

# Management geographical proximity and stock price crash risk

Appointment  
of managers in  
China

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## Abstract

**Purpose** – This study provides empirical support for the cultural economics model between executive team and firm performance and offers important implications for policy selection and appointment of managers in China.

**Design/methodology/approach** – From the perspective of relationship embeddedness, the authors explore the impact of management geographical proximity (GP) on stock price crash risk in China. Using archival data from China's unique dataset about birthplace culture, the authors find that management GP experiences a large increase in corporate stock price crash risk for the period 2009–2018.

**Findings** – The impact of management GP on stock price crash risk is more pronounced when the company is located in areas with weaker formal legal environment and stronger Confucian culture. Furthermore, the impact has a significant links with firm characteristics such as information transparency, over-investment and tax aggressiveness.

**Originality/value** – First, the research extends the literature on the empirical determinants of stock price crash risk. These studies focus on formal institution, not on informal institution, such as relational culture. Second, the research provides evidence for economic consequences on relational governance from executive birthplace culture to explore the economic consequences of geographical relational governance but takes stock price crash risk to present executives' behavior strategies and market reaction via exploring asymmetrical variation of market stock price. Finally, the paper provides reference to corporate governance arrangement and executive appointment.

**Keywords** Management geographical proximity, Stock price crash risk, Legal environment, Confucian culture

**Paper type** Research paper

## 1. Introduction

The topic of culture has gained increasing attention in the economic and finance literature (Guiso *et al.*, 2006, 2008). In particular, Zingales (2015) argues that the cultural revolution is

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entering the field of finance. He also points out that besides the societal dimension of culture, there is the corporate dimension of culture and also the interaction between the two dimensions. Relationship culture has a great influence on corporate governance structure and market efficiency in emerging countries, such as China (e.g. [Yeung and Tung, 1996](#); [Xin and Pearce, 1996](#)). Corporate governance based on relationship culture is also called relationship governance, which includes internal relationship governance (such as the relationship between senior executives or fellow-townsmen) and external relationship governance (interlocking senior executives, etc.). And the effect of internal relationship governance depends on the “relationship” between executives. There are regional characteristics of Chinese culture because of the historical, geographical and political differentiation. Such regional culture is always presented as geographical proximity (GP) (fellowship) of executives in enterprises. This natural interpersonal relationship not only increases mutual trust, but also helps to communicate and coordinate. Although the fellowship between chairman and CEO reduces agency costs, the over-efficient communication and coordination caused by the fellowship can increase the level of firm risk and default tendency ([Lu and Hu, 2014](#)). Therefore, GP may be not only the lubricant of enterprise operation, but also the catalyst of enterprise risk.

In 2015, the sharp volatility of China’s A-share market created unusual stock price crash risk. On June 12th, Shanghai Composite Index reached 5178.19. In the next 18 trading days from June 12 to July 9, the largest decline in the A-share market was about 35%. China’s A-share market experienced the situation of “thousands of stocks down to limits, thousands of stocks up to limits, and thousands of stocks suspended” in several days. The index declined rapidly and the market value evaporated by 21 trillion RMB in three weeks. This phenomenon has aroused many scholars’ attention to explore the forces of stock price crash risk. An important concern about pre-existing studies on the determinants of stock price crash risk is that they rely on tunneling, stock option and promotion ([Kim et al., 2011a, b](#); [Piotroski and Zhang, 2014](#)). The related literature divides the characteristics into two classes. One is internal firm characteristics, like transparency ([Hutton et al., 2009](#)), executive option incentive ([Kim et al., 2011b](#)), religious belief ([Callen and Fang, 2015](#)), tax avoidance ([Kim et al., 2011a](#); [Jiang, 2013](#)), the individual feature of executives ([Kim et al., 2016](#)), disclosure of internal control information ([Ye et al., 2015](#)), over-investment ([Jiang and Xu, 2015](#)), social responsibility ([Kim et al., 2014](#)) and so on. The others are external environment factors like mandated IFRS standards adoption ([DeFond et al., 2015](#)), political events ([Piotroski et al., 2015](#)), analyst coverage ([Xu et al., 2013](#)), institutional investors ([Callen and Fang, 2013](#)), media coverage ([Luo and Du, 2014](#)), investor protection ([Wang et al., 2014](#)) and external audit ([Yeung and Lento, 2018](#)). Although the literature has recorded the profound influence of institutional environment on stock price crash risk, little explores from the cultural perspective. Therefore, we try to explore the following issues: how does the fellowship culture affect corporate stock price crash risk? Under the differentiated formal and informal institutional environment, will the relationship be the same?

To explore the issue empirically, we construct a birthplace culture dataset of Chinese A-share companies from 2008 to 2017 as the research sample. Based on the availability and reliability of data, this paper uses only the social tie of regional origin between the chairman and the chief executive officer (CEO), called GP. We examine how much GP of executives will affect the stock price crash risk of listed companies and explore the impact of legislation environment and cultural tradition on the relationship. We find that (1) close GP of executives can increase the stock price crash risk; (2) weak legislation environment can tighten the relationship between executives’ GP and stock price crash risk; (3) strong cultural tradition can tighten the relationship. Moreover, information transparency, over-investment and tax aggressiveness are important interaction channels.

The paper has three potential contributions. First, our research extends the literature on the empirical determinants of stock price crash risk. Although related scholars analyze and

explore the influence of internal features and external factors of stock price crash risk, these studies focus on the formal institutions, not on the informal institutions, such as relational culture. Second, our research provides evidence for economic consequences on relational governance from executive birthplace culture. Different from previous literature, the paper does not test internal economic efficiency, such as agency cost and default tendency, to explore the economic consequences of geographical relational governance, but takes stock price crash risk to present executives' behavior strategies and market reaction via exploring the asymmetrical variation of market stock price. Finally, the paper provides a reference to corporate governance arrangement and executive appointment. Thus, the conclusion shows that GP should be used to appointing executives.

The remainder of this paper is organized as follows. Section 2 documents the literature review and theoretical analysis. Section 3 outlines the research design. Section 4 presents the empirical results. And section 5 concludes.

## 2. Literature review and theoretical analysis

### 2.1 Executives' geographical proximity

Interpersonal relationships, social networks and social capital are seen as important principles in social activities for a long time in China. Internal social capital can increase internal communication efficiency, establish belief and coordination, coordinate internal relationships and facilitate information resources exchange and combination between individuals and departments. Internal social capital is a kind of essential and beneficial supplement of the organizational institution and roots in internal interpersonal relationships. In China's traditional society deeply influenced by Confucian thoughts, the main social connection is GP, besides the family connection. Mister Fei mentions in *Child-bearing System in China* that GP is a reflection of blood relationships. He argues that people prefer dependent relationships in China's traditional social structure. And the dependent relationship evolves to differential patterns with blood and GP. Hence, GP is an important social relationship (Fei, 1998). For example, the geographical partnership firms in Shan Xi only hire shop owners, managers, workers and apprentices from the owners' hometowns. These firms neither hire staff from other areas, nor hire owner's family members and clansman members, which shows the importance of GP in corporate operation. Based on Chinese context research, Chen *et al.* (2010) use the matching degree of blood, geographical, school and business relationship to represent the uniformity level of executives. The study finds that the uniformity level of executives is positively related to corporate performance, and there is no significant difference between companies in developed areas and companies in underdeveloped areas. However, a close relationship could lead to the collusion of executives, increasing earnings management behaviors and worse market performance (Hwang and Kim, 2009). Fracassi and Tate (2012) find that the social connection between CEO and directors could generate weak board supervision and worse market performance, and CEO prefers to recommend an acquainted person to be the new director. Hence, the influence of GP of executives on corporate performance has two sides. But little literature explores the impact of relational governance on the capital market.

### 2.2 Stock price crash risk

Stock price crash is an extreme phenomenon of stock price volatility, rooted in the selective disclosure behavior of corporate. When capital markets gradually gain the hidden bad news, the market would react rapidly and result in a stock crash. As Romer (1993) firstly studies stock crash, much research on influencing factors of stock price crash risk emerges. Existing studies mainly focus on the impact effects of formal institutions. For example, DeFond *et al.* (2015) argue that, mandated IFRS adoption could reduce nonfinancial corporates' stock price crash risk, but has no significant effect on financial corporates. Wang *et al.* (2014) find that the

negative connection between regional investor protection and stock price crash risk is more significant in firms with worse performance and lower growth potential. [Luo and Du \(2014\)](#) find that frequent media coverage of listed companies significantly reduces the future stock price crash risk, and the positive supervision role and the information mediation role are significantly stronger in the area with a weaker institution. [Chen et al. \(2018\)](#) examine the negative effect of managers' political ranks on firms' stock price crash risk. The effect mainly exists in firms with younger managers and managers with shorter tenure and is only significant in regions with weak market forces, in firms without foreign investors, without political connections and during periods with no local government leaders' or managers' political promotions. [Zaman et al. \(2020\)](#) provide robust evidence that the total amount of penalties (in U.S. dollars) imposed on firms are negatively associated with firm-specific future stock price crash risk. Although recent literature has also studied the impact of the informal institutions on stock price crash risk, such as religion ([Callen and Fang, 2015](#)), trust ([Li et al., 2017](#)), powerful CEOs ([Mamun et al., 2020](#)), annual report disclosure timing ([Li et al., 2020](#)), board faultlines ([Liang et al., 2020](#)) and gambling preferences ([Ji et al., 2021](#)), they seldom mention the relationship between chairman and CEO. Hence, exploring the influence of relational governance on stock price crash risk is conducive to supplement related research.

### 2.3 Theoretical analysis

[William and O'Reilly \(1998\)](#) suggest that people prefer to interact with similar-featured people consciously or unconsciously. And GP is an important kind of individual feature. Among the differential relationships of China's social culture, GP is an important relationship only next to blood relationship, influencing the closeness of people ([Fei, 1998](#)). In the modern business society, GP provides similar life experiences and cultural backgrounds for individuals. Similar features will make communication easier and contribute to huddle groups. This cultural identity and emotional communication are likely to have a great influence on corporate governance. First, management GP will reduce the effectiveness of corporate governance and supervision. Effective supervision of the board of directors could ensure effective corporate governance and further promote corporate information disclosure. However, previous studies have shown that when there is a geographic relationship between the board and executives, the supervision will be relaxed due to trust. [Yu et al. \(2017b\)](#) suggest that such GP leads to declined performance sensitivity and the agency problem cannot be alleviated by compensation contracts. [Lu and Hu \(2014\)](#) find that management GP increases the probability of violation. Internal control is an effective mechanism to protect company information disclosure, while [Yu et al. \(2017a\)](#) show that GP would lead to the failure of internal control. All these evidences imply that the management GP will lead to the decline of corporate governance effectiveness. When there is GP between executives and the board of directors, the failure of corporate governance provides the breeding ground for executives' opportunistic behavior, which leads to their unwillingness to disclose "bad news" in time, and ultimately leads to an increase in the stock price crash risk. Second, management GP would also provide the possibility of collusion between board members and executives. [Ye et al. \(2015\)](#) believe that from the perspective of principal-agent, there still is an agency problem between the board of directors and external shareholders. The board of directors and executives are more intimate because of cultural identity and emotional communication generated by GP, and such relationship would make them expropriate the interests of external shareholders and conceal bad news, which might increase stock price crash risk.

A diversified management structure helps to provide more comprehensive knowledge, ideas and perspectives, which would reduce the risk of over-investment. Geographical proximity gives boards and executives similar growth records and thinking patterns, which weakens management diversification. The closer GP between the chairman and CEO would damage firms' investment efficiency. In firms with lower investment efficiency, the closer

relationship between the chairman and CEO could also make more concealment of their agency motivation from external investors and more benefit expropriation, thus increasing listed companies' stock price crash risk in the future. Based on the above analysis, the first hypothesis is proposed.

*H1.* Management GP is positively associated with the company's crash risk.

The improvement of the market economy system is conducive to reduce the transaction cost of formal institution, thus conducive to reduce the agency cost resulted from the informal relational economy system. Historical, geographical and political differences result in regional economic differences in China and differences in the degree of marketization. Thus, there are also regional differences in the impact of relationship culture on enterprises. [Fan et al. \(2011\)](#) compare the marketization process of various provinces, municipalities and direct-controlled municipalities from five aspects. One aspect is the development of intermediary agency and legislation environment. The data show that the legislation environment in the various areas is different. The collusion between the chairman and CEO resulted from GP can be significantly influenced by local government supervision level. The perfection of government supervision could reduce the hidden degree and possibility of negative information, making the stock price crash risk down. Negative media coverage could aggravate the effect on stock price crash risk ([Luo and Du, 2014](#)). When the legislation environment is poor, the punishment cost of hiding bad news is low. Then the executives tend to collude based on GP. Moreover, the possibility of hiding bad news is bigger, so the potential stock price crash risk is bigger. Based on the above analysis, the paper proposes the second hypothesis.

*H2.* The impact of management GP on crash risk is more pronounced in the region with less legally developed institutions.

With the booming economy in East Asia, the influence of Confucian culture on the economy is becoming an academic focus ([Metzger, 1977](#); [Kahn, 1979](#); [De Bary, 1988](#); [Jebran et al., 2019](#)). As the birthplace of Confucian culture, the culture inheritance lasts for thousands of years in China. It impacts the social network and social structure of individuals, families and interest groups deeply. Although Confucian culture has an important positive effect on the rise of China's economy, it also has a negative effect on the economy with the development of market economy and political institution. Confucian culture over-emphasizes the trust between acquaintances, weakening the trust between strangers, hindering professional division and cooperation ([Fukuyama, 1995](#)). The importance of "relationship" and "dignity" (which is called "mianzi" in Chinese) in China's market, is not only simply rooted in the internal preference of Chinese people, but also presented as a rule when people decide the relationship of rights and obligations. Even though people hate "relationship" and "dignity", they have to obey this coordination system for individual interest. "Harmony is important" in Confucian culture has become the common value in society. However, it also means that different opinions would be hidden to satisfy people's "relationship" and "dignity". The harmony would increase the tolerance level of wrong decisions made by managers, decrease the governance efficiency and increase the possibility of hiding information. Based on the above analysis, the third hypothesis has been proposed.

*H3.* The impact of management GP on crash risk is more pronounced in the region with strong Confucian culture.

### 3. Research design

#### 3.1 Sample selection and data source

Since the revised accounting standards were implemented from 2007, this paper chooses the A-share main board listed companies from 2008 to 2018 as the research sample. The sample interval of explanatory variables and control variables is 2008–2017, and the sample interval

of explanatory variable is 2009–2018. For the initial sample, we exclude: (1) observations where chairman and CEO are from the same family; (2) financial and insurance firms; (3) observations with uncertain property rights; (4) observations with missing executives' individual information [1]; (5) observations with missing variables.

The geographical data of executives are collected and handled by hand from annual reports. The actual controller property data and corporate finance data are collected and classified from CSMAR database. Confucian culture variable is collected from *Chinese Local Chronicles Compilations* published by Phoenix Publishing House, Shanghai Bookstore Publishing House and Bashu Book Publishing House in 1991. The legislation index is collected from the *Chinese marketization index* wrote by Fan *et al.* (2011) and Wang *et al.* (2019). To avoid the effects of extreme values, all continuous variables are winsorized at the first percentile and 99th percentile to eliminate the influence of extreme values.

### 3.2 Model design and variable specification

Following Kim *et al.* (2011a, b), Xu *et al.* (2013) and Wang *et al.* (2014), the paper uses the following multiple regression models to check the research hypothesis.

$$Ncskew_t( Crash_t ) = \alpha_0 + \alpha_1 Province_{t-1}( Geodist_{t-1} ) + \beta \sum CV_{t-1} + \gamma Year * Industry + \varepsilon_t \quad (1)$$

$$\begin{aligned} Ncskew_t( Crash_t ) = & \alpha_0 + \alpha_1 Province_{t-1}( Geodist_{t-1} ) + \alpha_2 Law_{t-1} \\ & + \alpha_3 Law_{t-1} * Province_{t-1}( Geodist_{t-1} ) + \beta \sum CV_{t-1} \\ & + \gamma Year * Industry + \varepsilon_t \end{aligned} \quad (2)$$

$$\begin{aligned} Ncskew_t( Crash_t ) = & \alpha_0 + \alpha_1 Province_{t-1}( Geodist_{t-1} ) + \alpha_2 Culture_{t-1} \\ & + \alpha_3 Culture_{t-1} * Province_{t-1}( Geodist_{t-1} ) + \beta \sum CV_{t-1} \\ & + \gamma Year * Industry + \varepsilon_t \end{aligned} \quad (3)$$

OLS and Logit models are used to test the effect of management GP on *Ncskew* and *Crash*, respectively. If H1 is supported, the coefficient  $\alpha_1$  in model (1) should be positive. If H2 is supported, the coefficient  $\alpha_3$  in model (2) should be negative. If H3 is supported, the coefficient  $\alpha_3$  in model (3) should be positive.

**3.2.1 Explained variable: stock price crash risk.** At present, there are three methods to measure the corporate stock price crash risk (Chen *et al.*, 2001; Hutton *et al.*, 2009; Kim *et al.*, 2011a, b; Xu *et al.*, 2013; Wang *et al.*, 2014). To simplify the issue, the paper only reports the results of the first two methods. The results are consistent with the results of Xu *et al.* (2013) and Wang *et al.* (2014).

To calculate the stock price crash risk, it is essential to calculate the specific weekly stock return rate of stock *j* on week *t* for every listed stock. The specific weekly stock return rate can be recorded as  $W_{j,t}$ .  $W_{j,t} = \text{Log}(1 + \varepsilon_{j,t})$ , in which  $\varepsilon_{j,t}$  is the residual of model (4). In model (4),  $r_{j,t}$  is the stock return rate of stock *j* in week *t* and  $r_{m,t}$  is the stock return rate of the overall market in week *t*. Besides, two-stage lagged variable and two-stage ahead variable of overall market stock return rate are included to control the effect of the asynchronous transaction. Model (4) is as follows:

$$r_{j,t} a + b_1 r_{m,t-2} + b_2 r_{m,t-1} + b_3 r_{m,t} + b_4 r_{m,t+1} + b_5 r_{m,t+2} + \varepsilon_{j,t} \quad (4)$$

Then, the paper calculates the stock price crash risk. The first measure of stock price crash risk (*Ncskew*) is calculated by Eqn (5). Therein, *n* is the number of transaction weeks of stock *j* in one year. Eqn (5) is as follows:

$$Ncskew_{j,t} = \frac{-\left[n(n-1)^{3/2} \sum W_{j,t}^3\right]}{\left[(n-1)(n-2) \left(\sum W_{j,t}^2\right)^{3/2}\right]}$$

The bigger the value of *Ncskew* is, the bigger the skewness of stock return rate distribution is, which reflects higher stock price crash risk.

The second measure of stock price crash risk (*Crash*) is the dummy variable. If the specific weekly stock return rate in a certain week is 2.58 times standard deviations lower than its mean in year *t*, it equals 1 (higher stock price crash risk), otherwise, it's 0.

**3.2.2 Explanatory variable: management geographical proximity.** To measure the heterogeneity of internal culture and ideas inside the management layer, domestic literature describes the GP of executives from two dimensions (Lu and Hu, 2014; Yu et al., 2017a, b). The two dimensions are represented as two variables: (1) dummy variable (*Province*). If chairman and CEO are from the same province, it equals 1, otherwise, it's 0; (2) geographical distance (*Geodist*) [2] which measures the geographical distance between the chairman's hometown and CEO's hometown. To keep the same indicating direction with *Province*, it's measured by the opposite number of the value of distance.

**3.2.3 Interaction variables.** *Law* is measured by the legislation index in Chinese marketization index and represents the legislation environment of the company's location. Due to the modification of the calculation method of marketization index, there may be inconsistency in the time trend of the index. Therefore, this paper sets the dummy variable according to the annual data. If the index is greater than or equal to the median of the annual sample, it equals 1, otherwise, it is 0. *Culture* represents the Confucian culture in company's location. It is also a dummy variable and is set according to the index of principal component analysis which is calculated with number of Confucian temples, schools, ancestral temples, "Jinshi", "Zhongxiao", "Lienv" (Kung and Ma, 2014). It is equal to 1 when the companies locate the place with higher index (more than the median), otherwise, it's 0.

**3.2.4 Control variables.** Drawing on existing research results (Jebran et al., 2019; Liang et al., 2020), we control the key influencing factors (CV) in model: *Ncskew<sub>-1</sub>* represents lagged *Nskew*; *Sigma* represents standard deviation of weekly returns over the fiscal year; *Wret* represents average weekly returns over the fiscal year; *Dturn* represents share turnover rate; *Soe* represents corporate property rights; *Dual* represents the duality of chairman and CEO; *First* represents the stock ratio of the largest stockholder; *Size* represents the firm size; *RoE* represents the rate of return on equity; *Lev* represents the asset-liability ratio; *Mb* represents the market-to-book value ratio; *Abacc* represents the absolute value of discretionary accruals from the modified Jones model; *Board* represents board size (total number of directors on board); *Indd* represents board independence (the proportion of independent directors on board); *Dage* represents the absolute value of age difference between chairman and CEO; *Dgender* represents the dummy variable of gender difference between chairman and CEO. *St* represents the dummy variable of whether the listed company is with special treatment in the current year. In the model above, the paper controls the fixed effects of industry combined with year.

## 4. Empirical result

### 4.1 Descriptive statistics

In this section, we show the descriptive statistics of the key variables involved in the model. Table 1 reports that the mean of *Ncskew* is  $-0.467$ , with the minimum of  $-2.648$  and the maximum of  $1.395$ . The standard deviations  $0.708$  is relatively small, indicating that sample

companies do not face obvious non-crash risk. The mean of *Province (Geodist)* in the GP of executives is 0.347 (−0.749), with the standard deviation of 0.476 (0.503). This indicates that there are widespread differences in the geographical distribution of executives among listed companies. The average legal environment (*Law*) and cultural tradition (*Culture*) are 0.759 and 0.490 respectively.

The correlation coefficients of major variables are shown in Table 2, including dependent variables, independent variables and control variables. The results indicate that stock price crash risk is significantly positively correlated with GP of executives, negatively correlated with the legal environment and positively correlated with cultural tradition. The finding supports our hypotheses.

4.2 Regression results

4.2.1 The geographical proximity of executives and stock price crash risk. Table 3 reports the regression result of HI. Columns (1) and (2) show the multivariate regression result of stock

Variable	N	Mean	SD	min	p25	p50	p75	Max
Ncskew	10733	−0.467	0.708	−2.648	−0.841	−0.412	−0.0266	1.395
Crash	10733	0.385	0.487	0	0	0	1	1
Province	10733	0.347	0.476	0	0	0	1	1
Geodist	10733	−0.749	0.503	−2.402	−0.930	−0.744	−0.500	0
Law	10733	0.759	0.428	0	1	1	1	1
Culture	10733	0.490	0.500	0	0	0	1	1
Ncskew <sub>-1</sub>	10733	−0.442	0.678	−2.490	−0.803	−0.390	−0.0215	1.334
Sigma	10733	0.0490	0.0180	0.0182	0.0361	0.0461	0.0588	0.107
Wret	10733	−0.0014	0.0010	−0.0058	−0.0017	−0.0010	−0.0006	−0.0002
Dturn	10733	0.126	0.0833	0.0075	0.0621	0.105	0.174	0.378
Soe	10733	0.731	0.444	0	0	1	1	1
Dual	10733	0.155	0.362	0	0	0	0	1
First	10733	0.363	0.154	0.0939	0.238	0.349	0.477	0.750
Size	10733	22.17	1.415	18.92	21.24	22.05	23.00	26.95
Roe	10733	0.435	1.456	−137.4	0.327	0.467	0.619	0.998
Lev	10733	0.529	0.210	0.0838	0.381	0.533	0.673	1.208
Mb	10733	0.0039	0.0043	−0.0034	0.0017	0.0027	0.0045	0.0275
Abacc	10733	0.0967	0.101	0	0.0238	0.0620	0.132	0.444
Board	10733	9.177	1.939	4	8	9	9	18
Indd	10733	0.368	0.0526	0.286	0.333	0.333	0.385	0.571
Dage	10733	6.174	5.897	0	1	5	9	34
Dgender	10733	0.0887	0.284	0	0	0	0	1
St	10733	0.0549	0.228	0	0	0	0	1

Table 1. Descriptive statistics

Variable	Ncskew	Crash	Province	Geodist	Law	Culture
Ncskew	1	0.5259***	0.0475***	0.0525***	−0.0361***	0.0132
Crash	0.4929***	1	0.0252***	0.0535***	−0.0141	0.0078
Province	0.047***	0.0252***	1	0.2833***	−0.0087	0.0172*
Geodist	0.04***	0.0439***	0.2516***	1	0.035***	0.0578***
Law	−0.0369***	−0.0141	−0.0087	0.0571***	1	0.2741***
Culture	0.0094	0.0078	0.0172*	0.0675***	0.2741***	1

Table 2. Correlation coefficients. Note(s): The upper triangle shows Spearman correlation coefficient and the lower triangle shows Pearson correlation coefficient. \*, \*\* and \*\*\* represent significance at the 10, 5 and 1% levels, respectively



	Ncskew		Crash	
	(1)	(2)	(3)	(4)
<i>Province</i>	0.051*** (3.53)		0.076* (1.76)	
<i>Geodist</i>		0.043*** (3.24)		0.165*** (4.03)
<i>Ncskew<sub>1</sub></i>	0.062*** (5.95)	0.062*** (5.95)	-0.069** (-2.30)	-0.072** (-2.39)
<i>Sigma</i>	16.113*** (8.33)	16.116*** (8.33)	19.786*** (3.66)	19.699*** (3.64)
<i>Wret</i>	226.686*** (7.10)	226.724*** (7.10)	243.553*** (2.75)	241.669*** (2.72)
<i>Dturn</i>	-0.307*** (-3.19)	-0.294*** (-3.06)	-2.978*** (-10.64)	-2.946*** (-10.51)
<i>Soe</i>	0.000 (0.02)	-0.002 (-0.15)	-0.171*** (-3.55)	-0.174*** (-3.61)
<i>Dual</i>	0.055*** (2.80)	0.058*** (2.97)	0.027 (0.46)	0.013 (0.22)
<i>First</i>	-0.090* (-1.85)	-0.085* (-1.74)	-0.150 (-1.03)	-0.138 (-0.95)
<i>Size</i>	-0.000 (-0.07)	-0.002 (-0.33)	-0.080*** (-4.15)	-0.081*** (-4.27)
<i>Roe</i>	-0.011*** (-5.86)	-0.011*** (-5.90)	-0.025 (-1.39)	-0.027 (-1.27)
<i>Lev</i>	-0.074** (-2.02)	-0.074** (-2.02)	-0.174 (-1.58)	-0.184* (-1.66)
<i>Mb</i>	19.305*** (10.85)	19.020*** (10.70)	15.352*** (2.91)	14.999*** (2.84)
<i>Abacc</i>	-0.047 (-0.70)	-0.052 (-0.76)	-0.427** (-2.10)	-0.415** (-2.03)
<i>Board</i>	0.004 (1.12)	0.005 (1.20)	0.007 (0.62)	0.007 (0.61)
<i>Indd</i>	-0.107 (-0.77)	-0.102 (-0.74)	-0.920** (-2.21)	-0.894** (-2.15)
<i>Dage</i>	0.003* (2.17)	0.003** (2.11)	0.002 (0.70)	0.003 (0.73)
<i>Dgender</i>	0.004 (0.17)	0.001 (0.02)	0.015 (0.21)	0.012 (0.17)
<i>St</i>	0.113*** (3.35)	0.116*** (3.43)	-0.002 (-0.02)	0.000 (0.00)
<i>Constant</i>	-0.407*** (-2.82)	-0.324** (-2.25)	2.172*** (5.08)	2.355*** (5.54)
<i>Industry* year</i>	Yes	Yes	Yes	Yes
<i>N</i>	10,733	10,733	10,733	10,733
<i>Adj. R<sup>2</sup>/Pseudo R<sup>2</sup></i>	0.035	0.035	0.014	0.015
<i>F-value/χ<sup>2</sup></i>	21.474	21.260	213.690	225.879

**Note(s):** Standard error is clustered by firm, and robust *t*-statistics (*Ncskew*) or *z*-statistics (*Crash*) are in parentheses. \*, \*\* and \*\*\* represent significance at the 10, 5 and 1% levels, respectively and similarly hereinafter

**Table 3.**  
The effect of executives' geographical proximity on stock price crash risk

price crash risk (*Ncskew*) on GP of executives. Columns (3) and (4) show the regression result of stock price crash risk (*Crash*) on GP of executives. The result indicates that the coefficient of GP of executives stays positive and significant. Overall, the multivariate results are consistent with the implication discussed in H1 above.

4.2.2 *The moderating effect of legal environment.* The results of H2 are shown in Table 4 [3]. The coefficient of executives' GP is positive and significant, while the coefficients of interaction between executives' GP and legal environment (*Province\*Law*, *Geodist\*Law*) are both significantly negative. The result suggests that a stronger legal system environment helps more to mitigate the negative impact of executives' GP on the stock price crash risk, which is consistent with H2. The result proves that the improvement and effective implementation of the relevant legal system could effectively mitigate the agency problem caused by executives' GP and reduce corporate stock price crash risk. This finding also supports the proposal of "establishing a market economy under the rule of law" given by the Fourth Plenary Session of the 18th CPC Central Committee.

4.2.3 *The moderating effect of Confucian culture.* The results of H3 are shown in Table 5. The coefficients of interaction between executives' GP and Confucian culture (*Province\*Culture*, *Geodist\*Culture*) are both significantly positive. When the listed companies are located in regions where Confucian cultural tradition is stronger, the negative effect of executive's GP on stock price crash risk is more likely to be reinforced. The conclusion is in line with the expectation of H3. In the regions with stronger Confucian culture, the executives worship Confucian culture more. Meanwhile, the "human favor" culture in Confucian culture makes it more easily for executives with fellowship to trust each

**Table 4.**  
Moderator effect of  
legislation  
environment

	(1)	(2)	(3)	(4)
Province	0.182*** (7.23)		0.393*** (5.18)	0.482*** (6.24)
Province*Law	-0.191*** (-6.34)		-0.465*** (-5.06)	-0.460*** (-5.01)
Geodist		0.127*** (5.53)		
Geodist*Law		-0.122*** (-4.35)		
Law	-0.049*** (-3.06)	-0.056*** (-3.46)	-0.076 (-1.57)	-0.097*** (-2.01)
Constant	-0.505*** (-3.47)	-0.293*** (-2.04)	1.931*** (4.46)	2.427*** (5.70)
CV	Yes	Yes	Yes	Yes
Industry * year	Yes	Yes	Yes	Yes
N	10,733	10,733	10,733	10,733
Adj. R <sup>2</sup> /Pseudo R <sup>2</sup>	0.039	0.037	0.016	0.017
F-value/ $\chi^2$	21.830	20.821	242.875	254.742

	(1)	(2)	(3)	(4)
	Ncskew		Crash	
Province	-0.034* (-1.71)		-0.133** (-2.16)	
Province*Culture	0.081*** (3.03)		0.181** (2.23)	
Geodist		-0.033* (-1.85)		0.006 (0.10)
Geodist*Culture		0.107*** (4.19)		0.213*** (2.70)
Culture	-0.010 (-0.61)	0.097*** (4.26)	-0.015 (-0.31)	0.198*** (2.79)
Constant	-0.384*** (-2.67)	-0.375*** (-2.60)	2.189*** (5.14)	2.237*** (5.26)
CV	Yes	Yes	Yes	Yes
Industry * year	Yes	Yes	Yes	Yes
N	10,733	10,733	10,733	10,733
Adj. R <sup>2</sup> /Pseudo R <sup>2</sup>	0.035	0.036	0.015	0.015
F-value/ $\chi^2$	19.290	19.680	218.351	224.759

**Table 5.**  
Moderator effect of  
traditional culture

other. This kind of trust has a negative impact on corporate governance efficiency. Thus, the mitigating effect of culture on stock price crash risk continues to be significant.

#### 4.3 Additional test

**4.3.1 The channel and mechanism of geographical relationship.** First, high-quality external audit can effectively supervise the management, improve corporate governance and provide a good guarantee for the authenticity and reliability of accounting information (Bushman and Smith, 2001; Fan and Wong, 2005; Wang and Chen, 2006; Stanley *et al.*, 2009), reduce the concealment of “bad interest” and then reduce stock price crash risk (Wan, 2015). Therefore, high-quality external audit can effectively restrain the collusion and alleviate stock price crash risk caused by management geographical relationship. Based on the existing research (Ettredge *et al.*, 2014; Wan, 2015), we select audit fee (*Audfee*) as the measurement index of audit quality. The result in Table 6 Panel A highlights that the firm with higher audit quality is more likely to be restrained by the agency problem of management GP, which in turn reduces stock price crash risk.

Second, management who want to take aggressive tax avoidance would try to increase opportunistic behavior, implement earnings manipulation and hide “bad news”, which would aggravate stock price crash risk (Kim *et al.*, 2011a; Jiang, 2013). The “trust” generated by the GP stimulates the management to take tax avoidance behavior actively and further enhance stock price crash risk. Referred to Jiang (2013), tax aggressiveness (*Taxagg*) is measure by the effective tax rate. The higher the effective tax rate is, the lower the tax aggressiveness is. The result in Table 6 Panel B also verifies that GP is more likely to tolerate the tax aggressive behavior for common interests, resulting in the further increasing firm risk.

Third, Management often conceals inefficient investment behavior by distorting financial data and earnings manipulation (Christie and Zimmerman, 1994). The closer relationship makes management implement collusion and earnings manipulation more easily, which further aggravates the agency problem. However, companies with over-investment and serious agency problems suffer negative market reaction in the capital market (Titman *et al.*, 2004) and higher stock price crash risk. Jiang and Xu (2015) find that over-investment could increase stock price crash risk in the future. Therefore, the closer management GP would promote management to cover up the inefficient investment of enterprises, which would also increase stock market crash risk. This paper calculates the residual value according to Richardson (2006) model and sets a dummy variable to measure investment efficiency (*Inveff*). If the residual value is within  $[-\sigma, \sigma]$ , it equals to 1 (higher investment efficiency), otherwise, it is 0. The result in Table 6 Panel C supports the inefficient investment would strengthen the positive association between management GP and stock price crash risk.

**4.3.2 Other moderator effects.** As the management of state-owned enterprises is subject to more government supervision and has personal appeals for political promotion (Zheng *et al.*, 2012; Zhou, 2017), they try to make less earnings manipulation, disclose “bad news” and improve the quality of information disclosure (Yi *et al.*, 2010). Therefore, compared with non-state-owned enterprises, the geographical relationship between the chairman and CEO in state-owned enterprises has less impact on the stock price crash risk, which is confirmed by the result shown in Table 7 Panel A.

If the location of the listed company is not the chairman’ hometown, the chairman has fewer advantages in the regional network and the interpersonal relationship of the chairman is not enough to transmit adverse information to the stakeholders through other non-public information channels. At this time, the risk of manipulating earnings and concealing “bad news” is high. Therefore, the GP has little impact on the stock price crash risk in the companies which are not located in the chairman’s hometown. The results are shown in Table 7 Panel B.

	(1)	(2)	(3)	(4)
<i>Panel A: Auditing quality</i>				
Province	0.478*** (9.67)		1.310*** (8.66)	
Province*Audfee	-0.035*** (-9.18)		-0.101*** (-8.65)	
Geodist		0.513*** (8.16)		1.438*** (7.47)
Geodist*Audfee		-0.036*** (-7.60)		-0.100*** (-6.82)
Audfee	-0.029** (-2.12)	-0.032 (-2.30)	-0.049 (-1.20)	-0.054 (-1.31)
Constant	-0.704*** (-4.41)	-0.156 (-1.02)	1.295*** (2.68)	2.771*** (6.13)
CV	Yes	Yes	Yes	Yes
Industry * year	Yes	Yes	Yes	Yes
N <sup>1</sup>	10,103	10,103	10,103	10,103
Adj. R <sup>2</sup> /Pseudo R <sup>2</sup>	0.045	0.042	0.023	0.021
F-value/ $\chi^2$	23.136	22.096	319.984	304.544
<i>Panel B: Tax aggressiveness</i>				
Province	0.134*** (4.88)		0.305*** (3.63)	
Province*Taxagg	-0.387*** (-3.49)		-1.069*** (-3.14)	
Geodist		0.130*** (4.80)		0.327*** (3.90)
Geodist*Taxagg		-0.398*** (-3.56)		-0.734*** (-2.20)
Taxagg	-0.073 (-1.27)	-0.076 (-1.31)	0.251 (1.44)	0.255 (1.47)
Constant	-0.461*** (-3.13)	-0.279* (-1.92)	1.891*** (4.32)	2.319*** (6.41)
CV	Yes	Yes	Yes	Yes
Industry * year	Yes	Yes	Yes	Yes
N	10,733	10,733	10,733	10,733
Adj. R <sup>2</sup> /Pseudo R <sup>2</sup>	0.036	0.036	0.015	0.016
F-value/ $\chi^2$	20.103	19.895	227.034	234.316
<i>Panel C: Investment efficiency</i>				
Province	0.251*** (8.52)		0.582*** (6.59)	
Province*Inveff	-0.260*** (-7.80)		-0.660*** (-6.56)	
Geodist		0.131*** (4.24)		0.362*** (3.89)
Geodist*Inveff		-0.110*** (-3.23)		-0.245*** (-2.37)
Inveff	0.002 (0.08)	0.003 (0.17)	-0.032 (-0.57)	-0.030 (-0.54)
Constant	-0.622*** (-4.23)	-0.309*** (-2.14)	1.669*** (3.81)	2.413*** (6.66)
CV	Yes	Yes	Yes	Yes
Industry * year	Yes	Yes	Yes	Yes
N	10,733	10,733	10,733	10,733
Adj. R <sup>2</sup> /Pseudo R <sup>2</sup>	0.040	0.036	0.017	0.016
F-value/ $\chi^2$	22.177	19.423	258.919	232.789
<b>Note(s):</b> 1: The difference of sample size is due to the lack of audit fee data				

**Table 6.**  
Channel and  
mechanism of  
geographical  
relationship

**Table 7.**  
Other moderator  
effects

	(1)	(2)	(3)	(4)
<i>Panel A: Ownership property</i>				
Province	0.137*** (5.83)		0.348*** (4.92)	
Province*Soe	-0.133*** (-4.64)		-0.427*** (-4.88)	
Geodist		0.083*** (4.00)		0.315*** (4.63)
Geodist*Soe		-0.065 (-2.44)		-0.243*** (-2.85)
Soe	0.008 (0.48)	-0.001 (-0.06)	-0.1147*** (-3.00)	-0.166*** (-3.42)
Constant	-0.472*** (-3.25)	-0.316*** (-2.19)	1.982*** (4.60)	2.387*** (5.61)
CV	Yes	Yes	Yes	Yes
Industry * year	Yes	Yes	Yes	Yes
N	10,733	10,733	10,733	10,733
Adj. R <sup>2</sup> /Pseudo R <sup>2</sup>	0.037	0.035	0.016	0.016
F-value/ $\chi^2$	21.520	20.609	240.868	234.434
<i>Panel B: Inconsistency of chairman's hometown with the location of his company</i>				
Province	0.080*** (4.30)		0.198*** (3.59)	
Province*Inconsistency	-0.084*** (-2.98)		-0.254*** (-2.96)	
Geodist		0.076*** (4.45)		0.266*** (5.00)
Geodist*Inconsistency		-0.085*** (-3.27)		-0.252*** (-3.08)
Inconsistency	-0.027 (-1.91)	-0.032 (-2.32)	0.119*** (2.77)	0.110*** (2.61)
Constant	-0.397*** (-2.69)	-0.265* (-1.81)	1.817*** (4.14)	2.174*** (5.03)
CV	Yes	Yes	Yes	Yes
Industry * year	Yes	Yes	Yes	Yes
N	10,733	10,733	10,733	10,733
Adj. R <sup>2</sup> /Pseudo R <sup>2</sup>	0.036	0.036	0.016	0.016
F-value/ $\chi^2$	19.870	19.729	235.478	244.611
<i>Panel C: Important development region</i>				
Province	0.084*** (4.52)		0.191*** (3.41)	
Province*Region	-0.079*** (-2.83)		-0.274*** (-3.19)	
Geodist		0.081*** (4.76)		0.284*** (5.23)
Geodist*Region		-0.089*** (-3.36)		-0.271*** (-3.25)
Region	-0.022 (-1.61)	-0.025* (-1.82)	-0.067 (-1.61)	-0.077* (-1.85)
Constant	-0.450*** (-3.10)	-0.324*** (-2.25)	2.034*** (4.74)	2.358*** (5.55)
CV	Yes	Yes	Yes	Yes
Industry * year	Yes	Yes	Yes	Yes
N	10,733	10,733	10,733	10,733
Adj. R <sup>2</sup> /Pseudo R <sup>2</sup>	0.036	0.036	0.015	0.016
F-value/ $\chi^2$	19.998	20.024	226.752	240.358

Crash

Neskew

The regional legal environment is affected by factors including regional development level, geographical business climate environment and the degree of reform development. Also, the regional agglomeration characteristics of regional economic development exist. For example, there are advantages of economic development in the eastern region compared with the western region, that is, the legal system environment is also relatively better in the developed regions. Therefore, we use the geographical characteristics of the developed region (Beijing, Tianjin, Hebei, Shanghai, Zhejiang, Jiangsu, and Guangdong) as an alternative variable of institutional development to explain the rationality of the legal effect in this study. The results shown in Table 7 Panel C hold consistency with the result in Table 4 and verify H2 again.

#### 4.4 Robustness test

*4.4.1 The test of subsample: chairman and CEO are from the same province.* Considering that although the chairman and CEO come from the same province, for the vast territory of China, some provinces are far away from each other in terms of geographical distance, and there are obvious differences in cultural situations. The emotional identity between the chairman and CEO due to geographical relationship may be different, which will affect the “intimate” relationship between them. Therefore, to observe the difference of stock price crash risk caused by management GP, we choose the sample of chairman and CEO from the same province to test again. Table 8 shows the robustness result, which is consistent with the previous findings.

*4.4.2 The test of subsample: enterprises without duality between chairman and CEO.* There are differences in executive decision-making and corporate governance between the enterprises with duality and no duality, which also affects the stock price crash risk differently. The duality of chairman and CEO contributes the strongest GP, that is, *Geodist* is exactly equal to 0. The above tests do not consider this issue. Therefore, we examine the hypotheses excluding the sample with the duality of chairman and general manager in the robustness test. The result is shown in Table 9, holding consistency with the previous findings.

*4.4.3 TSLS test.* Corporate governance and stock price crash risk are often endogenously determined in the intensive variable of relationship between chairman and CEO. To overcome the concerns, we choose geographical dialect as the instrumental variable (IV) and measure it as Dai *et al.* (2016) did. To a large extent, social identity is established and maintained through language. Individuals who speak the same dialect will form a network of communication, and their members have a close relationship and a high degree of identity (Gumperz, 1982). The identity function of dialects is particularly obvious in China. The more similar dialects are, the stronger their identity function is, and they are prone to collusion. The results of the correlation test, exogenous test and the two-stage least squares regression are shown in Table 10. The *F*-statistic and Wald chi [2] in the correlation test display that the selection of instrument variables satisfies the relevant condition. The AR test and Wald test show that we could reject the null hypothesis that the IV has no exogeneity. The satisfaction of relevant condition and exogenous condition provides strong evidence for the validity of the IVs. Table 10 reports the TSLS results, which are consistent with the previous findings.

*4.4.4 The test of subsample before and after management turnover.* The management turnover makes the change of the geographical relationship between Chairman and CEO and the change of stock price crash risk. Considering that it is hard to accurately identify whether the risk of management turnover is caused by the leaving or succeeding executives, we examine the difference of stock price crash risk between the year before and after management turnover [4]. The t-test results are shown in Table 11. It further explains the impact of the dynamic change of GP caused by management turnover on stock price crash

**Table 8.**  
Robustness test in  
subsample-chairman  
and CEO are from the  
same province

	(1)	Ncskew (2)	(3)	(4)	Crash (5)	(6)
<i>Geodist</i>	0.054 <sup>***</sup> (2.56)	0.145 <sup>***</sup> (3.97)	-0.023 (-0.78)	0.237 <sup>***</sup> (3.48)	0.541 <sup>***</sup> (4.34)	0.161 <sup>*</sup> (1.74)
<i>Geodist*Law</i>		-0.129 <sup>***</sup> (-2.80)			-0.442 <sup>***</sup> (-2.90)	
Law		-0.078 <sup>***</sup> (-2.99)			-0.129 (-1.55)	
<i>Geodist*Culture</i>			0.130 <sup>***</sup> (3.11)			0.123 (0.93)
Culture			0.093 <sup>***</sup> (2.93)			0.098 (0.98)
Constant	-0.751 <sup>***</sup> (-2.97)	-0.710 <sup>***</sup> (-2.81)	-0.794 <sup>***</sup> (-3.14)	0.485 (0.63)	0.564 (0.73)	0.407 (0.53)
CV	Yes	Yes	Yes	Yes	Yes	Yes
Industry * year	Yes	Yes	Yes	Yes	Yes	Yes
N	3,724	3,724	3,724	3,724	3,724	3,724
Adj. R <sup>2</sup> /Pseudo R <sup>2</sup>	0.039	0.043	0.040	0.016	0.018	0.015
F-value/ $\chi^2$	9.157	9.242	8.474	75.479	87.557	73.897



	Ncskew		Crash	
	(1)	(2)	(3)	(4)
<i>Panel A: The effect of executives' geographical proximity on stock price crash risk</i>				
Province	0.045 <sup>***</sup> (2.86)		0.022 (0.47)	
Geodist		0.032 <sup>**</sup> (2.24)		0.150 <sup>***</sup> (3.38)
Constant	-0.401 <sup>***</sup> (-2.55)	-0.335 <sup>**</sup> (-2.13)	2.213 <sup>***</sup> (4.76)	2.329 <sup>***</sup> (5.02)
CV	Yes	Yes	Yes	Yes
Industry * year	Yes	Yes	Yes	Yes
N	9,065	9,065	9,065	9,065
Adj. R <sup>2</sup> /Pseudo R <sup>2</sup>	0.036	0.035	0.014	0.015
F-value/ $\chi^2$	18.754	18.509	181.570	190.631
<i>Panel B: The moderator effect of legislation environment</i>				
Province	0.171 <sup>***</sup> (6.17)		0.371 <sup>***</sup> (4.45)	
Province*Law	-0.182 <sup>***</sup> (-5.54)		-0.505 <sup>***</sup> (-5.07)	
Geodist		0.116 <sup>***</sup> (4.67)		0.486 <sup>***</sup> (5.82)
Geodist*Law		-0.122 <sup>***</sup> (-4.02)		-0.490 <sup>***</sup> (-4.93)
Law	-0.056 <sup>***</sup> (-3.18)	-0.059 <sup>***</sup> (-3.32)	-0.105 <sup>**</sup> (-2.00)	-0.121 <sup>**</sup> (-2.31)
Constant	-0.496 <sup>***</sup> (-3.14)	-0.309 <sup>**</sup> (-1.96)	1.950 <sup>***</sup> (4.14)	2.396 <sup>***</sup> (5.16)
CV	Yes	Yes	Yes	Yes
Industry * year	Yes	Yes	Yes	Yes
N	9,065	9,065	9,065	9,065
Adj. R <sup>2</sup> /Pseudo R <sup>2</sup>	0.039	0.038	0.016	0.017
F-value/ $\chi^2$	18.633	17.950	194.981	204.799
<i>Panel C: The moderator effect of traditional culture</i>				
Province	-0.048 <sup>**</sup> (-2.22)		-0.175 <sup>***</sup> (-2.62)	
Province*Culture	0.097 <sup>***</sup> (3.23)		0.156 <sup>*</sup> (1.71)	
Geodist		-0.035 <sup>*</sup> (-1.85)		0.012 (0.20)
Geodist*Culture		0.090 <sup>***</sup> (3.19)		0.163 <sup>*</sup> (1.89)
Culture	-0.009 (-0.48)	0.091 <sup>***</sup> (3.52)	0.014 (0.28)	0.180 <sup>**</sup> (2.25)
Constant	-0.402 <sup>**</sup> (-2.55)	-0.382 <sup>**</sup> (-2.42)	2.168 <sup>***</sup> (4.66)	2.222 <sup>***</sup> (4.79)
CV	Yes	Yes	Yes	Yes
Industry * year	Yes	Yes	Yes	Yes
N	9,065	9,065	9,065	9,065
Adj. R <sup>2</sup> /Pseudo R <sup>2</sup>	0.036	0.036	0.015	0.015
F-value/ $\chi^2$	17.021	17.019	175.010	174.426

**Table 9.**  
Robustness test in  
subsample-no duality  
between chairman  
and CEO

	Ncskew		Crash	
	(1)	(2)	(3)	(4)
Province	0.094 <sup>**</sup> (2.30)		0.143 <sup>*</sup> (1.89)	
Geodist		0.143 <sup>**</sup> (2.29)		0.216 <sup>*</sup> (1.88)
Constant	-0.459 <sup>***</sup> (-3.04)	-0.271 <sup>*</sup> (-1.83)	1.253 <sup>***</sup> (4.52)	1.537 <sup>***</sup> (5.73)
CV	Yes	Yes	Yes	Yes
Industry * year	Yes	Yes	Yes	Yes
N	10,733	10,733	10,733	10,733
Wald $\chi^2$	402.464	400.836	219.319	220.137
AR test	5.26 <sup>***</sup>	5.26 <sup>***</sup>	3.53 <sup>*</sup>	3.51 <sup>*</sup>
Wald test	5.27 <sup>**</sup>	5.22 <sup>**</sup>	3.53 <sup>*</sup>	3.51 <sup>*</sup>

**Note(s):** AR test and Wald test are Weak-instrument-robust tests

**Table 10.**  
Two-stage least  
squares test  
(instrumental variable:  
geographical dialect)

Group	<i>N</i>	Mean ( <i>Ncskew</i> )	Difference ( <i>t</i> -value)	Mean ( <i>Crash</i> )	Difference ( <i>t</i> -value)
<i>(1) Province changed</i>					
Before ( <i>Province</i> = 1)	343	-0.408	0.133**	0.414	0.052*
After ( <i>Province</i> = 0)	343	-0.541	(2.359)	0.362	(1.411)
<i>(2) Province change</i>					
Before ( <i>Province</i> = 0)	86	-0.365	0.109	0.302	-0.093
After ( <i>Province</i> = 1)	86	-0.474	(1.062)	0.395	(-1.279)
<i>(3) Province unchanged</i>					
Before ( <i>Province</i> = 0 or 1)	611	-0.475	0.041	0.368	0.036
After ( <i>Province</i> = 0 or 1)	611	-0.516	(1.032)	0.332	(1.219)
<i>(3a) Province unchanged: Geodist<sub>after</sub>-Geodist<sub>before</sub>&gt;0</i>					
Before ( <i>Province</i> = 0 or 1)	140	-0.458	-0.059	0.350	0.007
After ( <i>Province</i> = 0 or 1)	140	-0.399	(-0.796)	0.343	(0.125)
<i>(3b) Province unchanged: Geodist<sub>after</sub>-Geodist<sub>before</sub>&lt;0</i>					
Before ( <i>Province</i> = 0 or 1)	471	-0.480	0.071*	0.374	0.045*
After ( <i>Province</i> = 0 or 1)	471	-0.551	(1.525)	0.329	(1.433)
<i>(4) Geodist changed: Geodist<sub>after</sub>-Geodist<sub>before</sub>&gt;0</i>					
Before	218	-0.441	-0.005	0.349	0.005
After	218	-0.436	(-0.089)	0.344	(0.100)
<i>(5) Geodist changed: Geodist<sub>after</sub>-Geodist<sub>before</sub>&lt;0</i>					
Before	822	-0.445	0.099***	0.386	0.038*
After	822	-0.544	(2.763)	0.348	(1.587)

**Table 11.**

Robustness test in subsample-the prior year and the next year of chairman or CEO turnover

**Note(s):** The significance of *t*-value is evaluated by one-tailed *t*-test

risk. Table 11 suggests that stock price crash risk is significantly reduced with farther GP caused by management turnover and stock price crash risk does not change significantly if GP gets closer. That is, the less intimate GP would improve the corporate governance efficiency of listed companies and reduce stock price crash risk. Due to the consideration of executives' interests and career development, the closer GP caused by management turnover would not quickly lead to a significant change in stock price crash risk. It also supports the hypothesis.

## 5. Conclusions

La Porta *et al.* (1998) conduct a series of research on the relationship between "law and finance" and find that the origin of law and investor protection (including law enforcement) have an important influence on the development of the financial market and corporate governance. However, Allen *et al.* (2005) do an empirical study on the relationship between the law and financial markets in the process of China's economic transition, and the results do not support the paradigm of "law and finance". Therefore, even in the society of market economy where people advocate "contract spirit" and "institutionalized", the role of culture can still not be underestimated in China's context. Using the data of China's listed companies in 2008–2018, this study explores the effect of executives' GP on stock price crash risk from the perspective of the relationship governance and examines the different mechanisms. We find that there is a significant positive relation between executives' GP and stock price crash risk, and less perfect legal environment and stronger cultural tradition in the location of the

company will mitigate the effect. Thus, executives' GP is an important driver of stock price crash risk in listed companies.

The conclusion of our study has important theoretical value and practical significance. First, this study finds that the cultural characteristic of GP governance has an important influence on the stock price crash risk, which breaks through the existing study that focuses on the effect of the formal institutional arrangements (such as political events, investor protection, accounting policy choice) on the stock price crash risk. Second, it provides new empirical evidence for the economic consequences of relationship governance. Different from the existing literature exploring the impact of relationship governance on the internal efficiency of the company, this study extends the research to the field of stock market reaction. Third, the moderator effect of the legal environment shows that the government needs to further improve the laws and regulations and strengthen supervision to achieve the stable and healthy development of the capital market, which would promote the companies to enhance the transparency of information, reduce the potential stock price crash risk and avoid capital market volatility phenomenon. Last but not the least, the different effects of cultural traditions indicate that culture is still an important factor that affects economic development in the process of China's economic transformation, and the relationship governance is deeply influenced by Confucian culture. Therefore, culture should be taken as an important factor when examining the influencing factors of corporate behavior.

### Notes

1. Since the data of the birthplace or native place of the chairman and CEO provided by CSMAR database only accounts for 30% of the total sample, the paper manually collects data to calculate the geographical distance between the birthplace or native place of the chairman and CEO. If the data cannot be obtained through the prospectus, annual reports, announcements of listed companies or the internet, the samples will be eliminated.
2. Google Earth is a virtual tellurion software program developed by Google. The software can accurately position the longitude and latitude of the specific location. Though, using the first six numbers of residential identity numbers to judge the location can be a good idea. The method can be difficult to conduct because some executives are over 16 years old before the first identity registration in 1985. If they are studying or not working locally, the inferred location can be different from the actual location. For the reason above, the paper does not adopt the method of identity number.
3. Due to space limitation, regression results of control variables were not reported, but no abnormality was found and similarly hereinafter.
4. For listed companies with several turnovers, this paper selects the year before the first turnover and the year after the last turnover in the sample observation range as the samples of the year before and after the turnover. And the samples with only the data of the previous year or the following year are deleted.

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