Corporate Governance and Downside Systematic Risk with a Moderating Role of Socio-Political in Pakistan

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Abstract

This research investigates the effect of corporate governance on downside systematic risk with moderating effect of socio-political factor. Corporate governance covers key areas such as board structure, ownership structure and audit quality. The research used two proxies, terrorism and assassination, to construct socio-political index, whereas downside-CAPM of Estrada (2002) is used as a measure of systematic risk. Using a sample of 201 non-financial firms from 2003 to 2014, this study has used the Arellano-Bond Dynamic Data-Estimation regression approach to uncover the relationship. Results revealed that the corporate governance mechanism reduces the firm's downside systematic risk and socio-political factor moderates the relationship between corporate governance and downside systematic risk.

Keywords*: D-CAPM, Corporate Governance, Socio-Political factors*

1. Introduction

The financial scandal of Enron followed by the bankruptcy of highly reputed firms such as Tyco, Health South and World Com trembled the investors' confidence in equity market. The reliability of accounting information and monitoring mechanism became questionable. Apparently, the huge financial disasters were attributed to weak internal control. However, the credibility of Big 5 Audit firms[3] was seriously damaged especially after the downfall of Arthur Anderson[4].

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4   Arthur Andersen based in Chicago, is an American holding company and formerly one of the "Big Five" audit firms

The investors' belief over the liquidity of equity market across the world was shaken by the occurrence of such extreme abnormalities. As a result, the Security Exchange Commission (SECP) of Pakistan introduced the Code of Corporate Governance in 2002 for the listed corporations to divert the managerial focus towards the maximization of firm value (Kamran & Shah, 2014). Therefore, firms having good corporate governance practices would yield higher rate of return. Hence the firms can access the low-cost financing to decrease the probability of default which minimizes the extreme downside pressure over the stock prices (Wang, Lin, Fung, & Chen, 2015). John and Senbet (1998) argued that corporate governance mechanism empowers the stakeholders to exercise necessary control over the management for maximizing their return on investment. Most of previous studies observed that corporate governance not only improves the firm performance (Bai, Liu, Lu, Song, & Zhang, 2004; Erkens, Hung, & Matos, 2012) but also increases the shareholders' wealth (Ammann, Oesch, & Schmid, 2011; Cremers & Nair, 2005; Ge, Kim, & Song, 2012). Moreover, the emergence of risk management concerns has induced the researchers to explore the relationship of corporate governance and firm risk. In this regard, Gadhoum and Ayadi (2003) ascertained the inverse relationship between corporate governance and firm total risk. Akin, Chen et al. (2003) also found a significantly negative relationship between the managerial ownership and firm risk. In short, the better governance mechanism increases the operational efficiency and reduces the firm risk (Henry, 2010).

The current research extends the existing literature in several ways. The previous study, for instance Wang, Lin, Fung, and Chen (2015) used Value at Risk (VAR) to capture the downside risk. This measure is highly criticized by Artzner, Delbaen, Eber, and Heath (1997) since it measures the percentile profit-loss distribution. Further, most of previous literature used "Capital Asset Pricing Model (CAPM)" to estimate the systematic risk. However, the various empirical studies like Hogan and Warren (1974), Bawa and Lindenberg (1977), Harlow and Rao (1989) and Estrada (2002) claimed that investors are more concerned about the downside systematic risk and have least concern regarding the upward fluctuations. Therefore, this research uses the DCAPM instead of CAPM to measure investors' concern in estimating the Downside Systematic risk.

Secondly, the analysis on non-financial firms of Pakistan Stock Exchange has far reaching implication for other developing economies sharing similar poor governance mechanism. As, Claessens, Djankov, and Lang (2000) observed that two-third of firms in Asian markets have concentrated ownership. This situation creates the problem of wealth expropriation for minority shareholders. Therefore, in order to safeguard the interest of non-controlling shareholders, the revised code of corporate governance requires the listed companies to have at least one-third independent directors along

with an independent audit committee. Therefore, current research investigates the effectiveness of board and audit committee characteristics in constraining the down-side risk.

Thirdly, socio-political factors have played a phenomenal role in the recent economic growth of Pakistan. The favorable socio-political circumstances lay down a solid foundation for strong economic and financial system. Conversely, socio-po-litical instability causes extreme fluctuations in capital market that makes the system more fragile (Julio & Yook, 2012). Therefore, the study uses socio-political index as moderator between corporate governance and downside risk.

Fourthly, previous studies like Wang et al. (2015), Alam and Ali Shah (2013) primarily focused on ownership structure along with fewer proxies of board structure. The current research used ten corporate governance proxies by covering the key aspects such as board composition, ownership structure and audit quality with extended data set that makes it more comprehensive than the previous research studies.

2. Literature Review

2.1. Downside risk measurement

Over the last few three decades, serious questions had raised over the explana-tory power of CAPM by focusing on whether Beta based on mean-variance behavior (hereafter MVB) is an appropriate measure of risk. Because in this case, Beta stems from equilibrium in which investors maximize a utility function that depends on the mean and variance of returns of their portfolio(Akbar, Rahman, & Mehmood, 2012). Moreover, the variance is suitable if the returns are systematic and normally distributed. However the symmetry and normality of returns are disputable matters for many empirical evidences. In addition, variance equally considered upward and downward volatility.

However, investors are more concerned about the downside risk. Therefore, the semi-variance is more suitable measure for various reasons. First, it is an appropriate measure whether the return follows symmetric distribution or asymmetric. Second, the semi-variance combines the variance and skewness information into one measure. Therefore, making it thinkable to use one factor model to calculate investors' required rate of returns based mean-semi-variance (MSB) behavior (Levy & Markowitz, 1979).

The first semi-variance model was proposed by the Hogan and Warren (1974)to calculate the downside systematic risk. later one Hogan and Warren (1974) framework is also generalized by Bawa and Lindenberg (1977)in the form of mean-lower partial moment model (MLPM) and they claimed that their model can better explain the

data as compared to CAPM; in fact, CAPM is a particular case of their generalized (MLPM) model. Just like Hogan-Warren framework, Bawa-Lindenberg framework uses risk-free rate as the standard return in the cosemivariance and it doesn't possess commutative nature either.

Following, Harlow and Rao (1989)derived an MLPM model as more generalized model and claimed that other frameworks are special cases of their arbitrary benchmark return framework. Furthermore, empirical results turn out to be significant in testing their MLPM model and thus, they rejected CAPM as a pricing model. In another argument, they claim that the benchmark return associated with an asset actually the average of returns distributions and not the risk-free rate. Recently, Estrada (2002) modified the HR-beta by defining the covariance of security i's returns with the covariance of the market portfolio in a downside framework as E [min(R it − μ i,0) . min(R Mt − μ M , 0)]. Also known as down side (D-CAPM).

Previous literature ascertained the relationship of corporate governance mechanism with firm downside risk. Wang, Lin, Fung, and Chen (2015) explored the relationship between corporate governance mechanism and firm downside risk. The study argued that the presence of good corporate governance mechanism reduces the firm downside risk. Further, the study argued that managerial ownership and independent director reduce the firm downside risk.

In addition, the strict compliance of corporate governance is expected to maximize the firm performance. Ammann, Oesch, and Schmid (2011) argued that rational investors expect that better governed firms to have high operational efficiency and profitability to maximize shareholders wealth. In addition, these firms also have lower cost of monitoring and control.

Among corporate governance mechanisms, ownership structure has a greater influence on the decision making of management. Wright, Ferris, Sarin, and Awasthi (1996) investigated the impact of block holders and institutional ownership on firm risk taking. Similarly, Gadhoum and Ayadi (2003) analyzed the effect of ownership structure with the risk-taking behavior of Canadian firms. However, the results suggested an inconsistent relationship.

H1: Corporate governance index reduces the firm downside systematic risk

2.2. The board structure and downside risk

2.2.1. Board size and downside systematic risk

The recommendations of several policy makers and analysts related to board struc-

ture are based on the assumption that "One Size Fits All" irrespective of the company or market economic characteristics. This assumption also laid the foundation for numerous corporate governance indices. However, the above-mentioned assumption is contradictory to the empirical evidence i.e., board size characteristics are function of economic development stage and agency risk. In ideal situation, the board members should protect the shareholders wealth thereby increasing firm's future cash flows or reducing the associated risk with expected cash flows (Jensen & Meckling, 1979).

Shleifer and Vishny (1997) analyzed the role of board composition in reducing the economic and agency risk of firms. They argued that investor's returns are exposed to moral hazard and adverse selection problem because the information asymmetry gives the information availability advantage to the management. As a result, the shareholders' interests are compromised. Rational investors recognize and price the impact of these expropriations on economic and agency risks.

H 2: Board Size reduces the firm downside systematic risk

2.2.2. Independent director and downside risk

Empirically, independent board of directors minimizes the firm's exposure to economic and agency risk (Fama & Jensen, 1983). Similarly, Khan and Awan (2012) explored the association between the board composition and firm performance in Pakistan. The results showed that board independence improves the market value of the business. Akin to the previous literature, Ibrahim, Rehman, and Raoof (2010) validated the relationship of board composition and firm performance. The study concluded a statistically significant positive impact of board independence on firm performance.

Contrary to above discussion, some theorists argued that a CEO would perceive the non-executive directors as a huge hurdle in his/her decision making. Therefore, the CEO would hesitate in disclosing some critical information related to the future projects. This situation may trigger the problem of asymmetric information. The environment of mistrust would result in ignominious failure. Similarly, Ravina and Sapienza (2010) argued that executive directors have more inside information because they are directly engaged in managerial affairs.

Moreover, board independence minimizes the cost of financing. This would minimize the firm risk. Anderson, Mansi, and Reeb (2004) ascertained that board independence has inverse relationship with cost of financing. The presence of independent director increases the reliability of financial information and minimizes the chances of window dressing. These findings revealed that the lower cost of financing would not only reduce the probability of default but also the variation in the stock prices.

H 3: Independent director reduces the firm downside systematic risk

2.2.3. The board meeting and downside systematic risk

The board of directors' meeting is beneficial to protect the shareholders wealth (Vafeas, 1999). Empirically, Adams and Ferreira (2009) observed that board meetings enhance its effectiveness to obtain information, fulfill monitoring role as well advise the management. Likewise, Conger, Finegold, and Lawler (1998) argued that regular board meetings facilitate the board of directors to properly monitor the management activities.

Conversely, Adams, Hermalin, and Weisbach (2010) argued that board of directors who do not actively participate in the board meetings are less effective to minimize the agency problem. Moreover, in family owned corporations, majority of the board members are less likely to argue against the family representative directors in order to avoid any conflict (Bettinelli, 2011).

Similarly, Jensen (1993) argued that directors spend a limited time to discuss the strategic decisions. Therefore, regular board meetings are ineffective to devise a proper monitoring and control system. Further, the study revealed the primary reason for this problem is lack of board of directors' power to influence the meeting agenda. In other words, the effectiveness of board meetings is also subject to the delegation of power otherwise it may become a rubber stamp board.

Lorcsh and MacIver (1989) argued that passive board members are merely involved in any decision making other than acting as rubber-stamp. However, active board members properly allocate time to the board meetings. Their visionary approach can affect the board's competency to efficiently and effectively protect shareholder interest (Forbes & Milliken, 1999). The rational investor expects that frequent board meetings would minimize the investor exposure towards risk.

H 4: Board Meetings reduces the firm downside systematic risk

2.2.4. The CEO duality and downside risk

The term CEO duality refers to the situation where a person holds two positions simultaneously in the business organization i.e. Chief Executive Officer and Chairman of the board. Generally, it is believed that CEO duality reduces the monitoring of top management and would flourish nepotism as per agency theory. The situation may create conflict of interest between the Principal and Agent due to the board ineffectiveness in monitoring managerial opportunism (Jensen, 1993; Rhoades, Rechner, & Sundaramurthy, 2001). Consquently, the firm risk would be be reduced.

However, contrary to the agency theory, stewardship theory favors the management's autonomous decision making. The theory proposed that CEO duality would bring coherence in decision making. Therefore, the firm's extraordinary performance is undeniable truth in the presence of CEO duality (Donaldson & Davis, 1994). This would minimize the firm risk.

The literature presents mixed evidences of CEO duality with respect to firm risk. Sharma (2004) argued that firms with CEO duality have greater chances of fraud. Hence, increases the chance of default risk. Muniandy (2007) argued the presence of CEO duality increases the firm risk. Therefore, auditors demand high fees from these firms. Nevertheless, Emprically, Xie (2015) and Chen, Jiang, and Yu (2015) argued that the presence of CEO duality increase the firm value. This would considerably reduce the firm risk.

In addition, the CEO duality also affects the firm performance. Coles, McWilliams, and Sen (2001) also suggested that CEO duality is preferable for health performance which may reducethe firm risk. Similarly, Chen, Cheung, Stouraitis, and Wong (2005) argued that segregating the roles of CEO and Chairperson would have positive consequences over the firm performance.

H 5: CEO duality reduces the firm downside systematic risk

2.3. The ownership structure and downside risk

2.3.1. The managerial ownership and downside systematic risk

The employee stock option plans offered to the managerial employees reduces their unnecessary exploitation. The managerial ownership considerably reduces the Principal-Agent by mitigating the conflict of interest. Such a desirable situation compels the top management to take lofty decisions to safeguard the public interest. However, lack of managerial ownership would create a vacuum of distrust among the concerned stakeholders. These undesirable circumstances lead to carelessly aggressive decisions in highly risky projects by the agent (Singh & Harianto, 1989). However, the other school of thought presume that managers are really concerned about their career, which can be harmful for the firm value. Hirshleifer and Thakor (1992) examined that managers tend avoid risk. Due to their passive behavior, managers some time losses a golden profit taking opportunity.

The argument is quite debatable because of the mixed empirical evidences. For instance, Wright et al. (1996) explored the relationship between the managerial ownership and firm risk. The study indicates that managers' possession of shares reduces the firm risk up-to a large extent. Akin, Chen et al. (2003) also found a significantly

negative relationship between the managerial ownership and firm risk. However, Hutchinson and Gul (2004) asserted a positive relationship between the managerial ownership and firm risk. In addition, Javid and Iqbal (2008) studied the relationship between managerial ownership and firm performance for sample of period 2003-08. The study exhibited a statistically significant positive relationship.

The managers are risk averse as their wealth maximization is directly proportion to the firm value. Therefore, they avoid undertaking riskier projects. Morck, Shleifer, and Vishny (1988); McConnell and Servaes (1990) explained the relationship of managerial ownership and firm value by incentive alignment hypothesis and the managerial entrenchment hypothesis. These hypotheses suggested that low managerial ownership have incentive alignment effect and high managerial ownership would make the managers more risk averse. In addition, when managerial ownership is high it would drive the managers to make conservative choices for themselves (Kim & Lu, 2013).

H 6: Managerial ownership reduces the firm downside systematic risk.

2.3.2. Concentrated ownership and downside risk

Minority shareholders rarely monitor the operational anomalies of a listed business due to lack of control. On the other hand, the majority shareholders have a keen interest in tracing the firm's performance over a period. Generally, a firm with concentrated ownership has been considered as superior performer than a firm with distributed ownership. Claessens and Djankov (1999) studied the association between firm performance and ownership concentration. The study suggested that concentrated ownership contribute positively to the market value of firm. Further, the study argued that concentrated ownership structure enhances employee productivity. In addition, the empirical study of Claessens and Djankov (1999) and Nguyen (2011), tested the link between concentrated ownership and risk. The results revealed that concentrated ownership structure reduces the risk exposure and enhances firm performance.

According to several empirical studies such as La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2000) and Siregar and Utama (2008), ownership concentration minimizes the issue of agency cost. However, it is also being observed that concentrated ownership structure violates the rights of minority shareholders thereby increasing the conflict of interest and risk exposure of firm.

H 7: Concentrated ownership reduces the firm downside systematic risk.

2.3.3 Block holder (Big 5 Ownership) and downside risk

The block holders have greater financial stake in firms. Therefore, they have keen

interest and ability to mitigate the agency problem (Andres, 2008). Particularly, the block-holders monitoring yields high return. Thus, the strong monitoring mechanisms force the management to work more efficiently (Maury & Pajuste, 2005). Nevertheless, block holders have access to inside information which generates idiosyncratic volatility. Thus, it can be concluded that high block holder ownership would increase the downside risk.

H 8: Block holder (Big5 ownership) reduces the firm downside systematic risk.

2.3.4. Institutional ownership and downside systematic risk

The role of institutional investors grabbed immense consideration in literature with respect to corporate governance. Generally, institutional investors have better expertise and information as compared to individual investors. Therefore, the presence of institutional investors reduces the firm risk (Rubin & Smith, 2009).

Prior studies documented that institutional investor have a pivotal role in monitoring the CEO behavior (Johnson & Greening, 1999; Neubaum & Zahra, 2006). Close monitoring of the institutional investor reduces the risk exposure and enhances the expected return. Rubin and Smith (2009) and Sias (1996) ascertained a negative association between institutional investors and firm risk. Further, Rubin and Smith (2009) argued that a sharp decrease in institutional ownership trigger high volatility.

H9: Institutional investors reduce the firm downside systematic risk.

2.4 Audit quality, audit committee and downside risk

2.4.1. Audit committee independence and downside risk

The audit committee has greater role in minimizing the firm risk. The audit committee strictly ensures the standard operation procedure to curtail the managerial opportunistic behavior in general and reduce the firm risk. Therefore, the revised Code of Corporate Governance 2012 has made it mandatory for the listed companies to have an audit committee chaired by the independent director.

2.4.2. Audit committee composition and firm downside risk

DeZoort, Hermanson, Archambeault, and Reed (2002) asserted that the presence of audit committee protects shareholders' interest. Thus, reduces the agency conflict risk between principal and agent. Moreover, functioning audit committee also improves the quality of financial disclosure (Klein, 2002), which reduce the firm cost of capital. As a sequel, the firm would have lower chances of default risk (Anderson, Mansi, & Reeb, 2004). Empirically, Chan and Li (2008) argued that the presence of

independent members inflate the firm value. Likewise, Collier and Zaman (2005) observed that the existence of audit committee boost the investors' confidence. As a result, the firms' stock prices have relatively lower variations.

H 10: Audit committee size reduces the firm downside systematic risk.

2.4.3. Audit quality and firm downside risk

The agency theory asserted that hiring big4 auditors would enhance the credibility of financial disclosure. Such a favorable situation reduces the firm agency risk. The two-proposed hypothesis such as reputation hypothesis and deep pocket hypothesis complement the relationship of big4 audit firm and quality financial disclosure. The reputation hypothesis argued that audit firms provide quality audit services; otherwise there is high probability to lose a valuable client (DeAngelo, 1981).Further, deep pocket hypothesis asserted big audit firms generate large amount of revenue from these company. Therefore, they provide quality audit services to avoid any chance of litigation (Becker, DeFond, Jiambalvo, & Subramanyam, 1998; Simunic, 1980).

H11: Audit committee composition reduces the firm downside systematic risk.

2.5. Socio-political factors

Political instability has a long-standing history of adverse effect on economic growth. The economic down turn because of the political instability triggers uncertainty in the stock market (Julio & Yook, 2012). Political instability can be measured by two approaches, the first one emphasizes on executive instability, while the second option is based on social unrest and political violence (Hussain, Shah, & Ahmad, 2017).

The first approach measures political instability as a propensity to observe government changes. The change can be constitutional or unconstitutional. The basic assumption behind this approach is that the change in leadership is associated with uncertainty of fiscal and monetary policy (Cukierman, Edwards, & Tabellini, 1989;Londregan & Poole, 1990).

On the other hand, the second political instability measure approach focuses on socio-political instability. For this purpose, the constructed political index model is based on various social unrest events like the number of political motivated assassinations, the number of people killed in conjunction with of domestic mass violence, the number of successful coups, the number of attempted but unsuccessful coups, democracy, semi democracies and dictatorships (Ali, 2001). In addition, another study by Asteriou and Price (2001) constructed the political instability index based on TERROR, the number of terrorist incidents, STRIK, the number of strikes ELECT,

an election dummy, REGIME, a dummy variable for War, 1982, GULF, a dummy variable for the period of Gulf War. Similarly, Hussain et al. (2017) securatize the affect of Socio-Political factors on systematic risk in Pakistan Stock Exchange (PSX). The study used four variables like Terrorism, Assassination, Riot and General strike. They further breakdown these variable in two kinds of Events i.e., number of persons killed and number of events. The study suggested number of events instead of number of persons killed is a better measure for Terrorism and Assassination with exception to Riots.

H12: Socio-Political index moderates the relationship between corporate governance index and firm downside systematic risk.

3. Methodology

This research investigates the impact of corporate governance over downside systematic risk. The study considered corporate governance factors such as Board size, Board independence, board meetings, CEO duality, concentrated ownership, institutional ownership, Managerial ownership, Big 5 ownership, audit quality and audit committee . While, the study used assassination and terrorism for the measurement of Socio-Political along with control variable like firm size, debt to asset ratio as well return on equity to minimize Cross-sectional level biasness. The current research constructs the Corporate Governance index and Socio-Political index using Principal component analysis (PCA). The research considered principal components based the eigen value. Those factors having eigen value greater than 1 value were considered for the prediction of index score. For rigorous analysis, the study also examined the individual variable effect corporate governance on Downside Systematic risk (DS-SR).

3.1. Downside systematic risk (DS-SR)

The research used DCAPM of Estarada(2002) for two reasons.First, it is an appropriate measure whether the return follows symmetric distribution or asymmetric. Second, the semi-variance combines the variance and skewness information into one measure. Therefore, making it thinkable to use one factor model to calculate investors' required rate of returns based mean-semi-variance (MSB) behavior.

$$\beta_i^E = \frac{Cov\left[\min\left(R_{it} - \mu_i, 0\right).\min\left(R_{Mt} - \mu_M, 0\right)\right]}{Var\left[\min(R_{Mt} - \mu_M, 0)\right]} \dots\dots\dots(3.1)$$

The downside beta of any asset i can be estimated using regression analysis, although this estimation is a bit tricky for the following reason. Let $y_t = Min[(R_{it} - \mu_i, 0)]$ and $X_t = Min[(R_{Mt} - \mu_M, 0)]$. Let μ_y and μ_{yx} be the mean of y_t and x_t, respectively (Estrada, 2002).

Moreover, current research analyzed the relationship through GMM through Arellano-Bond Dynamic Panel-Data estimation technique. This method is useful to curtail the problem of endogeneity which exists between the corporate governance and Downside systematic risk. Further, the Arellano-Bond Dynamic regression also minimizes the problem of unobservable heterogeneity. The Dynamic Panel-Data estimation technique is also considered by Wang et al. (2015).

3.2. Sample size

The research considered non-financial firms of Pakistan stock exchange. However, financial firms were excluded due to different regulatory frame work. The study also excluded those firms having less five years data.

Table 1: Sample Selection Details

Total No. of Firm on PSX	650
Financial Firm Excluded	146
Firms with incomplete data	274
No. of Firms considered for analysis	230
No. of Firms excluded having less than 5 year data	29
No. of Firm for Final GMM Estimation	201

3.3. Econometric models

The research used Arellano-Bond Dynamic Data-Estimation regression (System GMM) by applying the following econometric models to examined the effect of Corporate governance and downside risk with moderation effect of Socio-Political index.

$$\beta_{it}^{E} = \beta_o + \beta_{it} \sum_{i=1}^{n} CG-Index_{it} + \sum_{i=1}^{n} \gamma_{it} ControlVariable + \varepsilon_i \quad ...(1)$$

β_{it} is downside systematic risk, β_o is regression intercept, CG-Indexit stands for corporate governance index using ten proxies such as $BSIZE_{it}$, $BIND_{it}$, $BMEET_{it}$, CDit, $CONC_{it}$, $INST_{it}$, $MANG_{it}$, $BIG5_{it}$, AUQ_{it}, ACC_{it}, ε_{it} is error term.

$$\beta_{it}^{E} = \beta_o + \beta_{it} \sum_{i=1}^{n} CG-Index_{it} + \beta_t \sum_{i=1}^{n} SP_{it} + \beta_{it} CG-Index_{it} * \sum_{i=1}^{n} SP_t + \sum_{i=1}^{n} \gamma_{it} ControlVariable + \varepsilon_{it} \quad ...(2)$$

CG-Index$_{it}$ Corporate governance index calculated using Principal component analysis. Further, SP$_{it}$ is Socio-Political index through PCA. ∑Control Variables equal to Return on equity, Debt to asset and Firm Size ε_{it} is regression error term. ∑CGit-Indexit*∑SP$_t$ is the interaction term of Corporate governance index and Socio-Political index.

Table 2: Corporate Governance, Socio-Political Factors & Control Variables

Variable	Symbol	Measurement
Corporate Governance		
Board Size	BSIZE	Number of board members (Ullah & Kamal, 2017)
Board Independence	BIND	The number of independent directors divided by the total number of directors on the board for firm i for year t; (Christy, Matolcsy, Wright, & Wyatt, 2013)
Board Meeting	BMEET	Dummy variable = 1, if Four meeting once in a year (Kamran & Shah, 2014)
CEO Duality	CD	Dummy variable = 1 if CEO is also board chairman and 0 otherwise (Christy et al., 2013)
Ownership Concentration	OWNCON	The percentage of issued stock held by the top 20 shareholders for firm i at the end of year t; (Christy et al., 2013)
Institutional Ownership	INSTOWN	Percentage of common stock held by institutions (Kamran & Shah, 2014)
Concentrated Ownership	CONC	Natural log of the number of firm shareholders (Christy et al., 2013)
Managerial Ownership	MANGWN	Percentage of common stock held by management (Saleh, Iskandar, & Rahmat, 2005)
Big 5 Ownership	BIG5	Sum of ownership percentage of the five biggest firm shareholders (Kamran & Shah, 2014)
Audit Quality	AUDQ	Dummy variable = 1 if firm is audited by the Big Four and 0 otherwise (Kamran & Shah, 2014)
Audit Comittee Composition	ACC	No of non-executive directors divided by all members of the committee by Alam and Ali Shah (2013)
Socio-Political Factors		
Assassinations	ASSAS	Political assassinations (Hussain et al., 2017)
Terrorism	TERROR	The No of terrorist incidents ((Hussain et al., 2017)
Control Variables		
Firm SIZE	SIZE	Log of Total Assets (Kamran & Shah, 2014)
Financial Leverage	Debt_Asset	Total Debt divided by Total Assets (Kamran & Shah, 2014)
Profitability	ROE	Net Income divided by Equity Alam and Ali Shah (2013)

$$\beta_{it}^{E} = \beta_o + + \beta_{it} \text{BSIZE}_{it} + \beta_{it} \beta_{it} \text{BIND}_{it} + \beta_{it} \text{BMEET}_{it} + \beta_{it} \text{CD}_{it}$$

$$+ \beta_{it} \text{CONC}_{it} + \beta_{it} \text{INST}_{it} + \beta_{it} \text{MANG}_{it} + \beta_{it} \text{BIG5}_{it} + \beta_{it} \text{AUQ}_{it} + \beta_{it} \text{ACC}_{it} + \sum_{i=1}^{n} \gamma_{it} ControlVariable + \varepsilon_{it} \quad ...(3)$$

BSIZE_{it} is board size, BIND_{it} is equal to board independence, BMEET_{it} is used for board meeting and CD_{it} is CEO duality. Moreover, concentrated ownership is represented through CONC_{it} and INST_{it} depicts Institutional Ownership, MANG_{it} is managerial ownership. Withal, BIG5_{it} stands for big five ownership, AUQ_{it} stands for audit quality, ACC_{it} is Audit Committee Composition. While control variables are ROE, Debt to asset ratio and Size.

4. Analysis and Discussion

4.1. Summary statistics and correlation matrix

The descriptive statistics of variables are reported in Table 3. The board meetings has higher kurtosis value of 36.78 as compared to remaining proxies. Further, board meetings have a higher value of standard deviation that shows higher variations as compared to other variables. Likewise, concentrated ownership has a higher 7.420 value and maximum value of 16.06. Further institutional ownership has a higher kurtosis value of 9.41 that less than Board meeting. Besides, Socio-Political factor has a standard deviation of 1.33. Moreover, the correlation matrix results indicate that corporate governance index has higher negative correlation. Moreover, ownership proxies like concentrated ownership and managerial ownership have weak correlation coefficient values than board structure proxies like board size, board independence. Withal, audit quality has a higher correlation than the audit committee Composition.

4.2. Regression Results

The research analyzed casual effect of corporate governance mechanism over the firm downside risk. In addition, control variable such as size, debt to asset ratio and return on equity are considered control variables to minimize the firm level biasness. Further, the study also scrutinized the moderation effect of the Socio-Political index. The research used Arellano-Bond dynamic data-estimation regression (System GMM). The p-values of Sargan test and AR (2) were insignificant which depicts that instruments used in the research are valid and the data free from serial correlation problem.

The corporate governance index has coefficient value of -8.055. This indicates that corporate governance has a negative impact on Downside systematic risk. The negative coefficient value indicates that corporate governance mechanism would considerably reduce the firm downside risk. Thus, the research ascertained an inverse relationship of corporate governance with firm downside volatility which is robust

Table 3: Descriptive Statistics

Variable	Mean	Median	Max	Min	SD.	Skewness	Kurtosis
DS-SR	14.49	2.196	4097	0.000	115	23.4	687.0
CGIndex	4.46	-0.044	5.310	-4.000	1.460	0.130	2.810
SPIndex	0.080	0.284	2.530	-1.610	1.330	0.240	1.980
BSIZE	8.000	7.000	20.000	0.000	1.730	1.200	7.180
BIND	0.180	0.111	1.000	0.000	0.250	1.430	4.090
BMEET	5.410	5.000	34.000	0.000	2.580	4.530	36.78
CD	0.220	0.000	1.000	0.000	0.420	1.330	2.770
CONC	7.540	7.424	16.060	2.080	1.270	0.470	5.130
INST	0.130	0.077	0.990	0.000	0.150	2.180	9.480
MANG	0.220	0.099	0.960	0.000	0.260	0.930	2.650
BIG5	0.580	0.589	1.000	0.000	0.210	-0.410	2.870
AUQ	0.560	1.000	1.000	0.000	0.500	-0.230	1.050
ACC	0.800	0.750	1.000	0.000	0.220	-1.170	5.070
ROE	0.145	0.158	10.635	-32.646	1.150	-17.124	491.7
SIZE	15.360	15.247	20.023	8.786	1.575	0.026	3.309
DTA	0.635	0.599	9.807	0.009	0.504	8.410	116.985

DS-SR stands for downside systematic risk, CG_Index stands for Corporate governance index, SP is Socio-Political index, board size(BSIZE), board independence(BIND), board meetings (BMEET), CD(CEO duality), concentrated ownership (CONC) , institutional ownership (INST), managerial ownership(MANG), Big 5 ownership(BIG5) and audit quality(AUQ) ,DTA is Debt to Asset ratio.

with Wang et al. (2015).

Moreover, the research tested the moderation effect of interaction terms, i.e. socio-political index. The interaction term, i.e. SocioPol*CG (Socio Political index-*Corporate governance index) has a coefficient value of 14.59. The coefficient value asserts significant moderation effect for non-financial firm. In other words, Socio-Pol*CG moderates the relationship between corporate governance and downside systematic risk. Similarly, the research also investigated the individual proxies' effect to identify those keys factors which contributed in establishing the relationship of corporate governance with firm downside risk. The research observed board size has a positive coefficient value of 1.225. The result depicts that board size increases the firm risk. However, three other proxies of board structure such as board meeting and board independence significantly reduce the firm risk as per their coefficient values of -6.073 and -5.523 respectively. Further, the significant coefficient value of CEO

Table 4: Correlation Matrix

Vari	DS	CG	SP	BSIZE	BIND	BMEET	CD	CONC	INST	MANG	BIG5	AUQ	ACC	ROE	SIZE	DTA
DS	1															
CGIndex	-0.15	1														
SP	-0.03	-0.11	1													
BSIZE	-0.07	0.6	-0.1	1												
BIND	-0.05	0.21	-0.11	0.06	1											
BM	0.04	-0.03	-0.06	0.05	-0.05	1										
CD	0.01	-0.31	-0.08	-0.13	0.06	-0.02	1									
CONC	-0.12	0.67	-0.04	0.35	0.07	-0.03	-0.02	1								
INST	-0.04	0.36	-0.16	0.13	0.08	-0.07	-0.05	0.11	1							
MANG	0.07	-0.69	0.06	-0.21	-0.13	-0.03	0.17	-0.38	-0.21	1						
BIG5	-0.02	0.14	0.03	-0.02	-0.03	-0.04	-0.03	0.03	-0.1	-0.07	1					
AUQ	-0.13	0.58	0.005	0.21	0.05	0.02	-0.13	0.25	0.08	-0.23	0.16	1				
ACC	-0.07	0.48	0	0.17	0.08	-0.1	-0.12	0.17	0.003	-0.21	0.05	0.17	1			
ROE	-0.02	0.06	0.01	0.06	0.02	-0.01	-0.09	-0.0002	0.00	-0.02	0.06	0.05	0.01	1		
SIZE	-0.17	0.48	0.04	0.31	0.01	0.17	-0.06	0.63	0.09	-0.27	0.03	0.25	0.05	0.026	1	
DTA	0.14	-0.13	0.02	-0.01	-0.05	-0.02	0.17	0.01	-0.06	0.02	-0.07	-0.25	-0.07	-0.057	-0.24	1

Table 5: Corporate Governance Index, Socio-Political Index and Downside Systematic Risk

	Model 01	Model 02	Model 03
β(L1)	-0.263***	-0.270***	-0.265***
	(0.0005)	(0.0013)	(0.0009)
ROE	-0.616***	-0.617**	-1.385***
	(0.1850)	(0.308)	(0.445)
Size	-10.92***	-0.756	-0.0759
	(0.662)	(0.511)	(1.336)
DTA	-2.052***	3.982***	3.725***
	(0.672)	(1.152)	(1.241)
CG Index	-8.055***	-18.16***	
	(0.434)	(0.677)	
Socio-Pol_index		-11.71***	
		(0.595)	
SocioPol*CG		14.59***	
		(0.561)	
BSIZE			1.225**
			(0.580)
BIND			-6.073**
			(2.755)
BMEET			-5.523***
			(0.605)
CD			-10.54***
			(2.176)
CONC			-22.85***
			(2.931)
INST			-24.49***
			(3.633)
MANG			24.65***
			(5.912)
BIG5			-79.00***
			(11.13)

AUQ			-7.146**
			(3.270)
ACC			-12.40***
			(2.478)
Constant	183.6***	33.86***	263.8***
	(10.54)	(8.458)	(32.29)
Wald chi2(14)	0.000	0.000	0.000
Sargan	0.620	0.741	0.1806
AR(2) P value	0.3101	0.3151	0.3068
Observations	603	603	603

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. CG Index stands for Corporate governance index, Socio*CG stands is the interactive term , board size(BSIZE), board independence(BIND), board meetings (BMEET) , CD(CEO duality), concentrated ownership (CONC) , institutional ownership (INST), managerial ownership(MANG), Big 5 ownership(BIG5) and audit quality(AUQ)

duality -10.54 suggested that CEO duality minimizes the risk. The results are in line with Christy et al. (2013).

The proxies related to ownership structure have negative impact over the firm downside risk. The concentrated ownership, Institutional ownership and big five ownership reduce the firm downside risk as per their statistically significant coefficient values of -22.85, -24.49 and -79.00 respectively. However, managerial ownership has positive coefficient value of 24.65. The value infers that managerial ownership increases the firm risk. Similarly, the Audit quality and audit committee composition have negative coefficient value of -7.146 and -12.40 respectively. The results reveal that presence of audit quality and audit committee independence would reduce the firm risk.

As far as individual proxy effect is concerned. The study observed a persistent behavior of board size, board meeting, board independence, CEO duality, concentrated ownership, institutional ownership, Big5 ownership, Audit quality and Audit committee. Nevertheless, the study found non-persistent behavior of managerial ownership. These results are in line with Wang et al. (2015) and Christy et al. (2013).

Table 6: Corporate Governance and Downside Systematic Risk

	Model 02	Model 03	Model 04	Model 05	Model 06	Model 07	Model 08	Model 09	Model 10
β(L1)	-0.194***	-0.194***	-0.197***	-0.195***	-0.195***	-0.194***	-0.194***	-0.193***	-0.196***
	(0.0005)	(0.001)	(0.0004)	(0.0006)	(0.0005)	(0.0006)	(0.0009)	(0.0007)	(0.0006)
ROE	-1.138***	-0.760***	-1.113***	-0.884***	-0.915***	-0.884***	-1.794***	-0.930***	-0.937***
	(0.1590)	(0.172)	(0.165)	(0.066)	(0.0753)	(0.109)	(0.347)	(0.090)	(0.152)
Size	-3.223***	-2.060***	-4.171***	-1.614***	-2.015***	-1.836***	4.089***	-1.129***	-1.374***
	(0.208)	(0.317)	(0.197)	(0.112)	(0.079)	(0.117)	(0.339)	(0.090)	(0.208)
DTA	3.836***	3.877***	3.405***	5.110***	4.975***	4.423***	2.163**	5.161***	4.012***
	(0.448)	(0.710)	(0.336)	(0.249)	(0.244)	(0.409)	(0.885)	(0.254)	(0.488)
BSIZE	2.335***								
	(0.192)								
BMEET		-5.970***							
		(0.340)							
CD			-7.542***						
			(0.491)						
CONC				-2.582***					
				(0.384)					
INST					4.533***				
					(0.206)				

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
MANG					-20.34***				
					(0.875)				
BIG5			-66.32***						
			(6.540)						
AUQ		-3.828***							
		(0.998)							
ACC	-19.24***								
	(0.750)								
Constant	45.90***	28.17***	-14.24***	40.88***	40.38***	41.05***	53.37***	76.43***	71.84***
	(3.758)	(1.763)	(4.874)	(3.754)	(2.194)	(1.522)	(4.242)	(3.217)	(5.974)
Wald chi2(14)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sargan Test(P-Value)	0.112	0.220	0.4692	0.152	0.2109	0.400	0.530	0.300	0.1502
AR(2) (P value)	0.3075	0.3077	0.3103	0.3081	0.3103	0.3066	0.306	0.3075	0.3081
Observations	685	795	759	750	759	759	759	749	682

Standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$, board size(BSIZE), board independence(BIND), board meetings (BMEET) , CD(CEO duality), concentrated ownership (CONC) , institutional ownership (INST), managerial ownership(MANG), Big 5 ownership(BIG5) and audit quality(AUQ), DTA is debt to asset ratio , ROE is return on equity, size is firm size

5. Conclusion

The current research explored the polemical debate of corporate governance and downside systematic risk along with moderating effect of Socio-Political factors using dynamic penal regression. The study considered ten corporate governance proxies such as board size, board independence, board meetings, CEO duality concentrated ownership, institutional ownership, managerial ownership, big five ownership, audit quality and audit committee composition. Similarly, the socio-political index is constructed using number of persons killed in assassination and number persons killed in terrorists' events.

The results reveal that corporate governance significantly affects the downside systematic risk. The research ascertained moderation effect of Socio Political index. These results have strong practically implication, that if a firm is strictly observing corporate governance's practices would have low volatility in its stock prices. Nonetheless, Investor confidence would be shaken for a firm having loosened observance.

As far as individual corporate governance proxies are concern, the study suggested that board size and managerial ownership increases the firm downside volatility. However, board meeting, board independence, CEO duality, concentrated ownership, institutional ownership, big5 ownership, audit quality and audit committee have statistically significant have considerable power to reduce the firm downside risk. Moreover, future research may consider the emerging economies to ascertain the relationship of corporate governance and risk. Further, cross country comparison would another interesting avenue for future research.

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