size	7	-	-	Insignificant	Do not reject
Board size	8	-	+	Insignificant	Do not reject
Board diversity on the basis of gender	9	-	+	Significant (5%)	Reject

Note: Column 1 presents the nine variables that are represented the ten tested hypotheses. Columns 3 to 6 present information relating to hypotheses one to nine with regard to the Pakistani corporate governance index.

6.3.1 Empirical Findings of Explanatory Variables

Panel A of Table 6.14 presents the empirical findings of explanatory variables including *PCGI*, ownership variables and audit/board characteristics in relation to firms' COC among Pakistani listed firms. In this subsection, these findings are discussed in relation with the formulated hypotheses and prior CG literature.

6.3.1.1 Empirical Findings of *PCGI*

In this study, the impact of the level of CG compliance and its relationship with COC for Pakistani listed firms has been investigated. As reported in *Panel A* of Table 6.14, the coefficient on *PCGI* is negative and statistically significant at 5% level, suggesting that firms with high level of CG standards have a lower COC. Despite limited number of studies on the relationship between CG and COC, prior studies provide empirical evidence of negative relationship between firm-level CG and firms' COC (e.g., Blom and Schauten, 2008; Chen *et al*., 2009; Bozec and Bozec, 2011), which is consistent with the finding of this study. For instance, Bozec and Bozec (2011) report empirical evidence that Canadian firms Cost of Debt (COD) and Cost of Equity (COE) decreases as the quality of CG practices increases.

Table 6.14: The OLS regression of CG and COC

Dependent Variable: COC				
Independent Variables	Expected Sign	Coefficient	Std. Error	t-Statistic
Panel A: CG variables				
PCGI	-	-0.00026**	0.000108	-2.36741
DOWNP	+	0.000448**	0.000189	2.378413
IOWNP	-	0.00011	0.000113	0.96854
GOWNP	-	0.000242	0.000219	1.10389
BOWNP	+/-	-0.00017***	4.87E-05	-3.3948
FOWNP	-	0.000782***	0.000161	4.871608
BIG4	-	-0.00039	0.00646	-0.0599
BSZ	-	0.002998	0.001825	1.642575
BGEN	-	0.011861**	0.005159	2.29886
Panel B: Control variables				
LTA		-0.01866***	0.004099	-4.5532
ROE		-0.00052*	0.000284	-1.83358
SALESG		-0.00168	0.005707	-0.29502
LVG		-0.0007***	0.000166	-4.23521
B		0.152732**	0.06078	2.512878
CEMENT		0.010105	0.016853	0.599615
CHEMICAL		0.004724	0.012783	0.369522
ELECTRICITY		0.024752**	0.010845	2.282339
FOOD		0.033699**	0.013581	2.481303
HOUSHOLD		0.039404**	0.015635	2.520262
MISC		0.016622	0.013944	1.192062
OIL___GAS		0.037005**	0.014953	2.474791
PHARMA		-0.01242	0.019023	-0.65297
TEXTILE		0.024341*	0.012686	1.918665
Y_02_DUM		0.050828***	0.002613	19.45041
Y_03_DUM		-0.10767***	0.009801	-10.9856
Y_04_DUM		-0.09469***	0.010857	-8.72147
Y_05_DUM		-0.18459***	0.0135	-13.6736
Y_06_DUM		-0.13895***	0.012447	-11.1632
Y_07_DUM		-0.32238***	0.013284	-24.2681
Y_08_DUM		0.067629***	0.011717	5.772046
Y_09_DUM		-0.12128***	0.006191	-19.5911
Y_10_DUM		-0.266***	0.007264	-36.6202
Y_11_DUM		-0.05064***	0.007647	-6.62228
Constant		0.493347***	0.037561	13.13452
Adjusted *R-square*		0.540825	Sample: 2003 2013	
F-statistic		60.19378	Cross-sections included: 160	
Prob(*F-statistic*)		0.00000	Total *panel* (balanced) observations: 1760	

Notes: Variables are defined as follows. Cost of Capital (COC), Pakistani Corporate Governance Index (*PCGI*), director ownership (DOWNP), institutional ownership (IOWNP), government ownership (GOWNP), block ownership (BOWNP), foreign ownership (FOWNP), audit firm size (BIG4), size of the board of directors (BSZ), board diversity on the basis of Gender (BGEN), firm size as log of total assets (LTA), profitability (ROE), growth opportunities (SALESG), leverage (LVG) and systematic risk (β). Parameter estimates are obtained by OLS estimation (*Panel* Least Squares). Year 2003 and AUTO industry has been excluded from the analysis in order to avoid dummy variable trap. The asterisks *, ** and *** denote the 10%, 5% and 1% level of significance respectively.

6.3.1.2 Empirical Findings of ownership variables

Panel A of Table 6.14 presents the findings of the influence of ownership variables on firms' COC. First, the coefficient on director ownership is positive and statistically significant, suggesting that firms with high level of director ownership have a higher COC. Theoretically, this positive relationship between director ownership and COC is consistent with the prediction of agency theory. It has been argued that a higher level of director

ownership may worsen agency problems (Demsetz and Lehn, 1985). In similar vein, it has been suggested that higher director shareholdings may make a firm more vulnerable to collusion between directors and firm management (Vafeas and Theodorou, 1998; Konijin *et al*., 2011). In this regard, Bennedsen and Wolfenzon (2000) argue that one of the three ways by which multiple blockholders can influence firm value is that, they can use their power to form a coalition to expropriate value at the expense of other shareholders. Empirically, the relationship between director ownership and COC has not been documented yet in the best of researcher's knowledge. However, the impact of director ownership has been investigated on firm performance and negative relationship has been reported in literature (see Basu, *et al*., 2016) which is consistent to the findings of this study.

Second, the coefficient on institutional ownership on COC is positive and statistically insignificant, meaning that the percentage of institutional ownership has no explanatory power in explaining the variation in firm level COC. This is contrary to the formulated hypothesis in this study which postulates that there is a positive and significant relationship between institutional ownership and COC. Theoretically, the relationship between institutional ownership and COC being negative can be good as monitoring can be beneficial in reducing the conflicts of interest between investors and directors (Jensen and Meckling, 1976; Solomon, 2010). However, the current study does not lend empirical support to the CG literature as studies (e.g., Bhoraj and Sengupta, 2003; Piot and Missonier-Piera, 2009) document a negative relationship between institutional ownership and firm level COC.

Third, the coefficient on government ownership is positive and statistically insignificant, suggesting that there is no statistically significant association between the government ownership and firms' COC. This finding shows that the level of government ownership has no explanatory power in explaining the variation in firm level COC. Theoretically, this positive relationship between COC and government ownership is in line with the prediction of agency theory. It is argued that higher government ownership may cause agency problem where government ownership may lead to intervention in firms' operations which may result in poor CG practices (Konijn *et al*., 2011). For instance, government may appoint CEO and directors regardless of experience and qualification (Cornett *et al*., 2010; Tsamenyi *et al*., 2007).

Fourth, unlike the institutional and government ownership, the coefficient on block ownership is statistically significant at 1% and negative proposing that there is relationship between the block ownership and firm-level COC. This shows that Pakistani firms with

higher level of block ownership have lower COC than those firms with lower percentage of block ownership. This is consistent with the prediction of agency theory in which the dominance of majority shareholders in publically traded firms demonstrates that minority shareholders have the risk of expropriation. Bozec *et al*. (2014) argues that minority shareholders can accept such risk as long as they are compensated. Empirically, this finding is in line with previous literature (e.g., Pham *et al*., 2007) that provides empirical evidence of negative relationship between ownership concentrations on firm-level weighted average COC.

Finally, the coefficient on foreign ownership is positive and statistically significant at 1% level, indicating that there is statistically significant and positive relationship between foreign ownership and firm-level COC. This finding shows that Pakistani firms with higher level of foreign investors have higher COC than those with less or no foreign investors. Theoretically, this positive relationship between foreign ownership and COC is consistent with the prediction of information asymmetry. This issue is relatively higher among foreign investors because of language and distance obstacles (Huafang and Jianguo, 2007) which may leads to higher COC. Empirically, the finding of this positive relationship between foreign ownership with firm-level COC is in line with prior literature (e.g., Boubakri and Saffar, 2016).

6.3.1.3 Empirical Findings of audit firm/board characteristics

In addition to CG index and ownership variables, the current study also investigates the impact of audit firm size and board characteristics, such as board size and board diversity on firms' COC. First, the coefficient on audit firm size is negative but statistically insignificant, indicating that there is no significant relationship between audit firm-size with firm-level COC. Therefore, audit firm size shows no significant impact on firms' COC. Theoretically, external auditors have been suggested as one of the most effective CG mechanisms for reducing agency cost by reducing conflicts of interest between shareholders and managers (Jensen and Meckling, 1976; Watts and Zimmerman, 1983). Similarly, the quality of external auditor is an important issue which can reduce information asymmetry and this is significantly determined by audit firm size (DeAngelo, 1981). Arguably, firms audited by big audit firms are expected to have less problem with information asymmetry as such firms can be influenced by the big audit firms to disclose more information. This will result in increased confidence in the firm's CG by outside investors, which in turn, is expected to decrease the firms' COC. The reported results in the

current study do not lend evidence to the literature (e.g., Pittman and Fortin, 2004) of negative and significant relationship between audit firm size and COC.

Second, the coefficient on board size is positive and statistically insignificant, indicating that there is no significant relationship between board size and firm-level COC. This indicates that size of board has no explanatory power in explaining the variations in firm level COC. Theoretically, this positive relationship between board size and COC is consistent with the prediction of agency theory. Board of directors is considered as one of the most effective CG mechanisms (Jensen and Meckling, 1976; Jensen, 1993). Specifically, agency theory argues that a larger board may increase managerial costs that adversely affect the firm value (Yawson, 2006) and, thus, may increase cost of funding. The current study does not support the literature (e.g., Bozec and Bozec, 2011; Shah and Butt, 2009) that document a negative and significant relationship between board size and firm-level COC.

Finally, the coefficient on board diversity on the basis of gender is positive and statistically significant at 5% level, indicating that there is statistically significant and positive relationship between the percentage of female board members and firm-level COC. This finding shows that Pakistani firms with higher level of female board members have a higher COC than those with less or no female board members. Theoretically, several studies have examined the impact of board-gender diversity on different issues and find that board diversity have influence on firms' boards (Huse and Solberg, 2006; Admas and Ferreire, 2009; Peni and Vahamaa, 2010; Cater *et al*., 2010). For instance, Admas and Ferreire (2009) argue that boards with more female members can lead to a greater participation in directors' decision making. However, this positive connection between board-gender diversity and COC finding does not lend empirical support to the literature. This may be due to less participation of female directors in firms' boards for Pakistani listed firms.

6.3.2 Empirical Findings of Control Variables

A number of control variables have been used in the analysis to diminish the impact of potential endogeneity and omitted variables problem. *Panel B* of Table 6.14 presents the empirical findings of these variables.

First, the analysis found a significant and positive relationship between beta and capital expenditure with firm level COC as reported in Table 6.14. The coefficient on beta is positive and significant at 5% level, suggesting that firms with higher systematic risk are likely to have higher COC than those with lower systematic risk. This positive and significant relationship

between firm beta and firm level COC is consistent with prior CG literature (e.g., Zhu, 2009; Pham *et al*., 2012). Similarly, the coefficient on capital expenditure is positive and significant at 5% level of significance, indicating that the firms with higher capital expenditures have higher COC than firms with lower or no capital expenditures.

Second, *Panel B* of Table 6.14 reports a significant and negative relationship between firm size, profitability and leverage with firms' COC. In Particular, the coefficient on firm size is negative and significant at 1% level of significance, suggesting that the larger firms are likely to have lower COC than smaller Pakistani listed firms. This negative and significant relationship between firm size with firms' COC is consistent with prior CG literature (e.g., Zhu, 2009; Bozec and Bozec, 2010; Zhu, 2012; Pham *et al*., 2012). Similarly, findings show a significant and negative relationship between sampled firms profitability and COC. This significant relationship is consistent with prior CG literature (e.g., Zhu, 2009; Zhu, 2012). The reported results also show a significant and negative relationship between leverage and firms' COC. This significant relationship is consistent with prior CG literature (e.g., Zhu, 2009; Zhu, 2012).

Third, the study shows statistically insignificant relationship between firm growth and book to market value with firm level COC. Specifically, the coefficient on sales growth is negative but insignificant, suggesting that firms with more growth and investment opportunities do not impact the firms' COC. This finding is consistent with prior CG literature (e.g., Zhu, 2009). Similarly, the coefficient on book to market value is negative but statistically insignificant with firms' COC, indicating that the level of firms' book to market value have no impact on firms' COC. Finally, the findings show that all of the year dummies and most of the industries dummies are statistically significant with the firms' COC. In particular, all year dummies, except 2004 and 2008, have a negative and significant relationship at 1% level of significance with firms' COC whereas 2004 and 2008 are also significant but have a positive relationship with firms' COC. The relationship between the level of compliance and COC differs across the industries. For instance, this relationship is positive and significant for, electricity, food, household, oil and gas, and textile industries while insignificant for cement, chemical, miscellaneous and pharmaceutical industries. These findings are also consistent with prior CG literature (e.g., Zhu, 2009; Pham *et al*., 2012).

6.4 SUMMARY OF THE CHAPTER

This chapter discussed OLS assumptions and reported empirical findings of the study. Particularly, it aimed to attain three key objectives. First, it analysed the OLS assumptions by applying several statistical tests, including, Breush-Godfrey test to detect the issue of autocorrelation; White general test to investigate for the presence of heteroscedasticity; Augmented Dickey-fuller test to ensure that whether series have unit roots or not; Correlation coefficient, TOL and VIF to address the issue of multicollinearity. The findings of tests showed that there is no serious violation of OLS assumptions in data. Therefore, after employing all the above tests and procedures, it is concluded that the OLS is the appropriate statistical estimation to perform the study's main analyses.

Second, it presented and discussed the findings obtained from the OLS estimation technique used to assess the determinants of the level of CG compliance and disclosure. Specifically, it examined the nexus between the nine CG mechanisms and the *PCGI*. Overall, the analysis of the explanatory variables suggests that, board size, government, institutional, foreign and block ownership have significant relationships with the *PCGI*. In contrast, director ownership, audit firm size, board gender and nationality diversity have no statistical significance with the *PCGI*.

Thirdly, this chapter presented and discussed the empirical findings obtained from the OLS estimation technique related to the impact of CG on COC. Generally, the findings of a negative and significant relationship between *PCGI* and block ownership with firms' COC are in line with formulated hypotheses while a positive and significant relationship between director ownership and firms' COC is consistent with the hypotheses. Contrary to the formulated hypotheses, foreign ownership and gender diversity are positively and statistically significant with firm-level COC.

7 ROBUSTNESS IN FINDINGS AND ENDOGENEITY

This chapter presents and discusses the findings of a number of robustness analyses. The main objective of this chapter is to check the extent to which the findings obtained in chapter 6 are sensitive or robust to alternative estimations and models. Specifically, this chapter seeks to achieve the following four objectives. First, whether the main findings are robust to the weighted Corporate Governance (CG) index. Second, whether the main findings are robust to the alternative measures of Cost of Capital (COC). Third, whether the main findings are robust to the unobserved firm-specific characteristics. Fourth, whether the main findings obtained by OLS, are sensitive to fixed or random effects and finally, whether the main findings are robust with regards to endogeneity problems.

7.1 ROBUSTNESS TESTS: CORPORATE GOVERNANCE COMPLIANCE AND DISCLOSURE

The main findings which have been previously reported in Table 6.12 and robustness results are reported in same table in order to facilitate the comparison between main findings and robustness findings. These analyses show that the main findings are robust except minor sensitivities in the magnitude of coefficient and significance level. Detailed discussion on these findings is presented below.

7.1.1 Results Based on an Alternative Corporate Governance Proxy

As discussed in Chapter 4, Subsection 4.2.1.3, the CG index that is used in the current study to measure CG compliance and disclosure among Pakistani listed firms consists of 70 CG provisions divided into five sub-indices, which are equally weighted, but the number of CG provisions are different in the five sub-indices and leads to different weights being assigned to each sub index. The *PCGI* assigns a weight of 25%, 20%, 8.5%, 20%, and 25% for five sub-indices: board of directors, internal auditing and committees, shareholders' right, transparency and disclosure, and internal control, external auditor and risk management, respectively. Therefore, to test whether the main findings are sensitive to the weighting of five sub-indices, following the CG literature (e.g., Ntim *et al*., 2012a ; Beiner *et al*., 2006), a weighted Pakistani CG Index (*WPCGI*) is constructed by assigning 20% weight to each sub index of *PCGI*. The *PCGI* in equation (1) is replaced by the *WPCGI* and the findings are presented in Table 7.1.

Table 7.1: Results Based on Weighted CG Index

Dependent Variable: *PCGI*/*WPCGI*					
		Un weighted Index		Weighted Index	
Independent Variable		Coefficient	t-Statistic	Coefficient	t-Statistic
Panel A: CG variables					
DOWNP	-	0.0352	1.252	0.0366	1.2190
IOWNP	+	0.0955***	4.099	0.1015***	3.8597
GOWNP	-	0.2989***	7.484	0.3033***	7.0718
BOWNP	-	-0.0189***	-3.230	-0.0180***	-2.9184
FOWNP	+	0.0759***	3.276	0.0797***	3.2328
BIG4	+	0.8569	0.900	1.0353	1.0930
BSZ	+	-0.4628**	-2.237	-0.5050**	-2.2589
BGEN	+	-0.5878	-0.456	-0.7844	-0.5889
NTL	+	0.0557	0.068	-0.4999	-0.5264
Panel B: Control variables					
LTA		1.5234***	5.716	1.4812****	5.5318
ROE		-3.5925***	-2.767	-3.9595***	-2.9200
SALESG		0.8651	0.530	0.8098	0.4885
LVG		0.0092	0.695	0.0092	0.6719
CE		0.0000***	-3.305	0.0000***	-3.1565
CEMENT		6.3499***	3.230	5.9949***	2.8591
CHEMICAL		3.3518	1.585	2.9167	1.2459
ELECTRICITY		8.7193**	2.444	8.1854**	2.1352
FOOD		-4.8611***	-4.712	-6.6665***	-4.7261
HOUSHOLD		4.7509**	2.302	4.5877**	2.0009
MISC		-8.3676***	-12.751	-8.7784***	-11.1712
OIL___GAS		-8.1924***	-7.379	-8.9282***	-7.3051
PHARMA		-9.4477**	-2.552	-10.0500***	-2.7324
TEXTILE		-4.2243**	-2.046	-4.0393*	-1.7920
Y_02_DUM		2.5254***	3.544	2.5511***	3.5347
Y_03_DUM		10.0207***	18.288	10.5178***	18.9859
Y_04_DUM		18.8683***	24.639	19.5607***	25.2680
Y_05_DUM		26.0512***	53.537	27.1404***	54.9225
Y_06_DUM		31.9506***	46.645	33.3578***	47.8428
Y_07_DUM		45.2754***	76.805	47.6675***	79.4918
Y_08_DUM		51.4214***	87.622	54.0755***	91.1900
Y_09_DUM		55.2553***	78.276	58.2822***	81.6769
Y_10_DUM		61.6627***	105.440	64.6824***	109.9600
Y_11_DUM		63.3932***	122.045	66.3444***	128.1035
Constant		-0.8912	-0.176	-0.2729	-0.0539
Adjusted R-*square*		0.486065		0.483753	
F-statistic		51.41241***		50.94792***	
Balanced *panel* observations		1760		1760	

Notes: Variables are defined as follows. Weighted Pakistani Corporate Governance Index (W*PCGI*), Pakistani Corporate Governance Index (*PCGI*), director ownership (DOWNP), institutional ownership (IOWNP), government ownership (GOWNP), block ownership (BOWNP), foreign ownership (FOWNP), audit firm size (BIG4), size of the board of directors (BSZ), board diversity on the basis of gender (BGEN), board diversity on the basis of nationality (NTL), firm size as log of total assets (LTA), profitability (ROE), growth opportunities (SALESG), leverage (LVG)and capital expenditures (CE). Parameter estimates are obtained by OLS estimation (*Panel* Least Squares). Year 2003 and AUTO industry has been excluded from the analysis in order to avoid dummy variable trap. The asterisks *, ** and *** denote the 10%, 5% and 1% level of significance respectively.

Table 7.1 reports the main findings using *PCGI* in columns 3 and 4 and robust findings using weighted CG index presents in Columns 5 and 6 in the same table. Adjusted *R-square* is 0.486065 for Un-weighted Index and 0.483753 for Weighted Index which shows that adjusted *R-square* in both analyses is about 48%. This suggests that the variability in either *PCGI* or *WPCGI* is not sensitive to weighting system employed in the index construction. Similarly, the *F-statistic* is 51.41241*** for Un-weighted Index and 50.94792*** for Weighted Index with both being statistically significant at 1% level. Generally, the findings of both analyses are similar as both predict similar sign of coefficient, magnitude of coefficient and level of significance either with *PCGI* or *WPCGI*. These findings are discussed in the following subsections, with particular focus on the main sensitivities of this analysis.

7.1.1.1 Empirical Findings of Ownership and audit firm size/board Variables

Table 7.1 presents the impact of audit/board characteristics and ownership variables on *PCGI* and *WPCGI*. As presented in column 5 and 6 of Table 7.1, results based on weighted index find a positive and significant relationship between institutional ownership, government ownership and foreign ownership with *WPCGI*. These findings show that the main results are robust with alternative CG Proxy. Similarly, a negative and significant relationship between block ownership and board size with *WPCGI* is consistent with the main analysis with respect to the coefficient and significance level. Further, the findings of director ownership, audit firm size, board diversity on the basis of gender and board diversity on the basis of nationality are in line with those reported in the main test.

7.1.1.2 Empirical Findings of Control Variables

As reported in *Panel B* of Table 7.1, irrespective of observable minor differences in the magnitude of the coefficients, significance level and the direction of coefficients in weighted CG index, the findings remain essentially the same with the use of un-weighted CG index. First, results based on the use of weighted CG index show a 1% statistical significance and positive relationship between firm size and capital expenditure with firm level CG compliance and disclosure. This is consistent with results based on the unweighted index. Second, the use of weighted CG index report significant and negative relationship between firms' profitability and the level of CG compliance which is in line with the original finding. Finally, the use of weighted CG index shows statistically insignificant relationship between

firm growth and leverage with firm-level CG compliance, suggesting that the main findings are robust with alternative CG proxy.

7.1.2 Results Based on Lagged Structure

As discussed in Subsection 4.3.2.1of Chapter 4, endogeneity is a statistical problem that can arise from measurement errors, simultaneity and omitted variables (Wooldridge, 2009; Lacker and Rusticus, 2010). The presence of such problem may question the validity of any empirical findings (Larcker and Rusticus, 2010). This study therefore investigates the extent to which the results reported in Table 6.12 are influenced by endogeneity problems. Thus, following prior studies' procedures (e.g., Larcker and Rustics, 2010; Ntim *et al*., 2013), all independent and control variables used in investigating the factors influencing the level of CG compliance are lagged by one period as indicated in equation below.

$$\begin{aligned} PCGI_{it} = {} & \alpha_0 + \beta_1 DOWNP_{it-1} + \beta_2 IOWNP_{it-1} + \beta_3 GOWNP_{it-1} + \beta_4 BOWNP_{it-1} \\ & + \beta_5 FOWNP_{it-1} + \beta_6 BIG4_{it-1} + \beta_7 BSZ_{it-1} + \beta_8 BGEN_{it-1} \\ & + \beta_9 BNAT_{it-1} + \sum_{i=1}^{n} \beta_i CONTROLS_{it-1} + \varepsilon_{it-1} \end{aligned} \quad (28)$$

Except for the one year lag of explanatory and control variables, all variables are similar as explained in equation 1 of subsection 4.2.2.4 of chapter 4.

The findings of Un-lagged structure analysis (main findings) and lagged structure analysis (robust analysis) are presented in Table 7.2 simultaneously in order to compare the findings. Columns 3 and 4 report findings based on unlagged variables and Columns 5 and 6 report robust findings using lagged variables. Adjusted *R-square* is 0.486065 for Un-lagged structure and 0.482606 for lagged structure which are roughly similar. Similarly, *F-statistic* is 51.41241 for Un-lagged structure and 50.71913 for lagged structure and both are statistically significant at 1% level. The results suggest that both analyses are appropriate and all the parameters in analysis are jointly significant. Generally, the reported results for both analyses are similar in terms of the sign and magnitude of coefficient as well as the level of statistical significance.

Table 7.2: Results Based on Lagged Structure

Dependent Variable: *PCGI*					
		Un-Lagged Structure		Lagged Structure	
Independent Variable		Coefficient	t-Statistic	Coefficient	t-Statistic
Panel A: CG variables					
DOWNP	-	0.0352	1.252	0.004703	0.161632
IOWNP	+	0.0955***	4.099	0.054491**	1.97334
GOWNP	-	0.2989***	7.484	0.228089***	4.661064
BOWNP	-	-0.0189***	-3.230	-0.04307***	-3.61292
FOWNP	+	0.0759***	3.276	0.050333*	1.7295
BIG4	+	0.8569	0.900	0.882857	0.605422
BSZ	+	-0.4628**	-2.237	-0.6771*	-1.73113
BGEN	+	-0.5878	-0.456	-0.74045	-0.53753
BNAT	+	0.0557	0.068	-0.33967	-0.21146
Panel B: Control variables					
LTA		1.5234***	5.716	1.154447**	3.229553
ROE		-3.5925***	-2.767	-0.00619	-0.14132
SALESG		0.8651	0.530	0.692036	0.439401
LVG		0.0092	0.695	-0.00722	-0.65083
CE		0.0000***	-3.305	-9.88E-08**	-2.46933
CEMENT		6.3499***	3.230	6.820391***	2.809519
CHEMICAL		3.3518	1.585	3.224976	1.257529
ELECTRICITY		8.7193**	2.444	8.462928***	2.780292
FOOD		-4.8611***	-4.712	-4.619*	-1.87244
HOUSHOLD		4.7509**	2.302	4.579879	1.461588
MISC		-8.3676***	-12.751	-9.5873***	-3.58249
OIL___GAS		-8.1924***	-7.379	-6.94446**	-2.37025
PHARMA		-9.4477**	-2.552	-10.0838***	-2.99378
TEXTILE		-4.2243**	-2.046	-4.45567*	-1.82242
Y_02_DUM		2.5254***	3.544	2.70033	0.970183
Y_03_DUM		10.0207***	18.288	10.23907***	3.721963
Y_04_DUM		18.8683***	24.639	19.04049***	6.806758
Y_05_DUM		26.0512***	53.537	26.31768***	9.618791
Y_06_DUM		31.9506***	46.645	32.42412***	11.70637
Y_07_DUM		45.2754***	76.805	45.71179***	16.61305
Y_08_DUM		51.4214***	87.622	51.93651***	18.8375
Y_09_DUM		55.2553***	78.276	55.69367***	20.03011
Y_10_DUM		61.6627***	105.440	62.02597***	22.45534
Y_11_DUM		63.3932***	122.045	63.67356***	23.01709
Constant		-0.8912	-0.176	10.44509	1.515505
Adjusted *R-square*		0.486065		0.482606	
F-statistic		51.41241***		50.71913***	
Balanced *panel* observations		1760		1600	

Notes: Variables are defined as follows. Pakistani Corporate Governance Index (*PCGI*), director ownership (DOWNP), institutional ownership (IOWNP), government ownership (GOWNP), block ownership (BOWNP), foreign ownership (FOWNP), audit firm size (BIG4), size of the board of directors (BSZ), board diversity on the basis of Gender (BGEN), board diversity on the basis of Nationality (BNAT), firm size as log of total assets (LTA), profitability (ROE), growth opportunities (SALESG), leverage (LVG)and capital expenditures (CE). Parameter estimates are obtained by OLS estimation (*Panel* Least Squares). Year 2003 and AUTO industry has been excluded from the analysis in order to avoid dummy variable trap. The asterisks *, ** and *** denote the 10%, 5% and 1% level of significance respectively.

7.1.2.1 Empirical Findings of Ownership and audit firm /board Variables

Table 7.2 presents the impact of ownership variables on *PCGI* for Un-lagged and lagged analyses. Two main cases of sensitivities can be observed. First, the statistical significance level of the coefficients on government and institutional ownership has changed. Specifically, the coefficients on government and institutional ownership, which were statistically significant at 1% and 5% level, are now statistically significant at 5% and 1% level, respectively. Second, the coefficient on foreign ownership, which was statistically significant at 10% level, is now no longer statistically significant. As reported in column 5 and 6 of Table 7.2, there is a positive and significant relationship between institutional ownership, government ownership and foreign ownership with *PCGI*. Similarly, a negative and significant relationship between block ownership and board size is reported for lagged structure which is consistent with the results reported for the un-lagged. However, for the un-lagged analysis, the relationship between board size and *PCGI* is negative and statistically significant at 5% level rather than at10% level for the lagged. Overall, the results predicted by the lagged structure analysis are largely consistent with those reported by the un-lagged structure.

7.1.2.2 Empirical Findings of Control Variables

As shown in *Panel B* of Table 7.2, irrespective of some sensitivity in the magnitude of coefficients, significance level and the direction of coefficients in lagged structure, essentially the findings remain the same as in the main analysis. First, lagged structure analysis shows that the relationship between firm size and firm level CG compliance is positive and significant, which is consistent with the main findings significance level and the direction of coefficient. Second, it presents statistically insignificant relationship between firm growth and leverage with firm-level CG compliance and disclosure. This analysis also reports insignificant relationship between firm growth and leverage with firm-level CG compliance and disclosure, suggesting that the findings of main analysis are largely robust with lagged structure. However, firms' profitability and capital expenditure with level of CG compliance and disclosure show changes in the lagged structure analysis. For instance, profitability (ROE) is negatively and significantly associated with CG compliance and disclosure in the main analysis however it became insignificant in the lagged structure analysis.

7.1.3 Results Based on Random effect Model

As discussed in subsection 4.2.4.2, the current study employs OLS to conduct its analyses where firms' characteristics differ among firms, but remain same over the time, which may not be captured by OLS estimation (Gujarati, 2003). Chung and Zhang (2011) argue that unobserved firms' characteristics can have an influence on governance disclosure level because of differences in challenges and opportunities that firms face.

Table 7.3:Correlated Random Effects - Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	P value
Cross-section random	0.000000	24	1.0000

Thus, to check the extent to which the main results are sensitive to firms' characteristics, one could employ either fixed or random effect model. The Hausman test is performed to identify the suitability between the fixed effect and random effect models. The null hypothesis of this test is that the random-effects model is appropriate while alternative hypothesis is that fixed effect model is appropriate. As shown in Table 7.3, the insignificant result suggests that the null hypothesis cannot be rejected. Therefore, the random effect model has been used as a robust analysis to control for the unobserved firms' characteristics. The findings of random effect model (robust findings) and OLS analysis (main analysis) are presented in Table 7.4 simultaneously in order to compare the findings.

Table 7.4 reports the main findings using OLS in columns 3 and 4 and robust findings using random effect model presents in Columns 5 and 6 of the same table. Adjusted *R-square* is 0.48 for main analysis and 0.56 for the random effect model, suggesting 48% variability in the main analysis and 56% in random effect model is jointly explained by all variables in each analyses. The value of *F-statistic* is 51.41 for main analysis and 71.10 for the random effect model and both are statistically significant at 1% level. Generally, the reported results are similar for both analyses in terms of sign magnitude of coefficient and level of statistical significance.

7.1.3.1 Empirical Findings of Ownership and audit firm size/board Variables

Panel A of Table 7.4 presents the OLS and random effect model findings. As presented in column 5 and 6 of Table 7.4, the random effect model finds a positive and significant relationship between director ownership, institutional ownership, government

ownership and foreign ownership with *PCGI*. The reported findings of the relationship between institutional and government ownership with *PCGI* are robust given the reported results with the random effect model. However, foreign ownership is now statistically significant at 10% level as compared to the main analysis where it was significant at 1% level while director ownership is now significant with the random effect model which was insignificant in the main analysis.

The findings of negative relationship between block ownership and board size with *PCGI* is consistent with the main analysis. Similarly, the audit firm size and board diversity on the basis of gender show no significant impact on level of CG compliance and disclosure both in random effect and in the main analysis, suggesting that these findings are robust. There is no significant relationship between nationality diversity and COC in the main analysis but it is now at 5% significance level in random effect model. Overall, the findings of main analysis using OLS estimation are robust with random effect model.

7.1.3.2 Empirical Findings of Control Variables

As shown in *Panel B* of Table 7.4, irrespective of observable sensitivity in the magnitude of coefficients, significance level and the direction of coefficients in random effect model, the findings largely remain the same as in the main analysis. First, the random effect model shows that the relationship between firm size and firm level CG compliance is positive and significant, which is consistent with main finding. Second, this analysis presents statistically insignificant relationship between firm growth and leverage with firm-level CG compliance and disclosure. This analysis also reports insignificant relationship between firm growth and leverage with firm-level governance compliance, suggesting that the findings of main analysis are largely robust with lagged structure. However, sampled firms' profitability and capital expenditure relationship with the level of CG compliance and disclosure show changes in the random effect model. For instance, profitability is negative and significantly associated with CG compliance and disclosure in the main analysis however it is insignificant in random effect model analysis.

Table 7.4: Results Based on Random Effect Model

Dependent Variable: *PCGI*					
		Ordinary Least Square		Random effect	
Independent Variable		Coefficient	t-Statistic	Coefficient	t-Statistic
Panel A: CG variables					
DOWNP	-	0.0352	1.252	0.1126***	2.914371
IOWNP	+	0.0955***	4.099	0.1283***	3.709527
GOWNP	-	0.2989***	7.484	0.3094***	6.800401
BOWNP	-	-0.0189***	-3.230	-0.0404***	-4.616613
FOWNP	+	0.0759***	3.276	0.0770*	1.825455
BIG4	+	0.8569	0.900	1.8628	1.217684
BSZ	+	-0.4628**	-2.237	-0.2717	-0.742531
BGEN	+	-0.5878	-0.456	1.2918	0.906741
BNAT	+	0.0557	0.068	2.7536**	2.132082
Panel B: Control variables					
LTA		1.5234***	5.716	0.8928**	2.024144
ROE		-3.5925***	-2.767	-1.4028	-1.307234
SALESG		0.8651	0.530	0.3897	0.279607
LVG		0.0092	0.695	0.0315	1.562978
CE		0.0000***	-3.305	0.0000	-0.922332
CEMENT		6.3499***	3.230	5.7313	1.537175
CHEMICAL		3.3518	1.585	2.7862	0.611160
ELECTRICITY		8.7193**	2.444	8.9052	1.014122
FOOD		-4.8611***	-4.712	-5.1043	-1.537730
HOUSHOLD		4.7509**	2.302	4.5635	0.945239
MISC		-8.3676***	-12.751	-7.6283***	-3.533570
OIL___GAS		-8.1924***	-7.379	-6.8728***	-2.970803
PHARMA		-9.4477**	-2.552	-10.1706	-1.127147
TEXTILE		-4.2243**	-2.046	-5.0866	-0.903291
Y_02_DUM		2.5254***	3.544	2.7929***	4.521340
Y_03_DUM		10.0207***	18.288	10.1713***	21.76422
Y_04_DUM		18.8683***	24.639	18.9664***	29.03065
Y_05_DUM		26.0512***	53.537	26.0506***	60.33353
Y_06_DUM		31.9506***	46.645	32.0894***	55.89384
Y_07_DUM		45.2754***	76.805	45.4053***	86.61310
Y_08_DUM		51.4214***	87.622	51.8860***	100.2401
Y_09_DUM		55.2553***	78.276	55.6048***	90.73233
Y_10_DUM		61.6627***	105.440	62.3046***	120.2705
Y_11_DUM		63.3932***	122.045	63.7789***	135.5551
Constant		-0.8912	-0.176	3.1762	0.371509
Adjusted *R-square*		0.486065		0.568077	
F-statistic		51.41241***		71.10547***	
Balanced *panel* observations		1760		1760	

Notes: Variables are defined as follows. Pakistani Corporate Governance Index (*PCGI*), director ownership (DOWNP), institutional ownership (IOWNP), government ownership (GOWNP), block ownership (BOWNP), foreign ownership (FOWNP), audit firm size (BIG4), size of the board of directors (BSZ), board diversity on the basis of Gender (BGEN), board diversity on the basis of Nationality (BNAT), firm size as log of total assets (LTA), profitability (ROE), growth opportunities (SALESG), leverage (LVG)and capital expenditures (CE). Parameter estimates are obtained by OLS estimation (*Panel* Least Squares). Year 2003 and AUTO industry has been excluded from the analysis in order to avoid dummy variable trap. The asterisks *, ** and *** denote the 10%, 5% and 1% level of significance respectively.

7.1.4 Results Based on 2SLS Model

As discussed in Subsection 7.1.2, the current study seeks to mitigate endogeneity issues by applying non-econometrics and econometrics solutions to ascertain whether its findings are seriously affected by the presence of this problem. Regarding econometrics solutions, accounting and CG literature suggest that two-stage least square (2SLS) is commonly used by researchers to address endogeneity problem among other solutions. Following the suggestion in literature, Durbin-Wu-Hausman endogeneity test is used first to investigate the presence of endogeneity (e.g., Lacker and Rusticus, 2008; Beiner *et al*., 2006). This test is performed in two stages. First, and as shown in equation 3 and 4, the regression is run on *PCGI* and control variables. Then predicted values from the regressions are named as *P-PCGI*. The first stage of Durbin-Wu-Hausman is performed using the following equation:

$$PCGI_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \qquad (29)$$

Where the *PCGI* refers to Pakistani Corporate Governance Index and *CONTROLS* variables are as defined in equation 1 in subsection 4.2.2.4 of chapter 4.

In the Second stage of the Durbin-Wu-Hausman test, the *PCGI* is regressed on *P-PCGI* and control variables as specified in equation below:

$$PCGI_{it} = \alpha_0 + \beta_1 P - PCGI_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \qquad (30)$$

Where the *PCGI* refers to Pakistani Corporate Governance Index, *P-PCGI* denotes the predicted values from regression of equation 29, and *CONTROLS* variables remain the same as in equation 1 in subsection 4.2.2.4 of chapter 4.

After performing Durbin-Wu-Hausman endogeneity test, the current study rejects the null hypothesis of no endogeneity as the coefficient on *P-PCGI* is statistically significant (0.0650) at 10% level with *PCGI*. This result shows that the endogeneity problem exists.

Table 7.5: Results Based on 2SLS

Dependent Variable: *PCGI*					
		Ordinary Least Square		2SLS	
Independent Variable		Coefficient	t-Statistic	Coefficient	t-Statistic
Panel A: CG variables					
DOWNP	-	0.0352	1.252	0.027	0.849
IOWNP	+	0.0955***	4.099	0.11**	2.516
GOWNP	-	0.2989***	7.484	0.293***	5.554
BOWNP	-	-0.0189***	-3.230	-0.018*	-1.916
FOWNP	+	0.0759***	3.276	0.092***	2.739
BIG4	+	0.8569	0.900	0.434	0.288
BSZ	+	-0.4628**	-2.237	-0.708*	-1.762
BGEN	+	-0.5878	-0.456	-0.697	-.484
BNAT	+	0.0557	0.068	0.255	0.153
Panel B: Control variables					
LTA		1.5234***	5.716	1.484***	3.818
ROE		-3.5925***	-2.767	-3.649	-1.359
SALESG		0.8651	0.530	0.89	0.564
LVG		0.0092	0.695	0.009	0.431
CE		0.0000***	-3.305	-3.14E-07***	-3.533
CEMENT		6.3499***	3.230	6.568***	2.657
CHEMICAL		3.3518	1.585	3.649	1.409
ELECTRICITY		8.7193**	2.444	9.126***	2.975
FOOD		-4.8611***	-4.712	-4.72*	-1.888
HOUSHOLD		4.7509**	2.302	4.976	1.587
MISC		-8.3676***	-12.751	-8.24***	-3.077
OIL___GAS		-8.1924***	-7.379	-7.601**	-2.588
PHARMA		-9.4477**	-2.552	-9.645***	-2.867
TEXTILE		-4.2243**	-2.046	-3.936	-1.601
Y_02_DUM		2.5254***	3.544	2.539	0.915
Y_03_DUM		10.0207***	18.288	10.045***	3.662
Y_04_DUM		18.8683***	24.639	18.91***	6.782
Y_05_DUM		26.0512***	53.537	26.096***	9.555
Y_06_DUM		31.9506***	46.645	32.009***	11.565
Y_07_DUM		45.2754***	76.805	45.366***	16.490
Y_08_DUM		51.4214***	87.622	51.502***	18.705
Y_09_DUM		55.2553***	78.276	55.369***	19.962
Y_10_DUM		61.6627***	105.440	61.829***	22.402
Y_11_DUM		63.3932***	122.045	63.57***	23.022
Constant		-0.8912	-0.176	1.488	0.199
Adjusted *R-square*		0.4861		0.4860	
F-statistic		51.41241***		51.432***	
Balanced *panel* observations		1760		1760	

Notes: Variables are defined as follows. Pakistani Corporate Governance Index (*PCGI*), director ownership (DOWNP), institutional ownership (IOWNP), government ownership (GOWNP), block ownership (BOWNP), foreign ownership (FOWNP), audit firm size (BIG4), size of the board of directors (BSZ), board diversity on the basis of gender (BGEN), board diversity on the basis of Nationality (BNAT), firm size as log of total assets (LTA), profitability (ROE), growth opportunities (SALESG), leverage (LVG) and capital expenditures (CE). Parameter estimates are obtained by OLS estimation (*Panel* Least Squares). Year 2003 and AUTO industry has been excluded from the analysis in order to avoid dummy variable trap. The asterisks *, ** and *** denote the 10%, 5% and 1% level of significance respectively.

Thus, following the literature (e.g., Ntim *et al*., 2013) current study uses the 2SLS technique as a robustness test for the reported results. Each of the nine CG variables is regressed on the control variables and the predicted values for each individual CG variable is saved in the first stage as specified in the following equations.

$$CGVAR_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (31)$$

Where the *CGVAR* denotes the 9 governance variables and control variables remain same as in equation 1.

In stage two, equation 1 is regressed by replacing nine CG variables with their predicted values as follows:

$$\begin{aligned} PCGI_{it} = {} & \alpha_0 + \hat{\beta}_1 DOWNP_{it} + \hat{\beta}_2 IOWNP_{it} + \hat{\beta}_3 GOWNP_{it} + \hat{\beta}_4 BOWNP_{it} \\ & + \hat{\beta}_5 FOWNP_{it} + \hat{\beta}_6 BIG4_{it} + \hat{\beta}_7 BSZ_{it} + \hat{\beta}_8 BGEN_{it} \\ & + \hat{\beta}_9 BNAT_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \end{aligned} \quad (32)$$

Where all variables remain the same as in equation 1, except the nine CG variables where the predicted values from equation (31) are used instead of their actual values.

The results based on 2SLS and main analyses are presented in Table 7.5 simultaneously in order to compare the findings. Table 7.5 reports the main findings using OLS in columns 3 and 4 and robust findings using 2SLS are presented in columns 5 and 6. Adjusted *R-square* is 0.4861 for OLS analysis and 0.48260 for 2SLS which is similar. The *R-square* of about 48% for both analyses, suggesting that about 48% of variability in either main or 2SLS regressions are jointly explained by the variables. Similarly, the *F-statistic* of 51.41241 for the 2SLS and 51.432 for OLS are both statistically significant at 1% level. Generally, the findings for both analyses are similar and both analyses predict almost similar sign and magnitude of coefficient as well as level of significance.

7.1.4.1 Empirical Findings of ownership and audit firm size/board Variables

Panel A of Table 7.5 presents the OLS and 2SLS findings. Table 7.5 presents the impact of ownership variables on *PCGI* using 2SLS and OLS estimation techniques. As presented in column 5 and 6 of Table 7.5, the findings based on 2SLS finds a positive and significant relationship between institutional, government and foreign ownership with *PCGI*. Regardless of some sensitivity in the magnitude of coefficient and level of

significance, the results based on the 2SLS show that the main findings are robust. For example, institutional ownership is statistically significant at 5% level in 2SLS compared to the main analysis where the statistical significance is at 1% level.

Similarly, a negative and significant relationship between block ownership and board size with *PCGI* are also consistent with the main analysis. For instance, the relationship between block ownership, board size and *PCGI* are statistically significant at 1% and 5% level in main analysis and 10% in 2 SLS. In addition to the above significant variables, director ownership, audit firm size, board diversity on the basis of gender and board diversity on the basis of nationality are insignificant in both OLS and the 2SLS.

7.1.4.2 Empirical Findings of Control Variables

As shown in *Panel B* of Table 7.5, despite some observable sensitivity, the findings of 2SLS remain largely the same as in the main analysis. First, 2SLS shows that the relationship between firm size and firm level CG compliance is positive and significant, which is consistent with main finding. Second, this analysis presents statistically insignificant relationship between firm growth and leverage with firm-level CG compliance and disclosure. This analysis also reports insignificant relationship between firm growth and leverage with level of CG disclosure, suggesting that the findings of the main analysis are largely robust with 2SLS analysis. However, firms' profitability and capital expenditure with level of CG compliance and disclosure show some sensitivity in 2SLS. For instance, profitability is negative for both OLS and 2SLS but insignificant in later while capital expenditure is significant in both OLS and 2SLS but coefficient became negative in the later analysis.

7.2 ROBUSTNESS TESTS: CG AND COC

The findings of nexus between CG and COC presented in chapter 6, Table 6.4 are tested as to whether these findings are sensitive to the alternative variables and models, by performing a number of robustness analyses. The findings of these robustness analyses are reported and discussed under this subsection. Main findings which have been previously reported in Table 6.4 and robustness results are reported in the same table in order to facilitate the comparison between main results and robustness tests. Irrespective of minor sensitivities in the magnitude of coefficient and significance level, these analyses show that the main findings are largely robust. Detailed discussion on these findings is presented in the following subsections.

7.2.1 Results Based on an Alternative Corporate Governance Proxy

The current study responds to literature in order to address the possibility that the main findings may be sensitive to the type of CG index. Hence, a weighted CG index instead of un-weighted CG index is employed by assigning 20% weight to each sub index of *PCGI* whereas the un-weighted CG index has different weights assigned to each sub index. The procedure of weighted index previously described in 7.1.1 is employed in the analysis. This procedure is consistent to the previous studies (e.g., Ntim *et al*., 2012a) that used the same method to test whether their main findings are sensitive to the weighted CG index or not. Therefore, the *PCGI* in equation (2) is replaced by the *WPCGI* and the findings are presented in Table 7.6.

Table 7.6 reports the main findings using *PCGI* in columns 3 and 4 and robust findings using weighted CG index in Columns 5 and 6 of the same table. Adjusted *R-square* is 0.540825 for Un-weighted Index and 0.550872 for weighted Index, suggesting that 54% and 55% variability in *PCGI* and *WPCGI*, are jointly explained by independent variables in equation (2) explained in subsection 4.2.3.4. Similarly, the *F-statistic* is 60.19378 using Un-weighted Index and 60.41580 using Weighted Index and both are statistically significant at 1% level. This suggests that both analyses are appropriate and all the parameters in analyses are jointly significant. Generally, the findings of both analyses are similar as both predict similar sign of coefficient, magnitude of coefficient and level of significance either using *PCGI* or *WPCGI*. These findings are discussed in the following subsections, with particular focus on the main sensitivities of this analysis.

Table 7.6: Results Based on Weighted CG Index

Dependent Variable: COC					
		Un weighted Index		Weighted Index	
Indep.Variable	Exp Sign	Coefficient	t-Statistic	Coefficient	t-Statistic
Panel A: CG variables					
PCGI	-	-0.000256**	-2.367414	-0.000285***	-2.692242
DOWNP	+	0.000448**	2.378413	0.000453**	2.409312
IOWNP	-	0.000110	0.968540	0.000111	0.990667
GOWNP	-	0.000242	1.103890	0.000253	1.140036
BOWNP	+/-	-0.000165***	-3.394800	-0.000169***	-3.466370
FOWNP	-	0.000782***	4.871608	0.000787***	4.904898
BIG4	-	-0.000387	-0.059896	-0.000282	-0.043382
BSZ	-	0.002998	1.642575	0.003034*	1.659411
BGEN	-	0.011861**	2.298860	0.011793**	2.280540
Panel B: Control variables					
LTA		-0.018664***	-4.553196	-0.018612***	-4.569124
ROE		-0.000520*	-1.833582	-0.000519*	-1.825441
SALESG		-0.001684	-0.295017	-0.001598	-0.280165
LVG		-0.000704***	-4.235213	-0.000706***	-4.250991
β		0.152732*	2.512878	0.152671**	2.514698
CEMENT		0.010105	0.599615	0.010074	0.595943
CHEMICAL		0.004724	0.369522	0.004721	0.366442
ELECTRICITY		0.024752**	2.282339	0.024499**	2.274621
FOOD		0.033699**	2.481303	0.032968**	2.427244
HOUSHOLD		0.039404**	2.520262	0.039455**	2.516284
MISC		0.016622	1.192062	0.015925	1.126001
OIL___GAS		0.037005**	2.474791	0.035346**	2.326878
PHARMA		-0.012422	-0.652965	-0.013435	-0.697934
TEXTILE		0.024341*	1.918665	0.024093*	1.890246
Y_02_DUM		0.050828***	19.45041	0.050724***	19.57160
Y_03_DUM		-0.107665***	-10.98564	-0.107157***	-10.87289
Y_04_DUM		-0.094688***	-8.721466	-0.093805***	-8.562953
Y_05_DUM		-0.184587***	-13.67361	-0.183452***	-13.48365
Y_06_DUM		-0.138946***	-11.16315	-0.137606***	-10.93193
Y_07_DUM		-0.322375***	-24.26807	-0.320551***	-23.76597
Y_08_DUM		0.067629***	5.772046	0.069609***	5.822728
Y_09_DUM		-0.121282***	-19.59109	-0.119146***	-18.77869
Y_10_DUM		-0.265995***	-36.62020	-0.263461***	-35.71425
Y_11_DUM		-0.050639***	-6.622276	-0.048183***	-6.188803
Constant		0.493347***	13.13452	0.493092***	13.17160
Adjusted *R-square*		0.540825		0.550872	
F-statistic		60.19378***		60.41580***	
Balanced *panel* observations		1760		1760	

Notes: Variables are defined as follows. Cost of Capital (COC) Pakistani Corporate Governance Index (*PCGI*), director ownership (DOWNP), institutional ownership (IOWNP), government ownership (GOWNP), block ownership (BOWNP), foreign ownership (FOWNP), audit firm size (BIG4), size of the board of directors (BSZ), board diversity on the basis of gender (BGEN) , firm size as log of total assets (LTA), profitability (ROE), growth opportunities (SALESG), leverage (LVG) and Systematic risk (β) . Parameter estimates are obtained by OLS estimation (*Panel* Least Squares). Year 2003 and AUTO industry has been excluded from the analysis in order to avoid dummy variable trap. The asterisks *, ** and *** denote the 10%, 5% and 1% level of significance respectively.

7.2.1.1 Empirical findings of ownership and audit firm size/board variables

Panel A of Table 7.6 presents the findings of nexus between CG and COC using both *PCGI* and *WPCGI* as a main independent variable. Table 7.6 presents the impact of *PCGI* and *WPCGI* on *COC*. As presented in column 5 and 6 of Table 7.6, the analysis using *WPCGI* finds a negative and significant association between *PCGI* and block ownership with *COC*. Irrespective of observable minor sensitivities in the magnitude of coefficient and level of significance, these findings show that the main findings are robust with *WPCGI*. For instance, the relationship between *PCGI* and COC is significant at 5% level of significance in main analysis using *PCGI* as compared to the robust analysis using *WPCGI* where it is significant at 1% level.

Similarly, a significant and positive association between foreign ownership, board diversity and director ownership with *COC* are also consistent with the findings of main analysis, however, a minor sensitivity in the magnitude of coefficients can be observed. The board size which was insignificant in main analysis is now significant at 10% level of significance.

7.2.1.2 Empirical Findings of Control Variables

As shown in *Panel B* of Table 7.6, despite observable minor sensitivities in the magnitude of coefficients, significance level and the direction of coefficients in robust analysis using *WPCGI*, the results remain essentially the same as in the main analysis using *PCGI*. First, in the robust analysis, a significant and negative association between firm size, firms' profitability and leverage with firm level *COC* which are significant at 1% level are consistent with main finding's significance level and the direction of coefficients. Second, the analysis shows that systematic risk is positively and significantly associated with *COC* at 1% which is also in line with the findings of the main analysis. Finally, this analysis presents statistically insignificant relationship between sales growth and *COC*, suggesting that the findings of main analysis are robust with alternative CG proxy.

7.2.2 Results Based on COE: an alternative COC Proxy

The current study employs alternative proxies for COC in order to account for the possibility that the main findings are sensitive to different proxies. In particular, and consistent to the previous literature (e.g., Pham *et al*., 2012), cost of equity (COE) is used as alternative COC's measurement. The relationship between *PCGI* and COC are re-regressed with COE as an alternative of COC as stated bellow.

$$COE_{it} = \alpha_0 + \beta_1 PCGI_{it} + \beta_2 DOWNP_{it} + \beta_3 IOWNP_{it} + \beta_4 GOWNP_{it} + \beta_5 BOWNP_{it} + \beta_6 FOWN_{it} + \beta_7 BIG4_{it} + \beta_8 BSZ_{it} + \beta_9 BGEN_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (33)$$

Where all variables remain the same as in equation 2, except the Cost of Equity (COE) used as dependent variable rather than COC.

Table 7.7 reports the main findings using *COC* in columns 3 and 4 and robust findings using COE in columns 5 and 6 of the same table. Generally, the findings of both analyses are similar as both analyses predict similar sign of coefficient, magnitude of coefficient and level of significance either using *COC* or *COE*. These findings are discussed in the following subsections, with particular focus on the main sensitivities in this analysis.

7.2.2.1 Empirical findings of ownership and audit firm size/board variables

Panel A of Table 7.7 presents the findings of nexus between CG and COC using both *COC* and *COE* as a dependent variables. As presented in column 5 and 6 of Table 7.7, this analysis using *COE* as a main dependent variable, finds a negative and significant nexus between *PCGI* and block ownership with *COE*. Irrespective of some noticeable sensitivity in the magnitude of coefficient and level of significance, these results show that the main findings are robust with *COE*. For instance, *PCGI* is negative and significant at 5% level in both analyses using *COC* or COE as dependent variable. However, the relationship between block ownership and COE is negative but insignificant in robust analysis whereas it was significant in the main analysis.

Similarly, a positive association between director ownership, foreign ownership and board diversity on the basis of gender with *COE* are also consistent with the findings reported for the main analysis. However, some sensitivity in the magnitude of coefficients and level of significance can be observed. For instance, director ownership is significant at 5% level in the main analysis, but insignificant in robust analysis. Similarly, gender diversity is insignificant with *COE* which was previously significant at 5% level of significance. Finally, the findings of institutional, government ownership, audit firm size and board size using *COE* are consistent to those reported in main analysis using *COC*.

Table 7.7: Results Based on Cost of Equity

Dependent Variable: COC/COE					
		Dependent Variable: COC		Dependent Variable: COE	
Indep.Variable	Exp Sign	Coefficient	t-Statistic	Coefficient	t-Statistic
Panel A: CG variables					
PCGI	-	-0.000256**	-2.367414	-0.000158**	-2.204032
DOWNP	+	0.000448**	2.378413	0.000176	1.101021
IOWNP	-	0.000110	0.968540	1.21E-05	0.082011
GOWNP	-	0.000242	1.103890	0.000146	0.605721
BOWNP	+/-	-0.000165***	-3.394800	-0.000101	-1.558801
FOWNP	-	0.000782***	4.871608	0.000411***	2.638581
BIG4	-	-0.000387	-0.059896	0.006483	0.905017
BSZ	-	0.002998	1.642575	0.004159	1.500352
BGEN	-	0.011861**	2.298860	0.007951	1.085436
Panel B: Control variables					
LTA		-0.018664***	-4.553196	0.001458	0.795485
ROE		-0.000520*	-1.833582	-0.000397**	-2.385347
SALESG		-0.001684	-0.295017	-0.006968	-0.894314
LVG		-0.000704***	-4.235213	5.89E-05	0.881462
β		0.152732*	2.512878	0.262360***	2.959989
CEMENT		0.010105	0.599615	0.001034	0.129406
CHEMICAL		0.004724	0.369522	-0.011374	-0.672846
ELECTRICITY		0.024752**	2.282339	-0.008664	-0.442859
FOOD		0.033699**	2.481303	0.008284	1.064973
HOUSHOLD		0.039404**	2.520262	0.022184	1.591867
MISC		0.016622	1.192062	-0.014294	-1.285527
OIL___GAS		0.037005**	2.474791	-0.010638	-0.971212
PHARMA		-0.012422	-0.652965	-0.010169	-0.652053
TEXTILE		0.024341*	1.918665	0.007607	0.570009
Y_02_DUM		0.050828***	19.45041	0.072188***	22.86867
Y_03_DUM		-0.107665***	-10.98564	-0.138754***	-7.675312
Y_04_DUM		-0.094688***	-8.721466	-0.120677***	-6.395655
Y_05_DUM		-0.184587***	-13.67361	-0.309031***	-16.44785
Y_06_DUM		-0.138946***	-11.16315	-0.214983***	-10.89812
Y_07_DUM		-0.322375***	-24.26807	-0.536020***	-26.93127
Y_08_DUM		0.067629***	5.772046	0.106917***	6.311324
Y_09_DUM		-0.121282***	-19.59109	-0.214256***	-20.10931
Y_10_DUM		-0.265995***	-36.62020	-0.483644***	-40.63108
Y_11_DUM		-0.050639***	-6.622276	-0.112500***	-9.112842
Constant		0.493347***	13.13452	0.217037***	3.344781
Adjusted *R-square*		0.540825		0.744496	
F-statistic		60.19378***		147.4412***	
Balanced *panel* observations		1760		1760	

Notes: Variables are defined as follows. Cost of Capital (COC) Pakistani Corporate Governance Index (*PCGI*), director ownership (DOWNP), institutional ownership (IOWNP), government ownership (GOWNP), block ownership (BOWNP), foreign ownership (FOWNP), audit firm size (BIG4), size of the board of directors (BSZ), board diversity on the basis of Gender (BGEN), firm size as log of total assets (LTA), profitability (ROE), growth opportunities (SALESG), leverage (LVG) and Systematic risk (β). Parameter estimates are obtained by OLS estimation (*Panel* Least Squares). Year 2003 and AUTO industry has been excluded from the analysis in order to avoid dummy variable trap. The asterisks *, ** and *** denote the 10%, 5% and 1% level of significance respectively.

7.2.2.2 Empirical Findings of Control Variables

Panel B of Table 7.7 presents the findings of main analysis and robust findings. A negative and significant relationship between firms' profitability and COE is observed. Also, a positive and significant association is observed for sampled firms' systematic risk and *COE* are in line with the main analysis. A significant and negative association between the size of the firm and leverage with *COE* became insignificant in the robust findings. The insignificant nexus between sales growth and *COE* is in line with the main findings of CG and COC.

7.2.3 Results Based on COD: an alternative COC Proxy

As discussed in subsection 4.3.2.3, the main findings are based on COC as a main measurement to calculate COC. Thus, the current study employs another alternative proxy for COC in order to account for the possibility that the main findings are sensitive to different COC's proxies. In particular, and consistent with previous literature (e.g., Pham *et al*., 2012), cost of Debt (COD) is used as an alternative COC's measurement. The relationship between *PCGI* and COC are re-regressed with COD as an alternative of COC and stated bellow.

$$\begin{aligned} COD_{it} = {} & \alpha_0 + \beta_1 PCGI_{it} + \beta_2 DOWNP_{it} + \beta_3 IOWNP_{it} + \beta_4 GOWNP_{it} \\ & + \beta_5 BOWNP_{it} + \beta_6 FOWN_{it} + \beta_7 BIG4_{it} + \beta_8 BSZ_{it} \\ & + \beta_9 BGEN_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \end{aligned} \qquad (34)$$

Where all variables remain the same as in equation 2, except the Cost of Debt (COD) used as dependent variable instead of COC.

Table 7.8 reports the main findings using *COC* in columns 3 and 4 and robust findings using COD presents in columns 5 and 6 of the same table. Generally, the findings of both analyses are similar as both predict similar direction of coefficient and level of significance either using *COC* or *COD.*

Table 7.8: Results Based on Cost of Debt

Dependent Variable: COC/COD					
		Dependent Variable: COC		Dependent Variable: COD	
Indep.Variable	Exp Sign	Coefficient	t-Statistic	Coefficient	t-Statistic
Panel A: CG variables					
PCGI	-	-0.000256**	-2.367414	-0.000556***	-3.764441
DOWNP	+	0.000448**	2.378413	0.000150**	2.021592
IOWNP	-	0.000110	0.968540	4.21E-05	0.209547
GOWNP	-	0.000242	1.103890	-0.000204	-1.365303
BOWNP	+/-	-0.000165***	-3.394800	-0.000258***	-7.090828
FOWNP	-	0.000782***	4.871608	0.000926***	5.473368
BIG4	-	-0.000387	-0.059896	-0.016931***	-3.138824
BSZ	-	0.002998	1.642575	-0.001615	-0.854725
BGEN	-	0.011861**	2.298860	0.006309	1.638559
Panel B: Control variables					
LTA		-0.018664***	-4.553196	-0.029582***	-8.405904
ROE		-0.000520*	-1.833582	-0.000696***	-2.721204
SALESG		-0.001684	-0.295017	-0.006232	-1.136623
LVG		-0.000704***	-4.235213	-0.000348****	-9.934225
β		0.152732*	2.512878	0.005018	1.022498
CEMENT		0.010105	0.599615	-0.108863***	-6.655512
CHEMICAL		0.004724	0.369522	-0.085767***	-6.805960
ELECTRICITY		0.024752**	2.282339	-0.032952	-1.093311
FOOD		0.033699**	2.481303	-0.116980***	-11.29308
HOUSHOLD		0.039404**	2.520262	-0.039804***	-2.583380
MISC		0.016622	1.192062	-0.101445***	-6.597592
OIL___GAS		0.037005**	2.474791	-0.009387	-0.439813
PHARMA		-0.012422	-0.652965	-0.184223***	-9.579359
TEXTILE		0.024341*	1.918665	-0.100337***	-7.269902
Y_02_DUM		0.050828***	19.45041	-0.002534	-1.335294
Y_03_DUM		-0.107665***	-10.98564	-0.041724***	-15.94742
Y_04_DUM		-0.094688***	-8.721466	-0.024114***	-5.140635
Y_05_DUM		-0.184587***	-13.67361	-0.018813***	-3.160709
Y_06_DUM		-0.138946***	-11.16315	-0.006469	-0.906201
Y_07_DUM		-0.322375***	-24.26807	0.017339*	1.942072
Y_08_DUM		0.067629***	5.772046	0.022637**	2.167550
Y_09_DUM		-0.121282***	-19.59109	0.015678	1.457604
Y_10_DUM		-0.265995***	-36.62020	0.023112**	2.055828
Y_11_DUM		-0.050639***	-6.622276	0.044381***	3.870213
Constant		0.493347***	13.13452	0.756528***	9.673746
Adjusted *R-square*		0.540825		0.270132	
F-statistic		60.19378***		19.60072***	
Balanced *panel* observations		1760		1760	

Notes: Variables are defined as follows. Cost of Capital (COC) Pakistani Corporate Governance Index (*PCGI*), director ownership (DOWNP), institutional ownership (IOWNP), government ownership (GOWNP), block ownership (BOWNP), foreign ownership (FOWNP), audit firm size (BIG4), size of the board of directors (BSZ), board diversity on the basis of Gender (BGEN), firm size as log of total assets (LTA), profitability (ROE), growth opportunities (SALESG), leverage (LVG) and Systematic risk (β) . Parameter estimates are obtained by OLS estimation (*Panel* Least Squares). Year 2003 and AUTO industry has been excluded from the analysis in order to avoid dummy variable trap. The asterisks *, ** and *** denote the 10%, 5% and 1% level of significance respectively.

7.2.3.1 Empirical findings of ownership and audit firm size/board variables

Panel A of Table 7.8 presents the findings of the relationship between CG and COC using both *COC* and *COD* as a dependent variable. As presented in column 5 and 6 of Table 7.8, this analysis using *COD* as a main dependent rather than *COC,* finds a negative and significant relationship between *PCGI* and block ownership with *COD*. Regardless of observable sensitivities in the magnitude of coefficient and level of significance, these findings show that the main findings are similar to the use of *COD* as the dependent variable. For instance, block ownership is negative and significant at 1% level in both analyses either by using *COC* or *COD* as dependent variable. However, the relationship between *PCGI* and *COD* is negative and significant at 5% level but significant at 1% level in robust analysis.

Similarly, a positive association between director ownership, foreign ownership and board diversity on the basis of gender with *COD* are also consistent with the findings of main analysis. However, sensitivity in the magnitude of coefficients and level of significance can be observed. For instance, gender diversity in board is insignificant with *COD* whereas it was previously significant at 5% level. In addition, the insignificant relationship between institutional ownership, government ownership and board size with COD is consistent with main findings. However, audit firm size is negative and significant with *COD* which was negative and insignificant with *COC* in the main analysis.

7.2.3.2 Empirical Findings of Control Variables

As shown in *Panel B* of Table 7.8, in spite of the observable minor sensitivities in the magnitude of coefficients, significance level and the direction of coefficients in robust model using *COD,* overall findings remain the same as in the main analysis using *COC* as the independent variable. First, significant and negative association between the size of the firm, firms' profitability and leverage with COD is consistent with the main analysis. Second, insignificant relationship between sales growth and COD is also consistent with the main analysis. Finally, systematic risk is positively and significantly associated at 10% with COC but became insignificant with COD.

7.2.4 Results Based on Lagged Structure

The current study employed lagged structure to investigate the level to which the study results are affected by endogeneity problem. The specification of this model is similar to that one specified previously in section 7.1.2 and the equation is presented below.

$$\begin{aligned} COC_{it} = {} & \alpha_0 + \beta_1 PCGI_{it-1} + \beta_2 DOWNP_{it-1} + \beta_3 IOWNP_{it-1} + \beta_4 GOWNP_{it-1} \\ & + \beta_5 BOWNP_{it-1} + \beta_6 FOWNP_{it-1} + \beta_7 BIG4_{it-1} + \beta_8 BSZ_{it-1} \\ & + \beta_9 BGEN_{it-1} + \sum_{i=1}^{n} \beta_i CONTROLS_{it-1} + \varepsilon_{it-1} \end{aligned} \quad (35)$$

Except for the one year lag of explanatory and control variables, all variables are similar as explained in equation 2 in subsection 4.2.3.4 of chapter 4.

Generally, the findings of both analyses are similar as both analyses predict almost similar sign of coefficient, magnitude of coefficient and level of significance. These findings are discussed in the following subsections, with particular focus on the main sensitivities of the analysis.

7.2.4.1 Empirical Findings of Ownership and audit firm size/board Variables

Table 7.9 presents the impact of Un-lagged and lagged ownership variables on *COC*. As presented in column 5 and 6 of Table 7.9, the analysis of lagged structure finds that *PCGI* and block ownership are negatively associated with COC. Although some observable minor sensitivity in the magnitude of coefficient and level of significance can be seen, the main results are robust with lagged structure. For instance, *PCGI* significant at 10% level of significance while it was significant at 5% in the main analysis.

Similarly, a positive and significant association of director ownership and foreign ownership with *COC* is also consistent with the findings of main analysis, however, a minor sensitivity in the magnitude of coefficients and level of significance can be observed. For instance, director ownership is statistically significant at 1% level while it was significant at 5% level in the main analysis. Institutional ownership and board diversity on the basis of gender show some level of sensitivities. For instance, institutional ownership is significant at 1% level while it was insignificant in the main analysis. Similarly, gender diversity in board is insignificant while it was significant in 5% level in the main analysis.

Table 7.9: Results Based on Lagged Structure

Dependent Variable: COC					
		Un-Lagged Structure		Lagged Structure	
Indep.Variable	Exp Sign	Coefficient	t-Statistic	Coefficient	t-Statistic
Panel A: CG variables					
PCGI(-1)	-	-0.000256**	-2.367414	-0.000250*	-1.838121
DOWNP(-1)	+	0.000448**	2.378413	0.000496***	2.613038
IOWNP(-1)	-	0.000110	0.968540	0.000270*	1.802866
GOWNP(-1)	-	0.000242	1.103890	-8.92E-05	-0.285109
BOWNP(-1)	+/-	-0.000165***	-3.394800	-0.000196***	-2.968802
FOWNP(-1)	-	0.000782***	4.871608	0.000795***	4.081046
BIG4(-1)	-	-0.000387	-0.059896	0.001296	0.151817
BSZ(-1)	-	0.002998	1.642575	0.002940	1.359421
BGEN (-1)	-	0.011861**	2.298860	0.010384	1.204158
Panel B: Control variables					
LTA(-1)		-0.018664***	-4.553196	-0.018774***	-8.242142
ROE(-1)		-0.000520*	-1.833582	-0.000559*	-1.820631
SALESG(-1)		-0.001684	-0.295017	-0.001323	-0.135539
LVG(-1)		-0.000704***	-4.235213	-0.000705***	-8.992319
β(-1)		0.152732*	2.512878	0.152765***	19.22891
CEMENT		0.010105	0.599615	0.010137	0.636258
CHEMICAL		0.004724	0.369522	0.001964	0.132510
ELECTRICITY		0.024752**	2.282339	0.026850	1.534219
FOOD		0.033699**	2.481303	0.035288**	2.527793
HOUSHOLD		0.039404**	2.520262	0.039856**	2.153012
MISC		0.016622	1.192062	0.017636	0.935508
OIL___GAS		0.037005**	2.474791	0.042451**	2.232807
PHARMA		-0.012422	-0.652965	-0.013447	-0.737611
TEXTILE		0.024341*	1.918665	0.024908*	1.718005
Y_02_DUM		0.050828***	19.45041	0.051004***	3.259694
Y_03_DUM		-0.107665***	-10.98564	-0.108369***	-6.960392
Y_04_DUM		-0.094688***	-8.721466	-0.095440***	-5.994008
Y_05_DUM		-0.184587***	-13.67361	-0.185397***	-11.77733
Y_06_DUM		-0.138946***	-11.16315	-0.140445***	-8.609766
Y_07_DUM		-0.322375***	-24.26807	-0.323608***	-19.40903
Y_08_DUM		0.067629***	5.772046	0.065392***	3.911418
Y_09_DUM		-0.121282***	-19.59109	-0.122687***	-7.145642
Y_10_DUM		-0.265995***	-36.62020	-0.266950***	-15.29352
Y_11_DUM		-0.050639***	-6.622276	-0.052837***	-3.001795
Constant		0.493347***	13.13452	0.496610***	12.83157
Adjusted *R-square*		0.540825		0.540752	
F-statistic		60.19378***		58.53265***	
Balanced *panel* observations		1760		1600	

Notes: Variables are defined as follows. Cost of Capital (COC) Pakistani Corporate Governance Index (*PCGI*), director ownership (DOWNP), institutional ownership (IOWNP), government ownership (GOWNP), block ownership (BOWNP), foreign ownership (FOWNP), audit firm size (BIG4), size of the board of directors (BSZ), board diversity on the basis of Gender (BGEN), firm size as log of total assets (LTA), profitability (ROE), growth opportunities (SALESG), leverage (LVG) and Systematic risk (β) . Parameter estimates are obtained by OLS estimation (*Panel* Least Squares). Year 2003 and AUTO industry has been excluded from the analysis in order to avoid dummy variable trap. The asterisks *, ** and *** denote the 10%, 5% and 1% level of significance respectively.

7.2.4.2 Empirical Findings of Control Variables

As shown in *Panel B* of Table 7.9, despite the observable minor sensitivities in the magnitude of coefficients and significance level in the robust analysis, the findings remain statistically the same as in the main analysis. First, the robust findings show a significant and negative nexus between firm size, firms' profitability and leverage with firm level *COC* which are consistent with main analysis's findings except for some minor sensitivity in level of significance. Second, this analysis shows significant and positive relationship between systematic risk and *COC* which is also in line with the findings of main analysis. Finally, it reports statistically insignificant relationship between sales growth and *COC*, suggesting that the overall findings of main analysis are robust.

7.2.5 Results Based on Random effect Model

Fixed or random effect model is applied to test the degree to which the main findings are sensitive to unobservable firms' characteristics. Following the procedure discussed in subsection 7.1.3, this study employs Hausman test to identify the suitability between the fixed effect and random effect models. As shown in Table 7.10, the p value suggests that the random effect model is appropriate as a robust analysis to control for the unobserved firms' characteristics. The findings of random effect model (robust findings) and OLS estimation (main analysis) are presented in Table 7.

Table 7.10:Correlated Random Effects - Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	P value.
Cross-section random	0.000000	24	1.0000

Adjusted *R-square* is 0.540825 for main analysis and 0.345833 for random effect model. Similarly, *F-statistic* is 60.19378 for main analysis and 27.56898 for the random effect model and both are statistically significant at 1% level. Generally, the findings of both analyses are similar as the sign of coefficient, magnitude of coefficient and level of significance are similar. These findings are discussed in the following subsections, with particular focus on the main sensitivities in this analysis.

7.2.5.1 Empirical Findings of Ownership and audit firm size/board Variables

Panel A of Table 7.11 presents the OLS and random effect models findings. As presented in column 5 and 6 of Table 7.11, the random effect model finds a negative and

significant nexus between *PCGI* and block ownership with *COC*. Although minor sensitivities in the magnitude of coefficient and level of significance can be noticed, these findings show that the main findings are robust with unobservable firm characteristics. For instance, *PCGI* is significant at 5% level of significance in the main analysis whereas it is significant at 10% level in random effect model.

Similarly, a significant and positive association of foreign ownership and director ownership with *COC* are also consistent with the findings of main analysis. However, institutional ownership and board diversity shows some level of sensitivities in robust analysis. For example, institutional ownership is significant at 10% level of significance while it was insignificant in the main analysis. Similarly, board diversity on the basis of gender is significant in both random effect and OLS analysis but the coefficient has changed from positive to negative in the robust analysis.

7.2.5.2 Empirical Findings of Control Variables

As shown in *Panel B* of Table 7.11, the findings for control variables in the random effect model remain largely the same as in the main analysis except for some observable sensitivity in the magnitude of coefficients and significance level. First, the random effect model shows that significant and negative association between the size of the firm, firms' profitability and leverage with *COC*, which is consistent with the main analysis. However, sampled firms' profitability became statistically significant at 1% level which was previously significant at 10% level. Second, the random effect model report asignificant and positive association between systematic risk and *COC*, which is also consistent with the main analysis. However, systematic risk became highly significant, at 1% level in the robust findings which was previously significant at 5% level. Finally, the figures reported in the table shows a statistically insignificant relationship between firm growth and firm-level *COC*, suggesting that the findings of the main analysis are largely robust with random effect model.

Table 7.11: Results Based on Random effect Model

Dependent Variable: COC					
		Ordinary Least Square		Random effect	
Indep.Variable	Exp Sign	Coefficient	t-Statistic	Coefficient	t-Statistic
Panel A: CG variables					
PCGI	-	-0.000256**	-2.367414	-0.001193*	-1.859904
DOWNP	+	0.000448**	2.378413	0.000768**	2.563165
IOWNP	-	0.000110	0.968540	0.000448*	1.649500
GOWNP	-	0.000242	1.103890	0.000365	0.703903
BOWNP	+/-	-0.000165***	-3.394800	-0.000245***	-2.704907
FOWNP	-	0.000782***	4.871608	0.001188***	5.928747
BIG4	-	-0.000387	-0.059896	0.005355	0.526697
BSZ	-	0.002998	1.642575	0.000219	0.042486
BGEN	-	0.011861**	2.298860	-0.017972*	-1.707922
Panel B: Control variables					
LTA		-0.018664***	-4.553196	-0.025381***	-4.907045
ROE		-0.000520*	-1.833582	-0.000981***	-2.586850
SALESG		-0.001684	-0.295017	-0.010722	-0.348259
LVG		-0.000704***	-4.235213	-0.000760***	-3.637288
β		0.152732*	2.512878	0.171212**	2.394239
CEMENT		0.010105	0.599615	0.027762	0.872298
CHEMICAL		0.004724	0.369522	0.023853	0.788389
ELECTRICITY		0.024752**	2.282339	0.057958	1.339660
FOOD		0.033699**	2.481303	0.030918	1.102371
HOUSHOLD		0.039404**	2.520262	0.058436**	2.009510
MISC		0.016622	1.192062	0.031300	0.921679
OIL___GAS		0.037005**	2.474791	0.040242	1.311495
PHARMA		-0.012422	-0.652965	-0.044457	-1.502836
TEXTILE		0.024341*	1.918665	0.046541*	1.683848
Y_02_DUM		0.050828***	19.45041	0.053000***	7.706434
Y_03_DUM		-0.107665***	-10.98564	-0.127128***	-8.630683
Y_04_DUM		-0.094688***	-8.721466	-0.113086***	-7.392718
Y_05_DUM		-0.184587***	-13.67361	-0.205311***	-9.451115
Y_06_DUM		-0.138946***	-11.16315	-0.151037***	-7.130157
Y_07_DUM		-0.322375***	-24.26807	-0.341802***	-15.58416
Y_08_DUM		0.067629***	5.772046	0.040661***	2.308330
Y_09_DUM		-0.121282***	-19.59109	-0.144043***	-15.56460
Y_10_DUM		-0.265995***	-36.62020	-0.311461***	-30.73740
Y_11_DUM		-0.050639***	-6.622276	-0.079397***	-6.463321
Constant		0.493347***	13.13452	0.558114***	4.445384
Adjusted *R-square*		0.540825		0.345833	
F-statistic		60.19378***		27.56898***	
Balanced *panel* observations		1760		1760	

Notes: Variables are defined as follows. Cost of Capital (COC) Pakistani Corporate Governance Index (*PCGI*), director ownership (DOWNP), institutional ownership (IOWNP), government ownership (GOWNP), block ownership (BOWNP), foreign ownership (FOWNP), audit firm size (BIG4), size of the board of directors (BSZ), board diversity on the basis of Gender (BGEN), firm size as log of total assets (LTA), profitability (ROE), growth opportunities (SALESG), leverage (LVG) and Systematic risk (β) . Parameter estimates are obtained by OLS estimation (*Panel* Least Squares). Year 2003 and AUTO industry has been excluded from the analysis in order to avoid dummy variable trap. The asterisks *, ** and *** denote the 10%, 5% and 1% level of significance respectively.

7.2.6 Results Based on 2SLS Model

The current study employed the same procedure as explained in section 7.1.4 to address further the possibility of the existence of endogeneity in the relationship between CG and COC. This investigation is implemented in two stages. First, and as shown in equation 3 and 4, the regression is run on *PCGI* and the controls. Then predicted values from the regressions are named as *P-PCGII*. The first stage of Durbin-Wu-Hausman is performed using the following equation:

$$PCGI_{it} = \alpha_0 + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (36)$$

Where the *PCGI* refers to Pakistani Corporate Governance Index and *CONTROLS* variables remain the same as explained in equation 2 in subsection 4.2.3.4 of chapter 4.

In the Second stage of Durbin-Wu-Hausman, the COC is regressed on *PCGI*, *P-PCGII* and control variables as follows:

$$COC_{it} = \alpha_0 + \beta_1 PCGI_{it} + \beta_2 P - PCGII_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (37)$$

Where the COC refers to weighted average cost of capital, *PCGI* refers to Pakistani CG Index, *P-PCGII* denotes the predicted values from regression of control variables over *PCGI* from equation (36), and *CONTROLS* variables remain the same as in equation 2 in subsection 4.2.3.4 of chapter 4.

After carrying out Durbin-Wu-Hausman endogeneity investigation, the current study rejects the null hypothesis of no endogeneity as the coefficient on *P-PCGI* is statistically significant (0.000) at 1% level of significance with *PCGI*. The finding of this investigation shows that the endogeneity problem exists. Therefore, following, the current study uses the 2SLS technique as a robust to find out how far the findings are biased and inconsistent due to this problem.

2SLS is performed in two stages. In the first stage, the *PCGI* is regressed on four alternative CG variables, nationality diversity in board, the non-executive members of the board, the board meetings number, and capital expenditure. The alternative CG variables' selection is based on literature (e.g, Ntim *et al*., 2012; Pham *et al*., 2012; Tariq *et al*., 2014). The equation below specifies this regression where the predicted value of *PCGI* and residuals will be saved as *P-PCGII* and *R-PCGI* respectively. As shown in Table 7.12, the study accepts the *P-PCGII* as a valid instrumental variable as *P-PCGII* is significantly associated with *PCGI* and insignificantly related to *R-PCGI*. This decision is taken on the basis of correlation matrix that includes *PCGI*, *P-PCGII*, and *R-PCGI*.

Table 7.12: Results Based on Correlations

		PCGI	*P-PCGII*	*R-PCGI*
PCGI	Pearson Correlation	1	.092**	.996**
	Sig. (2-tailed)		0.000	0.000
	N	1760	1760	1760
P-PCGII	Pearson Correlation	.092**	1	0.000
	Sig. (2-tailed)	0.000		1.000
	N	1760	1760	1760
R-PCGI	Pearson Correlation	.996**	0.000	1
	Sig. (2-tailed)	0.000	1.000	
	N	1760	1760	1760

**. Correlation is significant at the 0.01 level (2-tailed). *PCGI* denotes Pakistani Corporate Governance Index, P-*PCGI*I denotes Standardized Predicted Value and R-*PCGI* denotes Standardized Residual.

$$PCGI_{it} = \alpha_0 + \beta_1 BNAT_{it} + \beta_2 NEXD_{it} + \beta_3 BMF_{it} + \beta_4 CE_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \quad (38)$$

Where *PCGI* denotes the Pakistani governance index, and BNAT, NED, BFM, and CE are termed as nationality diversity in board, the non-executive members of the board, the board meetings number, and capital expenditure. Controls remain similar as explained in equation 2.

In the second stage, equation 2 is re-estimated using *P-PCGII* instead of *PCGI* as follows:

$$\begin{aligned} COC_{it} = {} & \alpha_0 + \beta_1 P - PCGII_{it} + \beta_2 DOWNP_{it} + \beta_3 IOWNP_{it} + \beta_4 GOWNP_{it} \\ & + \beta_5 BOWNP_{it} + \beta_6 FOWNP_{it} + \beta_7 BIG4_{it} + \beta_8 BSZ_{it} \\ & + \beta_9 BGEN_{it} + \sum_{i=1}^{n} \beta_i CONTROLS_{it} + \varepsilon_{it} \end{aligned} \quad (39)$$

Where all variables remain same as in equation 2 in subsection 4.2.3.4 of chapter 4, except the *P-PCGII,* that is being used as instrumental variable for the main independent variable.

The findings of 2SLS (robust findings) and OLS estimation (main analysis) are presented in Table 7.13 simultaneously in order to compare the findings. Table 7.13 reports the main findings using OLS in columns 3 and 4 and robust findings using 2SLS presents in columns 5 and 6 of the same table.

Table 7.13: Results Based on 2SLS

Dependent Variable: COC					
		Ordinary Least Square		2SLS	
Indep.Variable	Exp Sign	Coefficient	t-Statistic	Coefficient	t-Statistic
Panel A: CG variables					
PCGI	-	-0.000256**	-2.367414	-0.003473**	-2.368299
DOWNP	+	0.000448**	2.378413	0.000808***	2.755872
IOWNP	-	0.000110	0.968540	0.000451	1.036336
GOWNP	-	0.000242	1.103890	0.001057*	1.668139
BOWNP	+/-	-0.000165***	-3.394800	-0.000312***	-2.802401
FOWNP	-	0.000782***	4.871608	0.001167***	4.033018
BIG4	-	-0.000387	-0.059896	0.012895	0.909296
BSZ	-	0.002998	1.642575	-0.001324	-0.341998
BGEN	-	0.011861**	2.298860	-0.002020	-0.148545
Panel B: Control variables					
LTA		-0.018664***	-4.553196	-0.015608***	-3.683365
ROE		-0.000520*	-1.833582	-0.001147***	-2.668026
SALESG		-0.001684	-0.295017	-0.008931	-0.574553
LVG		-0.000704***	-4.235213	-0.000756***	-6.888064
β		0.152732*	2.512878	0.151077***	13.68539
CEMENT		0.010105	0.599615	0.038009	1.435644
CHEMICAL		0.004724	0.369522	0.019447	0.752682
ELECTRICITY		0.024752**	2.282339	0.066610**	2.044975
FOOD		0.033699**	2.481303	0.013120	0.523226
HOUSHOLD		0.039404**	2.520262	0.055672*	1.765461
MISC		0.016622	1.192062	0.004592	0.157366
OIL___GAS		0.037005**	2.474791	0.007353	0.234713
PHARMA		-0.012422	-0.652965	-0.070214*	-1.950258
TEXTILE		0.024341*	1.918665	0.025023	1.014281
Y_02_DUM		0.050828***	19.45041	0.063890**	2.318367
Y_03_DUM		-0.107665***	-10.98564	-0.091923***	-2.986079
Y_04_DUM		-0.094688***	-8.721466	-0.047307	-1.214524
Y_05_DUM		-0.184587***	-13.67361	-0.116177**	-2.482431
Y_06_DUM		-0.138946***	-11.16315	-0.041004	-0.753458
Y_07_DUM		-0.322375***	-24.26807	-0.186725***	-2.594431
Y_08_DUM		0.067629***	5.772046	0.217326***	2.705040
Y_09_DUM		-0.121282***	-19.59109	0.046495	0.542313
Y_10_DUM		-0.265995***	-36.62020	-0.099240	-1.047143
Y_11_DUM		-0.050639***	-6.622276	0.137427	1.414382
Constant		0.493347***	13.13452	0.565122***	8.267790
Adjusted *R-square*		0.540825		0.264234	
F-statistic		60.19378***		28.47540***	
Balanced *panel* observations		1760		1760	

Notes: Variables are defined as follows. Cost of Capital (COC) Pakistani Corporate Governance Index (*PCGI*), director ownership (DOWNP), institutional ownership (IOWNP), government ownership (GOWNP), block ownership (BOWNP), foreign ownership (FOWNP), audit firm size (BIG4), size of the board of directors (BSZ), board diversity on the basis of gender (BGEN) , firm size as log of total assets (LTA), profitability (ROE), growth opportunities (SALESG), leverage (LVG) and Systematic risk (β) . Parameter estimates are obtained by OLS estimation (*Panel* Least Squares). Year 2003 and AUTO industry has been excluded from the analysis in order to avoid dummy variable trap. The asterisks *, ** and *** denote the 10%, 5% and 1% level of significance respectively.

7.2.6.1 Empirical Findings of Ownership and audit firm size/board Variables

As presented in column 5 and 6 of Table 7.13, the 2SLS finds a negative and significant association between *PCGI* and block ownership with *COC*. Similarly, a positive and significant nexus between director ownership and foreign ownership with *COC* is also consistent with the findings of main analysis. However, minor sensitivity in the magnitude of coefficients and in level of significance can be observed. For instance, Director Ownership is statistically significant at 1% level which was previously significant at the 5% level in the main analysis. . Similarly, government ownership is significant at 10% level in the 2SLS analysis whereas it was insignificant in the main analysis. Further, gender diversity in board is negative and insignificant while it was positive and statistically significant at 5% level in the main analysis.

7.2.6.2 Empirical Findings of Control Variables

Panel B of Table 7.13 shows that the findings of control variables in 2 SLS are largely similar to the main analysis by using OLS. For instance, 2SLS shows that size of the firm, firms' profitability and leverage are negatively associated with *COC* while a positive and significant relationship between systematic risk and *COC* is consistent with main analysis. However, firms' profitability became significant, at 1% level which was previously significant only at 10% level. Similarly, systematic risk became significant, at 1% level in robust analysis which was previously significant at 5% level of significance.

7.3 SUMMARY AND DISCUSSION ON FINDINGS

This chapter presented and discussed the findings of a number of robustness analyses. Specifically, four tests were employed to check the extent to which the findings obtained in chapter 6 are sensitive or robust to alternative estimations and models, including, (i) the a weighted CG index as an alternative; (ii) use of COE and COD as alternative COC variables; (iii) the use of fixed or random effects; and (iv) the use of lagged structure to test the endogeneity problems. Regardless of observable minor sensitivities in the magnitude of coefficient and significance level, these analyses show that the findings of main analysis performed in chapter 6 are robust with the alternative variables, lagged structure, fixed or random effect and to the presence of endogeneity.

Robustness tests regarding factor influencing level of compliance shows that overall findings are unchanged. All robustness tests suggest a positive and significant relationship between institutional ownership, government ownership and foreign ownership with *PCGI*.

As discussed in section 6.2, these finding shows that Pakistani firms with higher level of institutional ownerships are likely to comply with more CG standards than those with less or no institutional ownership. From agency theory viewpoint, Aggarwal *et al*. (2011) suggests that the presence of institutional ownership ensures some degree of accountability and this potentially influence firms to adopt better CG practices, either directly by influencing managements by using their voting rights or indirectly by their decisions to buy or threaten to sell their shares. This finding also shows that Pakistani firms with higher level of government ownerships are likely to comply with more CG regulations than those firms with less or no government ownership. The agency theory literature suggests that the firms with government ownership are expected to disclose more CG information since there is less divergence between shareholders and government interest. The reported finding also shows that Pakistani firms with higher level of foreign investors are likely to provide additional CG information than those with less or with no foreign investors. Theoretically, this positive relationship between foreign ownership and firm-level of CG compliance is consistent with information asymmetry and imperfect information issues.

The reported negative and significant relationship between block ownership and board size with *PCGI* is consistent with the main analysis with respect to the coefficient and significance level. As discussed in section 6.3, this shows that Pakistani firms with higher level of block ownerships are expected to less comply with CG rules than those with lower block ownership. This significant and negative relationship between CG disclosure level and block ownership is consistent with theoretical prediction. In this regard, block shareholders may influence the management to disclose less CG information as their interest may not necessarily align with minority shareholders (Shleifer and Vishny, 1997; Laidroo, 2009). This issue is more evident in the emerging markets such as Pakistan due to the weak legal system in protecting minority shareholders. Further, the findings of no relationship between director ownership, audit firm size, board diversity on the basis of gender and board diversity on the basis of nationality with level of compliance are in line with those reported in the main test.

Robustness results regarding the nexus between CG and COC are also consistent with the main findings. For example, a negative and significant association between *PCGI* and block ownership with *COC* is consistent with the main findings. As reported in section 6.3, the coefficient on *PCGI* is negative and statistically significant at 5% level, suggesting that firms with high level of CG standards have a lower COC. Similarly, the coefficient on block ownership is significant at 1% and negative suggesting that there is relationship

between the block ownership and firm-level COC. This shows that Pakistani firms with higher level of block ownership have lower COC than those firms with lower percentage of block ownership. This is consistent with the prediction of agency theory in which the dominance of majority shareholders in publically traded firms demonstrates that minority shareholders have the risk of expropriation.

The significant and positive association between foreign ownership, board diversity and director ownership with *COC* are also consistent with the findings of the main analysis. The coefficient on director ownership is positive and statistically significant, suggesting that firms with high level of director ownership have a higher COC. Theoretically, this positive relationship between director ownership and COC is consistent with the prediction of agency theory. It has been argued that a higher level of director ownership may worsen agency problems (Demsetz and Lehn, 1985). Similarly, the finding shows that Pakistani firms with higher level of foreign investors have higher COC than those with less or no foreign investors. Theoretically, this positive relationship between foreign ownership and COC is consistent with the prediction of information asymmetry. This issue is relatively higher among foreign investors because of language and distance obstacles (Huafang and Jianguo, 2007) which may leads to higher COC.

CHAPTER 8

8 CONCLUSION AND AVENUE FOR FUTURE RESEARCH

This chapter discusses the conclusion of the study. Specifically, it aims to attain the following objectives. First, it recaps the findings of study. Second, it explains the policy implications of the study, and where appropriate, makes recommendations. Third, this chapter summarises the contributions of the study. Fourth, it identifies the limitations of the current study. Finally, it highlights perspective avenues for the future research.

The chapter is organised into five sections. Section 8.1 discusses the summary of the study. Section 8.2 presents the policy implications of the current study, and makes recommendations accordingly. Section 8.3 provides the contributions of the current study. Section 8.4 reports the limitations of the study, while section 8.5 reports the perspective avenues for the future research.

8.1 SUMMARY OF THE REAEARCH FINDINGS

This thesis sought to empirically ascertain whether Pakistani listed firms that comply with 2002 *PCCG* have improved firm value and lowered COC than those with less or no compliance. Specifically, using a sample of 160 Pakistani listed firms from 2003 to 2013, this study has examined the relationship between CG structure and firm COC. The level of compliance with *PCGI* and factors influencing the level of compliance and disclosure are also examined in this study. Distinct from prior literature, the CG-COC relationship is examined by using three main variables i.e. unique compliance CG index, the ownership structures and audit/board characteristics. These findings summaries are provided in the subsections below.

8.1.1 Findings of CG Compliance level with *PCGI*

The prior literature has studied CG either by individual CG mechanisms or by CG compliance index. Briefly, individual CG mechanisms involves examining the relationship between single CG variables and firms' decisions while CG compliance index involves the construction of broad CG index that encapsulates a wide set of CG mechanisms and then investigating the nexus between CG compliance index and firms' decisions. This study uses a unique compliance CG index to examine the relationship between CG and COC.

Specifically, by using a sample of 160 Pakistani listed firms from 2003 to 2013, this study seeks to answer the first research question about the level of CG compliance and disclosure with the 2002 PCCG. In addition, it seeks to answer three sub-questions: (i) the extent to which the introduction of the PCCG 2002 has improved CG standards among Pakistani listed firms; (ii) the CG provisions that Pakistani firms comply with most and (iii) the extent to which the reliance on the Anglo-American model has led to better CG practices in Pakistan.

First, the reported findings suggest that the mean score of *PCGI* (average compliance level) has improved from 20.6% in 2003 to 85.2% in 2013 with an overall increase of 64.6% in eleven years. This improvement in level of compliance and disclosure is in line with research performed in other developing countries (e.g., Akkermans *et al*., 2007; Aguilera and Cuervo-Cazura, 2009; Ntim *et al.*, 2012a). The overall *PCGI* ranges from a minimum of 0.00 to a maximum of 97.18, with an average of 54.23 for the 1760 firm-year observations over eleven years from 2003 to 2013. In contrast to the concerns about the capability of CG codes to enhance CG practices in a developing country setting, the findings suggest that listed Pakistani firms have increasingly complied with governance requirements over the eleven years from 2003 to 2013.

Second, the findings of the study suggest that the introduction of the PCCG in 2002 has improved CG standards among Pakistani listed firms. For instance, the overall level of compliance with *PCGI* was 20.56% in 2003 which has risen to 85.16% in 2013. This is further supported by the findings of sub-indies' findings where the *PCGI* shows a higher compliance level with the provisions related to the five sub-indices. Finally, and in contrast to the probability that the PCCG's dependence on Anglo-American style may not be able to improve CG practices due to the differences between the developed world and Pakistan, the findings of the study suggest that PCCG is capable to some extent to promote CG standards of Pakistani listed firms.

8.1.2 Findings Based on Factors Influencing Level of CG Compliance

The findings related to the nine hypotheses investigated for the factors influencing CG compliance level have been stated and discussed in section 6.2, and are now briefly summarised in this subsection. The first hypothesis examining the relationship between director ownership and level of CG disclosure find that the coefficient on director ownership is positive and statistically insignificant, meaning that there is no statistically significant relationship between the director ownership and level of CG compliance and

disclosure. The second hypothesis testing the connection between institutional ownership and level of CG disclosure shows that the coefficient on institutional ownership is positive and statistically significant at a 1% level, meaning that Pakistani firms with higher level of institutional ownerships are likely to comply with more CG standards than those with less or no institutional ownership.

The third hypothesis investigating the relationship between government ownership and level of CG disclosure finds that the coefficient of government ownership is positive and statistically significant at 1% level, suggesting that Pakistani firms with higher level of government ownership are likely to comply with more CG practices than those with less or no government ownership. The fourth hypothesis examining the relationship between block ownership and level of CG disclosure reports that the coefficient of block ownership is negative and statistically significant at 1% level. It suggests that Pakistani firms with higher level of block ownerships are less likely to comply with CG standards than those with lower block ownership.

The fifth hypothesis testing the relationship between foreign ownership and level of CG disclosure finds that the coefficient of foreign ownership is positive and statistically significant at 1% level. This finding shows that Pakistani firms with higher level of foreign investors are likely to provide additional CG information than those with less or no foreign investors. The sixth hypothesis investigating the relationship between audit firm size and level of CG disclosure find that the coefficient of audit firm size is positive, but statistically insignificant, indicating that there is no significant relationship between audit firm size and firm-level of CG compliance and disclosure.

The seventh hypothesis examining the nexus between the board size and level of CG disclosure report that the coefficient of board size is negative and statistically significant at 5% level. This suggests that small board tend to increase the level of CG compliance and disclosure rather than larger boards. The eighth hypothesis investigating the relationship between the presences of foreigners on the firm's board and level of CG disclosure show no explanatory power in explaining the variations in CG compliance and disclosure. This finding suggests that the presence of foreign directors on firms' board do not encourage firms to provide more CG information.

The ninth hypothesis testing the relationship between the presence of female on firms' board and level of CG disclosure reports evidence of no explanatory power in explaining the variations in CG disclosure. This suggests that the presence of female on

firms' boards do not encourage Pakistani listed firms to provide additional CG information.

8.1.3 Findings Based on CG-COC Relationship

The findings of the association between CG and COC have been reported and discussed in chapter 6, section 6.3, and are now briefly summarised in this subsection. The tenth and main hypothesis tested for the relationship between CG and COC finds that there is a negative and statistically significant relationship between *PCGI* and COC. The negative evidence of a statistically significant *PCGI*-COC relation implies that, on average, better governed Pakistani listed firms tend to be associated with lower COC than their poorly-governed counterparts.

The eleventh hypothesis tested is that there is positive relationship between director ownership and firms' COC. The finding shows that the coefficient of director ownership is positive and statistically significant, suggesting that firms with high level of director ownership have a higher COC. The twelfth hypothesis of intuitional ownership and firms' COC has been tested in the current study. The finding suggests that the coefficient of institutional ownership on COC is positive and statistically insignificant, suggesting that the percentage of institutional ownership do not explain the variation in firm level COC.

The thirteenth hypothesis testing the nexus between government ownership and firms' COC reports a positive and statistically insignificant relationship. This means that the level of government ownership has no power in explaining the variation in firm level COC. The fourteenth hypothesis examined the relationship between block ownership and firms' COC. Its finding shows that the coefficient of block ownership is negative and statistically significant at 1% level of significance, suggesting that Pakistani firms with higher level of block ownership have lower COC than those firms with lower percentage of block ownership.

The fifteenth hypothesis tested the relationship between foreign ownership and firms' COC. It finds a positive and statistically significant nexus, indicating that Pakistani firms with higher level of foreign investors have higher COC than those with less or no foreign investors. The sixteenth hypothesis examined the nexus between board size and firms' COC. The finding shows that the coefficient of board size is positive and statistically insignificant indicating that size of board not explaining the variations in firm level COC.

The seventeenth hypothesis tested the relationship between audit firm size and firms' COC and finds that the coefficient of audit firm size is negative and statistically insignificant, suggesting that there is no association between audit firm size and firm-level COC. The final hypothesis examined the association between gender diversity and firms' COC. It finds a positive and statistically significant nexus at 5% level of significance.

8.1.4 Findings Based on the Robustness Analyses

As it has been discussed in chapter four and reported in chapter seven, four robustness analyses were performed to ascertain the extent to which the findings presented in chapter six are robust to alternative theoretical and empirical explanations, as well as estimations. These analyses include: alternative governance index; alternative COC measures; and random effect model. It also includes analyses examining different endogeneity problems including: lagged structure and a two stage least square model.

8.1.4.1 Robustness Findings Based on Factors Influencing Level of CG Compliance

The robustness findings of the investigation of factors influencing level of CG compliance and disclosure are discussed in section 7.1 are now summarised in this subsection. First, in order to ascertain whether the findings are sensitive to the un-weighted CG index used in this study, a weighted Pakistani CG Index (W*PCGI*) is constructed and used instead of un-weighted CG index. The finding shows that the main findings are robust with alternative CG proxy and not sensitive to the weighted CG index. Second, to test the extent to which the main results are sensitive to firms' characteristics, random effect model is applied after identifying the suitability between the fixed and random effect models through the Hausman test. Despite minor conflicting results, the findings in random effect model are in line with the original findings of the study.

Third, the presence of endogeneity problem among the CG variables is addressed by using lagged structure model to test whether main findings are robust or not. Regardless of observable minor sensitivities in the magnitude of coefficient and significance level, these analyses show that the findings in lagged structure are robust with the findings of un-lagged structure, suggesting that the study's findings are robust to the presence of endogeneity. Finally, the presence of endogeneity among the CG variables is further addressed by using two-stage least square model to examine whether findings are sensitive to the endogeneity problems that may arise due to the omitted variables problem. The

findings of 2SLS suggest that the overall findings of the model are in line with the main findings of the study and; hence, it is clearly evident that findings of main study presented in section 6.2 are robust to the presence of endogeneity.

8.1.4.2 Robustness Findings Based on CG and COC

The robustness results of the nexus between CG and COC are discussed in section 7.2 and summarised in this subsection. First, in order to make sure that the findings are robust to the un-weighted CG index used in this study, a weighted Pakistani CG index (W*PCGI*) is constructed and used to test the relationship between CG and COC. Using *WPCGI* as a main independent variable instead of *PCGI*, the findings show that the results of CG and COC relationship are largely robust with alternative CG index and not sensitive to the *WPCGI*. In addition to the alternate CG index, the current study also employs alternative proxies for COC in order to account for the possibility that the main findings are sensitive to different COC proxies. In this regard, Cost of equity (COE) is used as alternative COC's measurement. The relationship between *PCGI* and COC has been re-estimated by using COE. The result shows a negative and significant impact of *PCGI* on the cost of capital in the form of COE which is consistent with the main study's findings. Likewise, the current study employs Cost of Debt (COD) as another alternative proxy for COC. The nexus between *PCGI* and COC has been re-estimated by using COD as a main dependent variable. The finding shows a negative and significant relationship between *PCGI* and COD which is consistent with the original study's findings. Therefore, it is obvious that findings of study presented in section 6.3 are robust to the alternative CG and COC variables.

Second, to examine the level to which the results of the current study are sensitive to firms' characteristics, random effect model is applied. Irrespective of observable sensitivities in the nexus between institutional ownership and board diversity on the basis of gender with COC, these findings show that the main results are robust to unobserved firms' characteristics. Third, the presence of endogeneity problem was addressed by using lagged structure model to examine whether main findings of the study are robust. Regardless of minor sensitivities in the relationship between institutional ownership and board diversity on the basis of gender with COC, these results show that the main findings are robust to the presence of endogeneity. The findings of institutional ownership and board diversity on the basis of gender show some level of sensitivities in lagged structure model. For example, institutional ownership is significant at 10% level of significance

while it was insignificant in the main study. Finally, the presence of endogeneity among the CG variables is further addressed by using two-stage least square model. The results of 2SLS suggest that the overall findings of the model are in line with the main findings of the study and; hence, it is evident that findings of study presented in section 6.3 are robust to the presence of endogeneity.

8.1.5 Summary of the Key Findings

Using the data of 160 Pakistani firms for eleven years from 2003 to 2013, this thesis has examined the level of compliance with *PCGI*, factors influencing the level of compliance and the relationship between CG structure and firm COC. The reported findings relating to the CG disclosure suggest that governance disclosure has improved over the study period with an overall increase of 64.6% over eleven years of the *PCGI* from 2003 to 2013. The findings of the study also suggest that the introduction of 2002 PCCG has improved CG standards among Pakistani listed firms. The results of the study suggest a positive and significant relationship between institutional ownership, government ownership and foreign ownership with *PCGI*. However, study report significant and negative nexus between board size and block ownership with *PCGI*. Further, the findings report no relationship between director ownership, audit firm size, board diversity on the basis of gender and board diversity on the basis of nationality with level of governance disclosure compliance.

The results on the relationship between CG and COC suggest that there is a negative and statistically significant relationship between *PCGI* and COC. Similarly, a negative and significant association between block ownership with *COC* is reported. The reported results indicate that there is a positive and significant relationship between director ownership, foreign ownership and board diversity with *COC*. However, the relationship between Institutional and government ownership, big4 and board size with COC reports no significant relationship.

8.2 POLICY IMPLICATION OF THE STUDY AND RECOMMENDATIONS

This section discusses the policy implications of the current study's findings summarised in section 8.1. It also proposes some recommendations to investors, regulatory authorities, firms and policy makers.

8.2.1 Policy Implications and Recommendations: Level of CG Compliance and Disclosure

A number of important implications and recommendations can be listed from the findings of factors influencing the level of CG compliance and disclosure reported in section 6.2.

First, the finding of the level of CG compliance and disclosure with *PCGI* shows that the CG standards have generally improved over the period of study. This indicates that the efforts of various CG stakeholders, notably the Security and Exchange Commission of Pakistan and Karachi Stock Exchange Pakistan, among others, have positive influence on improving CG standards among Pakistani listed firms. Specifically, the findings of study states that the introduction of 2002 PCCG, alongside the Companies Ordinance 1984, and the KSE listing rules have significantly helped in improving the CG standards. This evidence of enhancement in CG practices also infers that the UK-style CG compliance regime appears to be working to some extent, and therefore may be appropriate for Pakistani listed firms. This conclusion is in line with the prior studies that have examined CG standards in countries with UK style CG regime (e.g., Aguilera and Cuervo-Cazurra, 2009; Filatotchev and Boyd, 2009; Ntim and Soobaroyen, 2013).

Second, the improvement in level of CG compliance and disclosure recommends that the implementation of high governance principles in the form of CG codes can increase CG practices in developing countries even with weak legal enforcement. Therefore, it is recommended that the countries have not issued CG code yet, are highly encouraged to adopt a CG code according to their local settings in order to improve the firms' level of CG compliance and disclosure.

Third, the findings also show that there are significant differences in complying with CG standards among Pakistani listed firms. In practice, it is likely due to the fact that compliance with CG provisions is expensive in terms of time and finance. Therefore, it is expected that larger firms can afford this more easily compared to smaller firms. Following the current study's empirical evidence, and given that Pakistan is generally classified as a

developing market with high ownership concentration (for instance, as shown in Table 5.4, block ownership ranges from 0 to 99.806% with an average of 55.45%), thus, it can be recommended that there can be some level of flexibility and judgment in applicability of CG standards in PCCG to evade excessive monitoring and redundant expenses to the smaller firms.

Finally, it is recommended that there should be an effective co-ordination and co-operation among the key stakeholders of CG compliance and disclosure. Such as key corporate regulators and independent directors of firms to constitute such provision which can be applicable for both large and small firms or there should be some level of flexibility in applicability of some provisions to increase level of CG compliance among.

8.2.2 Policy Implications and Recommendations: Factors influencing Level of CG Compliance and Disclosure

Several policy implications and recommendations can be concluded from the findings of factors influencing the level of compliance and disclosures with *PCGI* are reported in section 6.2.

First, institutional, government and foreign ownerships are positively and significantly associated with level of CG compliance and disclosure. These findings suggest that institutional, government and foreign ownership assists as alternate CG mechanisms to motivate Pakistani firms to offer more CG information in annual reports to their stakeholders. This may help investors to invest in firms with higher institutional, government and foreign ownership. It can also motivate investors to invest through institutions rather than making individual investments to ensure higher return and more CG disclosure. Further, this finding can also be a source of motivation for Pakistani government and policy makers to relax the restrictions on foreign investors in order to increase investment in Pakistani firms and for improvement in the CG standards.

Second, the finding of the study shows that there is a negative and significant relationship between each of block ownership and board size and level of CG compliance and disclosure among Pakistani listed firms. These findings suggest that Pakistani firms with higher level of block ownership (on average 55.45% in sampled firms) and bigger board size (on average 8.22 in sampled firms) are likely to comply less with governance standards among Pakistani listed firms. These findings of decreasing level of CG compliance and disclosure with higher level of block ownership suggest that CG standards need to be reviewed by policy makers accordingly. One way to improve CG standards can

be in line with UK Combined Code, 2006 by introducing some level of flexibility and judgment in applicability of CG standards among Pakistani firms based on their individual requirements. For instance, small and family firms can have more relaxed requirements in relation to number of non-executive directors. Similarly, in case of board size, firms can be relaxed from the requirement of minimum seven directors in the board in case of small firms to improve the level of compliance and disclosure with PCCG.

Finally, the relationships between director ownership, audit firm size, presence of female director in the board and presence of foreign director in the board with CG compliance and disclosure show no significant nexus. In this regard, policy makers may introduce some monitoring mechanisms for firms with higher level of director ownership to improve the level of compliance and disclosure. The negative relationship between board size and CG disclosure is in line with the theoretical prediction that large boards are likely to have poor monitoring. Therefore, Pakistani policy makers can be motivated to relax the board members requirements (minimum 7 member), specifically for smaller firms as it may cost effective and; hence, increase the level of compliance and disclosure at large. The finding of no nexus between audit firm size and CG disclosure is different to the theoretical prediction that external auditors influence considerably the level of disclosure in firms' annual reports. This finding can result from the fact that the PCCG recommends auditors report on very few CG issues. Therefore, Pakistani policy makers can encourage external auditors to demand higher level of CG disclosure.

8.2.3 Policy Implications and Recommendations: CG and COC

As discussed in section 6.3, the findings obtained from investigating the nexus between the CG standards and COC have several implications, and recommendations can be drawn from these findings.

First, the findings of the current study demonstrate that there is a negative and significant association between the *PCGI* and block ownership with firm-level COC. This implies that Pakistani listed firms with better governance are expected to have lower COC than their poorly-governed counterparts.

Second, the relationships between each of institutional ownership, government ownership, audit firm size and board size and firm-level COC demonstrate no significant nexus among Pakistani listed firms. Findings advocate that these variables show no influence on firm-level COC. Therefore, Pakistani policy makers can be motivated to relax

the board members requirements (minimum 7 member), specifically for smaller firms as it may cost effective and may make it easy to external financing at a lower cost.

Finally, director ownership, foreign ownership and female director in the firms' board are positively and significantly associated with firm-level of COC. This implies that firms can minimise director ownership to attract external financings at a lower cost. Hence, policy makers may encourage firms to further improve their CG structures in order to attract foreign investors.

8.3 LIMITATIONS OF THE STUDY

The current study may have some limitations which need to be acknowledged. First, although using a sample of 160 firms can be considered as a large sample than previous international studies (e.g., Mangena and Chamisa, 2008; Ntim and Soobaroyen, 2013; Ntim *et al*., 2014), and especially those in Pakistani context (e.g., Javed and Iqbal, 2007; Javed and Iqbal, 2008; Tariq and Abbas, 2013), the generalisability of this study's findings can be further improved. The excluded 282 firms from initial sample could improve the current study's generalisability, but due to unavailability/insufficient data, these firms were not included in the final sample.

Second, limiting the study to a sample of balanced *panel* may introduce survivorship bias. However, this criterion generated a larger sample size as compared to those of prior Pakistani studies to the extent that the generalisation of the study findings may not be noticeably impaired. For capital structure and regulatory differences, the sample also excludes financial firms. As it is in line with the prior CG literature (e.g., Haniffa and Hudaib, 2006; Mangena and Chamisa, 2008; Ntim and Soobaroyen, 2013; Ntim *et al*., 2014), which helps the current study to compare the findings with these studies. Together, these weaknesses may potentially limit the generalisation of the study findings.

Third, using other methods of data collection, such as interviews, and/or using additional sources of data, such as interim reports, could improve both the quantity and quality of data. In this regard, using other methods and sources were extremely difficult as the current study had to take into consideration time, funding and accessibility to data. However, as compared to the manually collected data in CG literature (e.g., Elghuweel *et al*., 2016; Ntim *et al*., 2012a) a sample of 160 listed firms with 1760 firm-year observations over 2003-2013 is sufficient enough to make significant contributions to the extant literature.

Fourth, and as it has been explained in subsection 3.5.2 chapter three, there can be a validity and reliability problems with the self-constructed CG compliance and disclosure index such as the *PCGI*. Although efforts were made to improve the validity and reliability of *PCGI*, few limitations regarding the construction of index were identified. For instance, the current study uses binary coding scheme, where all CG provisions are equally important. Therefore, the use of a weighted index[26] may improve the validity and reliability of *PCGI*. Similarly, the reliability of *PCGI* could be improved by applying inter-coder reliability[27]. Additionally, the scoring processes of indices may result in some inherent subjectivity (Beattie *et al*., 2004).

The *PCGI* is constructed by binary coding rather than ordinal coding scheme. It is argued that binary coding is less informative (Hassan and Marston, 2008). Similarly, the *PCGI* is an un-weighted index which has been criticised for considering all CG provisions to be of same importance, which is inconsistent with both theory and practice (Barako *et al*., 2006a). There is a general lack of rigorously developed theoretical basis on which weights can be accurately assigned to the various CG provisions (Black *et al*., 2006a). In this regard, the use of un-weighted CG index may avoid subjective judgments in assigning values with relative importance to each CG provision. The use of binary index also prevents subjectivity in weights assigning process. Additionally, empirical literature of disclosure suggests that the use of weighted and un-weighted indices is likely to give the similar findings (e.g., Beattie *et al*., 2004; Barako *et al*., 2006a). Finally, in line with previous CG literature (Black *et al*., 2006a; Henry, 2008; Morey *et al*., 2009; Ntim *et al*., 2014) an un-weighted index is constructed, which makes is easier for comparing the findings of the current study. Reliability and validity of the *PCGI* has been explained in subsection 4.2.1.2 and briefly, according to Allegrini and Greco (2013), the Cronbach's alpha value above 0.80 proposes that the instrument is consistent. As shown in Table 4.2, the coefficient alpha value for five subcategories of *PCGI* is 96.4% which indicates that the constructed index is highly reliable.

Fifth, there may be defining problems with some of the variables. In addition, COC is measured by using WACC. In this regard, only COE and COD constitute WAAC. COE is calculated using CAPM while interest rate on the firm's debt is used as a method to calculate COD. There is no theory suggesting which model should be used as a best proxy

[26]Efforts have been made to contact an independent professional organisation called Pakistan Institute of Corporate Governance in Islamabad, Pakistan to improve the *PCGI*, but no response was received.

[27]Inter-coder reliability can be achieved if results are similar while the coding is performed by different coder.

to calculate COE and COD capital, and thus, following the literature these proxies has been used in the current study. These defining limitations may possibly influence the findings of the study and therefore, these findings must be interpreted in the light of above limitations.

8.4 FUTURE RESEARCH AVENUES

As it has been discussed in section 8.4, limitations of the study potentially represents avenues for the future research. Hence, there are several research avenues and improvements which can be made in the future research. First, this research can be extended by using the data from across Asia. This may assist the understanding of CG-firm value nexus across the different Asian markets. Second, and in addition to director ownership, to examine the nexus between directors (i.e., executive, non-executive and CEO) pay and firm value can be an interesting area for future research. Third, the relationship between CG structures and risk can be examined in future as better governed firms are likely associated with lower risk.

Fourth, the current study can be improved by increasing the sample size. Future studies can also estimate both balanced and un-balanced panels to avoid survivorship bias. Financial and non-financial firms can be examined together for comparison purposes and to ascertain whether the findings of current study are robust to different sample specifications. Fifth, future studies can improve the construction of CG compliance index to enhance the reliability and validity. This can be performed by examining the robustness of findings to: binary and ordinal coding scheme; and weighted and un-weighted indices. The reliability of index can also be enhanced by coding of index with more than one coder so that inter-coder consistency can be measured.

Sixth, additional sources for data collection can be used to supplement that information provided in the firms' annual reports to improve the data availability. Seventh, definition of variables can be improved. For instance, board diversity can be measured in percentages, while director ownership may be distinguished as by executive and non-executive directors, beneficially and non-beneficially, and directly and indirectly. Similarly, COC measure can be re-estimated by using different approaches to calculate COE and COD to make sure that findings are robust.

Eighth, mixed models of research methodology, namely qualitative and quantitative can be used together to eliminate some limitations associated with quantitative approach. Ninth, to measure CG standards, both CG compliance index and individual CG variables can be used in parallel in order to compare the findings from both models. Tenth, inclusion

of listed and non-listed firms in the study sample is likely to improve the generalisability of the findings. Finally, future research may focus on motivations and main drivers of CG reforms in Pakistan. This can be done by conducting face to face interviews with some of the key stakeholders of CG reforms in Pakistan, such as SECP and KSE officials, among others. This may assist to understand how CG structures can be improved in emerging markets.

APPENDICES

Appendix 1: Pakistani CG Index (*PCGI*) List of Provisions and Measurement

CG Variables	Code	Reference CO and PCCG*	Measurement
1. BOARD OF DIRECTORS			
1. Directors Categorization[28] Disclosed in Reports	DCDA	PCCG, 2002 (i.c) LR, p. 34 (1) PCCG, 2012 (i)	Binary number 1is assigned if it discloses the categorization of directors in annual reports, 0 otherwise
2. Board Composition (Ratio of Independent Directors)	BCOM	PCCG, 2002 (i.b) PCCG, 2012 (i.b)	A binary number of 1 if at least one member of the board is independent, 0 otherwise
3. Director Representing Minority Shareholders	DRMS	PC, 2002 (i.a) PCCG, 2012 (i.a)	Binary number 1is assigned if director representing minority shareholders, 0 otherwise
4. Board Classification (Ratio of Non-Executive Directors)	RNED	PC, 2002 (i.c) PCCG, 2012 (i.d)	A binary number of 1 if at least one fourth of the board is non-executive, 0 otherwise
5. The Membership of Directors in Other Boards	MDOB	PC, 2002 (iii) PCCG, 2012 (ii)	Binary number 1is assigned if it discloses the director's membership in other boards of listed companies in their annual reports, 0 otherwise
6. Maximum Directorship in Other Boards of Listed Companies	MDSB	PCCG, 2002 (iii) PCCG, 2012 (ii)	Binary number 1is assigned if directors are not serving at the same time for the board of more than ten/seven, 0 otherwise
7. Non-Executive Chairman	NECH	PCCG, 2002 (ix) PCCG, 2012 (vi)	Binary number 1is assigned if the Chairman of the board is a Non-Executive director, 0 otherwise
8. Clear Definition of Respective Role of Chairman and CEO[29]		PCCG, 2002 (ix) PCCG, 2012 (vi)	Binary number 1is assigned if there is a description that categorises the role of chairman and CEO, 0 otherwise
9. CEO Duality Role	CEOD	PCCG, 2002 (ix) PCCG, 2012 (vi)	Binary number 1is assigned if the chairman position is separate than CEO, 0 otherwise
10. Orientation Courses for the Directors to enable them to Manage the Affairs on Behalf of Shareholders	OCDS	PCCG, 2002 (xiv) PCCG, 2012 (xi)	A binary number of 1 if firm disclose the directors attendance in the orientation course , 0 otherwise
11. Board Meeting Disclosure	BRMD	PCCG, 2002 (xi) PCCG, 2012(xvi, h)	A binary number of 1 if the board meetings are disclosed in annual reports , 0 otherwise
12. Board Meeting Frequency	BRMF	PCCG, 2002 (xi) PCCG 2012 (xvi, h)	A binary number of 1 if at least board meet 4 time in a year, 0 otherwise
13. National Tax Payer Director	NTPD	PCCG, 2002 (iv, a) PCCG, 2012 (xi, 3)	A binary number of 1 if the name of the directors is born on the register of National Tax Payers is disclosed, 0 otherwise
14. No Defaulter Director in the	NDDB	PCCG, 2002 (iv, b)	A binary number of 1 if no

[28] Categorization of directors in term of Independent, Non-Executive or Executive

[29] Chief Executive Officer

*CO stands for Companies Ordinance 1984 by Pakistani Government and PCCG stands for Pakistani Code of CG

Appendix 1: Pakistani CG Index (*PCGI*) List of Provisions and Measurement

CG Variables	Code	Reference CO and PCCG*	Measurement
Board		PCCG, 2012 (xi, 3)	defaulter information about directors is disclosed , 0 otherwise
15. Directors and their Spouses involvement in Brokerage Business	DSBB	PCCG, 2002 (xix, j) PCCG, 2012 (xvi, l)	Binary number 1is assigned if no directors involvement in brokerage business is disclosed in annual reports, 0 otherwise
16. Statement of ethics and Business Practices	SEBP	PCCG,2002 (viii, a) PCCG,2012 (xxxiv)	A binary number of 1 if firm discloses that the statement of ethics and business practices is prepared and circulated , 0 otherwise
17. Power and duties of BOD	PBOD	PC 2002 (vii) PCCG, 2012 (iv)	Binary number 1is assigned if it disclose their fiduciary powers are exercised by the board of directors , 0 otherwise
18. Future outlook	FUTO	PCCG,2002 (xix, f) PCCG,2012 (xvi, f)	Binary number 1is assigned if it disclose future outlook by board members , 0 otherwise
COMMITTEES & AUDITING			
19. Existence of R&HR Committee	RHRC	PCCG, 2002 (xxx) PCCG, 2012 (xxv)	Binary number 1is assigned if it has HR Committee or a Remuneration one , 0 otherwise
20. Committee Composition	CCOM	PCCG, 2002 (xxx) PCCG, 2012 (xxv)	A binary number of 1is assigned if Committee has at least three members with a majority of non-executive directors, 0 otherwise
21. Committee Meetings held During the Year	CMDY	PCCG, 2002 (xxxi) PCCG, 2012 (xxv)	Binary number 1is assigned if it disclose different committees meetings with numbers held during year, 0 otherwise
22. Committee Meeting Attended by each Directors	CMAD	PCCG, 2002 (xxx) LR p. 27 (16a2) PCCG, 2012 (16h)	Binary number 1is assigned if it discloses committees meetings attended by each director, 0 otherwise
23. The Names of the Members of the Committees of the Boards	NMCB	PC 2002 p.6 (xxx) LR p. 29 (26) PCCG, 2012 (xxvi)	Binary number 1is assigned if it discloses their members' names attended committees of the board in each annual reports, 0 otherwise
24. Existence and Disclosure of Audit Committee Members in Annual Reports	EDAC	PCCG, 2002 (xxx) PCCG, 2012 (xxiv)	A binary number of 1 if the names of audit committee are discloses in annual reports, 0 otherwise
25. Minimum Members of Audit Committee	MMAC	PCCG, 2002 (xxx) PCCG, 2012 (xxiv)	A binary number of 1 if minimum members of Audit Committee is at least three, 0 otherwise
26. Non-Executive Chairman of the Committee	NECC	PCCG, 2002 (xxx) PCCG, 2012 (xxiv)	A binary number of 1 if Non-Executive director is the Chairman of the audit Committee, 0 otherwise
27. Majority of Non-Executives in Audit Committee	MNEC	PCCG, 2002 (xxx) PCCG, 2012 (xxiv)	Binary number 1is assigned if its Non-Executives have the majority in audit Committee, 0 otherwise
28. Minimum Meetings of the Audit Committee in a Financial	MMAC	PCCG, 2002 (xxxi) PCCG, 2012 (xxvii)	Binary number 1is assigned if it audit Committee meets at least 4

Appendix 1: Pakistani CG Index (*PCGI*) List of Provisions and Measurement

CG Variables	Code	Reference CO and PCCG*	Measurement
Year			time in a year and this information is available in annual reports, 0 otherwise
29. CFO, The Head of Internal audit Committee and a Representative of External Auditors attendance	CIEA	PCCG, 2002 (xxxii) PCCG,2012 (xxviii)	Binary number 1is assigned if the CFO, The Head of Internal audit Committee and a Representative of External Auditors attended Audit Committee meetings and this information is discloses in annual reports, 0 otherwise
30. Review of quarterly, Half-yearly and annual financial statements prior to the approval of Board of Director	RQHY	PCCG,2002 (xxxiii, c) PCCG, 2012 (xxix, b)	A binary number of 1 if Audit Committee Review of quarterly, Half-yearly and annual financial statements prior to the approval of Board of Director and discloses in annual reports, 0 otherwise
31. Review of Management letter issued by external auditor	RMLE	PCCG,2002 (xxxiii, e) PCCG, 2012 (xxix, e)	A binary number of 1 if Review of Management letter issued by external auditors and discloses in annual reports , 0 otherwise
32. Appointment of Secretary by the Committee of Audit	ASAC	PCCG,2002 (xxxiv) PCCG, 2012 (xxx)	Binary number 1is assigned if its audit committee appointed a secretary and this information is discloses in the annual reports, 0 otherwise
RIGHT OF SHAREHOLDER AND ANNUAL GENERAL MEETING			
33. Notice of the Annual General (AGM) to shareholders	NAGM	CO 1984 p.111 (160a)	Binary number 1is assigned if they issued a notice of AGM about the meeting to shareholders, 0 otherwise
34. Well in Time Notice of the AGM to shareholders	WITN	CO 1984 p.111 (160a)	Binary number 1is assigned if they issued a notice of AGM at least 21 days before the meeting date, 0 otherwise
35. AGM with in a Period of Four Months Following the Close of it Financial Year	AFFY	CO 1984 p.108 (158/1)	Binary number 1is assigned if it held AGM within three/four[30] months following the close of its financial year, 0 otherwise
36. AGM in Same Town as Registered Office of the Company	ASRO	CO 1984 p.108 (158/2)	Binary number 1is assigned if firm held AGM within the same town as company has registered office, 0 otherwise
37. Notice of the Meeting with Specifying the Following Details31	NMFD	CO 1984 p.111 (160/1a)	A binary number of 1 if the notice of the AGM specify the date, place, time, and the business to be transacted, 0 otherwise
38. Right of Shareholder to Appoint a Proxy for AGM to Vote for Directors	RSAP	CO 1984 p.111 (160/1d)	A binary number of 1 if the notice of the AGM specify that shareholder can participate personally or through proxy, 0 otherwise
TRANSPARENCY AND DISCLOSURES			
39. Disclosure of Ownership	DOWS	PCCG,2002 (xix, i)	Binary number 1is assigned if it

[30] According to Companies Ordinance 1984, till 2008 this period was 4 month and then changed to 3 months. Data is collected accordingly.

[31] Notice of AGM to shareholders contains specifying the date, place, time, and the business to be transacted.

Appendix 1: Pakistani CG Index (*PCGI*) List of Provisions and Measurement

CG Variables	Code	Reference CO and PCCG*	Measurement
pattern		PCCG, 2012 (xvi, j)	publishes ownership pattern reports, 0 otherwise
40. Directors, CEO, their Spouse and Minor Children's' Ownership Disclosure	BDOD	PCCG,2002 (xix, i) PCCG, 2012 (xvi, j)	A binary number of 1 if firm discloses the name wise detail of shareholdings of directors, CEO, their spouse and minor children's , 0 otherwise
41. Shareholding Ten/five[32] Percent or More Voting Rights	STMV	PCCG,2002 (xix, i) PCCG, 2012 (xvi, j)	A binary number of 1 if firm discloses the shareholdings of ten/five percent or more voting rights, 0 otherwise
42. Going Concern Disclosure in Annual Reports	GCDR	PCCG,2002 (xix, a) PCCG,2012 (xvi, f)	A binary number of 1 if it is discloses that firm is a going concern entity and explanation if not, 0 otherwise
43. Outstanding Taxes and Other Charges disclosed	OTOC	PCCG,2002 (xix, e) PCCG, 2012(xvi, e)	Binary number 1is assigned if it discloses its outstanding taxes and other charges with reason in annual reports, 0 otherwise
44. Presentation of Operations, Cash Flows, and Change in Equity	POCE	PCCG,2002 (xix, a) PCCG, 2012(xvi, a)	Binary number 1is assigned if it discloses the operations, cash flows and change in equity in annual reports, 0 otherwise
45. Key Operating and Financial Data for Last Six Years	OFSY	PCCG,2002 (xix, c) PCCG, 2012(xvi, c)	Binary number 1is assigned if it discloses the last six years financial and operating performance in annual reports, 0 otherwise
46. Significant Deviation from Last Year Operating Outcomes	SDOR	PCCG,2002 (xix, b) PCCG, 2012(xvi, b)	Binary number 1is assigned if it discloses operating results and significant deviation from last year, if any and reasons explained in annual reports, 0 otherwise
47. Trades of Share Carried out by the director and Other Executives[33]	TSDE	PCCG,2002 (xix, j) LR p. 28 (16l) PCCG, 2012(xvi, l)	Binary number 1is assigned if it discloses the trade of shares of companies carried out by directors, executives, their spouses and minor child, 0 otherwise
48. Disclosure of Objectives and Corporate Strategy	DOCS	PCCG,2002 (viii, b) PCCG, 2012(v, c)	A binary number of 1 if firm discloses Mission, Vision and Corporate strategies in annual reports, 0 otherwise
49. Statement on Compliance with Corporate Governance Code	SCCG	PCCG,2002 (xlv) LR p. 34 (11) PCCG, 2012(xl)	Binary number 1is assigned if it provides a positive statement on PCCG[34] in the reports, 0 otherwise
50. Disclosure of Dividend Policy	DODP	PCCG,2002 (xix, d)	Binary number 1is assigned if it

[32] Shareholding to be disclosed was ten percent in PCCG 2002 which have been changed to five percent shareholding in PCCG 2012.

[33] Here "executives" means the CEO, COO, CFO, head of internal audit and company secretary.

[34] PCCG stands for Pakistani Code of Corporate Governance.

Appendix 1: Pakistani CG Index (*PCGI*) List of Provisions and Measurement

CG Variables	Code	Reference CO and PCCG*	Measurement
(Reason for any bonus share or no dividend)		PCCG, 2012(xvi, d)	discloses the reason of a bonus share (if any) or not paying dividend, 0 otherwise
51. Disclosure of Detail of Related Party Transaction	DRPT	PCCG,2002 (xiii, b) PCCG, 2012(x)	A binary number of 1 if firm discloses facts of any contract in which executives or any director was interested and clear statement in case of no such transaction, 0 otherwise
52. Director's Detailed Remuneration Disclosure	DDRD	PCCG,2012(xvii, b)	Binary number 1is assigned if it publishes board members' remuneration in annual reports , 0 otherwise
2. INTERNAL CONTROL, EXTERNAL AUDITOR AND RISK MANAGEMENT			
53. Presence of Effective Internal Control System	EICS	PCCG,2002 (viii, c) PCCG,2012(xxix,i)	Binary number 1is assigned if it publishes that there is an effective and sound internal control system established, implemented, and monitored by the BoD , 0 otherwise
54. Disclosure of Firm Risk in Annual Reports	DFRR	PCCG,2002 (xix, f) PCCG,2012(ix)	Binary number 1is assigned if it offers an explanation of actual and potential risk of the company , 0 otherwise
55. Risk Management Policies by the BOD	RMPB	PCCG,2002 (viii, b) PCCG,2012(ix)	A binary number of 1 if firm provides a clear description of risk management policies in annual report , 0 otherwise
56. Auditor review of Internal Control System	ARIS	PCCG,2002 (xxxiii, j) PCCG,2012(xiv, d)	A binary number of 1 if auditor reports provide a narrative that internal control system has been reviewed by the auditor , 0 otherwise
57. Auditor Review of Firm Financial Reports	ARFR	PCCG,2002 (xxxiii, c) PCCG,2012 (xxix, b)	Binary number 1is assigned if its auditor reports provide description financial reports have been reviewed by the auditor , 0 otherwise
58. Approval of Firm Financial Reports	AFFR	PCCG,2002 (xxiv) PCCG,2012 (xxi)	Binary number 1is assigned if its reports are ratified by BOD and signed by the authorized executives, CFO and CEO earlier than rotation, 0 otherwise
59. Proper Book of Account Maintained	PBAM	PCCG,2002 (xix, b) PCCG,2012 (xvi, b)	Binary number 1is assigned if it publishes that proper book of accounts are maintained in annual reports, 0 otherwise
60. Appropriate Accounting Policies Applied in Preparation of Accounting Estimations and Financial Statement	APAE	PCCG,2002 (xix, c) PCCG,2012 (xvi, c)	Binary number 1is assigned if it discloses appropriate accounting rules applied in preparation of accounting estimations and financial statements in annual reports, 0 otherwise

Appendix 1: Pakistani CG Index (*PCGI*) List of Provisions and Measurement

CG Variables	Code	Reference CO and PCCG*	Measurement
61. Financial Statements According to IAS[35]	FIAS	PCCG,2002 (xix, d) PCCG,2012 (xxix)	A binary number of 1 if firm discloses that financial statements are according to IAS, 0 otherwise
62. External Auditor's Satisfactory Rating by Institute of Charted Accountants of Pakistan	EARI	PCCG,2002 (xxxvii) PCCG,2012 (xxxiii)	A binary number of 1 if External Auditors have Satisfactory rating under the Quality Review Program by Institute of Charted Accountants of Pakistan and this information is discloses, 0 otherwise
63. Compliance with IFAC[36] Gridlines on Code of Ethics as Adopted by ICAP[37].	CGCE	PCCG,2002 (xxxviii) PCCG,2012 (xxxiii)	A binary number of 1 if Compliance with International Federation of Accountants Gridlines on code of ethics is published in annual reports , 0 otherwise
64. Auditor Duties According to IFAC	ADIM	PCCG,2002 (xl) PCCG,2012 (xxxiv)	A binary number of 1 Auditor perform duties according to IFAC, no management role and this information is discloses in annual reports, 0 otherwise
65. Attendance of AGM[38] by external Auditor	AAGM	PCCG,2002 (xliv) PCCG,2012 (xli)	A binary number of 1 if external auditor of the company attends the annual general meeting and this information is discloses in annual reports, 0 otherwise
66. Statutory Auditor's Review of Corporate Governance Compliance Statement	SARC	PCCG,2002 (xlvi) PCCG,2012 (xli)	A binary number of 1 if Statutory Auditors of company Reviews the Corporate Governance Compliance Statement and disclose this information in annual reports, 0 otherwise
67. Half yearly financial statements with statutory auditor's review	HYFS	PCCG,2002 (xxi) PCCG,2012 (xxix, b)	A binary number of 1 if Half yearly financial statements with statutory auditor's review information discloses in annual reports, 0 otherwise
68. Annual audited financial statements not later than four month from close of financial year	AAFS	PCCG,2002 (xxii) PCCG,2012 (xxix)	A binary number of 1 if Annual audited financial statements not later than four month from close of financial year discloses in annual reports, 0 otherwise
69. Determination of Compliance with relevant Statutory Requirements	DCSR	PCCG,2002 (xxx, l) PCCG,2012 (xxix, l)	A binary number of 1 if Compliance with relevant Statutory Requirements is determined by external auditors and discloses in annual reports, 0 otherwise

[35] IAS stands for International Accounting Standards and Pakistan follows these standards in preparation of financial statements.

[36] IFAC stands for International Federation of Accountants and this institute issued guidelines on code of ethics.

[37] ICAP stands for Institute of Charted Accountants of Pakistan and this institute adopted the same code of ethics.

[38] AGM stands for Annual General meeting of a company.

Appendix 1: Pakistani CG Index (*PCGI*) List of Provisions and Measurement

CG Variables	Code	Reference CO and PCCG*	Measurement
70. Monitoring Compliance with Best Practices of Corporate Governance and Identification of Violence	MCGV	PCCG,2002 (xxx, m) PCCG,2012 (xxix, m)	A binary number of 1 if external auditors are Monitoring Compliance with Best Practices of Corporate Governance and Identification of Violence if any discloses in annual reports, 0 otherwise

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