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How Do Corporate Social Responsibility and Corporate Governance Affect Stock Price Crash Risk?

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Abstract: We investigate the impact of corporate social responsibility (CSR) and corporate governance on stock price crash risk in manufacturing sector of India and Pakistan. We collect data of nine years from 2010 to 2018 from DataStream of 353 manufacturing firms. We apply the Generalized Method of Moments (GMM) to the analysis of the data. We find that when firms actively engage in CSR activities, they lead to reduced stock price crash risk. We further find that managerial ownership has a significant positive impact on stock price crash risk, while board size and CEO duality show a significant and negative impact on stock price crash risk.

Keywords: CSR; corporate governance; stock price crash risk; manufacturing sector; GMM

1. Introduction

Corporate social responsibility (CSR) demands firms to engage in contributing towards improvements in the environment and society. CSR is the concern of firms toward customers, environment and societies while generating profits and keeping the responsibility of fulfilling the requirements of employees and owners. The incorporation of CSR practices into a firm's business activities and decision making leads to competitiveness, provides business opportunities in new markets, and ultimately helps to ensure firms' sustainability. Therefore, firms focus on enhancing economic value, fulfilling their responsibilities, and contributing to society through an effective governance system. Firms with more social responsibilities enjoy moral prospects of society by showing better social behavior. However, how CSR practices increase or decrease the wealth of shareholders, enhance transparency about information, help to reduce the volatility of stock prices, and protect the interests of investors. These issues need to be addressed. In a competitive business environment, CSR has gained strategic importance. Firms with more social responsibility lead to higher transparency in financial reporting standards and ethical standards (Lee 2016).

Firms with social responsibility reveal more financial outcomes and are involved less in earnings management and bad news (Schuler and Cording 2006; Kim et al. 2012). CSR practices decrease stock price crash risk (Kim et al. 2014). Crash risk involves asymmetry in risks, which is mainly downside risk, and it is important to make decisions relating to risk management and investment. Along with financial outcomes, stakeholders are also concerned with the social outcomes of the firms (Darus et al. 2014). For proper implementation of CSR practices, firms need to incorporate an effective governance system. A good corporate governance system helps firms to achieve their financial outcomes. The concept of corporate governance is of immense importance as it includes the relationship between the management of a firm, board of directors, shareholders and stakeholders (Bhasin and Shaikh 2013). (Claessens and Yurtoglu 2013) note that an efficient governance system is helpful for firms through improved financial performance, better access to finance, and more desirable

handling of stakeholders. Good practices in corporate governance line up managers' and shareholders' interests. (Mitton 2002; Lemmon and Lins 2003) conclude that during recessions, stock prices drop more for the firms with weak corporate governance due to the personal benefits of executives. Weak internal control leads towards bad news hoarding in the market, which can adversely affect the stock prices, ultimately minimizing profits. Stock prices of the firms with weak corporate governance structure have a tendency to drop more in the contracting economy.

The focus of this study is the emerging economies (Pakistan & India) of South Asia because CSR practices are not up to standards in this region. This region lacks the application of good corporate governance. More socially-responsible firms employ codes of good corporate governance that mitigate the crash risk. There is growing trend of literature available regarding CSR and financial performance of the firms (for example, (Roman et al. 1999; Jiao 2010; Callan and Thomas 2014)), and CSR practices and their impact on capital cost (El Ghoul et al. 2011; Dhaliwal et al. 2011; Goss and Roberts 2011). Past studies explain the concept of CSR, but they still are lacking with respect to the governance system and the way these components affect the crash risk of stock prices, mainly in emerging economies. Furthermore, while explaining the concept of CSR, it is necessary to include corporate governance with major decision-makers such as directors in the board, CEOs, and ownership structures. These decision-makers have the authority to control the activities of the firms, as well as provide guidelines for policymaking. Boards of directors are becoming more aware of CSR practices (Boubaker and Nguyen 2012). The application of corporate governance practices is comparatively not very effective in emerging countries like Pakistan and India (Hunjra et al. 2020). Emerging economies and firms are facing the issue of corporate governance and trying to find out ways to improve the governance system in order to compete effectively and attract investors (Boubaker and Nguyen 2014). In addition, there is a lack of CSR education in the context of developing economies (Ali and Frynas 2018). Firms in developing countries such as Pakistan and India face the issues of paying taxes, work-related health and safety, environmental protection, employees' training, and human rights. Therefore, there is a need to analyze CSR practices in the developing economy context. Moreover, (Claessens and Yurtoglu 2013) describe that for a firm, effective corporate governance is helpful through access to funds and the required treatment of firms' stakeholders.

Therefore, we aim to analyze how CSR practices and corporate governance affect stock price crash risk in developing economies like Pakistan and India. The objective of our study is to determine the impact of CSR and corporate governance on stock price crash risk. We analyze the data of 353 manufacturing firms from Pakistan and India and apply GMM for hypothesis testing. The results of our study indicate that CSR and corporate governance of firms help to decrease stock price crash risk, which protects shareholders' interests. Our study helps to promote CSR activities, improve corporate governance practices, and stabilize the capital market. Findings of our study are relevant to the concept that when firms actively operate in CSR activities, they refrain from bad news hoarding, which results in decreasing stock price crash risk.

The remaining portion of the research is organized as follows: We present literature in Section 2; data and methodology in Section 3. Section 4 describes the empirical outputs, whereas Section 5 concludes the study with insights for future work.

2. Review of Literature

The crash risk is linked with the negative skewness for the distribution of returns of individual stocks (Callen and Fang 2015; Chen et al. 2001; Kim et al. 2014). Furthermore, crash risk takes into account stock movements which are on the higher side, like extreme negative movements. Investors hope to earn higher returns on stocks which have more negative skewness in consideration to the fact that skewness is a priced risk factor (Conrad et al. 2013; Harvey and Siddique 2000). Jin and Myers (2006) state that stock crash risks are linked to the presence of information asymmetries due to the fact that managers or insiders have more control and can hide information from external shareholders.

The concept of CSR gained popularity in the 1960s era, when firms showed responsibility towards society at large as one of its stakeholders. Since then, the focus has been growing around the globe. Mallouh and Tahtamouni (2018) describe CSR as involving social acts such as protecting environmental safety, protection against pollution, and providing job opportunities to the local community. Theoretically, CSR is a significant aspect influencing the value of information disclosure of firms and crash risk (Dai et al. 2019). CSR mainly relates to maximizing the social welfare and sustainability of firms with active management to ensure responsibilities for their stakeholders (Clarkson 1995). Businesses have changed their structures and feature departments for managing their social obligations more effectively and to ensure that their efforts are focused in the right direction while engaging with the larger society and local communities. Gelb and Strawser (2001) document that firms undertaking socially-responsible activities are relatively more transparent in providing reliable financial disclosure. It is relevant to the view that firms judge an increase in disclosure of financial information as a way of responsible behavior towards society in the general application of CSR activities. Such firms are more likely to show high transparency and rarely hide bad news from owners. Therefore, we can say that such firms are less prone to crash risks. Through engaging in CSR practices, firms can motivate consumers and investors, helping firms overcome financial issues (Hillman and Keim 2001; Choi and Wang 2009).

Kim et al. (2014) reveal a lower crash risk for such firms that are more transparent with their CSR disclosures. Unfortunately, some managers misuse such disclosures for better impression management to cover poor performance rather than to actually reporting the firm's true efforts under CSR. Lee (2016) uses a sample of the Taiwan stock exchange and finds that CSR shows that the more responsible firms are less exposed to crash risks. Zhang et al. (2016) examine the impact of philanthropic action on crash risk in China and conclude that it shows the same relationship. It, therefore, leaves a gap to discover the channels through which the CSR could mitigate the factors of hiding bad news and crash risk. For instance, firms that are more engaged in CSR are likely to decrease their crash risk (Kim et al. 2011a). However, Hao et al. (2018) conduct a study while taking a sample of Chinese firms and conclude an inverse impact of CSR on crash risk. Dai et al. (2019) find a non-linear association between CSR practices of listed firms operating in China and their stock price crash risk.

Hypothesis 1 (H1). *CSR negatively impacts the stock price crash risk.*

Corporate governance helps to protect the interests of firms' owners and other stakeholders. According to (Brennan and Solomon 2008), the process of corporate governance ensures the protection of the interests of firms' stakeholders by supervising the management's activities. According to stewardship theory of (Donaldson 1990; Donaldson and Davis 1991), and resource dependence theory of (Pfeffer 1972; Pfeffer and Salancik 1978), when CEOs also have a dual role as chairman of the board, they act for the interests of owners with integrated and strong leadership. Corporate governance practices help to prevent resourceful behaviors of management and decrease crash risk (Shleifer and Vishny 1997; An and Zhang 2013). The decrease in stock price crash risk ultimately helps to improve the financial outcomes of firms. Rossi et al. (2015) highlight a general concept that corporate governance practices influence the firm's performance and enhance owners' protections; therefore, it increases worldwide attention. An effective governance system also improves the accounting information quality and value of a firm (Bhagat and Bolton 2008; Alkurdi et al. 2019). Jensen and Meckling (1976) develop agency theory explaining that managers act for their personal benefits rather than shareholders' benefits which lead to inefficient utilization of resources. Ayadi and Boujelbène (2015) justify that small board size enhances communication and coordination among members of boards, ensures better internal control and helps to reduce agency conflicts between owners and management. Managerial ownership helps to relate incentives of management to those of owners (Boubaker et al. 2012). Corporate governance plays a crucial part in the disclosure of financial reporting and quality (Larcker et al. 2007; Bedard and Johnstone 2004). It has an impact on the effective

management of managerial remuneration. Andreou et al. (2016) conclude that a higher number or the equal number of independent and non-executive directors on the audit committee, possessing strong technical expertise and good industrial knowledge, and a well-described governance policy reduces the exposure to crash risk. Earlier research in China on stock price crash risk examines the causes of crash risk, including excessive benefits in state-owned enterprises. Xu et al. (2013) find that such high-value benefits motivate managers to hold bad news for long periods, which can result in higher crash risk.

The level of internal control quality in a firm determines the level to which the above-discussed processes can effectively manage or reduce the crash risk. Firms which have ineffective internal control procedures over their financial reporting mechanism are likely to disseminate less reliable financial information, which becomes a primary cause of crash risk. Chang et al. (2017) conclude that better quality of internal control mechanisms decreases the stock price crash risk. The earning quality reduces the crash risk, and this can be better achieved through dedicated institutional holding which ensures better control and monitoring, ultimately reducing the crash risk (An and Zhang 2013). Callen and Fang (2013) document an inverse association between crash risk and institutional investor's stability in effective monitoring. Boubaker et al. (2014) conclude a direct relation between stock price crash and excessive control while examining French listed firms. This complements their finding of undermining the interest of minority shareholders.

Hypothesis 2 (H2). *Corporate Governance negatively impacts the stock price crash risk.*

We use a set of control variables, i.e., firm size, return on equity, earning per share and stock volatility in our study. (Harvey and Siddique 2000; Chen et al. 2001) show that the size of a firm positively affects stock price crash risk. (Hutton et al. 2009; Kim et al. 2011a, 2011b) explain that an increase in financial performance helps firms to decrease crash risk. As per the outcomes of (Kim et al. 2014), stock volatility positively influences stock price crash risk.

3. Sample Selection and Methodology

We use panel data of 353 manufacturing firms from the emerging economies of South Asia (India and Pakistan). We take 197 firms from India and 156 firms from Pakistan. We collect data from DataStream for nine years from 2010 to 2018. We use descriptive statistics to summarize the data. We further use correlation analysis to explain the relationship between explanatory variables and the issue of multicollinearity. We apply the Generalized Method of Moments (GMM) for hypothesis testing. This technique addresses the variation and bias related to endogeneity issues. For this reason, we use two-step dynamic panel regression which is suitable for a short period and long cross-sectional data. (Arellano and Bond 1991; Arellano and Bover 1995) developed this technique. The technique helps to deal with autoregressive properties of the dependent variable and to handle the issue of endogeneity prevailing in dependent variables along with unabsorbed firm-specific characteristics (González 2013).

We use stock price crash risk as the dependent variable, while we use CSR and corporate governance as independent variables. However, we use a set of control variables in our study, which include firm size, earning management, stock volatility, return on equity and earning per share. We use two proxies for firm-specific crash risk; one is negative conditional skewness (NCSKEW) and the other is down to up volatility (DUVOL). (Chen et al. 2001; Kim et al. 2011b, 2014) also apply the same measures for stock price crash risk. For firm-specific weekly returns, we apply the following model.

$$r_{i,\tau} = \alpha_i + \gamma_{1,i}\, r_{m,\tau-2} + \gamma_{2,\,i}\, r_{m,\tau-1} + \gamma_{3,i}\, r_{m,\tau} + \gamma_{4,i}\, r_{m,\tau+1} + \gamma_{5,i}\, r_{m,\tau+2} + \epsilon_{i,\tau} \quad (1)$$

where,

$r_{i,\tau}$ = is the return of firm i in week τ,
$r_{m,\tau}$ = is the return on the value-weighted market return in week τ

We measure firm related weekly returns as to be the natural log of one plus the residual return from Equation (1) above:

$$w_{i,\tau} = \ln(1 + e_{i,\tau})$$

While estimating Equation (1), every firm-year is needed to have data of a specific number of weekly stock returns to improve the thin trading concerns.

The first measure of stock price crash risk is Negative Conditional Skewness (NCSKEW). This calculation confines the asymmetry of distributing returns and also is repeatedly explained in past studies. Negative values for the skewness explain data that are left-skewed, and positive values explain data that are right-skewed. NCSKEW can be calculated by considering the negative of the third moment of firm-specific weekly returns for each year and can be stabilized by taking the standard deviation of firm-specific weekly returns and raising it to the third power. We calculate NCSKEW as follows:

$$NCSKEW_{i,t} = -[n\,(n-1)^{3/2} \sum w^3{}_{i,\tau}]/[(n-1)\,(n-2)\,(\sum w^2{}_{i,\tau})^{3/2}\,] \quad (2)$$

This measure is multiplied with negative 1, so that a higher value corresponds to higher crash risk. The other measure of stock price crash risk is down-to-up volatility of firm related weekly returns (DUVOL). We calculate DUVOL as the natural log of standard deviation ratio of firm-specific weekly returns of firm i in year t, which we calculate when the returns are above and below the annual mean.

$$DUVOL_{i,t} = \ln\,[(n_u - 1) \sum_{\text{Down}} w^2{}_{i,\tau}/(n_d - 1) \sum_{\text{Up}} w^2{}_{i,\tau}] \quad (3)$$

where, n_u and n_d represent the number of up and down weeks for the firm in year t, respectively. A higher crash risk signifies a higher value of $DUVOL_{i,t}$ (Chen et al. 2001).

We use two measures of CSR activities; following (Feng et al. 2018; Javeed and Lefen 2019), the first measure includes an index for CSR as social contribution value per share (SCV). This indicator fulfills the environmental, societal and economical aspects of CSR practices of the emerging economies. Further, it helps to understand the social performance of manufacturing firms that how they contribute towards social values. This index incorporates all elements which are necessary for social benefits. These elements include earnings per share, producing value for shareholders, government tax revenue-producing value for society, salaries of employees, interest on loans from creditors, and other values for stakeholders. Furthermore, we eliminate the pollution of the environment as a social cost. We use the following formula to calculate CSV:

$$\text{CSV} = \text{Earnings per Share} + (\text{Tax Revenue} + \text{Salaries of Employees} + \text{Interest on Loans} + \text{Public Welfare Expenses} - \text{Social Cost})/\text{Total Equity}$$

We follow (Camelia-Daniela Hategan et al. 2018) for the second measure of CSR as a binary method of assigning values of 0 and 1. We place a value 1 if firms have one of four social activities; corporate giving, costs relating to health and safety at workplace (Dumitrescu and Simionescu 2015), expenses relating to training courses of employees (Dumitrescu and Simionescu 2015; Obrad and Gherheș 2018), and expenses connecting with waste management (Istrate et al. 2017), otherwise we use 0. We use three measures of corporate governance which include board size, CEO duality, and ownership structure. These mechanisms of corporate governance represent the main power of decision making of the firms and controlling business activities. We calculate CEO duality as a dummy variable and use 1 when the chairman and CEO in a large firm are the same person, or equal to 0 otherwise. We value board size as the number of members on board. We follow (Mehmood et al. 2019) to measure CEO duality and board size. We follow (Li et al. 2007) to measure managerial ownership as the percentage of shares held by top managers and their families. Following (Widyaningsih et al. 2017), we use the proxy of firm size as a natural log of total assets. We also use return on equity as net income divided by average equity. (Mehmood et al. 2019) apply the same measure of return on equity. We calculate earnings per

share as net income after interest and tax over a total number of shares issued. (Salim and Yadav 2012) use the same proxy for earning per share. To measure price volatility, we follow the measure of (Habib et al. 2012) and calculate the range of stock prices for each year, and then take an average of the highest and lowest prices. For price volatility, we divide the range by average and then raise the second power. We explain the proxies of variables in Table 1.

Table 1. Variables and their measurements.

Variables	Proxies	Symbols	Measurements	References	Expected Relationships with Stock Price Crash Risk
Stock Price Crash Risk Measure	Negative Conditional Skewness	NCSKEW	Negative of the third moment of firm-specific weekly returns for each year and stabilize it by taking the standard deviation of firm-specific weekly returns to raise to the third power	(Chen et al. 2001; Kim et al. 2011a, 2014)	
	Down-to-up volatility of firm-specific weekly returns	DUVOL	Natural log of standard deviation ratio of firm-specific weekly returns of firm i in year t	(Chen et al. 2001; Kim et al. 2011a, 2014)	
Corporate Social Responsibility	Social Contribution Value per Share	SCV	Earnings per Share + (Tax Revenue + Salaries of Employees + Interest on Loans + Public Welfare Expenses − Social Cost)/Total Equity	(Feng et al. 2018; Javeed and Lefen 2019)	Negative
	Corporate Social Responsibility	CSR	Binary rating method of assigning values of 0 and 1	(Chih et al. 2010)	
Corporate Governance	CEO Duality	CEOD	Dummy variable 1 if chairman of the board is also COE of the firm, otherwise it is 0.	(Mehmood et al. 2019)	Positive
	Board Size	BS	Number of members on board	(Mehmood et al. 2019)	Negative
	Managerial Ownership	MO	Percentage of shares held by top management and their families.	(Li et al. 2007)	Positive
Control Variables	Firm Size	FS	Natural Log of Total Assets	(Widyaningsih et al. 2017)	Positive
	Return on Equity	ROE	Net Income/Average Equity	(Mehmood et al. 2019)	Negative
	Earnings per Share	EPS	Net Income/Total shares issued	(Salim and Yadav 2012)	Negative
	Stock Volatility	SV	Range divided by average of stock price and then raising second power.	(Habib et al. 2012)	Positive

We use the following equations to analyze the data.

$$(NCSKEW)_{i,t} = \alpha + \beta_1(SCV)_{i,t} + \beta_2(CSR)_{i,t} + \beta_3(CGI)_{i,t} + \beta_4(FS)_{i,t} + \beta_5(ROE)_{i,t} + \beta_6(EPS)_{i,t} + \beta_7(SV)_{i,t} + \mu_{i,t} \quad (4)$$

$$(DUVOL)_{i,t} = \alpha + \beta_1(SCV)_{i,t} + \beta_2(CSR)_{i,t} + \beta_3(CGI)_{i,t} + \beta_4(FS)_{i,t} + \beta_5(ROE)_{i,t} + \beta_6(EPS)_{i,t} + \beta_7(SV)_{i,t} + \mu_{i,t} \quad (5)$$

4. Results and Hypotheses Testing

We explain the descriptive statistics and correlation analysis in Table 2. We find a small value of negative conditional skewness, which means that on average, firms have low negative returns. The average values of CSV and CSR show that firms in India and Pakistan are keen to engage themselves in social activities. This further implies that firms in this region are still at a growing stage in contributing to improving the environment and society. Outcomes regarding corporate governance indicate that firms are serious about governance mechanisms. Firms do not prefer the chairman of the board to act as CEO. On average, seven members work on a board, which is a reasonable number as per the requirement of the governance system. Results also indicate that firms prefer to issue shares to top management; executives, managers, directors and their family members. There is more variation in firm size and less consistency in an investment of total assets. It further explains that firms spend money on total assets depending on the need and availability of financial sources.

Table 2. Descriptive statistics and correlation analysis (overall).

	Mean	S.D.	NCSKEW	DUVOL	SCV	CSR	CEOD	BS	MO	FS	ROE	EPS	SV
NCSKEW	−0.016	1.137	1.000										
DUVOL	−0.110	0.435	0.071	1.000									
SCV	0.054	0.061	0.142	0.215	1.000								
CSR	0.873	0.334	0.084	0.094	0.551	1.000							
CEOD	0.120	0.326	0.016	0.011	0.072	0.037	1.000						
BS	7.234	1.550	0.045	0.065	0.413	0.287	−0.011	1.000					
MO	37.238	24.848	0.059	0.079	−0.073	−0.059	0.072	−0.243	1.000				
FS	17.918	7.225	−0.084	−0.093	−0.218	−0.148	−0.346	−0.277	0.091	1.000			
ROE	0.241	0.466	0.007	0.012	0.099	0.074	0.078	−0.015	−0.057	−0.065	1.000		
EPS	33.799	60.560	0.026	0.031	0.189	0.153	0.094	0.006	−0.016	−0.035	0.493	1.000	
SV	0.067	0.088	−0.095	−0.088	−0.231	−0.123	0.103	−0.051	−0.042	−0.031	−0.049	−0.096	1.000

Note: NCSKEW = Negative Conditional Skewness, DUVOL = Down-to-up volatility, S.D. = Standard Deviation, SCV = Social Contribution Value per Share, CSR = Corporate Social Responsibility, CEOD = Chief Executive Officer Duality, BS = Board Size, MO = Managerial Ownership, FS = Firm Size, ROE = Return on Equity, EPS = Earnings per Share, SV = Stock Volatility.

On average, firms earn a high return on equity with less variation in the values. Earnings per share of the firms is high with a large variation in the value, which shows inconsistency in earnings per share of the firms. We find less variation in the values of stock price volatility, and average volatility in stock prices is also low. It shows that firms keep a balance of stock prices to meet the challenges of unstable economic conditions. Table 2 further explains the correlation analysis among independent and control variables. We find that there is a weak correlation among variables, which proves no multicollinearity problem exists in the model.

We present the Variance Inflation Factor (VIF) test in Table 3 to verify the multicollinearity, which may occur due to the overlapping of variables. VIF values show that there is no multicollinearity problem.

Table 3. Test for multicollinearity.

Variable	VIF	1/VIF
EPS	1.360	0.735
ROE	1.330	0.750
FS	1.260	0.793
BS	1.240	0.807
CEOD	1.180	0.844
CSR	1.140	0.881
SCV	1.462	0.696
MO	1.080	0.925
SV	1.040	0.961

Note: VIF = Variance Inflation Factor.

Table 4 illustrates the results of GMM for the overall manufacturing sector of Pakistan and India. We find that SCV and CSR negatively impact the stock price crash risk of firms. This signifies that when firms are more active in their CSR activities and contribute towards society, they also contribute to reduced stock price crash risk.

Further, outcomes of corporate governance reveal that the dual responsibilities of CEO and board size show significant and inverse influences on stock price crash risk. However, managerial ownership shows a positive and significant impact on both measures of stock price crash risk. The results of managerial ownership show that managers are likely to operate for their own interests, which ultimately affects stock price crash risk positively. Results of the control variables of our study are generally consistent with past studies. Analysis indicates that firm size has a significant and positive influence on stock price crash risk, which follows the outcomes of (Chen et al. 2001; Kim et al. 2014). Findings of stock volatility also indicate a high crash risk which is in line with the outcomes of (Kim et al. 2014). However, outcomes also confirm that there is low crash risk with an increase in earnings per share. In addition, return on equity does not show any significant outcome on crash risk.

We explain country-wise findings in Table 5 to confirm the robustness of our findings. We find that CSV and CSR show a significant and inverse relationship with stock price crash risk in both countries. Further, we conclude that CSR firms have less chance of risk associated with stock price crashes for emerging economies of Pakistan and India. Results also indicate that board members and CEO duality reveal significant inverse effects on stock price crash risk in both countries. However, the impact is positive only in the case of managerial ownership. In particular, when the financial performance of a firm goes down more than investors expect, managers try to hide the bad news to safeguard their reputation, wealth, and jobs (Gormley et al. 2013). Findings of control variables suggest that firm size and sock volatility positively impact the stock price crash risk. Earning per share shows a significant and negative influence on crash risk. However, findings show varying outcomes with respect to the impact of return on equity on stock price crash risk for different models.

Table 4. The two-step system dynamic panel regression (overall).

	Dependent Variable: NCSKEW			Dependent Variable: DUVOL		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
L1.	−0.009 (−0.230)	0.126 *** (2.800)	0.036 ** (1.971)	1.079 *** (5.691)	0.063 (1.251)	0.0371 *** (3.412)
L2.	−0.074 ** (−2.030)	−0.041−0.820	−0.076 *** (−3.072)	0.520 (1.591)	0.279 (1.06)	0.307 *** (3.233)
SCV	−1.913 *** (−2.710)	—	−1.977 ** (−2.447)	−0.015 *** (−13.381)	—	−0.337 *** (−3.151)
CSR	—	−0.254 ** (−2.311)	−0.002 * (−1.787)	—	−0.031 * (−1.720)	−0.209 ** (−1.989)
CEOD	−0.083 *** (−2.970)	−0.950 * (−1.711)	−0.049 *** (14.657)	−0.067 *** (−8.198)	−0.897 * (−1.723)	−1.240 ** (−2.793)
BS	−0.145 * (−1.710)	−1.832 * (−1.841)	−0.061 *** (−2.941)	−0.011 * (−1.823)	0.001 (0.224)	−0.017 *** (−4.132)
MO	0.006 * (1.810)	1.015 (0.721)	0.357 *** (2.731)	0.005 * (2.261)	0.007 *** (18.812)	0.006 * (1.891)
FS	0.422 * (1.610)	0.512 ** (1.991)	0.031 *** (2.845)	0.005 (0.623)	0.467 *** (3.361)	0.004 *** (4.191)
ROE	−0.031 (−0.580)	−0.004 (−0.612)	−0.021 (−0.071)	0.001 (0.631)	−0.005 * (−1.681)	−0.003 (−0.762)
EPS	−0.049 ** (−1.950)	−0.084 ** (−2.244)	−0.561 *** (−3.342)	−0.001 (−0.343)	−0.002 (−0.162)	−0.129 *** (−9.011)
SV	0.126 ** (2.400)	0.027 (0.938)	0.003 * (1.941)	0.687 * (1.731)	0.113 * (1.876)	0.161 *** (9.217)
C	2.050 ** (2.380)	1.512 ** (2.110)	0.449 *** (8.322)	2.295 (0.623)	0.012 (0.501)	0.181 ** (2.632)

Note: Model 1 represents SCV as the first measure of CSR; model 2 represents the second measure of CSR, whereas model 3 shows the overall analysis including both measures of CSR. L1 = First lag of dependent variable, L2 = Second lag of dependent variable, NCSKEW = Negative Conditional Skewness, DUVOL = Down-to-up volatility, SCV = Social Contribution Value per Share, CSR = Corporate Social Responsibility, CEOD = Chief Executive Officer Duality, BS = Board Size, MO = Managerial Ownership, FS = Firm Size, ROE = Return on Equity, EPS = Earnings per Share, SV = Stock Volatility, C = Constant, ***, **, and * represents significant level at 1%, 5%, and 10%.

Table 5. Two-step dynamic panel estimation (country-wise).

	Pakistan						India					
	NCSKEW			DUVOL			NCSKEW			DUVOL		
	Model 1	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
L1.	0.129 *** (3.120)	0.297 *** (10.345)	0.176 *** (6.927)	0.129 *** (8.441)	0.018 (0.637)	0.710 *** (9.589)	0.057 ** (2.373)	0.382 *** (6.422)	2.398 (1.076)	−0.016 (−0.430)	0.133 *** (3.927)	0.187 * (1.968)
L2.	−0.052 (−1.170)	−0.136 *** (−2.831)	−0.048 *** (−13.049)	0.002 (1.392)	0.023 (0.117)	0.346 *** (10.046)	2.234 (1.013)	0.637 *** (7.956)	0.301 *** (6.861)	0.003 (0.060)	0.071 *** (4.281)	−0.019 *** (−2.789)
SCV	−0.128 *** (−2.840)	—	−0.185 *** (−3.307)	−0.161 *** (−8.120)	—	−0.261 *** (−3.619)	−0.18 *** (−7.967)	—	−0.127 *** (−3.671)	−0.025 ** (−2.163)	—	−0.649 * (−1.889)
CSR	—	−0.170 *** (−7.118)	−0.390 * (−1.670)	—	−0.097 *** (−3.135)	−0.305 *** (−2.395)	—	−0.016 (−1.249)	−0.446 * (−1.656)	—	−0.171 *** (−12.095)	−0.017 ** (−2.435)
CEOD	0.692 * (1.950)	0.055 *** (2.881)	−0.089 *** (−3.171)	−0.043 (−1.054)	−0.176 *** (−7.929)	−0.315 * (−2.495)	−0.650 * (−1.887)	−0.024 (−1.187)	−0.478 *** (−3.329)	−1.653 *** (−2.780)	−0.036 *** (−16.882)	−0.035 ** (−18.231)
BS	−0.126 *** (−3.890)	−0.115 * (−1.711)	−0.249 *** (−34.465)	−0.019 *** (−2.801)	0.015 (0.529)	−0.239 * (−1.899)	−0.067 (−1.315)	−0.536 * (−1.735)	−0.559 * (−1.819)	−1.120 ** (−2.160)	−0.292 ** (−2.110)	−0.351 *** (−10.341)
MO	0.006 * (1.910)	0.002 * (1.773	0.017 ** (2.553)	0.018 ** (2.510)	0.275 (0.149)	0.487 (1.586)	0.068 *** (2.918)	0.002 (1.261)	0.051 *** (2.310)	0.007 * (1.930)	0.002 * (1.951)	0.001 * (1.771)
FS	0.015 ** (2.412)	0.071 (0.115)	0.004 ** (2.117)	0.187 (0.160)	0.549 * (1.698)	−0.002 * (−1.667)	0.031 * (1.690)	0.931 * (1.817)	0.132 * (1.681)	0.015 (0.531)	0.545 *** (3.200)	0.724 ** (2.137)
ROE	−0.068 (−0.390)	−0.019 (−0.734)	−0.023 (−0.819)	0.478 *** (7.677)	0.020 (0.725)	0.007 * (2.425)	0.005 (1.231)	0.143 (1.521)	0.139 (1.497)	0.064 *** (2.930)	0.054 (1.612)	0.032 * (2.207)
EPS	−0.102 * (−1.730)	−0.794 *** (−4.271)	−0.604 * (−1.834)	−0.061 * (−1.822)	0.295 (1.269)	−0.057 ** (−2.539)	−0.081 (−1.321)	−0.059 * (−1.691)	−0.369 ** (−1.911)	−0.017 ** (−2.150)	−0.001 (−1.169)	−0.189 ** (−2.401)
SV	1.954 * (1.880)	0.184 ** (2.230)	0.397 * (1.720)	0.184 (0.129)	0.386 * (1.691)	0.079 *** (3.431)	0.749 * (1.689)	0.137 (1.489)	0.129 * (1.812)	0.079 (1.129)	0.471 *** (2.960)	0.277 * (1.743)
C	1.448 (0.940)	0.639 (0.772)	0.056 * (1.685)	0.041 * (3.178)	0.059 * (2.170)	0.025 ** (2.165)	0.114 (1.311)	0.052 * (1.757)	0.056 * (1.893)	2.817 (0.640)	0.017 (0.483)	0.066 ** (1.877)

Note: L1 = First lag of dependent variable, L2 = Second lag of dependent variable, NCSKEW = Negative Conditional Skewness, DUVOL = Down-to-up volatility, SCV = Social Contribution Value per Share, CSR = Corporate Social Responsibility, CEOD = Chief Executive Officer Duality, BS = Board Size, MO = Managerial Ownership, FS = Firm Size, ROE = Return on Equity, EPS = Earnings per Share, SV = Stock Volatility, C = Constant, ***, **, and * represents significant level at 1%, 5%, and 10%.

5. Discussion

Our results show that CSR and corporate governance are important determinants of crash risk for manufacturing firms in emerging economies (Pakistan and India). The negative impacts of both measures of CSR on crash risk demonstrate that with increased corporate social responsibilities activities, the chances of crash risk are reduced. Thus, we conclude that firms with CSR have less chance of risk associated with stock price crashes for emerging economies. In line with the findings of (Kim et al. 2014; Lee 2016), this study entails that firms with CSR have more transparent financial reporting standards that lead to a low level of crash risk.

The positive impact of managerial ownership on stock price crash risk reveals robust evidence that managerial ownership is a reliable tool to predict future risk of the stock price (Huang et al. 2017). Further, managerial ownership creates agency problems where owners prefer their personal benefits over firms' benefits. In addition, managerial ownership also leads managers to hide bad news, which also increases stock price crash risk. The findings of managerial ownership are similar to the outcomes of (Andreou et al. 2016). Findings of CEO duality justify organizational and management theory, which explains that when a CEO has high power, he/she has more advantages, which results in less costly outcomes (Sah and Stiglitz 1986). Integrated leadership helps to alleviate costs relating to information acquisition and coordination, and it also enables adaptability and better decision making (Boyd 1995; Jensen and Heckling 1995; Li et al. 2019). In addition, (Adams and Ferreira 2007) explain that when CEOs have more power, they are keen to share more inside information with boards with unified leadership, which is useful for firms. This implies that CEOs who are at the same time chairmen of boards may try to avoid shareholder monitoring by disclosing information as a bonding behavior. Further, findings indicate that directors on boards play a major part in corporate governance, mainly in monitoring top-level management (Fama and Jensen 1983). The monitoring of the board of directors plays a role to decrease stock price crash risk. This further indicates that corporate governance plays a monitoring role that mitigates the opportunistic behavior of the managers which negatively affects stock price crash risk, and our results are aligned with the findings of (An and Zhang 2013).

The negative impact of board size signifies that when there is age diversity in board size that includes both young and old directors, it helps to reduce stock crash risk (Jebran et al. 2020). In addition, (Andreou et al. 2017) find that young CEOs' positively influence stock crash risk as they have the motivation to possess negative information during the starting period of their career.

6. Conclusions

We analyze the effects of CSR and corporate governance on stock price crash risk in Pakistan and India. We select 353 firms from the manufacturing sector of both countries. We find that CSR, CEO duality and board size negatively impact the stock price crash risk of the firms operating in emerging economies (Pakistan and India). This implies that CSR and corporate governance are means to lower the crash risk. However, our findings show that managerial ownership has a positive relationship with stock price crash risk. The outcome of managerial ownership confirms agency issues prevailing in firms where management prefers their own interest instead of shareholders' interest, which leads to enhanced crash risk. Managers of firms can find benefits from our study in order to improve corporate strategies and policies by adopting effective corporate governance mechanisms. As emerging countries (Pakistan and India) are facing unstable economic conditions, the findings of our study provide insight for the management of firms and for investors to emphasize social contribution in order to reduce stock price crash risk and stabilize capital markets. Our study is beneficial for firms because an effective governance system helps to lower crash risk. Therefore, it is in the primary interest of shareholders to invest their funds in those firms that have better corporate governance practices. Outcomes of our study imply that managerial ownership contributes to implementing effective policies relating to risk management. Further, findings suggest that corporate governance practices lead to mitigate opportunistic performance of management; they also help to reduce stock price crash risk. This further shows that a decrease in crash risk indicates high efficiency of corporate governance practices.

The findings of our study encourage managers and owners to contribute more in CSR practices. Our study may provide a guide for investors to select firms with high CSR practices while investing funds to cover the loss caused by stock price crashes to their personal interests. Therefore, our study is helpful for investors who involve themselves in managing their crash risk while investing in stock markets. Our study suggests investors should consider necessary information about CSR practices as a factor influencing the stock price crash risks of the firms. Policymakers may focus more on implementing efficient corporate governance and CSR practices to attract investors to make their investment more secure. Our study further suggests that if management reacts positively to the demands of firms' stakeholders and focuses on enhancing the relationships with fund providers, customers, and suppliers, then CSR practices not only help to improve the brand image of the firm, but also decrease stock price crash risk. This study is limited to only two countries which can be extended by including more emerging countries and could be used to make a comparative analysis with developed countries. Future research can be done to find some more factors affecting the firm's risk relating to a stock price crash in order to enhance its understanding.

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