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An Empirical Investigation of Multinationality and Stock Price Crash Risk for MNCs in China

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Abstract: There is a large volume of literature in international business on multinationality. There is an equally large volume of literature in finance on stock price crash risk. However, very few studies have attempted to provide a link between these two research areas. Using an unbalanced panel data consisting of 473 multinational corporations (MNCs) publicly listed in the Chinese stock markets during 2004 to 2020, this paper is one of the first to empirically investigate whether and to what extent multinationality affects stock price crash risk. The paper finds strong evidence that multinational operation is negatively related to stock price crash risk. In addition, MNCs with better corporate governance quality experience larger decline in stock price crash risk when the degree of multinationality increases. Furthermore, MNCs with higher stock market liquidity experience lower crash risk. An important implication is that companies should strengthen their corporate governance and market liquidity while "going global".

Keywords: multinational corporations (MNCs); stock price crash risk; multinationality; Chinese stock markets

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1. Introduction

Multinationality refers to firms that operate beyond their domestic national borders. Such firms have become increasingly sophisticated in international financial dealings because international business may help reduce operational risk, enhance profitability and create opportunities that are not present in purely domestic business operations [1]. Existing studies on multinationality mainly focus on whether and to what extent the conditions of host countries, the ownership structure of foreign subsidiaries, corporate governance mechanisms, and external business environments influence the relationship between multinationality and firm performance.

Crash risk refers to sudden significant drop in stock prices for publicly listed companies. It can be measured by the probability of extreme negative return and is related to the negative skewness and volatility of return distribution [2]. Extant studies on stock price crash risk mainly focus on the role of institutional investors, short-sale constraints, and managerial behaviors in affecting agency costs and information asymmetry, which in turn determines the level of crash risk.

Despite voluminous previous research on multinationality or stock price crash risk, very few studies have attempted to link them together theoretically and empirically. To fill

this gap in the literature, this article provides one of the first empirical analyses that links multinationality with crash risk.

Using a panel of 473 multinational corporations (MNCs) publicly listed on the Shanghai and Shenzhen A-share stock markets between 2004 and 2020, the objectives of this study are two-fold. First, this article explores whether and to what extent multinationality affects stock price crash risk using two measures of multinationality and crash risk, respectively. Second, this article empirically investigates whether and to what extent corporate governance mechanisms can be an important moderating variable that affects the relationship between multinationality and crash risk.

The novelties and innovations of this study are as follows:

- There have been numerous studies on MNCs, but to date, there is no study that links multinationality with stock price crash risk.
- This article not only provides two theoretical perspectives on how multinationality may affect stock price crash risk, but also examines the moderating role of corporate governance.
- Using hand-collected data, this article is one of the first to use the full break-down of all foreign investment across different countries by an MNC to measure the degree of multinationality.

The significance of this study is as follows: multinationality is an important corporate development strategy to expand product markets outside of a nation, which helps publicly listed firms utilise global resources, enhance growth potential, and reduce downside risk in their business operation. Consequently, MNCs may experience lower stock price crash risk than their purely domestic counterparts. Therefore, it is important to analyse the theoretical link between multinationality and crash risk, which inevitably will provide new insights into the emerging interdisciplinary studies of finance and international business.

2. Literature Review

2.1. Theories on Multinationality

In general, multinationality can enhance returns or reduce risk. Because of market imperfection, MNCs with distinctive advantages in resources, technology, marketing, management, and financing can create stronger barriers to entry to its industry and maintain monopoly prices and profits through multinationality [3]. Ref. [4] showed that MNCs are less likely to be characterized by imperfect competition in the labor and product markets and that international activities through export or FDI are positively related to the extent of market imperfection. However, Ref. [5] argued that entering a foreign market entails large sunk costs. Because MNCs are usually reluctant to forgo sunk costs of investing abroad following an adverse shock, they are more exposed to risk.

In addition, when the development of products is completed and domestic market becomes saturated, firms can exploit profitable business opportunities by expanding their operations abroad [6]. In fact, Ref. [7] showed that MNCs are an important channel for internationalization of product strategy with respect to global standardisation and local adaptation of technology. In particular, MNC subsidiaries' customer cocreation affects new product innovativeness and knowledge leakage to competitors.

Moreover, when the marginal costs of production and transportation for exports exceed the average expected cost of production in importing countries, multinationality may become a more profitable strategy [8]. Ref. [9] analyzed the international operations of multinational firms to measure the spatial barriers to transporting goods and services versus transferring knowledge and found that production and transportation costs outweigh knowledge transfer costs and that differential costs account for much of the gravity in multinational activity.

Furthermore, when markets for intermediate goods are incomplete and characterized with high information asymmetry and transaction costs, internalization through overseas production and sales might be important for firms' own survival [10]. Ref. [11] proposed a "New Internalization Theory" and demonstrated that internalization of market deficiencies

across borders can improve corporate governance over time and become efficient solutions to market imperfections.

Finally, multinationality can help firms to diversify across industries and geographical regions, enhance internal capital market efficiency and reduce production and financing costs [12]. Ref. [13] argues that an important function of corporate headquarters is to operate an internal capital market, which can distribute resources more efficiently among strategically independent subsidiaries. In fact, internal capital markets are likely to produce the largest gains for MNCs because multinational activities are characterized by high geographical and cultural differences.

2.2. Measurement of Multinationality

Many studies use income from abroad, foreign income as a percentage of total income, or the ratio of foreign income to foreign assets as measures of multinationality [14–16]. Some studies use the number of host countries or the number of overseas subsidiaries of an MNC [17,18], while others use a combination of indicators, including asset distribution, management structure and sources of income [19]. In recent years, some articles have proposed using the density of foreign expenditure and profit [20], the fraction of overseas employees [21] and the dispersion of foreign operational centers [22].

2.3. Multinationality and Firm Performance

Studies on the effect of multinationality on firm performance have reached inconclusive results. MNCs operating internationally may allocate resources more efficiently within the conglomerate, which reduces the impact of negative shocks to the firm [23]. In addition, MNCs can adjust the production plan, research and development (R&D), and marketing network more flexibly, thus entering a better position to hedge various operation risk [24]. MNCs experience higher growth potential and have lower probability of persistent poor performance. As a result, the volatility of MNC share prices is relatively low [25].

However, MNCs face more complicated business environments, taxation and foreign exchange risk. Political, cultural and religious institutions vary across host countries. There might be greater uncertainty due to more sophisticated agency problems arising from multiple layers of the separation of ownership and control rights. Thus, multinationality may lead to poor firm performance [26–28].

Ref. [29] conducted a meta analysis of 186 academic articles published between 1998 and 2021, and found that the relationship between multinationality and firm performance is positive overall, but the relationship varies across diverse research designs and depends on whether MNCs are located in developed or emerging markets. In addition, the governance quality and transparency of home countries are positively related to the relationship between multinationality and firm performance, while nationalism has a negative impact on the relationship.

2.4. Crash Risk

An explanation of crash risk is that managers have incentive to conceal negative information about the firm or may reveal selective information just to avoid legal troubles. When negative information accumulates over time and exceeds a certain threshold, stock prices collapse [30]. Ref. [31] finds that managerial incentives such as stock ownership and stock options induce CEOs to cover up adverse information on the firm, which can lead to over-investment decisions and exacerbate stock price crash risks. In addition, the degree of earnings management is positively related to crash risks, while the effectiveness of internal control mechanism, independent directors on board, and education background of CEOs and CFOs can help reduce crash risks.

Another explanation is that investor heterogeneity may lead to stock price bubbles. An exogenous shock can cause a price bubble to burst, and at the same time, speculators rush to close their positions, which raises the stock price crash risk [32]. Ref. [33] finds that investors have asymmetric reactions to bad versus good news. When good news arrive

in the market, volatility feedback normally has little effect on risk premium. However, because stock returns are characterized by negative skewness and excess leptokurtosis, volatility is high when negative news arrive. The result is that risk premium rises, causing higher stock price crash risks.

3. Hypotheses

There are two channels in which multinationality may reduce stock price crash risk. One channel is through geographical diversification such that low-cost units can subsidize high-cost divisions. This channel is especially effective when product development enters the final stage and the international transfer of productive resources become more profitable. Location can be the source of comparative advantage to mitigate negative firm performance. An added benefit of geographical diversification is that negative political or economic shocks in one country may be offset or cushioned by other countries without similar negative shocks. Therefore, MNCs may experience lower probability of stock price crash risk.

Another channel is through internal allocation of resources such that information and opportunities from different regions/countries can be better shared and utilized within the organization. MNCs can adjust production plans, research and development activities, environmental policies, and even managerial resources more flexibly to reduce volatility of corporate earnings, thereby reducing stock price crash risk.

Based on the above analysis, we hypothesize that:

Hypothesis 1a. *Multinationality lowers stock price crash risk.*

However, because the overseas subsidiaries of an MNC possess independent business power, the agency problem can be quite sophisticated. In addition to the traditional principal-agent problem where CEOs may not act in the interest of shareholders, further complications may arise when division heads in overseas subsidiaries take advantage of better knowledge in local operation and do not act in the interest of the conglomerate CEO. As a result of the chain of agency problems that extends across borders, information asymmetry can be exacerbated. This, coupled with less effective board of directors and higher agency cost of managerial discretion, may increase stock price crash risk.

Based on the above analysis, we propose the following competing hypothesis:

Hypothesis 1b. *Multinationality increases stock price crash risk.*

Although multinationality may be accompanied by more complicated agency problems, a well-functioning corporate governance mechanism can help reduce agency costs. First, good corporate governance can better align management interest with that of shareholders or the interest of division heads with that of conglomerate CEO. Second, effective internal and external governance structure helps monitor and discipline managers. Third, good corporate governance almost always leads to better information disclosure, so negative information will not accumulate out of proportion. Therefore, corporate governance mechanism can serve as an important moderating variable for the relationship between multinationality and stock price crash risk.

Based on the above analysis, we hypothesize that:

Hypothesis 2. *If multinationality lowers stock price crash risk, then the negative relationship becomes stronger for MNCs with better corporate governance. On the other hand, if multinationality increases stock price crash risk, then the positive relationship becomes weaker for MNCs with better corporate governance.*

4. Data and Methodology

4.1. Data

The sample consisted of 473 MNCs publicly listed in Shanghai and Shenzhen A-share markets in China during 2004 and 2020. Data on stock prices, market capitalization, ownership structure, leverage, book-to-market ratio, return on assets, and firm-level characteristics were obtained from the China Stock Market and Accounting Research (CSMAR) database (See https://cn.gtadata.com, accessed on 28 February 2022). Data on foreign direct investment in various host countries by an MNC were hand-collected from the fDi Markets database commercially provided by Financial Times (See https://www.fdiintelligence.com/fdi-markets, accessed on 2 March 2022). In particular, we obtained detailed information on a total of 4448 FDIs for 473 publicly listed firms between 2004 and 2020. The final sample consisted of unbalanced panel data with 2841 observations.

4.2. Variables

Key dependent and independent variables were constructed as follows:

Multinationality $(MN_{i,t})$: We used two measures to proxy for the degree of internationalization. The first proxy $(MNFDI_{i,t})$ is the ratio of the total amount of foreign direct investment (FDI) and total asset for firm i in year t. The second proxy $(MNHHI_{i,t})$ is the dispersion of FDI among host countries, which is 1 minus the Herfindahl–Hirschman Index of FDI for firm i in year t.

Stock price crash risk $(CR_{i,t})$: We used two measures to proxy for stock price crash risk. One is the skewness parameter for negative returns $(CRSKEW_{i,t})$ and another is volatility ratio $(CRVOL_{i,t})$.

Following [34,35], we first regressed the weekly stock return for firm i $(R_{(i,l)})$ against the concurrent, lagged and lead market returns $(R_{(m,l)})$.

$$R_{(i,l)} = \alpha_0 + \alpha_1 R_{(m,l-2)} + \alpha_2 R_{(m,l-1)} + \alpha_3 R_{(m,l)} + \alpha_4 R_{(m,l+1)} + \alpha_5 R_{(m,l+2)} + \epsilon_{(i,l)} \quad (1)$$

where $l = 1, 2, \cdots, n$ and n is the number of trading weeks in year t.

Then, we obtained firm-specific idiosyncratic returns using the residuals from (1): $W_{(i,l)} = \ln\left(1 + \hat{\epsilon}_{(i,l)}\right)$. Finally, we constructed a skewness coefficient for returns to measure stock price crash risk.

$$CRSKEW_{(i,t)} = -\frac{n(n-1)^{\frac{3}{2}} \sum_{l=1}^{n} W_{(i,l)}^3}{(n-1)(n-2)(\sum_{l=1}^{n} W_{(i,l)}^3)^{\frac{3}{2}}} \quad (2)$$

where $CRSKEW_{(i,t)}$ is positively related to stock price crash risk.

In addition, we used the weekly firm-specific idiosyncratic returns $W_{(i,l)}$ to construct the following volatility ratio as another proxy for crash risk:

$$CRVOL_{(i,t)} = \log \frac{(n_d - 1) \sum_{l=1}^{n_d} W_{(i,l)}^2}{(n_u - 1) \sum_{l=1}^{n_u} W_{(i,l)}^2} \quad (3)$$

where n_u is the number of trading weeks in year t when stock prices go up while n_d is the number of trading weeks in year t when stock prices go down. If the volatility of returns when stock prices go down is higher than the volatility of returns when stock prices go up, then $CRVOL_{(i,t)}$ will be positive. Thus, the higher the $CRVOL_{(i,t)}$, the higher the stock price crash risk.

Corporate governance $(CG_{(i,t)})$: Using the method of principal component analysis, we construct an indicator for corporate governance quality by combining 7 variables, including managerial compensation, board size, fraction of independent directors, managerial ownership, power of CEO/board chairman, institutional ownership, and auditor quality.

Table 1 presents the full list of variables.

Table 1. List of Variables.

Type of Variable	Name of Variable	Definition of Variable
Dependent variable	CRSKEW	Stock price crash risk, measured using the skewness parameter of returns as proposed by [34]
	CRVOL	Stock price crash risk, measured using the volatility ratio as proposed by [35]
Key independent variables	MNFDI	Multinationality as measured by the ratio of FDI and total assets
	MNHHI	Multinationality as measured by the dispersion index of FDI
	CG	Corporate governance quality
	MNFDI × CG	Interaction term to examine the moderating
	MNHHI × CG	role of corporate governance
Control variables	SIZE	Logarithm of market capitalization
	LEV	Ratio of book value of total debt to total assets
	SLACK	The sum of account receivable, inventory, and sales and administrative expenses divided by sales
	MB	Market to book ratio, defined as market price per share divided by book value of equity per share
	DTURN	Difference in average monthly turnover between year t and $t-1$
	GROWTH	Growth rate in sales
	ROE	Ratio of net income to total equity
	SIGMA	Standard deviation of returns in year t

4.3. Econometric Models

To test Hypotheses 1a and 1b,we specified the following panel data regression:

$$CR_{(i,t)} = \beta_0 + \beta_1 MN_{(i,t)} + \gamma(\text{control variables})_{(i,t)} + \theta_t \sum_{t=1}^{16} \text{YEAR}_t + \epsilon_{(i,t)} \quad (4)$$

where $CR_{(i,t)}$ is the stock price crash risk as measured by $CRSKEW_{(i,t)}$ and $CRVOL_{(i,t)}$, respectively; $MN_{(i,t)}$ is multinationality as measured by $MNFDI_{(i,t)}$ and $MNHHI_{(i,t)}$, respectively; and YEAR_t is the year dummy (from 2005 to 2020).

Hypothesis 1a requires the coefficient estimate for multinationality $\hat{\beta_1} < 0$, while Hypothesis 1b requires $\hat{\beta_1} > 0$. To test Hypothesis 2, we augment (3) by including $CG_{(i,t)}$ as well as its interaction with $MN_{(i,t)}$.

$$\begin{aligned} CR_{(i,t)} = {} & \beta_0 + \beta_1 MN_{(i,t)} + \beta_2 CG_{(i,t)} + \beta_3 MN_{(i,t)} \times CG_{(i,t)} \\ & + \gamma(\text{control variables})_{(i,t)} + \theta_t \sum_{t=1}^{16} \text{YEAR}_t + \epsilon_{(i,t)} \end{aligned} \quad (5)$$

Hypothesis 2 requires the coefficient estimate for the interaction term $\hat{\beta_3} < 0$.

5. Empirical Results

Table 2 presents descriptive statistics for all variables listed in Table 1. The total number of observations is 2481, reflecting that many FDI are missing for MNCs. As shown in the table, the mean $CRSKEW_{(i,t)}$ and $CRVOL_{(i,t)}$ is -0.366 and -0.256 with a standard deviation of 0.762 and 0.506, respectively, suggesting that the variation of stock price crash risk is high. The average $MNFDI_{(i,t)}$ and $MNHHI_{(i,t)}$ is 0.174 and 0.195, while the median is 0.026 and 0, respectively, indicating that the degree of multinationality is right-skewed. In other words, over half of the MNCs have a below-average degree of multinationality. The average $CG_{(i,t)}$ is -0.174, while the median is -0.298, suggesting that over half of the MNCs have below-average corporate governance quality.

Table 2. Descriptive Statistics.

Variable	No. of Obs	Min	Max	Mean	Std Dev	Median
CRSKEW	2841	−4.436	5.263	−0.366	0.762	−0.328
CRVOL	2841	−2.262	2.953	−0.256	0.506	−0.253
MNFDI	2841	0	2.625	0.174	0.453	0.026
MNHHI	2841	0	0.908	0.195	0.272	0
CG	2841	−1.088	1.73	−0.174	0.515	−0.298
SIZE	2841	3.73	15.211	9.613	1.925	9.323
LEV	2841	1.112	12.919	2.818	2.425	2.04
SLACK	2841	0.032	2.352	0.661	0.474	0.563
MB	2841	0.723	14.349	3.452	2.885	2.532
DTURN	2841	−5.422	5.556	−0.015	2.066	−0.006
GROWTH	2841	−0.97	1.021	0.12	0.283	0.091
ROE	2841	−40.718	30.533	7.166	12.291	7.57
SIGMA	2841	0	77.085	42.724	15.606	41.333

Table 3 presents the correlation coefficients for all variables. As shown in the table, stock price crash risk is negatively related to multinationality. Firms with better corporate governance quality seem to have lower crash risk, although the correlation coefficients are not statistically significant. In addition, there is some evidence that smaller firms with higher financial slacks, lower return on equity, or higher volatility of returns have higher crash risk. Moreover, firms with higher average turnover (a measure of liquidity) have less stock price crash risk. The results are more or less consistent with our conjecture.

Table 3. Correlation Matrix. Figures in parentheses are t-statistics. ***, ** and * denote statistical significant at the 1%, 5% and 10% level, respectively.

	CRSKEW	CRVOL	MNFDI	MNHHI	CG	SIZE	LEV
CRSKEW	1.000						
CRVOL	0.878 ***	1.000					
MNFDI	−0.054 ***	−0.039 **	1.000				
MNHHI	−0.058 ***	−0.063 ***	0.146 ***	1.000			
CG	−0.004	−0.004	−0.01	−0.166 ***	1.000		
SIZE	−0.044 **	−0.063 ***	−0.157 ***	0.415 ***	−0.439 ***	1.00	
LEV	0.003	−0.008	−0.062 ***	0.155 ***	−0.202 ***	0.550 ***	1.000
SLACK	0.054 ***	0.052 ***	0.009	−0.118 ***	0.173 ***	−0.252 ***	−0.03
MB	0.021	0.011	0.070 ***	−0.122 ***	0.159 ***	−0.385 ***	−0.087 ***
DTURN	−0.130 ***	−0.132 ***	0.012	−0.005	0.017	0.011	0.017
GROWTH	−0.004	0.002	−0.067 ***	0.009	0.096 ***	0.014	−0.086 ***
ROE	−0.028	−0.041 **	−0.081 ***	0.111 ***	−0.063 ***	0.200 ***	−0.094 ***
SIGMA	0.087 ***	0.086 ***	−0.045 **	−0.129 ***	−0.063 ***	0.287 ***	−0.112 ***
	SLACK	MB	DTURN	GROWTH	ROE	SIGMA	
SLACK	1.000						
MB	0.077 ***	1.000					
DTURN	−0.024	0.01	1.000				
GROWTH	−0.126 ***	0.147 ***	−0.032 *	1.000			
ROE	−0.206 ***	0.174 ***	−0.029	0.355 ***	1.000		
SIGMA	0.124 ***	0.279 ***	−0.133 ***	0.033 *	−0.110 ***	1.000	

To assess whether regressions may suffer from the multicollinearity problem, we calibrated the variance inflation factor (VIF) for stock price crash risk regressions. Table 4 presents estimation results. As shown in the table, the VIF for most of the variables is below 2, suggesting that multicollinearity is not a serious estimation issue.

Table 4. Variance Inflation Factor for Independent Variables.

Variable	CRSKEW	CRVOL
MNFDI	1.106	1.106
MNHHI	1.304	1.304
CG	1.292	1.292
SIZE	3.049	3.049
LEV	1.693	1.693
SLACK	1.126	1.126
MB	1.743	1.743
DTURN	1.248	1.248
GROWTH	1.19	1.19
ROE	1.427	1.427
SIGMA	1.2	1.2

Table 5 presents estimation results for the panel data regression of stock price crash risk. Columns (i) and (ii) use skewness coefficient to measure crash risk, while Columns (iii) and (iv) use volatility ratio to proxy for crash risk. Columns (i) and (iii) use FDI as a fraction of total assets to measure multinationality, while Columns (ii) and (iv) use dispersion index to proxy for multinationality. In particular, to mitigate a potential endogeneity problem between crash risk and multinationality (i.e., there might be reverse causality when firms with lower stock price crash risk opt to expand their businesses internationally), we also use the following instrumental variable to measure multinationality: the number of countries firm i operates where China has a bilateral trade agreement. This instrumental variable is positively related to the degree of multinationality but will have no theoretical link with stock price crash risk for firm i. As shown in Table 5, the coefficient estimate $\hat{\beta_1}$ is significantly negative at the 1% level in Columns (i)–(iv), suggesting that multinationality is negatively related to stock price crash risk, irrespective of how multinationality and crash risk are measured. In addition, when an instrumental variable is used, the relationship between multinationality and stock price crash risk remains significantly negative at the 1% level. The above results provide strong evidence in support of Hypothesis 1a.

The above results are consistent with [23], which shows that conglomerates can withstand the impact of negative shocks better than purely domestic firm. It is also consistent with [24,36], who argue that multinationality has real options value. In other words, MNCs are able to allocate resources more efficiently among subsidiaries and reduce the probability of downside performance risk while increase the prospects of upside growth potential.

Table 6 presents estimation results on the moderating effect of corporate governance on multinationality and crash risk. As shown in the table, the coefficient estimate $\hat{\beta_1}$ is significantly negative at the 5% level in all columns, suggesting that multinationality is negatively related to crash risk. The coefficient estimate $\hat{\beta_2}$ is significantly negative at the 5% level in Column (i) and (iii), suggesting there is some evidence that corporate governance quality has a direct impact on crash risk, but only when multinationality is measured using the ratio of FDI and total assets. The coefficient estimate $\hat{\beta_3}$ is significantly negative at the 5% level in Columns (i)–(iv), indicating that firms with better corporate governance quality experience a larger decline in stock price crash risk when the degree of multinationality increases. The results are consistent with Hypothesis 2.

The above results demonstrate that the risk of a stock price crash is adversely and significantly linked to multinationality and corporate governance. The results echo the findings by [31,33,37], which show that sound corporate governance mechanisms, namely ownership structure, board composition, accounting opacity, internal control and managerial incentives, help reduce stock price crash risk. Our findings clearly support the proposition that effective corporate governance mechanisms curtail opportunistic behavior of managers to conceal and accumulate firm-specific bad news from public investors, which can further mitigate the negative effect of multinationality on share price slump.

Regarding control variables, there is strong evidence that MNCs with higher stock market liquidity experience lower crash risk, as the coefficient estimates for average turnover

are all significantly negative at the 1% level in all regressions. An explanation is that in markets where share turnover is high, news can be incorporated into share prices more rapidly. This discourages managers from hoarding bad news for fear of the catastrophic effect it might have on share prices. As a result, crash risk is lower when stock liquidity is higher [38]. In addition, there is some evidence that firms with more financial slack, higher market-to-book ratios, or higher return volatility have a lower stock price crash risk. However, firm size, leverage (a measure of financial distress), sales growth, and ROE (a measure of profitability) do not seem to affect stock price crash risk, as none of the coefficient estimates for these variables is statistically significant.

Table 5. Panel Data Regression of Crash Risk on Multinationality.

	CRSKEW		**CRVOL**	
	(i)	**(ii)**	**(iii)**	**(iv)**
MNFDI	−0.114 ***		−0.063 ***	
	(−3.726)		(−3.119)	
MNHHI		−0.156 ***		−0.098 ***
		(−2.802)		(−2.666)
SIZE	−0.005	0.01	−0.009	0
	(−0.466)	(0.874)	(−1.285)	(0.001)
LEV	0	−0.003	0	−0.001
	(−0.044)	(−0.372)	(0.027)	(−0.281)
SLACK	0.065 **	0.071 **	0.036 *	0.039 *
	(2.142)	(2.315)	(1.779)	(1.925)
MB	0.035 ***	0.035 ***	0.022 ***	0.022 ***
	(5.457)	(5.518)	(5.234)	(5.311)
DTURN	−0.031 ***	−0.031 ***	−0.018 ***	−0.018 ***
	(−4.005)	(−4.062)	(−3.503)	(−3.552)
GROWTH	0.029	0.039	0.05	0.055
	(0.549)	(0.719)	(1.416)	(1.555)
ROE	−0.001	−0.001	−0.001	−0.001
	(−0.816)	(−0.707)	(−0.902)	(−0.813)
SIGMA	0.004 ***	0.004 ***	0.003 ***	0.003 ***
	(3.796)	(3.818)	(3.616)	(3.636)
Constant	−0.223 *	−0.359 ***	−0.1	−0.181 **
	(−1.749)	(−2.774)	(−1.192)	(−2.124)
YEAR	Yes	Yes	Yes	Yes
Adj-R^2	0.061	0.06	0.065	0.065

The total number of observations is 2841. Figures in parentheses are *t*-statistics. ***, ** and * denote statistical significant at the 1%, 5% and 10% level, respectively.

Table 6. Moderating Effect of Corporate Governance on Multinationality and Crash Risk.

	CRSKEW		**CRVOL**	
	(i)	**(ii)**	**(iii)**	**(iv)**
MNFDI × CG	−0.053 **		−0.053 **	
	(−2.081)		(−2.100)	
MNHHI × CG		−0.219 **		−0.162 **
		(−1.976)		(−2.214)
MNFDI	−0.018 **		−0.017 **	
	(−2.203)		(−2.111)	
MNHHI		−0.170 **		−0.120 ***
		(−2.577)		(−2.767)
CG	−0.063 **	−0.035	−0.139 **	−0.029
	(−2.021)	(−0.976)	(−2.348)	(−1.224)
SIZE	−0.013	−0.006	−0.017	−0.01
	(−1.069)	(−0.447)	(−0.664)	(−1.226)
LEV	−0.002	−0.004	0.017	−0.002
	(−0.295)	(−0.528)	(1.551)	(−0.416)
SLACK	0.072 **	0.073 **	−0.004	0.045 **
	(2.355)	(2.39)	(−0.086)	(2.228)
MB	0.035 ***	0.036 ***	0.021 ***	0.021 ***
	(5.507)	(5.607)	(3.244)	(5.002)
DTURN	−0.032 ***	−0.033 ***	−0.017 ***	−0.020 ***
	(−4.167)	(−4.212)	−3.177)	(−3.966)
GROWTH	0.019	0.026	0.039	0.045
	(0.357)	(0.474)	(0.999)	(1.259)
ROE	−0.001	−0.001	−0.003 **	−0.001
	(−1.053)	(−0.996)	(−2.327)	(−1.092)
SIGMA	0.005 ***	0.005 ***	0.004 ***	0.003 ***
	(4.177)	(4.258)	(5.499)	(4.058)
Constant	−0.147	−0.188	0.006	−0.073
	(−1.110)	(−1.390)	(0.024)	(−0.822)
YEAR	Yes	Yes	Yes	Yes
Adj-R^2	0.065	0.063	0.076	0.068

The total number of observations is 2841. Figures in parentheses are *t*-statistics. ***, and ** denote statistical significant at the 1%, and 5% level, respectively.

6. Conclusions

Using an unbalanced panel data consisting of 473 MNCs publicly listed in Shanghai and Shenzhen A-share stock markets in China during 2004 to 2020, this paper explores the impact of multinational operations on the stock price crash risk. Based on theoretical analysis, the paper argues that the relationship between the degree of multinationality and crash risk can be negative or positive depending on whether geographical diversification benefits outweigh agency costs and political costs of internationalization. Using panel data econometric analysis, the paper finds that multinationality is negatively related to stock price crash risk. There is strong evidence that transnational operation reduces the probability of a sudden collapse in stock price for MNCs operating in multiple countries or regions at the same time. An explanation is that flexibility in mobilizing internal resources helps reduce the downside risk of performance. In addition, corporate governance quality plays a significant moderating role in relationship between multinationality and crash risk. In particular, the negative relationship between multinationality and stock price crash risk becomes significantly stronger for MNCs with better corporate governance quality. Moreover, MNCs with higher stock market liquidity experience lower crash risk. The results are robust to the use of an alternative measure of multinationality using the instrumental variable approach.

The policy implications for this paper are as follows: First, companies should strengthen their corporate governance while "going global". For example, MNCs should allow independent directors to exert due diligence on monitoring managers, install board subcommittees such as audit, compensation and communication subcommittees, and enhance the credibility of the board. In addition, MNCs should improve the internal control system to preserve resilience and prevent fraud. These measures will help reduce stock price crash risk associated with running a large and complex multinational entity. Second, companies should continue to improve the quality of information disclosure. A truth-telling disclosure is the best practice to enhance firm value and reduce stock price crash risk. In addition, it is important to pay attention to text similarity, negative tone, readability and word length, which can affect investor sentiments and hence stock price crash risk. Third, companies with higher market liquidity experience lower stock price risk, perhaps because of the participation of high-quality international investors with good governance skills. Thus, it is important that MNCs do not withhold bad news and encourage foreign ownership. In addition, large shareholders normally practice disciplinary trading, suggesting that encouraging block ownership can curtail stock price crash risks.

Although this article obtains some interesting findings and policy implications, several limitations remain. First, because of data constraints, this paper uses FDI in a host country as a fraction of total assets for the MNC as a proxy for multinationality. This proxy merely measures the depth of internationalization. Future research can use measures for the breadth of internationalization and see if the empirical results will hold. Second, although this article uses many control variables, it does not separate the industry-specific effect due to an insufficient number of observations in a number of industries such as agriculture, education services and recreation. Future research can control for industry heterogeneity when more data become available. Third, this article only examines the moderating role of corporate governance quality. Future research can attempt to investigate both the mediating effect and moderating effect of variables such as agency costs, information transparency, and earnings management.

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