Can Better Corporate Governance and Ownership Structure Reduce the Chances of Stock Price Crash Risk? Evidence from Pakistan Stock Exchange

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Abstract

The purpose of this study is to determine whether corporate governance and the risk of a stock price crash are related. A significant amount of research indicates that managers' propensity to conceal negative information from investors because of employment agreements and professional obligations is a significant contributor to the risk of a stock market crash. The purpose of this research is to confirm if effective governance frameworks aid in limiting these self-serving managerial practices. This study uses a regression model with 1300 data points from PSX-listed firms between 2010 and 2022 to test the hypothesis. This study offers concrete proof of the connection between governance attributes and stock crash risk. The results indicate that board structure may have an effect on lowering the risk of a stock price crash if independent directors and gender diversity are present. Additionally, ownership structure helps reduce crash risk. By expanding on previous research on corporate governance, this paper makes a contribution.

Keywords: Board structure, gender diversity, PSX, ownership structure, crash risk.

1. Introduction

A growing body of research explores the factors that influence stock crash risks as a result of the recent global financial crisis, captivating the interest of regulators, practitioners, and

researchers in the subject of stock price crash risk. The literature reveals that a significant predictor of the likelihood of a stock market crash is the managerial propensity to conceal negative information from investors on the grounds of employment contracts and professional obligations. A stock market crash results from bad news building up to a tipping point, at which point all the bad news is disclosed at once (Hutton et al., 2009; Kim et al., 2011).

A stock price crash is an excessive decline in equity value that results in a significant loss of wealth for equity investors. The risk of a stock price crash is described as the conditional skewness of the return distributions that captures the asymmetry in the risk associated with specific stocks as a result of their explosivity (Kim et al., 2014).

According to a substantial body of research, corporate governance frameworks can reduce agency risk and prevent managers from acting in an opportunistic manner that could be detrimental to shareholders (Karamanou and Vafeas, 2005; Klein, 2002; Masulis et al., 2007; Xie et al., 2003). According to Gompers et al. (2003), previous studies on the impact of corporate governance on different organizational outcomes have mostly concentrated on individual governance mechanisms or created one-dimensional governance metrics by adding up individual variables. A single governance mechanism has also been the sole focus of the crash risk literature (Callen and Fang, 2013; Hutton et al., 2009; Kim et al., 2011; Kim and Zhang, 2016). Instead, we conduct a thorough analysis utilizing a wide range of board and ownership structures, which offers a more enticing and reliable method (Ashbaugh-Skaife et al., 2006; Bebchuk et al., 2009; Bhagat et al., 2008). This allows us to assess the overall effectiveness of a firm's governance system and determine which aspects are most important for reducing crash risk.

Effective board of director governance practices should improve equity amongst the various company stakeholders (Collier & Esteban, 1999; Jensen, 2005; Matten & Crane, 2005). Generally speaking, it is generally accepted that the board of directors is crucial to corporate governance, especially when it comes to overseeing upper management (Fama & Jensen, 1983). In addition, independent directors must guarantee that financial decisions are made with the best interests of all shareholders in mind and do not produce cash flows or earnings that favor controlling or minority shareholders as well as managers (Donaldson & Preston, 1995). Corporate governance becomes crucial when a small group of people control large corporations because it is easy to manipulate earnings to their advantage at the expense of the general welfare. Consequently, there is a need to keep an eye on the opportunistic actions of these managers due to the possibility that these manipulations could harm stakeholders.

According to Yang and Zhao (2014), CEO duality describes a board leadership structure where the CEO also serves as the Chairman of the Board (COB). According to Davidson et al. (2004), a dual CEO-chair has higher expectations for financial performance than a non-dual CEO, which could provide an additional incentive for the dual CEO to exaggerate financial performance and conceal negative information. Furthermore, a company's board of directors is frequently referred to as the shareholder's first line of defence against inept management in an agency theory framework (Weisbach, 1988). The chief executive officer of the company has more authority to control the disclosure of accounting information and withhold unfavourable news from investors if they also serve as the board chair. This is because management is the primary watchdog of the company. Similarly, board gender diversity is considered an important attribute of board structure in curtailing crash risk. Haghigat et al. (2015) explored in their study the impact of institutional investors on SPCR and identified no significant association between the two.

We take into consideration two key aspects of governance mechanisms: (i) ownership structure and (ii) board structure, which are composed of a wide range of seven characteristics. According to Ashbaugh-Skaife et al. (2006), each of these corporate governance dimensions aims to lessen information asymmetry between the company and its external stakeholders, limit opportunistic behaviour by management, and improve or increase monitoring of their actions to support effective decision-making. While we encourage the application of each corporate governance feature, we do not anticipate that all of them would have an equal impact on a company's tendency to experience stock price crashes, as certain attributes may not be particularly relevant to the phenomenon we are examining.

We make contributions to research that examines particular governance characteristics that could influence SPCR. For instance, Hutton et al. (2009), Kim et al. (2011), Kim and Zhang (2015), Callen and Fang (2013), and others have found that executive equity incentives, non-conservative accounting practices, opacity in financial reports, and transient institutional ownership are all associated with an increase in stock price crashes. By offering the first thorough comparison of a wide range of corporate governance characteristics that may reduce (or increase) the risk of future crashes, our study builds on previous research. As a result, we can determine which of these characteristics of corporate governance best explains the existence (or absence) of crash risk. Additionally, when there are multiple studies about governance, we shed light on both board structure and ownership structure that can affect crash risk, namely board size, independent directors, CEO duality, board gender diversity, foreign ownership, and block-holders.

The study is organized as follows: section 2 outlines the literature and hypothesis development; section 3 outlines the research design and the corporate governance

characteristics that were looked into; section 4 describes the empirical analysis; and section 5

wraps up the investigation.

2. Literature Review & Hypotheses Development

Following the introduction of corporate governance, and the stock price crash risk, the study

will focus on the relevant literature on this topic. A core role of corporate governance is to

monitor and resolve agency problems arising from conflicts of interest between business

insiders and outside shareholders (Fama, 1980; Fama & Jensen, 1983). Corporate ownership

is concentrated in most of the world's countries, and controlling shareholders effectively

guide the actions of management or may operate the firm directly (La Porta, et al, 1999).

Controlling owners can utilize their power to enrich themselves at the expense of outside

shareholders, most of whom are presumably minorities. Additionally, in light of agency

theory, the existence of corporate governance mechanisms is anticipated to remedy the

aforementioned issue by lowering the agency problem by holding the top management

accountable for their deeds (La Porta et al., 2000). According to earlier research, effective

governance mechanisms boost investors' trust in the equities market and reduce sentimental

volatility. Similar to this, corporate governance mechanisms address the issue of agency

problems and help the company achieve share price stabilization. As opposed to developed

economies, developing economies are doomed to have poor corporate governance, which

leads to unexpected behavior in the financial markets. Wang (2015), Alam and Ali Shah

(2013), and Christy et al. (2013), established the connection between corporate governance

and firm risk.

This study comprises board structure, including board size, CEO duality, independent

directors and gender diversity. Previous research found a negative relationship between

corporate governance mechanisms and the risk of stock price decline. The stock price crash

risk is reduced by the presence of an effective corporate governance mechanism. This study uses two mechanisms of corporate governance, i.e. board structure and ownership structure. The board structure comprises of board size, independent directors, CEO duality, and board gender diversity (BGD) and the ownership structure comprise of institutional owners, foreign owners, and block-holders.

According to earlier studies (Arosa et al., 2010; Dalton et al., 1999; Gales and Kesner, 1994; Haniffa and Hudaib, 2006; John and Senbet, 1998; Lehn et al., 2009; Yawson, 2006), large boards offer a wider diversity of backgrounds, communications skills, experience, and business contacts outside the company. According to Dalton et al. (1998), larger boards give the directors the opportunity to consult more highly competent advisors and provide greater room for the possibility of correlation with various external linkages. Large boards also contribute significantly to improving and enhancing the results of choices by giving management access to fresh perspectives that could reduce agency issues (Lehn et al., 2009). According to Chang et al. (2017), De Villiers et al. (2011), and Oh et al. (2011), independent board members typically control, supervise, and monitor management and make helpful recommendations for management's decisions on decreasing SPCR. Lenard et al. (2014) explored in their study the impact of board gender diversity on firm risk and found it reduced stock market volatility. Chen, Xu, and Zhang (2015) explored in their study the impact of CEO duality on stock price crash risk and provided evidence that CEO duality is positively associated with firm-specific stock price crash risk.

H1. Board structure has a negative impact in non-financial listed firms in Pakistan's KSE-100 index

H1a: Board size has a negative impact on stock price crash risk in non-financial listed firms in Pakistan's KSE-100 index

H1b: Number of independent directors in a board has a negative impact on stock price crash risk in non-financial listed firms in Pakistan's KSE-100 index

H1c: Board gender diversity has a negative impact on stock price crash risk in non-financial listed firms in Pakistan's KSE-100 index

H1d: CEO duality has a positive impact on stock price crash risk in non-financial listed firms in Pakistan's KSE-100 index

This study comprises ownership structure, including institutional ownership, foreign ownership, and block-holders. Hutton et al. (2009), Kim et al. (2011), Kim and Zhang (2011), Callen and Fang (2013), and others have found that executive equity incentives, non-conservative accounting practices, opacity in financial reports, and transient institutional ownership are all associated with an increase in stock price crashes.

H2: ownership structure has a negative impact on stock price crash risk in non-financial listed firms in Pakistan's KSE-100 index

H2a: institutional ownership has a negative impact on stock price crash risk in non-financial listed firms in Pakistan's KSE-100 index

H2b: foreign ownership has a negative impact on stock price crash risk in non-financial listed firms in Pakistan's KSE-100 index

H2c: block-holders has a negative impact on stock price crash risk in non-financial listed firms in Pakistan's KSE-100 index

3. Methodology

Sample

Quarterly data of the manufacturing companies listed on the Pakistan Stock Exchange between 2010 and 2022 make up the study's sample. Data was gathered from investing.com and the financial statements of the companies that we found on their official websites. The Pakistan Stock Exchange website and scstrading.com are the sources of stock prices and

trading volume. We eliminate the inconsistencies in firm-year observations using the following data filters: (i) financial firms; (ii) firm-years with less than thirteen weeks of stock return data in a year; and (iii) firms with missing data. We have collected 1,300 observations in total.

Measuring Stock Price Crash Risk

The study used fluctuations in stock prices at various periods (down to up volatility) and negative skewness (NSKEW) as measures of stock price crash risk based on the weekly return of stock prices. Negative skewness (NSKEW) and down to up volatility (DUVOL) were used as measures of stock price crash risk by Hutton et al. (2009), and Jin and Myers (2006).

The study used the following expanded market model regression to estimate the weekly return for each firm:

$$R_{i,t} = a_i + B_{1,i}R_{m,t-2} + B_{2,i}R_{m,t-1} + B_{3,i}R_{m,t} + B_{4,i}R_{m,t+1} + B_{5,i}R_{m,t+2} + \varepsilon_{i,t} \quad (1)$$

$R_{i,t}$ is the return of stock i at week, t, and $R_{m,t}$ is the value-weighted market index during quarter t.

The weekly return at the firm-specific level is identified through the error term used in equation 1:

$$W_{i,t} = ln\,(1 + \varepsilon_{i,t}) \qquad (2)$$

Based on the firm-specific weekly return, this study used the "negative coefficient of skewness" as the first measure of stock price crash risk. Chen et al. (2017) defined the negative coefficient of skewness as the "negative of the third moment of firm-specific weekly return". The following is used to calculate NCSKEW:

$$NSKEW = [n(n-1)^{\frac{3}{2}}]/[(n-1)(n-2)^{\frac{3}{2}}] \qquad (3)$$

Where n is the number of observations for firm-specific weekly return at the time, t.

The second measure of stock price crash risk is the down to up volatility (DUVOL) of firm-specific weekly returns. The down to up volatility is calculated by taking the mean weekly return and identifying values up and below the mean points as an up group (up week) and a down group (down week). The standard deviations of the two groups are calculated, and then the log of the ratio of the standard deviation of down weeks to standard deviations of up weeks is taken to get the value.

Down to up volatility (DUVOL) is calculated by using the following formula:

$$DUVOL = \{[ln(n^{u-1})[ln(n^{d-1})]\} \qquad (4)$$

Where, n_u, is the number of up weeks, and, n_d is the number of down weeks during time t.

Generally, it is observed that the higher the value of NCSKEW and DUVOL, the more the crash risk.

The stock price crash risk is identified through two measures, i.e. (1) negative skewness and (2) Down to up volatility as explained by Hutton et al, (2009) and confirmed by multiple studies (Chen et al. 2017 and Callen &Fang, 2013).

Measuring Corporate Governance

In corporate governance, the study used board structure and ownership structure. Board size, independent director, CEO duality, and gender diversity are all part of the board structure. Institutional investors, foreign investors, and blockholders make up the ownership structure.

The study explains the concept of CEO duality. If the CEO is also the chairman of the company, this is termed "CEO duality." It is taken as a dummy variable. If the CEO is also

the chairman of the board, then it is termed dummy 1, otherwise, 0. The board gender diversity consider the importance of female members in board. It is also taken as a dummy variable. If there is one female member in board then it is teemed as dummy 1, otherwise 0. Board size depict the number of members in board. The percentage of independent members is taken. The ownership structure is based on different types of ownership, like institutional, foreign, and block-holders. For our study, we are including ownership percentage of institutional and foreign investors. Block holders are considered the minimum number of shareholders acquiring a maximum percentage of ownership in an organization. Block holders are calculated by summing up the 10% and above ownership percentages of shareholders in a given shareholder pattern.

Control Variables

A control variable is defined as a variable that is held constant during the study. The control variable might not affect the study but can influence the outcome. To get genuine results, some variables are used as control variables. The literature shows a bulk of variables as control variables, but the study uses only that variable as the control variable of the study, which is more repetitive, generating their validity. The control variables of the study are firm size, return on assets, return on equity, leverage and sales growth. Different studies like Jin and Myers (2006); Callen and Fang (2013); and Wen et al (2019) have used firm size, return on equity, return on assets, financial leverage and net sales growth as control variables in their study.

4. Results

Descriptive Statistics

Table 1 shows the descriptive statistics of all the variables, consisting of 1300 firm-year observations during 2010–2022. The stock price crash risk is measured through negative skewness ($NCSKEW_{t+1}$) and down-to-up volatility ($DUVOL_{t+1}$). The mean values of

negative skewness ($NCSKEW_{t+1}$) and down-to-up volatility ($DUVOL_{t+1}$) are 0.039 and

0.012. The mean values of board structure (comprises of board size, board gender diversity,

independent directors, and CEO duality) and ownership structure (comprises of institutional

investors, foreign investors, and blockholders) are shown in the table. It shows that among

the sample firms, the board size is 8.498, 48.7% are female members, 10.5% are independent

members, and CEO duality is 7.3%. It also shows that among sample firms, institutional

investors are 3.2%, foreign investors are 6.5%, and blockholders are 51.6%.

Table 1: Descriptive Statistics

variables	Obs.	mean	std. dev.	min	median	max
$NCSKEW_{t+1}$	1295	0.039	0.2163	-2.321	0.069	0.366
$DUVOL_{t+1}$	1295	0.012	0.583	-2.523	0.053	3.465
$BoardSize_t$	1295	8.498	1.115	6.000	8.000	14.000
BGD_t	1295	0.487	0.500	0.000	0.000	1.000
$B\_Independence_t$	1295	0.105	0.126	0.000	0.000	0.4000
$CEO\_Duality_t$	1295	0.073	0.260	0.000	0.000	1.000
$institutional_t$	1295	0.032	0.216	0.000	0.007	0.239
$foreign_t$	1295	0.065	0.188	0.000	0.000	0.847
$Blockholders_t$	1295	0.516	0.268	0.000	0.605	0.880
LEV_t	1295	0.361	0.457	-0.137	0.280	4.185
$SIZE_t$	1295	6.825	0.674	5.046	6.830	9.778
ROA_t	1295	0.044	0.351	-7.622	0.103	2.830
ROE_t	1295	0.101	0.664	-12.859	0.049	6.220
NSG_t	1295	6.782	4.671	-19.480	8.490	32.317

Table 2 displays the correlation matrix for the variables that are part of our main regression models. With correlation values of 0.755 at the 1% level for ($NCSKEW_{t+1}$) and ($DUVOL_{t+1}$), the results are statistically significant. It suggests that the two crash risk indicators capture similar information and have a fairly substantial correlation with each other despite having very different structures. As demonstrated, there is a significant negative correlation between board size, board gender diversity, blockholders, institutional investors, and stock crashes. It can be understood that companies with strong governance have a lower crash probability than companies with poor governance. ROE has a negative correlation with stock crashes as well.

Table 2: Pearson and Spearman Correlation matrix

13.													1

12.												1	0.026
11.											1	-0.006	-0.0066***
10.										1	0.705***	0.002	0.065***
9.									1	0.006	-0.014	-0.041*	-0.123***
8.								1	0.578***	0.040*	0.030	-0.013	-0.125***
7.							1	-0.107***	-0.138***	-0.176***	-0.118***	-0.038***	0.112***
6.						1	0.1335***	-0.052*	-0.118***	0.018	0.055**	-0.049***	0.271***
5.					1	0.153***	-0.047*	-0.241***	-0.187***	0.039*	0.002	-0.034	-0.126***

Variables	1. DUV	2. NCS	3. Blo	4. For	5. instit	6. Boar	7. CEO	8. Ind.D	9. BGD_t	10. ROA_t	11. ROE_t	12. NSG_t	13. LEV_t
1.	1	0.873***	-0.046*	0.013	-0.041*	-0.030***	0.007***	0.012	-0.019*	0.071***	-0.013*	0.005	-0.418***
2.		1	-0.061***	0.021	-0.057***	-0.029***	0.004	0.028	-0.038*	0.078***	-0.015	0.006	-0.464***
3.			1	0.026	-0.062***	0.045*	0.087***	-0.019***	-0.035***	0.052***	0.054***	0.012	0.018
4.				1	-0.031	0.057***	0.010	0.156***	0.033	0.074***	0.064***	-0.013	-0.252***

Note: Table 2 shows the correlation matrix of the major variables. ***, ** and * represent significance level at 1%, 5% and 10% respectively.

The results of an OLS regression regressing corporate governance, consisting of board structure and ownership structure, on crash risk are shown in Table 3. Regardless of whether down-to-up volatility (DUVOL) or negative skewness (NSKEW) is used as a proxy for crash risk, the estimated coefficients of corporate governance are both significantly negative at the 5% and 1% levels, respectively. This supports the hypothesis by showing a negative correlation between the risk of a stock market crash and the ownership structure, which comprises blockholders, foreign investors, and institutional investors. The board structure

comprises board size, and board gender diversity has a significant negative impact on stock price crash risk, but CEO duality has a significant positive correlation with stock price crash risk. When two different crash risk measurements are used, the result is trustworthy. A statistically significant negative coefficient value is associated with corporate governance. According to the beta value, corporate governance has a negative impact on the overall downside risk of the company. In line with the theory that businesses that strictly adhere to corporate governance experience fewer severe declines in stock prices and have better business performance (Akbar et al., 2016). According to Wang et al. (2015), corporate governance also lowers the risk of negative outcomes. Additionally, the current study strengthens Jensen and Meckling's agency theory (1976).

Table 3: Regression Analysis

Variables	$DUVOL_{t+1}$	$NSKEW_{t+1}$
$Blockholders_t$	-0.033* (-1.359)	0.371*** (2.65)
$Foreign\ Investors_t$	-0.105*** (-3.086)	-0.117*** (-4.065)
$Institutional\ Investors_t$	-0.024 (-0.192)	0.051 (0.478)
$Board\ Size_t$	-0.031*** (-8.060)	-0.025*** (-7.717)
$CEO\ Duality_t$	0.075*** (3.291)	0.075*** (3.859)
$Independent_t$	-0.450*** (-4.296)	-0.453*** (-5.051)
BGD_t	-0.103*** (-5.130)	-0.078*** (-4.485)
LEV_t	-0.241*** (-16.738)	-0.243*** (-19.511)
$SIZE_t$	-0.008 (-0.844)	-0.004 (-0.582)
ROA_t	0.184*** (7.57)	0.189*** (9.150)
ROE_t	-0.077*** (-6.106)	-0.079*** (-7.385)
NSG_t	0.000 (0.228)	0.000 (0.382)
Constant	0.483***	0.399***

	(6.657)	(6.361)
Industry fixed effects	No	No
Year fixed effects	No	No
Adjusted R^2	0.291	0.347
Obs.	1295	1295

The t-stats value in parenthesis are based on standard error classified by both firm and year. ***, ** and * represent significance level at 1%, 5% and 10% respectively.

5. Conclusion

This study examines the impact of corporate governance on stock price crash risk by using manufacturing companies on Pakistan's stock exchange from 2010 to 2022. In order to relate stock price crash risk to corporate governance, we use two different proxies: down-to-up volatility and negative skewness. In corporate governance, the study uses a board structure as well as an ownership structure. The board structure, which comprises board size, gender diversity, and independent directors, has a negative impact on stock price crash risk, showing that good corporate governance helps in reducing crash risk. The CEO duality has a strong positive impact on crash risk. Moreover, independent directors have a responsibility to guarantee that financial choices are made with the interests of all shareholders in mind (Donaldson & Preston, 1995). Because profits can be easily manipulated to one's advantage at the expense of the public interest, corporate governance becomes crucial when large corporations are controlled by a small number of people. Monitoring these managers' opportunistic actions is therefore necessary due to the possibility that these manipulations could harm stakeholders. Overall, the study suggests that if independent directors and gender diversity are present on the board, then it helps reduce crash risk.

The ownership structure, which consists of block holders and foreign investors, has a significant negative impact on stock price crash risk. Corporate governance practices can lessen the likelihood of a stock market crash and help stop managerial opportunistic behavior (Shleifer & Vishny, 1997; Healy et al., 1999; An & Zhang, 2013). Generally speaking, it is

generally accepted that a board of directors is crucial to corporate governance, especially when it comes to overseeing senior management (Fama & Jesen 1981).

In light of the aforementioned findings, the study suggests that corporations should do a better job of hiring female directors. Second, the results might be helpful to policymakers in developing governance mechanisms. With more female and independent members on the board, they would be able to control this risk and establish policies that take into account the significance of BGD and independent directors with regard to SPCR. Third, the business ought to steer clear of CEO duality. Fourth, the business needs to think about how important ownership structure is.

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