

Corporate Governance and Cost of Capital: Evidence from Pakistan

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Abstract

This research paper investigates Corporate Governance (CG) effect on Cost of Capital (CoC) for firms listed on Pakistan Stock Exchange (PSX). Sample of 144 firms from 23 different sectors were used for a period ranging 2007-2016, CG is measured by Corporate Governance Index (CGI) and CoC is measured by Weighted Average Cost of Capital (WACC). The result of panel data techniques reveals that CG and CoC are negatively and significantly associated. Results support the theoretical concept that due to good CG the CoC will be reduce. Moreover, leverage is inversely and insignificantly relate with COC, size is also inversely but significantly relate with COC. Further Return on Assets (ROA) and COC are positively and insignificantly associated.

Keywords: Corporate Governance, Corporate Governance Index, Cost of Capital, Panel Data Approaches.

1. Introduction

Capital market helps in allocation of resources in an efficient manner and in achieving macroeconomic goals (Audu, Pelasai, & ThankGod, 2013). However, one of the important institutions of capital market is stock exchange. It play important role in investor's investment decisions, promote industry growth and facilitate companies to raise fund (Aurangzeb, 2012).

Firms' are regulated by different rules and regulations of stock exchange and other regulatory bodies. Moreover, for offering shares companies fulfill rules and regulations of stock market (Andries, 2009). In the wake of the 1997 Asian Financial Crisis (AFC) many Asian countries bring significant changes to their capital market regulatory systems. Other significant crises that brought regulatory changes were the market crisis of Russia (1998), corporate collapses such as HIH in Australia (2001), Parmalat in Italy (2003), and Global Crossing Ltd (1997) and Enron (2001) in the US. The regulatory measures include improvements in trading and information infrastructure (Ahmad, & Rahman, 2009). However, regulations sometimes create obstacle to economic development and social welfare. In turn these obstacle leads to regulations inefficiency and the entire economy performance are affect (Kemal, 2002).

Regulatory framework in Pakistan is introduced after the implementation of regulatory reforms. With the passage of time these reforms are strengthened and modified for the purpose to meet future challenges (Hussain, 2011). Following the Dotcom Bubble of 2000, developed markets, led by the US, brought in considerable changes to the way corporations are governed (Ahmad, & Rahman, 2009).

Attention towards CG is increase after the scandals of financial reporting in companies like Enron, Parmalat and WorldCome (Khan & Sehti, 2009). CG concept is the main concern of researchers and businesses. CG is explored in research of finance and economics as well in developed countries. Interest of researchers is at growing stage in emerging economies/markets (Gompers, Ishii, & Metrick, 2003).

Corporate governance is defined in different ways by researchers. Javid and Iqbal (2010) define as

"The relationship among the management, board of directors, controlling shareholders, minority shareholders and other stakeholders".

Shleifer and Vishny (1997) Observe that those who make investment and sink their capital into business they need assurance to get back return on this and the mechanism of CG implementation should assure this.

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Good governance system plays important role to solve the problem of conflicts of interest in organizations. Good governance system also improves the firm performance in the sense to control the expropriation activities of large shareholders and ultimately firms make good decisions (Shah, Butt, & Hassan, 2009).

After accounting scandals realize to improve the financial reporting to create good governance environment (Klai & Omri, 2011). Good governance system plays important role to solve the problem of conflicts of interest, allocate resources in a better way. Define good governance system as:

“Little expropriation of the resources of corporations by controlling shareholders and managers are known as good governance” (Shah, Butt, & Hassan, 2009).

Importance and need of CG system is deeply examined in academics. In Pakistan good CG system and its implementation is the basic need of the day (Kamran & Shah, 2014). In Pakistan CG recently scratching the surface. Moreover, observed that code of CG is not fully practicing by many listed companies on stock exchange (Khan & Sehti, 2009). In Pakistan after publication of Corporate Governance Code (CGC) for listed companies this is become an interested area for research (Gompers, Ishii, & Metrick, 2003).

1.1 Problem Statement

In this study explore the areas of CG and CoC. Therefore, from previous studies identify gap. As recommend that in future studies need to incorporate proper CGI as proxy of CG for the purpose of true presentation of CG mechanisms (Kamran & Shah, 2014). Moreover, instead of separate CG mechanisms CGI is also recommend in international studies. As investigate and from the finding of the results recommend to incorporate CGI instead of using separate mechanisms of CG in future research studies (Lakhal, 2015). Therefore, CGI is use as proxy of CG in this study. This is one of the contributions of this study to the body of knowledge and to fill this gap in Pakistani scenario. Majority of CG studies are explored in large mature economies (Rad, 2014). Developing economies are also important to practice good CG system because all economies are interdependent due to globalization. However, analyses based in this study on Pakistan because Pakistan play an important role in adding to the generalizability of the understanding of CG and CoC. Moreover, Pakistan is an open economy which is well-known financial hub of its region and also has different experiences in CG and CoC.

Relationship of CG mechanisms and financial performance is investigated in prior studies but CG and CoC is largely missing (Rad, 2014). Therefore, this study contributes to the body of knowledge by filling this gap. CGI as proxy of CG with CoC is largely missing in literature. However, in this study incorporate CGI as CG measurement with CoC by filling this gap and to find answer to the question of the study. This can be demonstrated from literature that CG is important at international and national level.

1.2 Objective of the Study

This study aims to investigates the impact of CG on CoC of listed companies on Pakistan stock exchange (PSX).

1.3 Research Question

- Does CG affect CoC of listed firms on Pakistan Stock Exchange?

2. Review of Literature

In this section review capital structure and risk/bankruptcy cost briefly and the remaining section explain review of CG association/effect with (on) CoC.

For any business organization decision of capital structure is crucial because to maximize the return of all stakeholders and to operate successfully in competitive environment. Firms can choose any combination of securities such as lease finance, convertible bonds, warrants, forward & future contract and swaps etc., but firms select the right combination to maximize their market value (Abor, 2005). Combination of debt and equity that firm use for its operation is known as capital structure (Cuong, & Canh, 2012).

Amount of debt might be limited by bankruptcy cost because due to raising the level of debt the firm may be unable to pay the promised amount. Therefore, the assets ownership ultimately transfer to bondholders from shareholders. Moreover, firms become bankrupt according to principles when debt value becomes equal to assets value. In this situation value of equity becomes zero and control of the firm is transfer to bondholders from shareholders. If capital structure work to maximize the value of the firm then minimize the CoC. Furthermore, reveal that when debt level increasing, initially the CoC decline because the after-tax cost of debt is cheaper than cost of equity. However, after a level due to increase in debt the WACC also increase and then due to high debt level firms' bankruptcy can incur. Therefore, demonstrate that firms that facing the greater risk of financial distress will borrow less as compare to firms of lower risk of financial distress. Moreover, greater the volatility in operating profit of firm than the lesser will be borrowing activities (Ross, Westerfield, & Jordan, 2010 p, 510).

Barbuta-Misu (2009) investigate that firm managers trying to get advantages in form of firm value maximization and to minimize the cost of capital. Due to increase level of debt firms go to become default. Therefore, a small level crisis at operation level or at management level become difficult to control. Moreover, conclude that tax saving will lead to increase cost in form of bankruptcy (Ayeni, & Olaoye, 2015).

In research also investigate that how the bankruptcy and its cost effect organizations. Therefore, effect of financial distress on efficiency of organization is investigated. Demonstrate that conflict of interest among capital providers and asymmetry of information affects financial distress. Moreover, financial distress either beneficial or costly. Ownership and financial structure affect cost of firms (Wruck, 1990).

CG attributes also effect financial distress. Therefore, in this research work study Canadian firms relationship of CG attributes and status of financial distress. From analyses reveal that beside reliability on financial indicators composition of board of director explain financial distress. Moreover, outside directors in board & their ownership and change of chief executive officer can also affect financial distress of firms (Elloumi, & Gueyie, (2006). Financially distressed firms are investigated that how CG practices affect firms to avoid bankruptcy and power of financial information to predict bankruptcy. From results conclude that in financially distress firms' CG attributes significantly affect probability of bankruptcy. Moreover, in firms where board size is small, high level of independent board, high ratio of outside directors in board and majority ownership of insider directors exist than bankruptcy avoidance is high. Therefore, CG attributes have high monitoring power and such governance characteristics also improve the bankruptcy predicting power of financial accounting models (Fich, & Slezak, 2008).

Investors make investment for positive return but there is also the chance of loss. Therefore, this is important to take into account the risk factor. In this scenario this is generally and theoretically observe, and empirically test phenomenon that risk and return either positively or negatively associate. Fisher and Hall (1969) demonstrate that risk and return either linearly or positively relate. However, Mcnamara and Bromiley (1999) found that risk and return are negatively associate. Bowman (1980) describes that relationship of risk and return are significantly negative. Examine sample of 85 industries and conclude that in well and poorly performing firms the association of risk and return is negative. Fiegenbaum (1990) association of risk and return level are explore based on prospect theory of behavioral decision theory. From 85 sectors examine sample of 3,300 firms and from findings reveal that in industries where expected return is below than target level the association of risk and return is negative. However, this association is positive in firms which perform above their target level return. Moreover, Chang and Thomas (1989) demonstrate the curvilinear relationship of risk and return.

In the process of business decision making the CoC has numerous applications (Ayeni, & Olaoye, 2015). CoC concept is based on theoretical concepts of Modigliani and Miller (1958). Moreover, Modigliani and Miller (1963) relax their conceptual view and add that CoC can affect the capital structure of firms and in turn this affect the firm value. Due to relaxing the unrealistic assumption that tax factor show tax advantage in form of tax shield. Therefore, cost of borrowing decreases and on the other hand performance of firm is maximize (Ayeni & Olaoye, 2015). CoC is explain in literature in term of WACC.

“Weighted average cost of capital is the combination of costs of equity and debt” (Ayeni, & Olaoye, 2015).

From conceptual perspective clear that if there is good CG system then the CoC will be low. This conceptual phenomenon is empirically investigated in research studies and majority studies demonstrate their results in favor of inverse relationship of CG and CoC.

CoC has been a popular issue in corporate finance though little research work is perform about the CoC in emerging markets (Barry et al, 1998). For the purpose of minimization of cost and to rise external capital at lowest possible costs firms should adopt the rules and mechanisms of CG. Demonstrate if there is good CG system then the CoC should be low (Shleifer & Vishny, 1997). Moreover, reveal that if firms have good governance system then lenders and investors are more willing to make investment in these firms. Furthermore, risk of these firms become low and due to good governance system the cost of capital will be lower (Shah, Butt & Hassan, 2009).

2.1 Corporate Governance and Cost of Capital

From literature of modern corporate finance demonstrate that Modigliani and Miller started debate on capital structure in 1958. CoC of firm's is independent of capital structure of relevant firm in the absence of taxes. However, in 1963 they corrected their view of 1958, imply corporate tax into their model and reveal that tax add advantages to leverage. Therefore, affect firm CoC. Moreover, from the traditional analysis of capital structure and CoC reveal that when debt level increase to a certain level, value of firm increase primarily due to cheaper debt capital. Furthermore, conclude that WACC become lower due to increase in level of debt. Due to high level of leverage in capital structure WACC decrease because debt is tax deductible in form of interest payment. However, this beneficial influence of increase level of debt on CoC reduces due to probability of bankruptcy at some specific level of debt equity. Initially at increasing level of leverage cost of equity capital remain unchanged, later on researcher conclude that this view is not true because due to increasing level of leverage cost of equity capital also increasing proportionally. On the other hand observe that curve of WACC move upward (at optimal level of debt equity ratio WACC is minimize) due to high level of leverage in capital structure (Talwar). In large number of research work, relationship of CG and CoC is investigate.

Relationship of CG and CoC is investigate in Canadian listed firms during 2002-2005. Panel data of 155 firms use and for analyses applied panel data techniques and then select to apply fixed effect model. From results demonstrate that the relationship of CG and CoC is statistically significant and inverse. Moreover, if CG practices quality increase then the CoC decrease of Canadian firms (Bozec & Bozec, 2011). The same approach of CG and CoC also investigate in Australian firms and for this purpose collect data for 10 years from 1994 to 2003. From the results of study reveal that firms with stronger CG characteristics such as institutional blockholders', higher insider ownership and independence of board the CoC reduce significantly. Moreover, in the same study further examine the relationship of cost of equity and cost of debt separately with CG and from the analyses reveal the same results (Pham, Suchard & Zein, 2013).

In this study also investigate CG and CoC and from the results reveal that due to better CG practices of firms access to sources of finance become high and easy for firms. Therefore, in turn the CoC become low. Moreover, firm performance improves and these firms becomes favorable avenue of investment for investors. Further conclude from analyses that in countries where governance system is weak than the CG mechanisms become less effective and CoC increasing (Claessens & Yurtoglu, 2013). From previous research also review that due to good CG system firms easily access to sources of finance, perform better, CoC become lower and all stakeholders are treat in favorable manner. However, reveal that due to a country weak CG system the market and voluntary corporate mechanisms are less effective (Claessens, & Yurtoglu, 2012).

If the CG system is implemented in true sprits then it also affects the quality of earnings of firms and in turn it can affect the CoC. Therefore, relationship of earnings quality and CoC are investigate in listed firms on Tehran Stock Exchange. From the results conclude that there is inverse relationship of earnings quality with CoC (Noravesh & Majidi, 2005).

However, some studies conclude that CG cannot affect significantly the CoC of firms. In this study relationship of CG and CoC investigate in listed companies of South Africa. Select sample of 20 firms and from the results reveal that there is no relationship of CG and CoC (Opperman, 2009).

3. Research Methodology

Population of this study are companies of non-financial sectors listed on Pakistan stock exchange during 2006-2016. Due to lag values of some variables include time period from 2007-2016 in final analyses. However, sample of this study consist of 144 from 23 industries. These firms are selected on the basis of data availability during 2006-2016 (Annual Reports). Data use in this study is secondary in nature. Source of data is annual reports of all selected companies. Also use data of Balance Sheet Statement Analysis (BSA) of State Bank of Pakistan. Gujarati (2003) demonstrate that before test data fulfill the four critical assumptions. 1) Normality, 2) Linearity, 3) Homoskedasticity and 4) Independence of error terms.

3.1 Variables of the Study

As it is clear from the introduction and literature review sections to investigate CG and CoC. Therefore, design research model for analyses to investigate the research question given above.

3.1.1 Independent Variable

CGI is the independent variable of this study. CGI measure through different proxies. Majority of researchers examine single factors of CG but in few studies use CGI. For the listed firms on Pakistan stock exchange a CGI is design by (Javid & Iqbal, 2010). In this study propose to adopt this index. Index has three sub-indexes and these three sub-indexes consist of 22 indicators/factors. CGI is mention in appendix. To each factor assign a weight which is based on the subjective judgment. These subjective judgment/weighting done on the basis of expertise of financial experts and on empirical literature. 100 is the maximum score, if these factors are observed in annual reports of companies than 100 score is assign. For largely observe factor score is 80, if it is partially observed than the score is 50 and if not observe than the score is 0. From individual factors calculate the average of every sub-index and then calculate average of the three sub-indexes to get CGI of a particular firm (Javid & Iqbal, 2010).

3.1.2 Dependent Variable

CoC is dependent variable of this study. A very key component of wealth creation is CoC. Practitioners and researchers through optimal capital structure link capital structure with shareholders wealth and CoC (Rad, 2014). WACC is most widely use technique of CoC calculation in real world so far (Massari, Roncaglio, & Zanetti, 2007; Pierru, 2009). WACC is the combination of CoC of equity and debt. Due to its advantage WACC is one of the fundamental concept in corporate finance (Farber, Gillet, & Szafarz, 2006).

3.1.3 CoC Model

WACC is use as proxy for the measurement of CoC of firms (Bozec & Bozec, 2011). Massari, Roncaglio and Zanetti (2007) still WACC approach is widely use all around the world in research.

$$WACC = W_d R_d (1 - T_c) + W_e R_e$$

Equation of WACC uses equity and debt. Where, R_d represent cost of debt on the firm's outstanding debt and R_e denote cost of equity. Capital Asset Pricing Model (CAPM) is use frequently for its calculation. W_d and W_e are weights of debt and equity respectively. Weights of debts is the ratio of debt to debt plus equity. Weight of equity is calculated as ratio of equity to debt plus equity. T_c represent rate of tax on company income. Standard treatment is $(1 - t_c)$ in this equation to which reflect interest payments deductibility. Therefore, interest cost of debt will reduce (Rad, 2014).

3.1.4 Cost of Equity

Various techniques are used for calculation of cost of equity. However, Capital Asset Pricing Model (CAPM) is widely accept and employ in literature (Chen, 2009; Da, 2012). Sharpe and Lintner CAPM recommend in textbooks of finance to use for the estimation of cost of equity capital. CAPM is use in application worldwide for the purpose to calculate firms CoC and performance of portfolios (Fama & French, 2004). Therefore, in this study use CAMP for the cost of equity calculation.

$$\bar{R}_{it} = RFR + (R_m - RFR)\beta$$

Here:

- \bar{R}_{it} is the cost of equity of firm i at time t.
- RFR is the risk free rate.
- R_m is the market rate of return.
- $R_m - RFR$ is the risk premium
- β is shows market sensitivity

3.1.5 Beta Model

$\beta = \text{CoVar of Market \& Stock Returns} / \text{Var of Market return}$

Here:

- CoVar is covariance of Market and Stock Returns
- Var is variance of market return

3.1.6 Cost of Debt

Cost of debt is the interest that firms paid on their long term bonds. In other words the amount the company pay on its debts is known as cost of debt. It is also recommended that if this information is not available than interest paid on the long term borrowing is use as a proxy for the cost of debt. However, cost of debt is sometime computed through the rate on a risk-free bond (Rad, 2014).

3.1.7 Control Variables

3.1.7.1 Size of the Firm

Size of the firms is calculated by the natural log of the total assets (Rad, 2014). Conceptual and observed relationship between size of firm and CoC is difficult to predict. One view is size is inversely related with CoC while, another view is concern with the positive relationship of size and CoC (Bozec & Bozec, 2011).

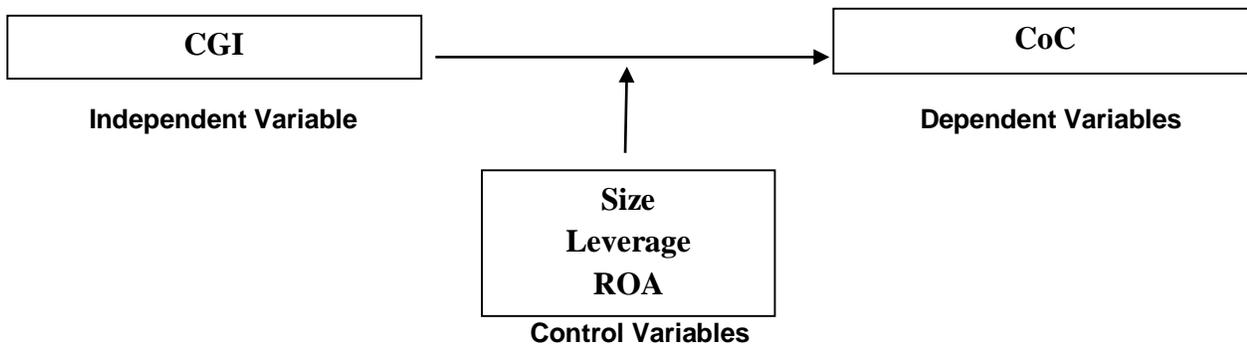
3.1.7.2 Leverage

In research researchers calculate leverage as the ratio of total debt to total assets (Rad, 2014). Relationship of leverage and CoC is inverse (Bozec & Bozec, 2011).

3.1.7.3 Return on assets (ROA)

Calculated as proxy of net income divided by total assets. It means return firm generate on its resources employed in form of current and fixed assets. Management is involve to generate highest return on minimum amount of resources (Gomes, 2014).

3.2 Theoretical Frameworks



3.3 Model of the Study

$$COC_{it} = \beta_0 + \beta_1 CGI_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 GDPG_{it} + \beta_5 ROA_{it} + \epsilon_{it}$$

Where:

- COC_{it} is cost of capital of firm i at time t.
- CGI_{it} is corporate governance index of firm i at time t.
- SIZE_{it} is size of firm i at time t.
- LEV_{it} is capital structure of firm i at time t.
- ROA_{it} is return on assets of firm i at time t.
- ε_{it} is the error term of firm i at time t.
- β₀, β₁, β₂, β₃, β₄, and β₅ are the parameters of the model.

3.4 Panel Data Approaches

Brooks (2008, p. 490) in financial research two panel estimators' approaches are use. These are fixed and random effects models. For econometric data handling panel data is one of the most efficient estimation.

3.4.1 The Fixed Effects Model

In equation for fixed effect model is mention as:

$$y_{it} = \alpha + \beta x_{it} + u_{it}$$

u_{it} is the combination of individual specific effect and remainder disturbance term.

3.4.2 Random Effect Model

Intercepts for all cross section are assumed to derive from the common intercept and a random variable. This model is mention in equation form as

$$y_{it} = \alpha + \beta x_{it} + \omega_{it}, \omega_{it} = \mu_i + v_{it}$$

However, Asteriou and Hall (2007, p. 344) There are three different approaches of panel data estimations. These are common constant, fixed effect and random effect methods. Common constant or pooled OLS method is based on assumption that "there are no differences among the data metrics of the cross sectional dimension (N)". Fixed effects method assumes that constant is group specific. For the test application of fixed effect or common effect nature to data require to apply F-test. F-statistic is calculated is:

$$F = \frac{(R^2_{FE} - R^2_{CE}) / (N-1)}{(1 - R^2_{FE}) / (NT - N - K)} \sim F(N-1, NT-N-K)$$

Where:

- R²_{FE} is the coefficient determination of fixed effect model
- R²_{CE} is the coefficient determination of common effect model
- N is the number of cross sections
- T is the length of time period use
- K is the number of independent variable use

If statistical value of F is higher than critical F value then reject the null hypothesis. Null hypothesis of this test is all the constants are same. Moreover, random effect model assume that for each cross section constant are not fixed.

3.4.3 Hausman Test

Asteriou and Hall (2007, p. 344) to make choice between fixed and random effect model use Hausman (1978) test. Assume no correlation OLS and GLS are consistent, however OLS is inefficient. This is test by H₀ "that random effects are consistent and efficient". However, H_a "random effects are consistent".

After calculation if value of statistic is large then difference of estimates is significant. Therefore, reject null hypothesis and accept alternative. However, if the value of hausman is small then random effect is more suitable approach.

4. Results and Discussions

Table No. 1: Descriptive Statistics

	COC	CGI	LEV	SIZE	ROA
Mean	0.368320	15.10030	78.06961	-0.291515	-2.380200
Median	0.608414	78.57143	-0.252665	15.53072	-2.245085
Maximum	3.690864	100.0000	1.085045	20.13230	4.235182
Minimum	-7.187250	35.71429	-2.141621	05.38311	-9.409826
Std. Dev.	1.160541	7.977170	0.254079	02.61631	1.143361
Skewness	-1.184516	-0.216915	-0.463824	-1.524115	-0.093704
Observations	1440	1440	1440	1440	1440

For the study of data nature use descriptive statistics (Murya 2010; Roychowdhury, 2006; Xiaoqi, 2013). From the above table mean, median, maximum, minimum and standard deviation are clear to researchers. However, Mark (2008) cited in Murya (2010) recommend skewness for testing normality of data. Skewness of these variables are in range of ± 1.96 , therefore, this show that data is normally distributed along their mean values.

Table No. 2: Correlation

	COC	CGI	LEV	SIZE	ROA
COC	1.0000				
CGI	-0.1495	1.0000			
LEV	-0.1606	-0.0047	1.0000		
SIZE	-0.2247	0.1016	-0.0213	1.0000	
ROA	0.0588	-0.0038	-0.1125	-0.0029	1.0000

Correlation is use for the relationship among variables (Roychowdhury, 2006; Xiaoqi, 2013). Correlation of these variables are very low. From literature reveal correlation of 0.80 is problematic. Therefore, correlation of all these variables are not problematic. This show that there is no issue of multicollinearity.

Table No. 3: Variance Inflation Factor

Variables	VIF
COC	1.01
CGI	1.12
LEV	1.20
SIZE	1.16
ROA	1.26

Asteriou and Hall (2007, p95) $VIF > 10$ is sign of problematic multicollinearity. Gujarati (2003) multicollinearity less than 0.80 is not problematic. Murya (2010) Variance Inflation Factor (VIF) use for multicollinearity test. VIF greater than 10 show problem of multicollinearity. Therefore, VIF of all these variables is less than 10 and from this reveal no problem of multicollinearity.

Table No. 4: Pooled Regression Model

Variables	Coefficients	Std.Err	t-values	P-Values
Constant	3.145462	.3263698	9.64	0.000
CGI	-.0186534	.0036711	-5.08	0.000
Lev	-.7368331	.1154229	-6.38	0.000
Size	-.0953681	.0111958	-8.52	0.000
ROA	.0401609	.0256437	1.57	0.118
R-Squared 0.0957				
Adjusted R-Squared 0.0932				

According to results of pooled regression CGI, Lev and size are negatively associated with CoC. Means that CoC will be low if CG practices are improved. Moreover, CoC will decline if firm add more debts in capital structure and CoC is low when firms are large in size. However, ROA and CoC are positively and non-significantly associated. Moreover, demonstrate that CGI, Lev and size are significantly associated with CoC. It means that due to these factors CoC is affected. This finding support results of (Bozec & Bozec, 2011; Claessens & Yurtoglu, 2013; Noravesh & Majidi, 2005).

Table No. 5: Fixed Effect Model

Variables	Coefficients	Std.Err	t-values	P-Values
Constant	1.999672	.4892464	4.09	0.000
CGI	-.014045	.0062104	-2.26	0.024
Lev	-.3124777	.2164392	-1.44	0.149
Size	-.0412543	.0121027	-3.41	0.001
ROA	.0012634	.0282244	0.04	0.964
R-Squared 0.0890				
Adjusted R-Squared 0.0870				

From the results of fixed effect model demonstrate that CGI, Lev and size with CoC are inversely related. Moreover, effect of CGI and size on CoC is significant, it means these variables affect CoC. However, ROA and Lev are non-significantly affect CoC. On the other hand association of ROA and CoC is positive.

Table No.6: Random Effect Model

Variables	Coefficients	Std.Err	t-Values	P-Values
Constant	2.503935	.3860844	6.49	0.000
CGI	-.0169142	.0046234	-3.66	0.000
Lev	-.6062412	.150435	-4.03	0.000
Size	-.0628373	.0113566	-5.53	0.000
ROA	.0180633	.026383	0.68	0.494
R-Squared 0.0940				
Adjusted R-Squared 0.0910				

From this table reveal that CGI, Lev and size are negatively associated with CoC. Means that CoC will be low if CG practices are improve. Moreover, CoC will decline if firm add more debts in capital structure and CoC is low when firms are large in size. However, ROA and CoC are positively and non-significantly associated. Moreover, demonstrate that CGI, Lev and size are significantly associated with CoC. It means that due to these factors CoC is affected. This finding support results of (Bozec & Bozec, 2011; Claessens & Yurtoglu, 2013; Noravesh & Majidi, 2005).

Table No. 7: Hausman Test Results

chi ²	42.86
Prob	0.0000

If P-value is less than 1% than instead of random fixed effect model appropriate (Brooks, 2008 p,509). Therefore, use for this data fixed effect model.

5. Conclusion

In this research work investigate CG and CoC in sample of 144 listed firms from 23 sectors of PSX. Used CGI as proxy of CG and WACC for CoC. Nature of data is panel therefore, use panel data models for analysis. From results of this study reveal that CGI and CoC are inversely and significantly associated.

These findings support the theoretical justification that due to good CG system CoC will reduce. Moreover, reveal that leverage is inversely and insignificantly related with COC. Due to high leverage the chances of default will increase therefore, investors demand more in form of cost of capital. Size is also inversely but significantly related with COC. Small firms have less opportunity for financing their capital. CoC is high as compared to large size firms. Further ROA and CoC are positively and insignificantly associated. This finding suggests that due to high CoC firms management manage in favor of high firms' performance. Moreover, ROA is not affected the CoC of listed firms on PSX.

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Appendix-1 Components of Corporate Governance Index

Sub- Index 1: The Board of Directors

- i.** Board Size (number of directors).
- ii.** Board Composition (Clear cut job description of all board members).
- iii.** Chairman CEO Separation (if not any lead director).
- iv.** Outside directors available to board (independent directors, nominee directors).
- v.** Board attendance (board meetings).
- vi.** Outside director attendance in Meetings.
- vii.** Existence of the position of CFO.
- viii.** Directors representing minority shareholders.

Sub- Index 2: Ownership and Shareholdings

- i.** Presence of outside block holder (more than 10 percent shareholdings).
- ii.** Does the CEO own shares?
- iii.** Directors' ownership (block ownership) other than CEO and Chairman.
- iv.** Chairman or CEO is Block Holder (10 percent).
- v.** Concentration of ownership (Top five).
- vi.** Dividend Policy.
- vii.** Staff benefits other than wages and salaries.

Sub-Index 3: Transparency, Disclosures, and Auditing

- i.** Does the company have full disclosure of corporate governance practices?
- ii.** Does the company disclose how much it paid to its auditor for consulting and other work?
- iii.** Does the company disclose full biographies of its board members?
- iv.** Disclosure of internal audit committee.
- v.** Disclosure of board directors and executive staff members' remuneration.
- vi.** Disclosure in the company's annual report) of share ownership according to the requirement of Code.
- vii.** Information of the executive management staff members' ownership (employees' ownership).