Business Strategy, Market Power and Stock Price Crash Risk: Evidence from China

Adnan Safi (✉ adnansafii@gmail.com)

Qingdao University <https://orcid.org/0000-0002-6228-1421>

Yingying Chen

Qingdao University <https://orcid.org/0000-0002-8772-5228>

Abdul Qayyum

Bahria University

Salman Wahab

Qingdao University

Research Article

Keywords: Business Strategies, Prospectors, Defenders, Crash Risk, Information symmetry, China

Posted Date: August 2nd, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-292390/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Version of Record: A version of this preprint was published at Risk Management on August 9th, 2021. See the published version at <https://doi.org/10.1057/s41283-021-00080-9>.

Business Strategy, Market Power and Stock Price Crash Risk: Evidence from China

Abstract

Business strategies play a vital role in a firm's success but, if not properly executed, can lead to financial irregularities and mispricing, influencing the firm's performance and leading to stock price crash risk. The present study examines the impact of a firm's business strategy and market power on stock price crash risk. Following Miles and Snow's (2003) model, we classify Chinese firms listed on the Shenzhen and Shanghai stock exchanges into defenders (conservative) and prospectors' (aggressive) business strategies over a period of 2006-2019. We employed industry and year fixed effects regression to show that prospectors who follow aggressive strategies are more prone to stock price crash risk than defenders who follow conservative strategies. Additionally, we show that firms with high market power also contribute to increased stock price crash risk. Our results are also robust to alternative control variables and different statistical models like the two-stage least squares method.

Keywords: Business Strategies; Prospectors; Defenders; Crash Risk; Information symmetry; China.

1. Introduction:

The competition among firms has increased significantly due to the rise in the globalization of economies. In this globally competitive environment, firms can no longer remain competitive by merely employing low-cost labor and instead must use innovative business strategies to improve their product, supply chain, procedure, and overall firm management. The global business environment and market trends create new challenges for firms in mapping innovative business strategies to achieve rapid growth. Moreover, the firm's business strategy also impacts its investment decision and overall organizational performance (Croteau and Bergeron 2001; Navissi et al. 2017). Firms adopting innovative solutions to achieve rapid growth enhance the

chances of irregularities and misinformation; this can lead to poor transparency and opaque financial reporting, which is one of the major causes of stock price crash risk (hereafter, crash risk) (Habib and Monzur 2017). The primary concern for the firm is the risk associated with these business strategies. Therefore, the present study explores the impact of a firm's business strategies on crash risk.

A key topic of business and accounting research discussion is how and whether the firm's corporate business strategy enables managers to ignore the shareholders' interests. Several research studies have focused on business strategies put forward by Miles et al. (1978) and Miles and Snow (2003), which classify strategies into prospectors that are innovation-oriented and defender strategies focused on efficiency. Firms that adopt prospector business strategies invest in high-growth risky projects and experience more agency problems (Rajagopalan 1997), therefore enhancing the chances of irregularities and misinformation that require more effort in audit (Bentley-Goode, Newton, and Thompson 2017). Furthermore, studies have also shown that firms with prospector business strategies are also involved in tax avoidance (e.g., Higgins et al., 2015). For a firm with a prospector business strategy, CEOs enjoy more power with less monitoring, enabling them to care for their career interest and neglect shareholder interest (Bentley, Omer, and Sharp 2013; Boyd and Salamin 2001). On the other hand, firms that engage in defender business strategies give managers less power with high monitoring, encouraging managers to minimize the risk related to their career by under-investment in projects with high returns (Thomas and Ramaswamy 1996).

Firms adopting innovation-oriented business strategies are likely to overestimate their equity due to managers' high growth expectations. This overvaluation of equity encourages CEOs to commit financial misreporting using opaque financial reporting (Jensen 2005), a key determinant of crash risk. In contrast, studies have also shown that as compared to defender business strategy, firm's that adopt innovative business strategies are more open to voluntary

disclosure and analyst coverage and thus minimizes information asymmetry and doubts about the value of the firm, which may help in reducing future crash risk (Bentley-Goode et al. 2017; Bushee et al. 2010). However, previous studies have not evaluated the linkage between a firm's business strategy and crash risk and how different strategies affect crash risk.

The present study investigates the impact of different business strategies on crash risk in the presence of information asymmetry using Chinese listed firms from 2006 to 2019. The present research study fills the gap in the literature, as no prior research studies have explored the influence of business strategies on crash risk in the context of developing markets, and the present study provides an insight into Chinese market business strategies. Unlike previous research studies (e.g., Callen and Fang 2015; Choi and Jung 2020; Moradi et al. 2021; Yu and Mai 2020) that are mainly focused on market-level determinants of crash risk, therefore, in this study, we examined how prospectors and defenders' business strategies affect stock price crash risk. Additionally, the present study also analyzes the impact of a firm's market power on crash risk. This study provides an underlying understanding of crash risk determinants to help investors with decision-making and allow them to invest in less risky firms.

The remainder of the paper is organized as follows: section two presents the literature review and hypothesis development of business strategy, market power, and firm's crash risk, the third part is the methodology which explains the method used to measure the variables and the analysis used in this study, fourth part presents the results obtained using different statistical analysis, and the last part is conclusion and recommendation.

2. Literature Review and Hypothesis Development

The determinants of crash risk are diverse; however, the underlying assumption is that the managers use their discretion to hold bad news, which accumulates over time but greatly impacts stock prices when released to the market at once and results in a stock price crash. Numerous firm-level factors are assumed to cause negative shocks to stock prices, including

agency problems (Bolton, Scheinkman, and Xiong 2006), tax avoidance (Kim et al., 2011), earnings management (Kirschenheiter and Melumad 2002; Leuz et al. 2003), and bad news hoarding (Callen and Fang 2015). Several research studies have been conducted to determine the factors influencing stock return and enhance the firm and market risk (see, e.g.,(Cardona, Mora-Valencia, and Velásquez-Gaviria 2019; Elenjical et al. 2016; Ma et al. 2020; Qureshi et al. 2019). Bentley et al. (2013) show that the different crash risk determinants depend on the firm's unique business strategy, which remains stable over a longer period. Therefore, the business strategy can explain the crash risk and its potential impact on investors.

2.1 Business strategy and crash risk

The extensive management literature uses different topologies to classify firms into different groups based on their strategies, such as product differentiation and cost leadership (Porter 1980). Porter (1980) argued that firms could achieve a competitive advantage based on either product differentiation or cost leadership, while Hill (1988) and Murray (1988) suggested that a combination of both provides greater financial benefits. Li and Li (2008) studied the different business strategies using a sample of Chinese firms and reported a significant reward to foreign firms who apply dual strategies while cost leadership seems to realize better performance for domestic firms. They also show that cost leadership is valuable only in highly concentrated markets while product differentiation is more sustainable strategy to create competitive advantage.

Organizations can also achieve market leadership through customer intimacy and operational excellence (Treacy and Wiersema 2007). Treacy and Wiersema reasoned that organizations can not do everything for everyone therefore, they should focus on combining their operating models and value creation system to succeed. They particularly suggested three areas to focus on; product leadership, operational excellence, and customer intimacy. Operational excellence is a comprehensive business strategy that combines the provision of low price, high quality,

ease of service delivery, and exceptional customer experience, which others cannot match. Therefore operational excellence requires excellent people who build excellent relationships with all the stakeholders to shape excellent processes that produce excellent products.

The managers can also create value by exploration of new opportunities or exploitation of existing options to improve the allocation of resources (March 1991). Exploration and exploitation are key strategies for organizational success and survival but keeping a balance between these two is difficult under the constraint resources. Therefore, organizations need to find an optimal allocation of resources for exploitation and exploration purposes because ignoring exploration can threaten competency and innovation, while overlooking exploitation may lead to failure.

Although firms are labeled with different classifications, a shared characteristic of all classifications is the existence of two distinct and opposite continuums. Miles & Snow (2003) classify firms into four types: prospectors, defenders, reactors, and analyzers based on the difference in products and market strategies. Prospectors spend aggressively to innovate and market their offerings which enable them to rapidly change their product mix, while defenders are conservative with scant research and development budgets and depend on low price, better service delivery, and a limited number of quality products to compete in the market. Analyzers operate in a diverse type of product market domain, ranging from stable to continuously changing environments. In a stable environment, analyzers behave like defenders, and in changing environments, top management adopts innovative ideas to transform their product mix and serve the customers better. Lastly, in the reactor business strategy, top management is aware of the rapidly changing business environment but unable to implement effective strategies to compete and grow. Among Miles and Snow's strategic classifications, only two, prospectors and defenders, are practical strategies, while analyzers hold both prospectors and defenders' features and lie somewhere between them. Reactors do not follow any viable

strategy to study. Moreover, studies show that characteristics of prospectors are similar to product differentiation (Porter 1980), exploration (March 1991), and product leadership (Treacy and Wiersema 2007), while defenders strategy has a lot of commonality with cost leadership (Porter 1980), exploitation (March 1991) and operation excellence (Treacy and Wiersema 2007). Therefore, we followed the prospector and defender business strategies of Miles and Snow (2003), which have plentiful commonalities with alternate classification and whose inferences can be aligned reliably to other classifications.

Prospectors spend aggressively on innovative solutions that provide rapid growth prospectus and enhance the chances of irregularities and misinformation. This lack of transparency is one of the key factors affecting crash risk. In contrast, defenders have more transparent financial reporting and thus a lower likelihood of crash risk (Hutton et al., 2009). The weaker internal control mechanisms in prospectors make it challenging to detect reporting irregularities and potential fraud, consequently, facilitates the prospectors to hoard bad news, which causes crash risk when released to the market at once (Bentley et al., 2017). Thus, prospectors have a higher risk of facing lawsuits and restatements, increasing the auditor's reputation risk who spend extra time and demand higher audit fees (Bentley et al., 2013). Consistently, Jia (2018) also found a positive relationship between firms innovative business strategies and crash risk while agency problem moderates this relationship.

Hypothesis 1. Firms with prospector business strategies are more prone to stock price crash risk than defenders.

2.2 Market power and crash risk

Prior studies also linked information disclosure with market competition. Competition is studied under two heads; one is the industry-level competition calculated using all the firm's operations in the industry and proxied with Herfindahl-Hirschman Index, while the other way is firm-level measures such as market share and Lerner Index. Market competition is an

external mechanism that affects information disclosure (Ho et al., 2016). Li (2010) and Shin (2013) used industrial concentration to show that competition from possible new entrants to the industry encourages information disclosure, whereas competition from present players suppresses information disclosures. Peress (2010) employed Lerner Index and argues that firms employ monopoly power to release private information to clients, improving resource allocation and enhancing the transparency of information, and ultimately reducing stock price crash risk. Zhang (2015) also followed Peress's (2010) and show that market power improves the information disclosure quality of stock prices. On the contrary, Xin et al. (2015) empirically show a higher probability of crash risk for firms enjoying market power and operating in a monopolistic environment than firms with less market power and operating in a balanced competitive environment. Literature is inclusive of the relation of competition and stock price crash risk. However, competition is an important determinant of crash risk, and differences in firms' market power and competition enhance the likelihood of crash risk under information quality theory.

Hypothesis 2: The market power of the firm is significantly associated with crash risk.

3. Research Methodology

The present study highlights the importance of business strategies at the firm level and their market power in reducing a firm's future stock price crash risk. This study examines the effect of prospector and defender strategy on crash risk in the context of Chinese firms. Moreover, this study also examined the impact of a firm's market power on stock price crash risk in China. The data for this study is taken from China Stock Market and Accounting Research Database (CSMAR) and WIND financial terminal databases. We have included China's A-shares firms listed on the Shanghai and Shenzhen stock exchanges. We obtained data from 2006-2019 with 20,046 firm-year observations after excluding the financial sector firms and firms with missing data. The observations are further reduced to 12597 firm-year observations for hypothesis H-1

as the business strategy is calculated using five-year rolling averages. We have used unbalanced panel data to analyze the influence of a firm's business strategy on crash risk. For our analysis, we excluded financial firms and firms with missing business strategy data. Following the study of Hutton et al. (2009), we excluded financial firms as they report and account under different regulations than the other industries firms and have a different capital structure. Based on the Wind Database classification, the industries are divided into eleven sectors. After excluding the financial sector, there are ten industries with 2365 sample firms and 12597 firm-year observations. About a quarter of the firms are from Industries, while Materials, Consumer Discretionary, and IT firms constitute 16.6%, 16.0%, and 15.5%, respectively. About 8.5% of the firms are from healthcare, 7.2% from Consumer Staples, 4.8% from Real Estate, 3.7% from Utilities, 2.5% from Energy, and only 0.1% from Telecom Services. Table-1 A in the appendix section provides further detail about the industry classification and the number of observations. In this study, we winsorized the variables at 1% and 99% to reduce outliers' effects in the data.

3.1 Measuring Business Strategy

Following Habib & Hassan (2017) and Bentley et al. (2013), in this study, we constructed a composite strategy score as a proxy for the firm's business strategy. The composite strategy score measure put forward by Bentley et al. (2013) is constructed partly based on the study of Ittner et al. (1997), and other indicators are adopted according to the Miles and Snow (2003) framework. We have constructed a composite strategy score following the studies of Bentley et al. (2013) and Habib & Hassan (2017).

The different aspects taken to construct the business strategy score are (i) research and development (R&D) to sales revenue ratio (indicating the firm's tendency towards developing innovative products) (ii) the total number of employees to sales revenue ratio (indicating the ability of the to manufacture and sale its products and services) (iii) the growth rate of sales (shows the change in the total sale and is taken as a proxy for historical growth) (iv) the

proportion of sales and management expenses to sales (this is taken as a proxy to measure firm's emphasis on marketing and sales) (v) volatility in the number of employees (the change in the total number of employees) (vi) the proportion of fixed assets in total assets (shows firm's capital intensity and firm's focus on production).

Following Bentley et al. (2013) and Ittner et al. (1997), we computed five years rolling averages for all the variables. For the first five aspects mentioned above, in each "industry-year" subsample, we grouped each aspect from small to large into five different groups based on their values over the past five years. The smallest number is assigned a value of "0" and the highest a value of "4". For the last aspect (i.e., fixed assets to total assets ratio), the smallest group is assigned a value of "4" whereas the largest is assigned a value of "0". All the values obtained from the six aspects are added to make a composite strategy score where the lowest value is "0" and the highest value is "24". The strategy score's high value indicates firms with prospector (aggressive) strategy, whereas a lower value shows defender firms.

3.2 Measuring Firm's Market Power

We used the Lerner index (Lerner, 1934) adjusted by industry to estimate the firm's market power. The Lerner index measure firm's market power and can be given as:

$$Lerner\ Index = \frac{Price - Cost\ Margin}{Price} \quad (1)$$

In the above equation, we can not directly calculate the price-cost margin; therefore, we have taken the price-cost margin as operating income and operating sales and management expenses, where the price is represented by operating income and cost margin given by the total operating sales and management expenses. Following the study of Peress (2010), Zhang (2011), and Xin, Gu & Li (2015), the price-cost margin of the industry is subtracted from the firm's price cost margin to calculate the Lerner index. In this way, the Lerner index can better show the firm's market power and eliminate the influence of different industries on the index due to their

different profit rates and structure that are not related to its market power. The Lerner index is given as:

$$Lerner_{i,k,t} = Lerner\ Index_{i,k,t} - Industry_{k,t} \quad (2)$$

In the above equation, $Lerner_{i,k,t}$ shows the market power of the firm “i” in industry “k” and time “t”, the lerner index $_{i,k,t}$ gives the price-cost margin (Lerner index) for the firm “i” in industry “k” and time “t” and $Industry_{k,t}$ shows the average price-cost margin of the industry “k” in time “t”. The small value of the $Lerner_{i,k,t}$ means low firm market power, whereas a higher value shows that the firm has high market power.

3.3 Control Variables

The control variables taken are in line with the prior studies of Kim et al. (2016), Huang et al. (2020), and Shahab et al. (2020). The control variables are; (1) Stock turnover (OTurn), (2) log of total assets (Size), (3) the idiosyncratic average rate of return (Ret), (4) Standard Deviation of the idiosyncratic rate of return (Sig), (5) Book to market value (BM) (6) Leverage Ratio (Lev), (7) Return on Assets (ROA).

3.4 Measuring Crash Risk

We employed the methods proposed by Hutton et al. (2009), Kim et al. (2011), and Kim et al. (2014) to measure crash risk. We measured crash risk using two different indicators (NCSKEW & DUVOL). This study calculated the firm’s yearly stock price crash risk by using the firm’s weekly returns and employing the expanded market model residuals as shown in Eq. (3). The firm-specific returns are selected so that our two crash risk indicators show the firm-specific factors and not the movement of the broad market. Following the study of Kim et al. (2014), we estimated the firm’s weekly return using the market model and is given as:

$$R_{k,t} = \alpha_1 + \delta_1 R_{m,t-2} + \delta_2 R_{m,t-1} + \delta_3 R_{m,t} + \delta_4 R_{m,t+1} + \delta_5 R_{m,t+2} + \varepsilon_{k,t} \quad (3)$$

In the above equation (1), $R_{k,t}$ indicates firm “k” stock return in the week “t”, $R_{m,t-2}$, $R_{m,t-1}$, $R_{m,t}$, and $R_{m,t+2}$ shows the average market returns for Shenzhen and shanghai stock markets “m”

during weeks t-2, t-1, t, and t+1 respectively. The market index return's lead and lag terms are added to account for non-synchronous trading (Dimson, 1979). The firm's returns are calculated using a log of one plus the residual term of equation (3). The equation (3) residuals are transformed into log form to have a more symmetric distribution as they are highly skewed (Hutton et al., 2009) and can be given as:

$$W_{k,t} = \text{Log}(1 + \varepsilon_{k,t}) \quad (4)$$

Following Kim et al. (2011), the first of the two crash risk indicators we used is the negative conditional skewness coefficients (NCSKEW) of the firm's weekly return over a year. NCSKEW is estimated by taking the negative of the third movement of weekly returns of the firm over a year and then normalize it using standard deviation by weekly returns of the firm raised to the third power and is given as follows:

$$NCSKEW_{k,t} = -[n(n-1)^{3/2} \sum W_{k,t}^3] / [(n-1)(n-2)(\sum W_{k,t}^2)^{3/2}] \quad (5)$$

Where $W_{k,t}$ shows the weekly return for the firm k as shown in equation (4), and n represents the number of weeks for firm k in year t. A high value of $NCSKEW_{k,t}$ points towards a higher probability of a crash and vice-versa.

The second measure employed in this study to measure crash risk is the upper and lower volatility ratio (DUVOL) of crash possibility. For firm j over a year t, the weekly returns of the firms are divided into two groups. The first group is “up” weeks during a year in which the firm's average returns are above the average market return, and the second group contains “down” weeks during a year when the firm's average returns are below the market average returns. The following equation then calculates the second crash risk indicator (DUVOL):

$$DUVOL_{k,t} = \log\{(n_{up} - 1) \sum_{down} W_{k,t}^2 / (n_{down} - 1) \sum_{up} W_{k,t}^2\} \quad (6)$$

Where n_{up} represents the number of weeks during a year in which the firm's average returns ($W_{k,t}$) are above the average market return, and n_{down} shows the number of weeks during a year in which the firm's average returns are below the market average returns. A high value of

DUVOL indicates a higher risk of a crash and vice-versa.

Moreover, to check the robustness of the two crash risk measures, we also measured the crash risk indicators (NCSKEW and DUVOL) using the returns calculated by Fama-French 3 factors model. The equation for can be given as:

$$R_{k,t} - r_{f,t} = \alpha_k + \beta_k(R_{m,t} - r_{f,t}) + s_kSMB_t + h_kHML_t + \epsilon_t \quad (7)$$

In the above equation, $R_{k,t}$ is the stock return of the firm, $r_{f,t}$ indicates the risk-free rate, $R_{m,t}$ gives the market return, SMB_t shows the difference in the returns of small and big firms, whereas HML_t indicates the variance in the returns of high Book to Market value firms and low Book to Market firms.

3.5 Model Specification

This study analyzes the effect of business strategy and firm's market power on stock price crash risk for Chinese firms using 12597 firm-year observations. Following the study of (Safi, Yi et al. 2021), the econometric model of this study is as follows:

$$SPR_{k,t+1} = \beta_0 + \beta_1 BusSt_{k,t} + \gamma Control_{k,t} + Year_k + Industry_k + \epsilon \quad (8)$$

$$SPR_{k,t+1} = \beta_0 + \beta_1 MktPwr_{k,t} + \gamma Control_{k,t} + Year_k + Industry_k + \epsilon \quad (9)$$

In Eq. (7) and Eq. (8), SPR shows the stock price crash risk, BusSt is composite business strategy score of the firm, MktPwr indicates firm's market power measured using the Lerner index, Year and Industry are the fixed effect dummy variables and control indicate the control variables taken in this study.

4. Empirical Results and Discussions

The empirical results obtained using different statistical analyses are presented in this section. Table-1 gives the descriptive statistics of the study. The crash risk indicators NCSKEW and DUVOL have a mean value of -0.288 and -0.190 with a standard deviation of 0.678 and 0.462, respectively. This indicates that the two measures are different in nature with a left-hand

distribution. The mean value for business strategy (BusSt) is 11.865 with a standard deviation of 0.462, indicating a neutral business strategy for all the firms operating in Shanghai and Shenzhen stock exchanges. The business strategy's minimum value is 2, indicating the firm defender strategy and the maximum value of 21 indicates prospector or aggressive strategy adopted by the firms. The mean value for market power (MktPwr) is 0.112, and the standard deviation of 0.127, where a minimum value indicates less market power and maximum value high market power. Lerner index's mean value suggests that there is no enhanced market competition, which is in line with previous studies, and there is more room for a competitive environment for firms in China (Yang and Shao 2016). The descriptive statistics are given in table-1.

Table-1 Descriptive Statistics

	N	Mean	StdDev	Min	p50	Max
NCSKEW_{t+1}	20046	-0.288	0.678	-2.764	-0.250	1.940
DUVOL_{t+1}	20046	-0.190	0.462	-1.531	-0.191	1.241
BusSt_t	12597	11.856	4.116	2.000	12.000	21.000
MktPwr_t	20046	0.112	0.127	-0.545	0.097	0.537
PLG_t	20046	0.407	0.491	0.000	0.000	1.000
NCSKEW_t	20046	-0.252	0.694	-2.830	-0.219	2.212
OTurn_t	20046	-0.158	0.499	-2.529	-0.088	1.476
Sig_t	20046	0.066	0.025	0.020	0.060	0.194
Ret_t	20046	0.002	0.011	-0.029	0.000	0.050
Size_t	20046	22.080	1.256	19.390	21.904	26.186
BM_t	20046	0.614	0.238	0.075	0.614	1.218
Lev_t	20046	0.437	0.207	0.033	0.434	0.924
ROA_t	20046	0.038	0.059	-0.556	0.036	0.214

AbsA_t	20046	0.060	0.061	0.000	0.041	0.418
-------------------------	-------	-------	-------	-------	-------	-------

Note: $NCSKEW_{t+1}$ and $DUVOL_{t+1}$ are future crash risk indicators, $BusSt$ is the business strategy measure, $MktPwr_t$ shows the market power, PLG_t is a dummy variable for equity pledging, $OTurn$ is stock turnover, Ret is the idiosyncratic average rate of return, BM is the firm's book to market value, $size$ shows firm's size, ROA is the return on assets, $AbsA$ shows firm's information asymmetry and Lev is leverage ratio.

Table-2 shows the difference test for prosecutor (aggressive) and defender firms. The firms are divided into two separate groups based on their business strategy. A firm is regarded as a defender if the firm business strategy's mean value is less than the industry's mean value, whereas a firm is a prospector if the mean value of the firm business strategy is higher than the industry's mean value. The difference test results indicate that firms with aggressive business strategies have higher future stock price crash risk with a mean value of -0.343($NCSKEW$) and -0.236 ($DUVOL$) as compare to defender firms with a mean value of -0.242 ($NCSKEW$) and -0.152 ($DUVOL$ s), respectively. Moreover, the difference is statistically significant and preliminary supports hypothesis H1. Both the crash risk measure indicators $NCSKEW$ and $DUVOL$ show the same results for defenders and prospector firms. The firm's market power ($MktPwr$) mean value for the defender firm is 0.091, and the prospector firm's mean value is 0.129, where a higher value indicates greater market power. These results indicate that firms with aggressive business strategies hold more market power as compare to defender firms. The difference test results also show that prospector firms have a higher share pledge (PLG) with a mean value of 0.454 compared to defender firms 0.352, indicating that prospector firms' shares are pledged more to alleviate financing constraints faced by the investors. Table-2 also shows the difference test analysis for other control variables selected in this research study.

Table-2 Difference Test

Defender Business	Prospector Business
Strategy	Strategy

	Obs	Mean	Obs	Mean	t-statistic
NCSKEW_{t+1}	9087	-0.242	10959	-0.343	0.101***
DUVOL_{t+1}	9087	-0.152	10959	-0.236	0.084***
BusSt_t	6903	8.847	5694	15.504	-6.657***
MktPwr_t	9087	0.091	10959	0.129	-0.038***
PLG_t	9087	0.352	10959	0.454	-0.102***
NCSKEW_t	9087	-0.316	10959	-0.198	-0.118***
OTurn_t	9087	-0.054	10959	-0.244	0.190***
Sig_t	9087	0.067	10959	0.065	0.003***
Ret_t	9087	0.002	10959	0.002	0.000
Size_t	9087	22.256	10959	21.934	0.321***
BM_t	9087	0.646	10959	0.587	0.060***
Lev_t	9087	0.496	10959	0.387	0.109***
ROA_t	9087	0.028	10959	0.046	-0.018***
AbsA_t	9087	0.059	10959	0.060	0.000

Note: NCSKEW_{t+1} and DUVOL_{t+1} are future crash risk indicators, BusSt is the business strategy measure, MktPwr_t shows the market power, PLG_t is a dummy variable for equity pledging, OTurn is stock turnover, Ret is the idiosyncratic average rate of return, BM is the firm's book to market value, size shows firm's size, ROA is the return on assets, AbsA shows firm's information asymmetry and Lev is leverage ratio. Asterisks *** shows a 1% significance level.

Table-3 gives the correlation analysis. The results show a highly significant correlation (0.873) between the crash risk measures NCSKEW and DUVOL indicated that the measures are consistent. The business strategy (BusSt) results show a significantly positive correlation with stock price crash risk, with coefficients of 0.065 for NCSKEW and 0.066 for DUVOL. The results also indicate a positive relationship between the firm's market power and crash risk indicators NCSKEW and DUVOL with coefficient values of 0.041 and 0.035. Furthermore,

the correlation analysis also shows that equity pledging and information asymmetry also contribute to crash risk. These results are in line with previous research studies, further validating the findings of the study.

Table-3 Correlation Analysis

	NCSKEW _{t+1}	DUVOL _{t+1}	BusSt _t	MktPwr _t	PLG _t	NCSKEW _t	OTurn _t	Sig _t	Ret _t	Size _t	BM _t	Lev _t	ROA _t
DUVOL _{t+1}	0.873 ^a	1.000											
BusSt _t	0.065 ^a	0.066 ^a	1.000										
MktPwr _t	0.041 ^a	0.035 ^a	0.115 ^a	1.000									
PLG _t	0.037 ^a	0.034 ^a	0.110 ^a	0.031 ^a	1.000								
NCSKEW _t	0.053 ^a	0.047 ^a	0.070 ^a	0.032 ^a	0.034 ^a	1.000							
OTurn _t	-0.041 ^a	-0.052 ^a	0.012	-0.091 ^a	0.003	-0.091 ^a	1.000						
Sig _t	-0.047 ^a	-0.056 ^a	0.043 ^a	-0.091 ^a	0.062 ^a	-0.109 ^a	0.247 ^a	1.000					
Ret _t	0.088 ^a	0.079 ^a	0.033 ^a	-0.002	0.002	-0.175 ^a	0.421 ^a	0.395 ^a	1.000				
Size _t	-0.079 ^a	-0.103 ^a	-0.033 ^a	0.115 ^a	-	-0.072 ^a	0.138 ^a	-	-	1.000			
					0.053 ^a			0.220 ^a	0.057 ^a				
BM _t	-0.144 ^a	-0.145 ^a	-0.168 ^a	-0.029 ^a	-	-0.021 ^a	-	-	-	0.530 ^a	1.000		
					0.071 ^a		0.077 ^a	0.292 ^a	0.429 ^a				
Lev _t	-0.074 ^a	-0.089 ^a	-0.146 ^a	-0.190 ^a	0.029 ^a	-0.080 ^a	0.134 ^a	-0.009	-0.002	0.499 ^a	0.372 ^a	1.000	
ROA _t	0.061 ^a	0.056 ^a	0.131 ^a	0.543 ^a	-	0.027 ^a	-	-	0.110 ^a	-0.002	-0.194 ^a	-0.343 ^a	1.000
					0.060 ^a		0.108 ^a	0.113 ^a					
AbsA _t	0.028 ^a	0.023 ^a	0.023 ^a	0.030 ^a	0.058 ^a	0.020 ^a	0.003	0.081 ^a	0.012 ^c	-0.028 ^a	-0.047 ^a	0.108 ^a	-0.118 ^a

Note: NCSKEW_{t+1} and DUVOL_{t+1} are future crash risk indicators, BusSt is the business strategy measure, MktPwr_t shows the market power, PLG_t is a dummy variable for equity pledging, OTurn is stock turnover, Ret is the idiosyncratic average rate of return, BM is the firm's book to market value, size shows firm's size, ROA is the return on assets, AbsA shows firm's information asymmetry and Lev is leverage ratio. The superscript a,b,c shows 1%, 5% and 10% level of significance respectively.

4.1 Regression Analysis

The empirical results obtained using regression analyses are explained in this section. Table-4 provides the results for the business strategy, firm's market power, and crash risk. The results indicate a significant positive association between business strategy (BusSt) and the crash risk indicators. Model (1-3) indicates that business strategy affects crash risk (NCSKEW) with coefficients values of 0.011, 0.010, and 0.007, respectively. Similarly, in the model (4-6), the

coefficient values for the second crash indicator DUVOL also show a significant positive relationship with coefficient values of 0.007, 0.007, and 0.005, respectively. These findings support hypothesis H1. This can be explained by the fact that firms with prospector business strategies show rapid growth, increasing the risk of financial misreporting using opaque financial reporting, which is the main cause of crash risk (Hutton et al., 2009; Kim et al. 2011, 2016).

The results in Table-4 also show the linkage between the firm's market power and crash risk indicators. The results indicate that firm market power ($MktPwr_{i,t}$) is positively and significantly associated with crash risk with coefficient values of 0.182 and 0.195 for NCSKEW in the model (2-3). Similarly, in models (5) and (6), the market power is significantly positively linked with crash risk indicator DUVOL with coefficient values of 0.084 and 0.129, respectively. This indicates that firms enjoying market power and operating in a monopolistic environment have a higher probability of stock price crash risk than firms with less market power and operating in a balanced competitive environment (Peress 2010). These results support hypothesis H2 and are consistent with the outcomes of Xin et al. (2015) and Zhang (2015).

Table-4 Regression Analysis

	NCSKEW _{t+1}			DUVOL _{t+1}		
	(1)	(2)	(3)	(4)	(5)	(6)
BusSt_t	0.011*** (0.001)	0.010*** (0.002)	0.007*** (0.002)	0.007*** (0.001)	0.007*** (0.001)	0.005*** (0.001)
MktPwr_t		0.182*** (0.051)	0.195*** (0.062)		0.084** (0.034)	0.129*** (0.040)
AbsA_t			0.262** (0.105)			0.136* (0.072)

NCSKEW_t			0.065***			0.042***
			(0.009)			(0.006)
OTurn_t			-0.033			-0.029*
			(0.027)			(0.018)
Sig_t			-0.606			-0.518*
			(0.450)			(0.305)
Ret_t			10.663***			6.993***
			(1.049)			(0.715)
Size_t			0. *			-0.004
			(0.008)			(0.005)
BM_t			-0.282***			-0.156***
			(0.041)			(0.028)
Lev_t			0.053			0.046*
			(0.041)			(0.027)
ROA_t			-0.396***			-0.295***
			(0.138)			(0.091)
_cons	-0.374***	-0.371***	-0.464***	-0.268***	-0.270***	-0.025
	(0.055)	(0.055)	(0.165)	(0.036)	(0.036)	(0.111)
Industry &	Yes	Yes	Yes	Yes	Yes	Yes
Year FE						
N	12597	12597	12597	12597	12597	12597
adj. R²	0.047	0.046	0.067	0.047	0.048	0.067
F	23.124	23.616	25.128	24.164	23.411	24.773

Note: NCSKEW_{t+1} and DUVOL_{t+1} are future crash risk indicators, BusSt is the business strategy measure, MktPwr_t shows the market power, OTurn is stock turnover, Ret is the idiosyncratic average rate of return, BM is the firm's book to market value, size shows firm's size, ROA is the return on assets, Lev is leverage ratio, AbsA shows

firm's information asymmetry and Industry & Year FE indicate the industry and year fixed effects. Asterisks *, **, *** shows 10%, 5% and 1% level of significance respectively.

Table-5 shows regression results for prospector and defender firms separately. Model (1) and (2) results show a significant positive linkage between prospector business strategy and crash risk with a coefficient value of 0.010 and 0.005 for NCSKEW and DUVOL. In contrast, the results for defender firms were positive but insignificant. These results indicate that firms with prospector strategies are more prone to crash risk as they spend aggressively on innovative solutions that provide rapid growth prospects, thus enhancing the chances of irregularities and misinformation. The lack of transparency and opaque financial reporting is one of the main causes of crash risk (Hutton et al., 2009; Jin and Myers 2006; Kim et al. 2016). The outcomes of this study are also supported by the research findings of (Bentley et al. 2013) and (Habib and Monzur 2017).

Table-5 Regression analysis for Prospectors and Defender firms

	(1)	(3)	(2)	(4)
	(1) NCSKEW	(2) DUVOL	(3) NCSKEW	(4) DUVOL
BusSt_t	0.010** (2.550)	0.005* (1.909)	0.004 (1.078)	0.003 (1.312)
MktPwr_t	0.281*** (3.290)	0.201*** (3.312)	0.208** (2.175)	0.185*** (2.962)
AbsA_t	0.285* (1.807)	0.196* (1.750)	0.326** (1.998)	0.192* (1.808)
NCSKEW_t	0.086*** (5.932)	0.047*** (4.775)	0.037*** (2.885)	0.045*** (4.996)
OTurn_t	-0.048 (-1.144)	-0.056** (-2.002)	-0.120*** (-3.431)	0.011 (0.431)

Sig_t	-1.333 [*]	-0.806 [*]	-3.372 ^{***}	-0.568
	(-1.944)	(-1.696)	(-6.525)	(-1.216)
Ret_t	12.800 ^{***}	8.139 ^{***}	7.114 ^{***}	7.696 ^{***}
	(7.713)	(7.083)	(5.388)	(7.159)
Size_t	0.016	-0.003	0.022 ^{**}	-0.014 [*]
	(1.328)	(-0.347)	(2.107)	(-1.746)
BM_t	-0.305 ^{***}	-0.155 ^{***}	-0.418 ^{***}	-0.125 ^{***}
	(-4.866)	(-3.513)	(-7.040)	(-2.986)
Lev_t	-0.022	0.000	0.044	0.062
	(-0.328)	(0.003)	(0.756)	(1.572)
ROA_t	-0.305	-0.250 [*]	-0.487 ^{**}	-0.502 ^{***}
	(-1.578)	(-1.893)	(-2.413)	(-3.473)
_cons	-0.463 [*]	0.005	-0.410 [*]	0.146
	(-1.834)	(0.026)	(-1.841)	(0.888)
Year &	Yes	Yes	Yes	Yes
Industry FE				
N	5011	5011	6051	6051
adj. R²	0.067	0.070	0.031	0.062
F	20.404	11.241	7.762	11.505

Note: NCSKEW_{t+1} and DUVOL_{t+1} are the crash risk indicators, BusSt is the business strategy measure, MktPwr_t shows the market power, OTurn is stock turnover, Ret is the idiosyncratic average rate of return, BM is the firm's book to market value, size shows firm's size, ROA is the return on assets, Lev is leverage ratio, AbsA shows firm's information asymmetry and Industry & Year FE indicate the industry and year fixed effects. Asterisks *, **, *** shows 10%, 5% and 1% significance level respectively.

4.2 Robustness test

The robustness test results are obtained using the two-Stage least squares (2SLS) method, which can deal with the problem of endogeneity. We have included control variables in the regression analysis, and endogeneity is still possible between business strategy, market power, and crash risk. Thus, following the studies of Ghadhab (2019), Wang, et al. 2020, and Yu & Mai (2020), we employed the 2SLS method as a robustness test to check for endogeneity and to further verify the results. Table-6 provides the 2-SLS method regression analysis. Firms in the same industry have the same business operations and policies and deal with the same products related to the firm's business strategy and market power. We have taken industry and province average business strategy as our instrumental variable for the 2SLS method, as used by earlier research studies (Habib and Monzur 2017; Shahab et al. 2020; Xu, Yu, and Zurbruegg 2020). The second stage results in Table-6 show that business strategy (BusSt_t) and firm's market power (MktPwr_t) are positively linked with crash risk. These results further confirm the results obtained using regression analysis given in table-4,5. These results are also similar to the research findings of Habib & Monzur (2017) and Xin et al. (2015).

Table-6 Two-Stage Least Squares Regression Analysis

	First stage Regression	Second stage regression	
	(1)	(2)	(3)
	BusSt _t	NCSKEW _{t+1}	NCSKEW _{t+1}
Prov_ BusSt _t	0.308*** (0.039)		
Ind_ BusSt _t	0.357*** (0.043)		
BusSt _t		0.006*** (0.002)	0.005*** (0.001)
MktPwr _t		0.136** (0.059)	0.093** (0.039)
PLG _t	0.856*** (0.068)	0.057*** (0.013)	0.031*** (0.008)
NCSKEW _t	0.271*** (0.047)	0.067*** (0.009)	0.043*** (0.006)
OTurn _t	-0.227* (0.138)	-0.029 (0.025)	-0.029* (0.017)
Sig _t	19.638***	-0.571	-0.459

	(2.434)	(0.448)	(0.299)
Ret _t	-31.941***	10.610***	6.944***
	(5.818)	(1.077)	(0.718)
Size _t	0.676***	0.016**	-0.004
	(0.042)	(0.008)	(0.005)
BM _t	-2.445***	-0.300***	-0.169***
	(0.228)	(0.041)	(0.028)
Lev _t	-1.832***	0.037	0.036
	(0.215)	(0.039)	(0.026)
ROA _t	4.728***	-0.374***	-0.280***
	(0.627)	(0.128)	(0.085)
AbsA _t	3.095***	0.247**	0.131*
	(0.563)	(0.104)	(0.069)
_cons	-11.278***	-0.551***	-0.072
	(1.105)	(0.160)	(0.107)
Industry & Year FE	Yes	Yes	Yes
Adjusted/centered R ²	0.2284	0.0681	0.0684
N	12597	12597	12597
F	82.733	31.687	31.823

Note: NCSKEW_{t+1} and DUVOL_{t+1} are future crash risk indicators, BusSt is the business strategy measure, MktPwr_t shows the market power, Ind_BusSt_t is the industry, and Prov_BusSt_t is the province average business strategy taken as an instrumental variable, PLG_t is a dummy variable for equity pledging, OTurn is stock turnover, Ret is the idiosyncratic average rate of return, BM is the firm's book to market value, size shows firm's size, ROA is the return on assets, Lev is leverage ratio, AbsA shows firm's information asymmetry and Industry & Year FE indicate the industry and year fixed effects. Asterisks *, **, *** shows 10%, 5% and 1% significance level respectively.

Furthermore, we calculated crash risk using Fama-French three-factors model returns to confirm the robustness of the measure used in this analysis. The crash risk calculated using the Fama-French 3 factor model is highly correlated with the stock return method proposed by Hutton et al. 2009 and Kim et al. 2016. The results obtained are provided in table-7. The results show a significant positive relationship between business strategy (BusSt_t), firm market power (MktPwr_t), and the crash risk indicators. The coefficient values have increased slightly compared to the results obtained using normal stock returns. However, these results are similar to the results obtained previously and further confirms our findings.

Table-7 Regression Analysis (Fama-French 3 Factor Model)

	NCSKEW _{t+1}			DUVOL _{t+1}		
	(1)	(2)	(3)	(4)	(5)	(6)

BusSt_t	0.011*** (0.002)	0.010*** (0.002)	0.007*** (0.002)	0.006*** (0.001)	0.005*** (0.001)	0.003*** (0.001)
MktPwr_t		0.343*** (0.063)	0.186** (0.075)		0.200*** (0.039)	0.113** (0.047)
AbsA_t			0.344*** (0.126)			0.225*** (0.081)
NCSKEW_t			0.063*** (0.011)			0.038*** (0.007)
OTurn_t			-0.024 (0.033)			-0.025 (0.021)
Sig_t			-1.425*** (0.542)			-1.078*** (0.342)
Ret_t			11.332*** (1.256)			7.178*** (0.809)
Size_t			0.070*** (0.009)			0.039*** (0.006)
BM_t			-0.439*** (0.050)			-0.261*** (0.031)
Lev_t			0.072 (0.051)			0.033 (0.032)
ROA_t			-0.155 (0.148)			-0.135 (0.097)
_cons	-0.464*** (0.064)	-0.470*** (0.064)	-1.576*** (0.195)	-0.326*** (0.039)	-0.329*** (0.041)	-0.925*** (0.123)
Industry & Year FE	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	12597	12597	12597	12597	12597	12597
adj. <i>R</i> ²	0.047	0.050	0.068	0.057	0.059	0.076
<i>F</i>	23.361	23.715	27.549	28.315	30.230	29.285

Note: NCSKEW_{t+1} and DUVOL_{t+1} are future crash risk indicators, BusSt is the business strategy measure, MktPwr_t shows the market power, OTurn is stock turnover, Ret is the idiosyncratic average rate of return, BM is the firm's book to market value, size shows firm's size, ROA is the return on assets, Lev is leverage ratio, AbsA shows firm's information asymmetry and Industry & Year FE indicate the industry and year fixed effects. Asterisks *, **, *** shows 10%, 5% and 1% significance level.

5. Conclusion

Stock price crash risk is an important factor to understand before making an investment decision and managing risks. Due to its importance, many research studies have been conducted to explore the determinants of stock price crash risk. Factors like CEO overconfidence, tax avoidance, financial misreporting, negative news hoarding, foreign investors, and other firm's level factor have been investigated as the factors that affect crash risk. However, studies have ignored the firm-level business strategy that leads to these factors

and influences crash risk. The present study investigates the impact of business strategy and firm's market power on stock price crash risk for firms listed on the Shenzhen and Shanghai stock exchanges from 2006 to 2019. In this study, we employed Miles and Snow's (2003) business strategy topology, which focuses on the firm's products and market change rate. For our analysis, based on the Wind database classification of industries, the industries are divided into ten different sectors. For our sample, as we have excluded the financial sector, there are ten industries with 2365 firms and 12597 firm-year observations. We argue that firms with innovation-oriented prospector business strategies may invest in risky projects for higher gains and thus enhance the chances of irregularities and misinformation. Managers may withhold this bad news, which may result in future crash risk.

This study's results show that firms with prospector business strategies are more likely to experience future stock price crash risk compared to firms that adopt defender strategies. Moreover, the results also indicate that the firm's market power also enhances future stock price crash risk. These results remain robust after controlling for firm-specific variables that may lead to crash risk. These factors include information asymmetry, stock turnover, firm size, the idiosyncratic average rate of return, the standard deviation of the idiosyncratic rate of return, book to market value, return on assets, and leverage ratio. We have made our results more robust by incorporating industry-fixed effects in all our analyses to make the analysis more robust as business strategy varies from industry to industry. The robustness test results obtained using the two-stage least squares regression method further verifies the results and addresses any endogeneity concerns.

This study's findings cannot be taken as an indication that companies should avoid prospector business strategies. In contrast, firms should encourage managers to adopt prospector business strategies as they are innovation-based, which is a key source of a firm's rapid growth. Firms should control the adverse effect of prospector business strategy and adopt innovation-based

strategies to improve their growth. The policy implication of this study is that firms, policymakers, and regulators should focus on developing a mechanism (e.g., conservative accounting policy) that can increase the flow of information and reduce information asymmetry, which will help mitigate the adverse influence of prospector business strategy on crash risk.

References

- Bentley-Goode, Kathleen A., Nathan J. Newton, and Anne M. Thompson. 2017. "Business Strategy, Internal Control over Financial Reporting, and Audit Reporting Quality." *Auditing* 36(4):49–69.
- Bentley, Kathleen A., Thomas C. Omer, and Nathan Y. Sharp. 2013. "Business Strategy, Financial Reporting Irregularities, and Audit Effort." *Contemporary Accounting Research* 30(2):780–817.
- Bolton, Patrick, Jose Scheinkman, and Wei Xiong. 2006. "Executive Compensation and Short-Termist Behaviour in Speculative Markets." *The Review of Economic Studies* 73(3):577–610.
- Boyd, Brian K., and Alain Salamin. 2001. "Strategic Reward Systems: A Contingency Model of Pay System Design." *Strategic Management Journal* 22(8):777–92.
- Bushee, Brian J., John E. Core, Wayne Guay, and Sophia J. W. Hamm. 2010. "The Role of the Business Press as an Information Intermediary." *Journal of Accounting Research* 48(1):1–19.
- Callen, Jeffrey L., and Xiaohua Fang. 2015. "Short Interest and Stock Price Crash Risk." *Journal of Banking & Finance* 60:181–94.
- Cardona, Emilio, Andrés Mora-Valencia, and Daniel Velásquez-Gaviria. 2019. "Testing Expected Shortfall: An Application to Emerging Market Stock Indices." *Risk Management* 21(3):153–82.

- Choi, Sanghak, and Hail Jung. 2020. "Director Liability Reduction and Stock Price Crash Risk: Evidence from Korea." *International Review of Finance*.
- Croteau, Anne Marie, and François Bergeron. 2001. "An Information Technology Trilogy: Business Strategy, Technological Deployment and Organizational Performance." *Journal of Strategic Information Systems* 10(2):77–99.
- Elenjical, Timmy, Patrick Mwangi, Barry Panulo, and Chun Sung Huang. 2016. "A Comparative Cross-Regime Analysis on the Performance of GARCH-Based Value-at-Risk Models: Evidence from the Johannesburg Stock Exchange Oa." *Journal of Revenue and Pricing Management* 18(2–3):89–110.
- Ghadhab, Imen. 2019. "Does Cross-Listing in the US Mitigate Stock Crash Risk? International Evidence." *International Review of Financial Analysis* 63:186–97.
- Habib, Ahsan, and Mostafa Monzur. 2017. "Research in International Business and Finance Business Strategy , Overvalued Equities , and Stock Price Crash Risk." *Research in International Business and Finance* 39:389–405.
- Higgins, Danielle, Thomas C. Omer, and John D. Phillips. 2015. "The Influence of a Firm's Business Strategy on Its Tax Aggressiveness." *Contemporary Accounting Research* 32(2):674–702.
- Hill, Charles W. L. 1988. "Differentiation versus Low Cost or Differentiation and Low Cost: A Contingency Framework." *Academy of Management Review* 13(3):401–12.
- Ho, Kung-Cheng, Shih-Cheng Lee, Chien-Ting Lin, and Lee-Hsien Pan. 2016. "Information Disclosure, Product Market Competition, and Firm Value." in *Asian Finance Association (AsianFA) 2016 Conference*.
- Huang, Zhi-xiong, Qi Tang, and Siming Huang. 2020. "Foreign Investors and Stock Price Crash Risk: Evidence from China." *Economic Analysis and Policy* 68:210–23.
- Hutton, Amy P., Alan J. Marcus, and Hassan Tehranian. 2009. "Opaque Financial Reports, R2,

- and Crash Risk.” *Journal of Financial Economics* 94(1):67–86.
- Jensen, Michael C. 2005. “Agency Costs of Overvalued Equity.” *Financial Management* 34(1):5–19.
- Jia, Ning. 2018. “Corporate Innovation Strategy and Stock Price Crash Risk.” *Journal of Corporate Finance* 53:155–73.
- Jin, Li, and Stewart C. Myers. 2006. “R2 around the World: New Theory and New Tests.” *Journal of Financial Economics* 79(2):257–92.
- Kim, Jeong-Bon, Yinghua Li, and Liandong Zhang. 2011. “Corporate Tax Avoidance and Stock Price Crash Risk: Firm-Level Analysis.” *Journal of Financial Economics* 100(3):639–62.
- Kim, Jeong Bon, Zheng Wang, and Liandong Zhang. 2016. “CEO Overconfidence and Stock Price Crash Risk.” *Contemporary Accounting Research* 33(4):1720–49.
- Kirschenheiter, Michael, and Nahum D. Melumad. 2002. “Can ‘Big Bath’ and Earnings Smoothing Co-exist as Equilibrium Financial Reporting Strategies?” *Journal of Accounting Research* 40(3):761–96.
- Leuz, Christian, Dhananjay Nanda, and Peter D. Wysocki. 2003. “Earnings Management and Investor Protection: An International Comparison.” *Journal of Financial Economics* 69(3):505–27.
- Li, Caroline Bingxin, and Julie Juan Li. 2008. “Achieving Superior Financial Performance in China: Differentiation, Cost Leadership, or Both?” *Journal of International Marketing* 16(3):1–22.
- Li, Xi. 2010. “The Impacts of Product Market Competition on the Quantity and Quality of Voluntary Disclosures.” *Review of Accounting Studies* 15(3):663–711.
- Ma, Xiaomeng, Dong Zou, Chuanchao Huang, and Shuliang Lv. 2020. “China’s Growing Influence and Risk in Asia–Pacific Stock Markets: Evidence from Spillover Effects and

- Market Integration.” *Risk Management* 22(4):338–61.
- March, James G. 1991. “Exploration and Exploitation in Organizational Learning.” *Organization Science* 2(1):71–87.
- Miles, R. E., C. C. Snow, A. D. Meyer, and H. J. Coleman. 1978. “Organizational Strategy, Structure, and Process.” *Academy of Management Review. Academy of Management* 3(3):546–62.
- Miles, Raymond E., and Charles C. Snow. 2003. *Organizational Strategy, Structure, and Process*. Stanford University Press.
- Moradi, Mahdi, Andrea Appolloni, Grzegorz Zimon, Hossein Tarighi, and Maede Kamali. 2021. “Macroeconomic Factors and Stock Price Crash Risk: Do Managers Withhold Bad News in the Crisis-Ridden Iran Market?” *Sustainability (Switzerland)* 13(7):3688.
- Murray, Alan I. 1988. “A Contingency View of Porter’s ‘Generic Strategies.’” *Academy of Management Review* 13(3):390–400.
- Navissi, Farshid, V. G. Sridharan, Mehdi Khedmati, Edwin Kia Yang Lim, and Egor Evdokimov. 2017. “Business Strategy, over- (Under-) Investment, and Managerial Compensation.” *Journal of Management Accounting Research* 29(2):63–86.
- Nishitani, Kimitaka, and Katsuhiko Kokubu. 2012. “Why Does the Reduction of Greenhouse Gas Emissions Enhance Firm Value? The Case of Japanese Manufacturing Firms.” *Business Strategy and the Environment* 21(8):517–29.
- Peress, Joel. 2010. “Product Market Competition, Insider Trading, and Stock Market Efficiency.” *The Journal of Finance* 65(1):1–43.
- Porter, Michael E. 1980. “Competitive Strategy: Techniques for Analyzing Industries and Competitors.”
- Qureshi, Fiza, Ali M. Kutan, Habib Hussain Khan, and Saba Qureshi. 2019. “Equity Fund Flows, Market Returns, and Market Risk: Evidence from China.” *Risk Management*

21(1):48–71.

- Rajagopalan, Nandini. 1997. “Strategic Orientations, Incentive Plan Adoptions, and Firm Performance: Evidence from Electric Utility Firms.” *Strategic Management Journal* 18(10):761–85.
- Safi, Adnan, Yingying Chen, Salman Wahab, Shahid Ali, Xianrong Yi, and Muhammad Imran. 2021. “Financial Instability and Consumption-Based Carbon Emission in E-7 Countries: The Role of Trade and Economic Growth.” *Sustainable Production and Consumption* 27:383–91.
- Safi, Adnan, Xianrong Yi, Salman Wahab, Yingying Chen, and Hassan Hassan. 2021. “CEO Overconfidence, Firm-Specific Factors, and Systemic Risk: Evidence from China.” *Risk Management* 1–18.
- Shahab, Yasir, Collins G. Ntim, Farid Ullah, Chen Yugang, and Zhiwei Ye. 2020. “CEO Power and Stock Price Crash Risk in China: Do Female Directors’ Critical Mass and Ownership Structure Matter?” *International Review of Financial Analysis* 68:101457.
- Shin, Yong-Chul. 2013. “Voluntary Disclosure and the Type of Product Market Competition: Capacity vs. Price.” *Journal of Modern Accounting and Auditing* 9(4):505.
- Thomas, Anisya S., and Kannan Ramaswamy. 1996. “Matching Managers to Strategy: Further Tests of the Miles and Snow Typology.” *British Journal of Management* 7(3):247–61.
- Treacy, Michael, and Fred Wiersema. 2007. *The Discipline of Market Leaders: Choose Your Customers, Narrow Your Focus, Dominate Your Market*. Hachette UK.
- Wang, Jiangyuan, Guangqiang Liu, and Qisong Xiong. 2020. “Institutional Investors’ Information Seeking and Stock Price Crash Risk: Nonlinear Relationship Based on Management’s Opportunistic Behaviour.” *Accounting and Finance* 60(5):4621–49.
- Xin, Yu, Xiaolong Gu, and Tianyu Li. 2015. “Industry Competition Structure, Market Power, and Stock Price Crash Risk.” *China Accounting and Finance Review* 17(2):1–46.

- Xu, Limin, Chia Feng (Jeffrey) Yu, and Ralf Zurbuegg. 2020. "The Benefit of Being a Local Leader: Evidence from Firm-Specific Stock Price Crash Risk." *Journal of Corporate Finance* 65:101752.
- Yang, Jun, and Hanhua Shao. 2016. "Impact of Bank Competition on the Bank Lending Channel of Monetary Transmission: Evidence from China." *International Review of Economics and Finance* 43:468–81.
- Yu, Jingwen, and Dongren Mai. 2020. "Political Turnover and Stock Crash Risk: Evidence from China." *Pacific Basin Finance Journal* 61:101324.
- Zhang, Yiming. 2015. "Product Market Power, Corporate Governance and the Information Content of Stock Price." *Corporate Governance and the Information Content of Stock Price* (May 7, 2015).

Appendices

Table-1A Industry classification

Industries/sectors	Firms	Number of Observations	Percentage
Consumer Discretionary	379	1999	15.8688577
Industrials	589	2965	23.5373502
Real Estate	114	765	6.07287449
Utilities	88	513	4.07239819
Consumer Staples	171	984	7.81138366
Healthcare	201	1111	8.81956021
Materials	393	2228	17.6867508
Telecom Services	3	20	0.15876796
Energy	60	363	2.88163849
IT	367	1649	13.0904184
Total	2365	12597	100