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The Impact of Corporate Governance on Financial Constraints: Evidence from Pakistan

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This study examined the corporate governance-financial constraints relationship in the context of agency cost, information asymmetry, and corporate voluntary disclosure. A large sample of Pakistan Stock Exchange (PSX) listed firms during the period 2010-2018; we have covered audit committee, board structure and ownership structure as board governance mechanism to investigate its possible association towards financial constraints measures through KZ Index. We have also investigated the possible impact of financial variables on financial constraints. By employing random effect logit model, we concluded that cash flow and free flow have fundamental to relieve firm from financial constraint. Among governance variables board participation, family, foreign, institutional and concentrated ownership shows significant relationship towards financial constraints. The findings suggest that there is a need to strengthen the role of an audit committee and board structure mechanism in mitigating agency cost, and information asymmetry and improving disclosure that indirectly save firm from financial constraints.

Keywords: Corporate governance, financial constraints, Pakistan Stock Exchange

INTRODUCTION

The basic objective of the firm is to tap the investment opportunity by choosing the most appealing source of financing (Kumar and Ranjani, 2018). Firms have no other way to meet financial needs, but to choose out of three options namely internal funds, borrowings, or issuance of new equity. Pecking order theory posits that selection of funding choice depends upon the cost it incurs. Accordingly, the firms prefer internal funds than external financing followed by issuing new equity to feed up upcoming positive net present value (NPV) projects because it is the most economical source of financing and the later one can engage firms into financial constraints situation. Perfect capital market assumptions narrate that firms can tap any profitable investment project irrespective of the availability of internal funds because it can raise external funds without any additional cost. But in practical world, this would not happen due to the presence of tax burden, information asymmetry, agency conflict, etc. The presence of these market fundamentals brings up the concept of "financial constraints". This concept states that there prevails an incongruity between internal and extrinsic sources of financing, which prohibit the company from employing an investment it would have chosen to make, had internal funds been available (Kaplan &Zingales, 1995). In simple words, firm forgo positive investment opportunity because of unavailability of external funds, is an example of financial constraints.

Fazzari et al., (1988) among the pioneers who studied financial constraints in literature. They linked financial constraints with corporate investments and claimed that cash flow is an important determinant for capital spending when firm is financially constrained; and the sensitivity of investment to cash flow increasing in the context of financial constraints. They proposed dividend payout ratio as an indicator of financial constraints and hypothesized that lower dividend paying firm is to be considered as financial constrained, hence greater sensitivity of investment towards cash flows. Later, this study challenged by researchers on both theoretical and empirical grounds. Kaplan & Zingales (1997) argued that sensitivity of investment to cash flow is not a valid source of judging financial constraints. They argued that less financially constrained firms prove to be more sensitive to investment to cash flow than more constrained firms. According to them all firm facing financial constraints, but the intensity varies according to their difference between cost of internal and external financing. There are number of researchers who conducted studies in line with Kaplan and Zingales (1997) like Kadapakkam et at., 1998; Cleary, 1999; Dasgupta & Sengupta, 2007; Erickson & Whited, 2000; Alti, 2003; Chen & Chen, 2012 and agreed that sensitivity of investment to cash flow is not a efficient measure of measuring financial constraints because of multicollinearity problems. However, the discussion about the behavior of firm's investment in the presence of financial constraints continues intense.

Traditional financial constraints theory proclaimed that the information asymmetry, agency problems and transaction cost are the main source of financial constraints (Myers and Majluf, 1984; Gertler, 1992). Nowadays, researchers goes one step forward to diagnose the more specific causes of financial constraints like governance quality, financial transparency, financial reporting quality, and the financial experience of the directors etc (Biddle and Hilary, 2006; Jiang et al., 2016; Li et al., 2018, Khan & Ali, 2018; Nawaz et al.,2019).

Financial transparency and disclosure is one of the possible solutions to handle information asymmetry which is one of the main causes of financial constraints. Li (2018) states that increasing financial transparency can effectively wipe out the information asymmetry issue between enterprises and financial institutions, enhancing firm's ability to obtain external financial resources. Jensen and Meckling (1976) advocates that good disclosure practices minimize agency cost and helpful in

mitigating information asymmetry between managers and shareholders. Extensive literature available that discuss the drivers of corporate disclosures. Among these, Corporate Governance (CG) has paid considerable attention in shaping disclosure practices among firms. For instance, ownership structure (e.g., Eng and Mak, 2003; Chen et al., 2008), the boards mechanism (e.g., Cheng and Courtenay, 2006; Patelli and Prencipe, 2007), the audit committee (e.g., Bronson et al., 2009), and audit quality (e.g., Piot and Janin, 2007) have identified as determinants of the extent of voluntary disclosure.

To minimize the agency problem, is another way to get out of financial constraints. Ai and Wei (2004) claims that investors can supervise and restrain the financiers by acquiring corporate governance rights. This can not only protect the investor's rights but can relieve firm from financial constraints as well. Bhojraj and Sengupta (2003) note that efficient corporate governance minimize default risk by mitigating agency costs and monitoring managerial performance and by eliminating information asymmetry between the firm and the lender.

Reducing transaction cost is another effective mechanism to deal with financial constraints. Li (2011) document that firm can get finance at cheaper rate through establishing good and trust building relationship with financial institutions. Ge (2017) argues that agency cost can be handled by M&A, thus minimizing transaction costs and elevating financial constraints.

The availability of external financing is the backbone for economic prosperity. Ahmad and Hamid (2011) argues that Pakistan's financial sector is not adequate to meet liquidity requirement of financial sector as it only meet 10% financial needs of firms. They further remark that 40% of Pakistani firms complain about scarcity of external financing while in India only 12%, in Sri Lanka 14% and 15% Indonesian firms talk about the limitation of external funds. In Pakistan, credit facility to private sector is on decreasing trend and currently it comprises 23.3% of GDP. This ratio is lowest in the region as India (46.8%) and Bangladesh (41.5%) according to the world development index (2011). At present, Pakistan firms meet 80% of financial needs to tab new investment opportunities through internal sources while Sri Lankan firms have only meet 52% through internal sources (Global Financial Inclusion, 2014). The presence of external financing to meet working capital requirement has share only 6.5% while the same is in Bangladesh (32%), Sri Lanka (21%) and India (16%) as reported by World Bank, 2011. The above-mentioned points reveal that firms operating in Pakistan face financial constraints, and therefore, they mostly rely on internal financial resources to meet their financing needs.

There has been a generally consensus by the researchers that asymmetric information and agency problems are more sensitive in developing economies by virtue of weak governance mechanism and the limited potential of market institutions to adequately asses firm's investment projects and financial stature (Kalatzis et al., 2008; Stieglitz, 1989). So, it is theorized that an effective and efficient governance mechanism is necessary to effectively utilized firm resources but to also refrain firms from financial constraints.

The major contribution of this paper is to study the role of corporate governance on financial constraints, non-existent in Pakistani literature. There are very limited numbers of studies available that explore the possible impact of governance structure on financial constraints status of the firm (Allen and Phillips, 2000; Filatotchev et al., 2007; Goergen and Renneboog, 2001). Further, financial constraints as a topic of finance mostly studied in the context of developed economies like United States and European countries (Kumar &Ranjani, 2018). To get understanding this concept in Pakistani perspective is essential as firms have to face higher borrowing cost which inherently leads them towards financial constraints situation.

We used an unbalanced panel data of 190 Pakistan Stock Exchange (PSX) listed firms for the period 2010-2018 to estimate the logit probability model. KZ index proposed by Lamont et al., (2001) used to categorize the firms into financial constrained and unconstrained status. This index in turn was based on estimation of ordered logit model of Kaplan and Zingales (1997). Results show that ownership structure has significant association with financial constraints that board structure and audit committee variables; furthermore, liquidity variable shows significant association to reduce the likelihood of financial constraints.

The structure of this study is as follow: section 2 demonstrates the literature review; section 3 presents conceptual framework; Section 4 talk about data and methodology; section 5 provide the results; and section 6 concludes the findings of this study.

LITERATURE REVIEW

A firm's investment proclivity may affect its capacity to access extrinsic funds. The presence of barriers in capital market leads firm towards financial constraints which squeeze its ability of investment (Cao & Leung, 2016). The higher tendency of conflict of interest between shareholders and managers depict unpleasant signals in the capital market which may limit firm's power to access extrinsic financial resources that leads the firm towards financial constraints state. This un-accessibility of external funds hampers the firm performance such as profitability (Viet et al., 2020). Further, firms that can raise funds from external market without any obstacle will grow better (Ayyagari et al., 2010; Girma&Vencappa, 2015). There are number of studies that strengthen the corporate governance literature by discussing it with information asymmetry, agency cost, financial disclosure, financial transparency, which in turn related with financial constraints literature as these are the major participator or mechanism to handle financial constraints.

As discussed above, information asymmetry is one of the major causes of financial constraints. It occurs when one party has more informationally equipped that then second one. Brown & Hillegeist (2007) explains information asymmetry as it occurs when one or more investors are privy to the company's value while the rest can access on public

information. In a company, management has more and complete information than the outside investors. Resultantly, investors not truly valued the company as they have limited and selective information (Akerlof, 1970). Creditors looking for a compensation for capital that costs higher than the costs of internal funds (Lemmon & Zender, 2016). So companies more dependent on internal funds than external financial resources as costs of external funds goes higher by virtue of this information asymmetry (Myers, 1984). This focus on internal funds to meet investment opportunity is called investment cash flow sensitivity (ICFS). Conversely, companies that do not face high information costs they got external funds at cheaper rates. So these companies are less dependent on internal cash flow.

Jamalinesari and Soheili (2015) investigate the CG and information asymmetry relationship on 145 listed Tehran Stock Exchange firms over the period from 2008-2013. CG variables include institutional ownership, ownership concentration, type of auditor, and board independence and changes in liquidity in stock market used as a proxy of information asymmetry. Results show that board independence, and institutional ownership has a significant negative while ownership concentrations have significant positive relationship between the two and auditor's type has no significant association with information asymmetry.

Tessema (2019) empirically analyzing the impact of CG on the level of information asymmetry on Gulf Cooperation Council (GCC) countries. The sample used in this study comprises of listed local banks for the fiscal year 2012-2016. Information asymmetry is proxies by share trading volume, market value of shares traded, and volatility of shares returns. Results shows that board independence, institutional ownership, blockholders, and board size leads to raise the information asymmetry that shows positive association with information asymmetry.

Existing literature on the association between information asymmetry and disclosure argues that an enhanced voluntary disclosure minimizes adverse selection problems in the equity market and counter the information asymmetry problem as well (Diamond & Verrecchia, 1991; Lambert, Leuz, & Vvrrecchia, 2007; Leuz & Verrecchia, 2000). According to information economics theory, voluntary disclosure is an effective tool to minimize information asymmetry between managers and investors and minimize cost of capital. According to Diamond and Verrecchia (1991) this outcome occurs through greater disclosure that enhance transparency which in turn increase stock market liquidity and reduce transaction costs of a firm's stock. As Chen et al., (2003) claims that disclosure lowering the cost of capital to 0.47% while good CG mechanism reducing the firm cost of equity by 1.26%. But in the context of Asian emerging markets, Chen et al., (2003) claims that governance disclosure plays weak role in reducing cost of capital. Consistent with this view, numerous empirical studies documents that higher disclosure quality reduces information asymmetry by altering the trading behavior of uninformed investors (Cheng, Courtenay, & Krishnamurti, 2006; Lang & Lundholm, 2003; Walker, 1995). Wang & Chaung (2015) narrates that low information transparency increase information asymmetry problems that leads to adverse selection, moral hazards, and misappropriation of capital funds. Information asymmetry decrease with the comprehensive disclosure practices of firms, thereby increasing the liquidity of a firm's stock (Healy and Palepu, 2001).

Eng and Mark (2003) studied ownership and board structure as CG variables to investigate the impact of the same on voluntary disclosure practices. Ownership variables comprises of managerial ownership, blockholders ownership and government ownership and board structure measures through number of independent directors in board along with number of control variables i.e. firm size, leverage, auditor reputation, growth opportunities, market to book value of assets and profitability measures ROA and ROE. Sample comprises of 158 firms listed on the Stock Exchange of Singapore. Voluntary disclosure measures through aggregate score of non-mandatory strategic, non-financial, and financial information of sample firms. The result shows that managerial ownership and government ownership is positively associated while board independence negative linked with disclosure practices. Further, blockholders ownership remains insignificant with disclosure practices.

Alhazaimeh et al., (2014) analyze the impact of CG and ownership structure on voluntary disclosure practices of 72 Jordanian listed companies over the period from 2002 to 2011. By employing the system GMM estimation technique, results show that board activity, foreign ownership, board independence, and blockholders ownership have a significant influence on voluntary disclosure practices among sample firms.

Talpur et al., (2018) examined the role of an AC on voluntary corporate governance disclosure on Malaysian listed firms. The study used the content analysis of annual reports to get voluntary corporate governance disclosure and the impact of AC measures through size, independence, and meeting frequency. Result shows that all three variables of AC is positively associated with voluntary corporate governance disclosure among sample companies.

In the perspective of Pakistan, Ullah et al., (2018) investigated the impact of CG mechanism on voluntary disclosure of 62 non-financial PSX listed firms for the period 2013 to 2015. Through employing multiple regression technique, result shows CG has significant influence on voluntary disclosure practices. It reveals that audit committee size and meeting frequency has a positive impact on voluntary disclosure while duality shows a significant negative impact on voluntary disclosure. Further result shows that board mechanism (board size, board meetings, board composition) has no association with voluntary disclosure.

Sarhan and Ntim (2018) investigate the impact of board characteristics and ownership structure on emerging Middle Eastern and North African (MENA) economies over the period from 2009-2014 on voluntary disclosure. Results shows that in general MENA countries have low level of disclosure compare to developed countries. Further results reveal that regarding

board characteristics, board diversity have a positive association with disclosure. Duality, managerial shareholdings, and government shareholdings have negative association towards voluntary disclosure; however, family ownership fails to prove any association with voluntary disclosure.

Alkurdi et al., (2019) explores the impact of CG attributes on mandatory and voluntary disclosure practices for a sample of financial Jordanian listed firms. They carried out their study on 15 Jordanian banks over the period from 2008-2015. Ordinary Least Squares (OLS) regression technique employed to establish the findings. Results reveals that board size, independent board, meeting frequency and separation between CEO and chairman of the board has statistically positive impact on voluntary disclosure while managerial ownership fails to establish any association with voluntary disclosure. Further results show that audit committee size, and board independency has significant positive impact on mandatory disclosure practices.

Corporate governance literature discusses one of two types of agency problems that raises conflict of interest between managers and shareholders and ultimately brings the firm into financial constrained state. One, when the interest of board of directors and shareholders are assumed to be aligned (board of directors make decisions which are in the best interest of the shareholders, but the interest of the management are not aligned with the interest of the board of directors and shareholders. There are several mechanism discusses in literature to deal with this type of conflict like executive compensation plan, incentive structures, and other monitoring mechanism that make sure that mangers work but for the best interest of the shareholders. Second type of agency problem arises in a situation where interest of board and management are aligned but these are not aligned with the interest of the shareholders. Research on this type of conflict includes studies on board independence, entrenched CEO's, and shareholders actions to influence, challenge, or overturn the board decisions. Fakhari and Pitenoei (2017) added that higher the conflict of interest, the greater the information asymmetry and the weaker information environment are. This improper information environment along with high information asymmetry discourages investors to participate in capital market, prevent optimal resource allocation and finally increase the cost of capital and financial constraints.

To reduce agency conflict, corporate governance has both formal and informal contracts. Formal contracts include corporate charters, employment contracts, exchange listing requirements, and stock ownership guidelines. Informal contracts comprises of unwritten or implicit arrangements that allow the contracting parties to engage in activities that would otherwise be either prohibitively costly or infeasible to memorialize in a formal contract.

Wang et al., (2010) conducted study on A-share listed Chinese companies to investigate the impact of ownership and governance variables on agency costs. Agency cost measures through four proxies namely asset turnover ratio, sales and management expense ratio, free-cash flow ratio, and assets liquidity ratio and applied fixed effect regression model to conclude the findings. Results shows a significant positive relationship between board characteristics and free cash flow, while with other three agency cost variables it shows insignificant results. Managerial ownership remains insignificant with all four measures of agency costs.

The study of (Yegon et al., 2014) analyzes the impact of governance structure of Keynian firms listed at Nairobi stock exchange on agency cost for the period from 2008 to 2012. They measured agency cost through asset turnover ratio while governance structure measures through institutional ownership, management ownership, external ownership, board size, and board independence. Result reveals that institutional ownership and management ownership has an inverse association with agency cost while board size and board independence has direct association with agency costs.

Garanina & kaikova (2016) empirically test the impact of CG measures through board size, board composition, leverage, and firm size on agency cost in the context of USA, Russia, and Norway. Sample comprises of 243 Americans, 196 Russians, and 175 Norwegians joint stock companies over the period from 2004 to 2012. After applying regression analysis, results describes that board size is positively associated with agency costs whereas gender diverse board has positive impact in case of US companies, a negative association in case of Norwegian companies, and while in case of Russian firms it show insignificant association in term of agency cost.

Zurigat et al., (2016) aims to study the impact of internal governance measures on agency costs on listed industrial companies of ASX for the period from 2000-2013. These CG mechanisms are Board size, corporate ownership, management reward, and debt financing. Final sample of the study comprises of 58 companies and result shows a direct relationship between management rewards and agency cost while level of debt financing has significantly inverse association with agency cost and corporate ownership has not shown any association with agency costs.

Hamdan et al., (2016) studies the ownership structure and its impact on agency costs on listed firms on Bahrain stock exchange. Ownership structure comprises of ownership concentration, board ownership, corporate ownership, and foreign ownership. Sample data comprises of longitudinal data of 31 companies for the period 2002-2014 and fixed effect model used to arrive at a conclusion. Results shows that ownership structure has significant negative relationship with agency cost except board ownership which shows insignificant association with agency costs.

In the perspective of Pakistan, Siddqsui et al., (2013) analyzed the institutional governance mechanism to find its impact on agency costs. Sample data comprises of 120 firms over the period from 2003-2010 listed at Pakistan Stock Exchange (PSX). They use two proxies to measure agency costs i.e. liquidity ratio, asset turnover ratio and governance variables comprises of board size and board meetings. Results show a positive relationship in term of board size while board meetings show a negative impact on agency costs.

Al-Karasneh and Bataineh (2018) investigate the impact of corporate governance on reducing agency cost on 46 Jordanian industrial public shareholding companies over the period from 2014-2016. To accomplish the research objective, agency cost measures through asset turnover ratio and operating expense percentage, while board size, institutional ownership, audit committee used as a governance variable. The relationship between agency cost and corporate governance is measures through generalized estimating equations (GEE) model. Result shows insignificant association between governance variables and agency cost.

THEORETICAL/ CONCEPTUAL FRAMEWORK

Conceptual framework provides support to the researcher in a number of ways. It gives answer the questions like how and why certain phenomena are occurred. Further it narrates how much phenomena are effective (Bargathi, 2014).

Based on the above comments, figure 1 presents the conceptual framework of this study. This framework explains that this study investigates the aftermath of ownership structure on financial constraints while using number of control variables. Ownership structure measures through following proxies i.e. insider ownership, family ownership, institutional ownership, foreign ownership, block holder ownership, and associated ownership; while financial constraints measures through KZ Index. Control variables comprise of firm size, leverage, Tobin's Q, dividend policy, and change in short term credit.

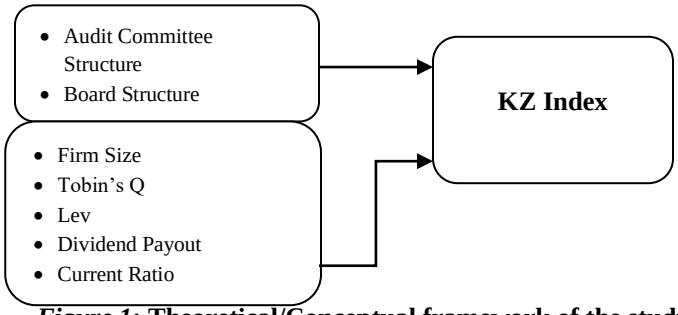

***Figure 1*: Theoretical/Conceptual framework of the study**

DATA AND METHODOLOGY

This study empirically examined the impact of governance variables on financial curtailments. To accomplish this purpose, secondary data and panel in nature data used in this study. Data has been collected from diversified annual reports of respected firms, SBP balance sheet data analysis, brecorder.com, open doors websites and PSX historical data. Study employed annual data as Xiaoqi (2013) favors annual data as variables are explained and data are more in detail available in annual reports.

Moreover, after data collection at initial level, it has been observed that there are some outliers' presents in data which affect the generalizability of the results. So data trimming techniques of standardized variables (z-score) used to deal with the issue and this further eliminate 10 firms having extreme values in the sample data. This final sample represents 35% of PSX listed firms during the study period. Furthermore, the year 2009 used as a lag year to calculate some variables. Hence a total 1716 firms year observations of 205 firms covers the interval from 2010 to 2018 used to analyze the impact of CG practices on financial constraints.

Table 1 presents the description for all financial variables of KZ Index used in this work

Table 1: Variables Definition of Financial Constraints

Abb	Variable Description
K	Capital Stock, Measured by the property plant and equipment, net of depreciation
I	Firm's investment, measured by (Kt-Kt-1)
NI	Net Income
DA	Depreciation and amortization
CF	Cash flow, measured by (NI+DA)
S	Sales
LTD	Long term debt, measured by Long-term liabilities
TA	Total assets
SE	Stockholders' equity
CL	Current Liabilities
FCF	Free Cash flow, measured by (CF+I)/S
TD	Total Debt, measured by (LTD+STD)
TE	Total equity, measured by (PC+ELP+PL)
ROA	Ratio of NI to TA
OI	Operational income

We use KZ Index developed by Lamont, Polk e Saa-Requejo (2001) to categorized firms as financially constrained and unconstrained. This index comprises of variables belongs to financial constraint and it will indicate firms with higher likelihood to be considered as financially constraint. It is to be considered a good measure of financial constraint although it employs smaller number of variables, once it captures the essence of firm's financial constraint.

$$\text{KZ Index}_{it} = -[1.0019.\frac{CF}{Kt-1}]_{it} + 3.139.[\frac{LTD}{Kt-1}]_{it} - 1.1315.\ FCF_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Where t is year; i is firm; K_{it} is the stock capital; CF_{it} is the cash flow variable; LTD_{it} is the long-term debt and FCF_{it} is free cash flow.

We take values of KZ Index of sample data and divide firms into constraint and unconstraint group based of median value of the KZ Index. Firms whose index value is higher than median value of KZ Index belongs to financial constraint group and assume value 1 rest of the firms are in unconstraint group assume value 0. After classifying the firms into constraint and unconstraint group, we employed logit model as dependent variable is in binary form.

We use the following econometric model to conclude the findings.

$$P(KZ_{it} = 1 \mid X1, \beta, \alpha_i) = F[\beta_0 + \beta_1[\frac{CF}{Kt-1}]_{it} + \beta 2\ [FCF]_{it} + \beta 3\ [\frac{LTD}{Kt-1}]_{it} + \beta_{cg}\ (var\_CG)_{it}]$$

Where *i* is the firm; *t* represent year; *X* is a vector of all explanatory variables; $\alpha_i$is the firm specific effect; CF_{it} represent the cash flow; K_{t-1} is capital stock; FCF_{it} is the free cash flow; LTD_{it} is long-term debt. Corporate governance (CG) variables include ownership structure variable i.e. Insider ownership, family ownership, institutional ownership, foreign ownership, concentrated ownership, and block holder ownership.

While estimating equation 2, α_i can be fixed or random effect. In fixed effect logit model $\alpha_i$may be correlated with independent variables while in random effect model $\alpha_i$is a random variable , $\alpha_i \sim N(0, \sigma^2_\alpha)$. We adopt random effect logit model to consider the largest number of observation in the

model as possible. Cameron and Trivedi (2010) explain that this imprecision occurs due to presence of time-un varying information.

RESULTS

Considering the issues discussed in previous sections, present section describes the main economic findings from equation 2. Table 2 presents the results of financial variables of sample data as a whole and between constrained and unconstrained firms categorize based on KZ Index. Results shows that financial constrained firms show lower values for investment rate, cash flow, sales and free cash flow. These results show greater need and dependence of external resources and cash flow of financial unconstrained firms to meet liquidity requirement. Results support the findings of Eunike & Mallelak (2019) who concludes investment-cash flow sensitivity is found to be higher in financially constrained firms in Indonesian context. Small firms are considered more financial constrained, having lower level of profitability, probability of the presence of high fixed cost and deprive to gain the benefits from economies of scale and economies of production.

Debt-equity ratio shows that constrained firms have higher leverage in capital structure than unconstrained firms that leads the firms towards financial constraints status. In relation to long-term debt, unconstrained firms employ more long-term debt than short term debt. That shows long term debt more expensive than short term debt employed by unconstrained firms.

Table: 2 Characteristics of firms- Descriptive Statistics

Indicators	**Total Sample**	**Sample divided into groups**	
		Unconstrained Firms	**Constrained Firms**
Investment/Capital Stock $_{t-1}$	0.19	0.282	0.087
	(3.313)	(4.557)	(0.279)
Cash Flow/Capital Stock $_{t-1}$	1.335	2.450	0.141
	(16.663)	(22.920)	(0.278)
Sales/Capital Stock $_{t-1}$	16.778	28.801	3.425
	(159.426)	(218.998)	(8.165)
Free Cash Flow	0.179	0.261	0.088
	(0.474)	(0.618)	(0.188)
Total Assets	2.42E+07	28700000	19400000.000
	(59700000.000)	(72100000.000)	41400000.000
Long-term Debt/Capital Stock $_{t-1}$	0.21	0.151	0.275
	(1.794)	(2.465)	(0.194)
Total Debt/Total equity	0.86	0.302	1.479
	(3.300)	(0.664)	(4.669)
ROA	0.074	0.123	0.020
	(0.163)	(0.202)	(0.072)
Operational Income/Capital Stock $_{t-1}$	2.254	4.099	0.204
	(25.093)	(34.494)	(0.437)
Number of Observations	1716	903	813

Notes: The table reports sample means of financial variables. Standard deviation is presented in parentheses. The subscript t indexes time.

The panel A of table 3 presents the descriptive statistics of governance variables in sample firms and between constrained and unconstrained firms. On average results show that there is no difference of audit committee and board structure variables between constrained and unconstrained firms. This shows their passive role in financial condition of the firm. Results shows that 87% of audit committee members are independent and the same was 42% in case of board independence. Managers have 19% ownership stake in sample firms. Among constrained firms insiders have 25% shareholdings that was not the case in unconstrained firms as insiders have only 10% ownership. This witness's agency issue among manager owned firms that lead towards financial constraints. Other nature of ownership found in Pakistani firms are family (19%), Institution (10%), foreign (5%), associated (23%), and concentrated (56%). For foreign controlled firms, 7% are financially unconstrained and 3% financially constrained firms.

Table: 3 Corporate Governance Variables - Descriptive Statistics

Panel A: Corporate Governance Variables			
Indicators	Total Sample	Sample divided into groups	
		Unconstrained Firms	Constrained Firms
AC Ind	0.872	0.884	0.859
	(0.180)	(0.171)	(0.188)
B Ind	0.426	0.446	0.404
	(0.283)	(0.293)	(0.271)
B Activity	5.534	5.430	5.650
	(2.491)	(2.376)	(2.608)
B Part	0.823	0.813	0.834
	(0.123)	(0.124)	(0.122)
Inside	0.197	0.105	0.255
	(0.240)	(0.097)	(0.260)
Family	0.189	0.137	0.247
	(0.242)	(0.210)	(0.263)
Institution	0.101	0.105	0.097
	(0.102)	(0.097)	(0.115)
Foreign	0.053	0.072	0.031
	(0.143)	(0.172)	(0.098)
Associated	0.325	0.378	0.266
	(0.307)	(0.314)	(0.287)
ConOwn	0.652	0.676	0.626
	(0.198)	(0.195)	(0.198)
Panel B: Control Variables			
Indicators	Total Sample	Sample divided into groups	
		Unconstrained Firms	Constrained Firms
Firm Size	9.826	9.834	9.816
	(0.691)	(0.727)	(0.648)
Tobin's Q	1.532	1.865	1.164
	(1.844)	(2.326)	(0.958)
Lev	0.508	0.407	0.621
	(0.221)	(0.198)	(0.189)
Div Payout	0.378	0.504	0.238
	(1.148)	(1.375)	(0.791)
CR	1.927	2.62	1.156
	(4.932)	(6.694)	(0.687)

Notes: Panel A reports characteristics of ownership variables. AC Ind shows audit committee independence, B Ind shows board independence, B part shows board participation, B activity shows number of board meetings in a financial year, inside shows managerial ownership, Inst shows institutional ownership, Foreign shows foreign ownership, Associate shows associated ownership, and ConOwn show concentrated ownership among sample firms. Standard deviation is presented in parentheses.

To examine the role of corporate governance on firm's financial constraint, we regress logit model. Firms have categorized into financial constraints and un-constraints on the basis of KZ Index, and carries the value of 1 if firm in financial constraints or 0 otherwise. The results of the logit model presented in table 4.

The negative sign of cash flow and free cash flow shows that there is an inverse connection between cash flow and free cash flow with financial constraints. The greater the cash flow and free cash flow lower will be the probability of financial constraints of respective firm. Debt shows the positive association towards financial constraints. The greater the portion of debt in capital structure, higher will be the probability of financial constraints. All financial variables show significant association with financial constraints of sample firms which endorse the earlier findings made by Kalatzis et al., (2010) in the Brazilian firms context.

Board participation shows significant positive association towards financial constraints situation of the firm. Board members look upon interest of themselves rather than to safeguard the interest of minority shareholders. This could shake the confidence of minority shareholders, who could no

longer ready to invest infirm. Resultantly firm face financial constraints.

Family ownership shows significant positive association with financial constraints. This shows the controlling effects of family ownership. Family owner by virtue of fear of losing control on firms reluctant to issue new equity which constraints the external financing among controlling firms. These results match the findings of (Gingliger and Saddoru, 2007; Hanazaki and Lui, 2006) who concluded that family owned firms are more prone to financial constraints than non-family-controlled firms. Furthermore, Chu et al., (2016) studied the Malaysian family-controlled firms and found by virtue of information asymmetry, family firms are less efficient from investment point of view.

The presence of foreign ownership put significant negative impact on firm's financial constraints. Foreign owner bring latest technologies and expertise along with capital. This enhance firms image in the market. Resultantly this will enhance firm capacity to generate funds from the market to meet liquidity requirement in order to grab positive net present value projects. Furthermore, foreign ownership enhances voluntary disclosure (Alhazaimeh et al., 2014), reduce agency cost (Hamdan et al., 2016) which depicts a negative association in connection with financial constraints.

Table 4: Probability of Financial Constraints

Variables	Random Effect Logit
(Cash Flow/Capital Stock t-1)it	-3.641***
	(0.285)
(Free Cash Flow)it	-2.742***
	(0.408)
(Debt/Capital Stock t-1)it	3.627***
	(0.373)
(AC Ind)it	-0.527
	(0.341)
(B Ind)it	0.254
	(0.259)
(B Part)it	1.427***
	(0.368)
(B Activity)it	0.051*
	(0.025)
(Inside)it	0.923
	(0.613)
(Family)it	0.211***
	(0.550)
(Inst)it	-0.758***
	(0.627)
(Foreign)it	-0.289***
	(0.518)
(Assown)it	0.472
	(0.336)
(ConOwn)it	1.125***
	(0.0040)
Number of Firms	201
Number of Observations	1717
LR test	156.29

*Note: This table shows the results of logit model estimation. KZ Index is a dummy variable that carries the value of 1 if firm is financially constraint and 0 otherwise. Standard errors are presented in parentheses. Symbols *** and * shows significance at the 1% and 10% respectively.*

Institutional shareholding too shows significant negative association with financial constraints. Higher the presence of institutional shareholding in ownership structure, lower will be the probability of firm's financial constraints. Institutional shareholders have large stake in firm as they invest heavy funds in firm. Further they have resources and motivation to monitor the management, this effective monitoring elevates agency cost as well. Resultantly manager work but for the best interest of shareholder and not in a position to adopt self serving behavior. This enhances the resources utilization of the firm and increase firm profitability as well. Moreover, institutional ownership negatively associates with information asymmetry (Jamalinesari and Soheili, (2015), Agency cost (Yegon et al., 2014) that depicts inverse association with financial constraints. Concentrated ownership shows significant positive impact on financial constraints of the firm. These results show the present of entrenchment effect in which controlling shareholders look upon his own interest. Controlling shareholders not be willing to reduce control even if were benefits to finance new projects. Result support the findings of Setia-Atmaja (2009), that concentrated ownership negatively effect on board independence, as they prefer to be a more dependent board; hence they are willing to retain more effective control on board decision and would not go to capital market by virtue of probably fear of losing control over firm. Furthermore, concentrated ownership has more information asymmetry (Jamalinesari and Soheili, 2015; Tassema, 2019), negative impact in disclosure practices (Hamdan et al., 2016) which theorized positive association with financial constraints.

CONCLUSIONS

In this paper, we empirically test the possible association between corporate governance variables and financial constraints among PSX listed firms. We employed unbalanced panel data of PSX listed firms for the period of 2010 to 2018. To deal with possible negative effects of outliers, data are winsorized at 5%. Firms are segregated among constrain and un-constraint group based on KZ Index provided by the literature. With this, we used logit probability model to conclude the findings.

The principal outcome of logit model are that the availability of cash flows and free cash flows decrease the likelihood of financial constraints but the presence of debt in capital structure increase the possibility of financial constraints.

As for as governance mechanism are concerned board participation and board activity proves significant positive association with financial constraints in audit committee and board structure mechanism. The presence of institutional and foreign shareholding in firms decreases the likelihood of firm of being financially constraint. The presence of controlling shareholding as measured through concentrated ownership significantly positively associate towards financial constraints. But the likelihood of firm being financially constraint increases for family firms. This result endorse the earlier findings of Gingliger and Saddour (2007), as family owners reluctant to issue new equity but prefer to maintain their controlling rights resultantly constraining the access of external financing.

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Appendix-A

Corporate Governance Variable Measurement

Variable	Measurement
AC_ Ind	Audit committee independence calculated by non-executive directors in an audit committee/total members in an audit committee
B_ Ind	Board independence is measured by 1/B_Size* outside Directors/Inside Directors
B_Activity	Board activity measured by numbers if board committee meetings held in a financial year
B_Part	Board participation calculated by total number of board members attendance/required board members attendance
Inside	Insiders ownership calculated by number of shares owned by all insiders/total outstanding shares
Family	Family ownership measured by number of shares owned by entire family members/total outstanding shaes
Institution	Institutional ownership is equal to total number of shares held by institutions/total outstanding shares
Foreign	Foreign ownership measured by total number of shares held by foreigners/total outstnanding shares
Associated	Associated ownership is equal to number of shares held by associates or rated party firms /total outstanding shares
Concentrated	Concentrated ownership calculated by number of shares own by 5 big shareholders /total outstanding shares