Quantitative Finance and Economics

QFE, 6(2): 177–205.
DOI: 10.3934/QFE.2022008
Received: 15 March 2022
Revised: 26 April 2022
Accepted: 28 April 2022
Published: 07 May 2022

http://www.aimspress.com/journal/QFE

Research article

Impact of risks on forced CEO turnover

Xue Chang*

Faculty of Business, University of Nottingham Ningbo, Ningbo, China

* **Correspondence:** Email: bixxc7@nottingham.edu.cn.

Abstract: Risk management has been an important topic since the 2008 financial crisis, and it has become an important area of focus in business management. It is important for the board of directors to evaluate the ability and competence of the CEO. This study was aimed to investigate the effect of various risks on forced CEO turnover through the use of a linear probability model. The Chinese A-share market from 2010 to 2019 was selected as the sample, and theoretical analysis and empirical research were combined to explore the impact of various risks on forced CEO turnover, further analyzes the relationship under different ownerships. This paper study revealed that the crash risk is positively associated with forced CEO turnover. This paper also found that the idiosyncratic risk increases the likelihood of forced CEO turnover, and that the relationship is more significant in non- state-owned enterprises (non-SOEs) than state-owned enterprises (SOEs). The systematic risk has no effect on forced CEO turnover. Risks can be an important indicator of the CEO's ability and competence. This paper also evaluated the relationships in Chinese circumstances. China is an emerging market that has a different legal and social environment than other countries. The different goals of SOEs and non-SOEs lead to different risk attitudes. It is necessary to distinguish ownership when evaluating the Chinese situation.

Keywords: business management; risk management; crash risk; idiosyncratic risk; systematic risk

JEL Codes: G32, G34, M12

1. Introduction

CEO turnover is a hot topic in corporate governance (Clayton et al., 2005). Dismissing the CEO is an effective way to rebuild the company's reputation and restore the shareholders confidence (Jensen &

Meckling, 1976). This study was aimed to investigate the relationship between various risks and forced CEO turnover.

According to Andreou et al. (2017), crash risk is mainly derived from the managers hiding bad news for their own interest rather than releasing it in a timely manner. Once the accumulated bad news reaches the limit point, all of the bad news will flow to the market in a very short time, leading to stock price crashes (Hutton et al., 2009). The risk of stock price collapse not only directly leads to substantial damage to existing shareholders' wealth, but it also damages the company's performance due to the subsequent financial difficulties and the loss of customers and suppliers.

Risk management has been an important issue since the 2008 financial crisis. Bushman et al. (2010) found that idiosyncratic risk increases CEO turnover and systematic risk reduces the likelihood of CEO turnover in the United States of America. We evaluate the relationship under Chinese circumstances. The root of idiosyncratic risk is the uncertainty of information quality (Kapadia, 2007; Michael et al., 2010). Improving the information quality will decrease the idiosyncratic risk, which decreases information asymmetry and helps the board to evaluate the CEO's talent accurately.

We selected Chinese A-share listed companies from 2010 to 2019 as samples to investigate the impact of risks on CEO turnover. The results show that there is a positive relationship between crash risks and CEO turnover. The idiosyncratic risk will increase the likelihood of forced CEO turnover. In addition, the relationship is more significant in non-SOEs than in SOEs. The board of directors should consider the risk information when evaluating the CEO's talent.

1.1. Contributions

This study analyzes the impact of different risks on forced CEO turnover under Chinese circumstances, so it has the following contributions. Firstly, existing studies focus on the determinants of the crash risk, and few studies are concerned with the consequences of stock price crash risk (Habib et al., 2018). This study investigates the impact of collapse risk on CEO turnover to provide a new perspective on the crash risks. Besides, crash risks are a non-performance indicator that can be used to evaluate CEOs' talent. Secondly, many studies analyze the factors influencing idiosyncratic risk, such as the capital market environment, investment efficiency and corporate performance. This study connects the CEO turnover, systematic risk and idiosyncratic risk together, thus connecting the internal and external economic factors of the company. Thirdly, because of the different governance mechanisms of SOEs and non-SOEs, this study investigates the relationship between CEO turnover and corporate risk under different ownerships. SOEs take up the largest part in the Chinese economy, and the goal is totally different from that of non-SOEs, which is necessary to distinguish them.

The remainder of the paper is organized as follows. Section 2 presents the literature review and the hypothesis development is described in Section 3. Section 4 describes the model, data and variables. We present the results and discuss the robustness tests in Sections 5 and 6. In Section 7, we present the conclusions.

2. Literature review

2.1. CEO turnover

The CEO is the core of the management team; they take responsibility for the decision-making on major issues, including organizational strategy, risk management and social responsibility. Effective corporate governance mechanisms can evaluate a CEO's talent properly and replace the ineffective one. Forced CEO turnover is a mechanism for punishing the CEO to solve agency problems (Chang & Wong, 2009). Previous studies have investigated the factors and impact of CEO turnover (Clayton et al., 2005; Wiersema & Zhang, 2013).

A large number of studies were aimed to discover that corporate performance is the key determinant of CEO turnover (Fisman et al., 2014; Jenter & Kanaan, 2015; Jenter & Lewellen, 2021; Kato & Long, 2006). CEOs are fired after bad firm performance relative to the industry average (Fee et al., 2018; Jenter & Kanaan, 2015). The main responsibility of the board is to employ, dismiss, supervise and compensate management to maximize the shareholders' value. The greater independence of the board tends to make discipline more rigorous for CEOs (Guo & Masulis, 2015). A CEO with higher power will reduce the likelihood of a turnover (Pi & Lowe, 2009). The legal system and economic environment will affect the corporate governance and further affect the stability of CEOs (Jenter & Kanaan, 2015). Lawsuits are followed by increased CEO turnover (Aharony et al., 2015). The media reports, especially the negative reports, will put pressure on the enterprise. In order to restore the company's reputation, the corporation usually replaces the CEO (Farrell & Whidbee, 2002). Wiersema and Zhang (2013) found that negative ratings from securities analysts accelerate the CEO dismissal decision. This is because the negative reports affect the board's judgment and evaluation of the CEO's ability.

Previous studies have indicated a positive effect after forced CEO turnover (Bernard et al., 2016). CEO turnovers improve corporation performance (Kato & Long, 2006). Firms experience increased return on assets (ROA) following CEO turnovers (Huson et al., 2004).

In China, the government plays an important role in resource allocation, which can significantly influence the firm (Li et al., 2008). A CEO with political connections is less likely to be fired (Pi & Lowe, 2009). There are great differences between SOEs and Non-SOEs (Chang & Wong, 2009).

2.2. Crash risk

Many studies have analyzed the factors influencing stock price crashes (Kim & Zhang, 2016). Few studies have investigated the consequences of a stock price crash. Based on the agency theory, managers choose to hide bad news because of self-interest, and shareholders cannot capture the real situation of the company. Once bad news cannot be hidden, stock prices will face a significant drop. The nature of a crash risk is information asymmetry (Bleck, 2007). Overconfident CEOs are more likely to experience a stock price crash (Kim et al., 2016). Managers can use various approaches to hoard bad news, such as earnings manipulation and tax avoidance, which worsen the quality of information and increase the risk of stock price crashes (Chen et al., 2017). Corporate governance has a significant influence on crash risk (Chen et al., 2017). Andreou et al. (2016) showed that companies can reduce the likelihood of a crash by increasing the proportion of independent directors. External inspection also has a significant influence on crash risk. Auditors can find and prevent bad-news

hoarding activities, thus reducing the risk of a collapse (Callen & Fang, 2015; Robin & Zhang, 2015). Companies can decrease the crash risk by improving social trust (Callen & Fang, 2015; Li et al., 2017).

The United States of America dominates the research on crash risk. In China, many references indicate that, if a firm has a connection with the government, it will face less crash risk (Li & Chan, 2016). Xu et al. (2014) reported that managers with excess rewards tend to hold bad news in SOEs. Executives fear penalties for releasing negative news related to politically sensitive events, which increases the crash risk (Lee & Wang, 2016).

2.3. Idiosyncratic risk and systematic risk

Traditional financial theory differentiates risks into systematic risk and idiosyncratic risk, which requires the assumption that the capital market is efficient, investors are rational and information is complete (Bernile, 2018). The systematic risk is related to the whole market factors, which companies cannot control or eliminate from the market. It is also called "market risk" or "undiversifiable risk". Patton and Verardo (2012) discovered the impact of the earnings announcement effect on systematic risk. Unsystematic risk is controllable by the firm's internal factors. Investors can completely disperse the risk through the use of a diversified portfolio. It is also named as a "specific risk", "diversifiable risk" or "idiosyncratic risk". Idiosyncratic risk reflects microeconomic factors rather than macroeconomic factors. Idiosyncratic risks are important because the CEO can control and constrain them (Sassen et al., 2016). Besides, they represent 80% of the total risks (Bansal & Clelland, 2004). Idiosyncratic risks differ across firms and countries (Bartram et al., 2012; Bartram et al., 2011; Brown & Kapadia, 2007; Morck et al., 2000). Li (2004) showed that idiosyncratic risk has increased significantly in emerging markets.

A large number of studies have investigated the idiosyncratic risk based on the CEO's characteristics, earning management, information quality and expected return dimensions (Fu, 2009; Goyal & Santa-Clara, 2003). Few studies have investigated the causes of idiosyncratic volatility from the corporate governance perspective.

Upper echelons theory argues that a manager's risk attitude is affected by their own characteristics, including their experience (Mishra, 2020) and socioeconomic background (Gormley & Matsa, 2016). Dealing with the firm's specific risk is an important responsibility of management. Adams (2005) showed that CEOs with more power will lead to higher risks. Liu (2016) found a negative relationship between CEOs' ability and idiosyncratic risk.

Firm characteristics such as ownership (Panousi & Papanikolaou, 2012), firm age (Huang et al., 2014) and leverage level (Gerlach et al., 2015) can affect the idiosyncratic risk. Ownership concentration is positively associated with idiosyncratic risk (Abu-Ghunmi et al., 2015; Nguyen, 2011). A company's performance and size has a negative influence on idiosyncratic risk (Bali & Cakici, 2008; Irvine & Pontiff, 2009). Effective corporate governance also reduces the idiosyncratic risk (Ferreira & Laux, 2007).

"The idiosyncratic volatility puzzle" refers to the positive, negative and uncorrelated relationships between expected return and idiosyncratic risk. Some scholars believe that it is irrelevant because investors can eliminate idiosyncratic risk through the use of investment portfolios. Only the systematic risk affects the expected return in a perfect capital market (Bali & Cakici, 2008). Some scholars who hold the positive relationship believe that investors expect higher return compensation for the idiosyncratic risk. However, it is impossible to achieve a completely diversified portfolio due to the

restrictions on the investors' age, income level, education level and other factors (Malkiel, 2002; Xu & Malkiel, 2003). Other studies revealed a negative relationship between idiosyncratic risks and expect return (Ang et al., 2008; Hodrick, 2008; Huang, 2010).

A stream of research revealed that idiosyncratic risk has informational effects (Campbell et al., 2001; Campbell & Taksler, 2003; Ferreira & Laux, 2007). Many researchers have documented that a high information quality reduces the idiosyncratic risk (Bartram et al., 2011; Rajgopal & Venkatachalam, 2011).

3. Hypothesis development

3.1. Analyzing the impact of crash risk on forced CEO turnover

CEOs are agents who have relative information advantages based on agency theory (Jensen & Meckling, 1976). The existence of information asymmetries between managers and stakeholders results in crash risk (Benmelech et al., 2010; Hutton et al., 2009). In order to seek private interests, CEOs cover up bad news by using various approaches, such as the implementation of earnings management, tax evasion, related party transactions, and non-robust accounting policies (Chen et al., 2017). Directors obtain less information than CEOs, and the cost of evaluating the reliability of information is very high, which reduces the directors' supervision efficiency (Masulis & Mobbs, 2011; Raheja, 2005).When the hidden bad news accumulates to a certain point, a stock price crash occurs. The occurrence of a stock price crash is an indicator of the CEO's opportunistic behavior (Hutton et al., 2009).

A stock price crash is a major negative event that seriously damages the company's reputation. Reputation is an asset that can generate future cash flow, especially in a market with incomplete information (Kreps & Wilson, 1982). Reputation can reduce the cost of capital (Beatty & Ritter, 1986) and help companies attract long-term investors (Milgrom & Roberts, 1986) and obtain excess returns. Besides, the damage to a company's reputation leads to stock price decline and a significant increase in the cost of financing (Kravet & Shevlin, 2010). Therefore, once a company's reputation is damaged, the board will take various measures to restore its reputation (Suchman, 1995). The company will give an explanation after the scandal is exposed in order to repair the relationship with investors (Westphal & Deephouse, 2011). Dismissing the CEO is the most effective way to rebuild investors' confidence (Karpoff, 2008).

Given the extensive damage to the firm value brought about by stock price crashes, the low ability of executives should be terminated in order to protect the shareholders. Crash risk can serve as an indicator of the executives' inability. To sum up, after the collapse of a company's stock price, the board of directors is likely to make a decision to dismiss the CEO. Therefore, the author puts forward the first research hypothesis.

Hypothesis 1 (H1): the higher the crash risk, the higher the possibility of a CEO turnover in the future.

3.2. Analyzing the impact of risks on forced CEO turnover

Risk management has been an important issue since the 2008 financial crisis. Bushman et al. (2010) find that, in the United States of America, idiosyncratic risk increases the likelihood of a CEO

turnover and systematic risk reduces the CEO turnover. This study evaluated the relationships under Chinese circumstances.

We believe that idiosyncratic risk can capture factors of return variability, which is related to the CEO's talent and is under the CEO's control. Systematic risk reflects information that is unrelated to the CEO's talent and outside of the CEO's control. One of the important roles of the board is to properly evaluate the CEO's ability and make decisions regarding firing and retaining. Firing the inability CEO is a mechanism to protect the interests of shareholders (Jensen & Meckling, 1976). Firm performance is an important indicator for evaluating the CEO's talent, which is significantly affected by volatility. If volatility is driven primarily by factors within the firm, which we call the idiosyncratic risk, the board will replace low-talent incumbents. If the volatility is unrelated to the CEO's talent and outside of the CEO's control, which is systematic risk, the board will find it difficult to assess the CEO's talent and make a decision regarding whether to fire. Extensive studies have shown that poor performance leads to forced CEO turnover. This study complements existing literature by investigating the impact of risks on forced CEO turnover.

From the perspective of investment, there are two dimensions to investigate.

Firm investment decisions are related to the idiosyncratic risk rather than systematic risk (Datta et al., 2017). A large number of studies revealed that CEOs are reluctant to take on risky projects due to reputation costs and turnover threat (Goel & Thakor, 2008; Panousi & Papanikolaou, 2012). This is especially true for CEOs who have a risk-aversion attitude regarding idiosyncratic volatility and investment (Angeletos, 2007; Panousi & Papanikolaou, 2012). Therefore, CEOs tend to reduce firm risk to decrease the probability of being fired (Chakraborty, 2007; Peters & Wagner, 2014). Other scholars believe that boards might constantly encourage excessive risk-taking to maximize the value if a company has poor performance (Boyd & De Nicolo, 2005). The pressure from the board encourages CEOs to seek higher returns and risky projects to improve performance and secure their position (Zwiebel, 1995). CEOs have to change their risk-aversion attitude to risk seek to improve performance (John et al., 2008).

3.2.1. Information quality

The root of idiosyncratic risk is the uncertainty of information quality (Brandt et al., 2010; Brown & Kapadia, 2007). Jin and Myers (2006) found that firms possessing less information transparency exhibit high idiosyncratic risks. The relationship between information quality and idiosyncratic risk is negative, especially in emerging markets. Chen and Petkova (2010) discovered that higher information quality benefits shareholders because it decreases uncertainty and reduces information asymmetry, which allows the board to evaluate the CEO's talent accurately (Zhang, 2016).

Based on the above analysis, we put forward the second and third hypothesis:

Hypothesis 2 (H2): Idiosyncratic risk increases the likelihood of forced CEO turnover.

As previously said, systematic risk is the type of risk that the CEO cannot control; therefore, we put forward the third hypothesis:

Hypothesis 3 (H3): The relationship between systematic risk and CEO turnover is unrelated.

3.3. Relationship between CEO turnover and risks in SOE and non-SOE

Different ownerships have different governance mechanisms, and thus different attitudes regarding risks. In China, the government plays an important role in economic affairs and resource allocation, and state-owned enterprises occupy a dominant position in the market (Child & Tse, 2001).

They have the following differences. First, due to lack of owners of the SOEs, SOEs face less litigation risk. Besides, SOEs have strong political connections. Luo et al. (2016) discovered that, in China, political connections can reduce crash risk. CEOs in SOEs tend to pursue future official careers. They have the incentives to release bad news at normal times and avoid crash events in the near future, thereby safeguarding the official careers of politicians. Second, the government controls the governance of SOEs rather than markets. The government assesses business performance, supervises business behavior and issues governance policies. The executives are appointed and dismissed by the government, which is a political promotion tactic; they are unlikely to be dismissed. Non-SOEs are willing to provide liability insurance for senior managers so as to enhance the attractiveness of the company and win the battle for talent. Third, SOEs are supported by the government and enjoy various preferential policies, such as government assistance, bank credits and market access policies (Chung & Wynn, 2008; Dewatripont & Maskin, 1995; Preuss & Königsgruber, 2021).

The goals of SOEs are to provide public service and fiscal stability, and to perform sector regulation and employment creation rather than value maximization (Wang et al., 2008). In addition, SOEs have a political connection with the government, meaning that there is less risk compared with non-SOEs. They have information advantages that can help them to make proper strategies and thus reduce policy uncertainty (Alon et al., 2014). SOEs can obtain favorable loans and subsidies easily to reduce the risk of capital shortage (Haß et al., 2017). Therefore, managers in SOEs face fewer risks than those in non-SOEs. We put forward the following fourth and the fifth hypotheses:

Hypothesis 4(H4): The relationship between crash risk and CEO turnover is more significant in non-SOEs than in SOEs.

Hypothesis 5(H5): The relationship between idiosyncratic risk and CEO turnover is more significant in non-SOEs than in SOEs.

4. Sample, variables, and descriptive statistics

4.1. Data sources and sample selection

In this study, Chinese enterprises listed in the Shanghai Stock Exchange and Shenzhen Stock Exchange from 2010 to 2019 were applied as initial samples. The sample period began in 2010 because of the financial crisis that occurred in 2008, which had a significant influence on the stock market. All the data are from the China Stock Market and Accounting Research (CSMAR) database, except for the forced CEO turnover data, which were manually screened from their resumes. According to the following criteria, we excluded (1) firms flagged a Special Treatment (ST) or *ST, (2) financial services firms, because of their industry uniqueness, (3) firms with fewer than 30 trading weeks and (4) the companies whose CEO's tenure was less than one year and there was incomplete information on the key variables. To avoid outliers, we winsorized at the 1% level in both tails. In addition, we controlled for years and industries' fixed effects. Finally, we obtained 15,293 firm-year observations.

4.2. Model

We examined whether various risks affect the likelihood of forced CEO turnover by using the linear probability model (LPM). LPM simplifies the interpretation of coefficients, although it may produce fitted values outside of the 0 to 1 range (Wooldridge, 2002). According to Chyz and Gaertner (2017), the LPM is suitable for test. In the robustness tests, we used the logit model shown in Table 9.

$$ForcedCEOturnover_{i,t} = \alpha_0 + \beta_1 risk_{i,t-1} + \beta_k Controlss_{i,t-1} + I_j + T_{t-1} + \varepsilon_{i,t} \quad (1)$$

All of the above variables are explained in Table 3. Industry (*I*) and year (*T*) fixed effects (industry and year dummies) were included in order to remove the effects of macroeconomic and cross-sectional effects. If the coefficient of β1 is positive and significant, Hypotheses 1 and 2 are supported, showing the probability of forced CEO turnover increase with the crash risk and idiosyncratic risk.

4.3. Key variables

4.3.1. CEO turnover

The dummy variable TO_FORCE was equal to 1 for turnover events in the year *t*, and 0 otherwise (Cao et al., 2017). TO_FORCE was measured during the *t* period, while all other variables were measured during the $t-1$ period (Cao et al., 2017).

China Securities Regulatory Commission has required that enterprises should disclose the reasons for the CEO turnover in detail since 2000. Previous studies generally divided CEO turnover into normal and forced turnover (Chang & Wong, 2009). A normal CEO turnover refers to the reasons that are not related to management behavior, such as retirement, health condition and expiration term. There is no consistent definition of forced turnover, so we mainly followed Cao et al. (2017) to evaluate forced CEO turnover.

There were 3,137 CEO turnover events during the sample period. In Table 1, there are 12 reasons for CEO turnover, which were provided by the CSMAR database. Change of job takes up the highest percentage, accounting for 31.94% of the total turnover. The second one is the contract expiration, which represented 28.91%; the third reason comprises personal reasons (13.01%). Only 0.92% of CEO turnovers fell in the dismissal category. We reclassified the reasons for job changes, resignations, personal reasons and reasons not given (Firth et al., 2006). Other turnovers were classified as normal, with one exception: if the CEO is less than 60 years old and the stated reason is retirement, we classified this turnover as forced.

We tracked the destinations of departing CEOs using the resume information provided by the CSMAR database. For example, the reason for a job change can be divided into force or voluntary turnover. If a departing CEO moved to a position that was better than their previous position, then we classified it as non-forced (Huson et al., 2004). Table 2 summarizes the reasons for CEO turnovers and the corresponding frequency. After reexamining 1,836 cases by searching through CEO resumes, 649 cases were determined to be not forced. We can see that 417 cases resulted in the CEO remaining as chairman or vice chairman, and 232 cases resulted in promotion (210 CEOs promoted as chairman or vice chairman; 22 CEOs became government officials). We classified the remaining 385 cases as forced turnover. These included 243 CEOs who accepted new positions ranked lower than CEO positions; there were 944 cases without any traceable information. In conclusion, there were 1,898

normal turnover events, which accounted for 60.50% of the total, and 417 cases of forced turnover (13.29%). Because we investigated the impact of risks on forced CEO turnover, we ignored voluntary turnovers (Chakraborty et al., 2007).

Table 1. Reasons for CEO turnovers presented in the CSMAR database.

Reasons	Frequent.	Percent	Cum
Change in controlling shareholders	4	0.13%	0.13%
Change of job	1,002	31.94%	32.07%
Completion of acting duties	53	1.69%	33.76%
Contract expiration	907	28.91%	62.67%
Corporate governance reform	144	4.59%	67.26%
Dismissal	29	0.92%	68.19%
Health	55	1.75%	69.94%
Legal disputes	6	0.19%	70.13%
No reason given	182	5.80%	75.93%
Personal reasons	408	13.01%	88.94%
Resignation	244	7.78%	96.72%
Retirement	103	3.28%	100%
Total	3,137	100%	100%

Table 2. Forced and voluntary CEO turnovers.

Reasons for turnover	Number of observations	Frequency (%)
1. Normal turnover	1,898	60.50%
Retirement	80	2.55%
Contract expiration	907	28.91%
Change in controlling shareholders	4	0.13%
Health	55	1.75%
Corporate governance reform	144	4.59%
Legal disputes	6	0.19%
Completion of acting duties	53	1.69%
Remaining as board chairman or vice chairman	417	13.29%
Important government position	22	0.70%
Promoted to board chairman or vice chairman	210	6.69%
2. Forced turnover	1,239	39.50%
New position ranked lower than CEO position	243	7.75%
Retirement age less than 60	23	0.73%
Dismissed	29	0.92%
Information unavailable	944	30.09%
Total number of observations	3,137	100.00%

4.3.2. Idiosyncratic risk and systematic risk

According to the capital asset pricing model (CAPM), we get the coefficient $(\beta|i)$ and residual standard deviation $(\varepsilon|i,t)$. Following Bernile et al. (2018), idiosyncratic risk can be calculated as the

square root of 252 multiplied by the standard deviation of daily excess stock returns. The total risk equals the square root of 252 multiplied by the standard deviation of daily stock returns.

$$TOTAL_{RISK\,i,t} = ln \tag{2}$$

$$R_{i.d} = \alpha_i + \beta_i R_{m,d} + \varepsilon_{i,t} \tag{3}$$

$$IDIOSYNCRATIC_{RISK\,i,t} = ln\left(252 * \sqrt{var(\varepsilon_{i,d})}\right) \tag{4}$$

$$SYSTEMATIC_{RISK\,i,t} = ln\left(252 * \sqrt{var(\beta_i)}\right) \tag{5}$$

where $R_{i,d}$ is the daily return of the firm *i* and $R_{m,d}$ is the daily value-weighted market return.

4.3.3. Crash risk

According to extensive literature, two methods are used to measure crash risk (Dumitrescu & Zakriya, 2021; Habib et al., 2018; Li & Zeng, 2019). We obtained the following measures from the CSMAR database.

Firstly, we used the weekly return in the following expanded market model regression:

$$R_{i,j} = \alpha_0 + \beta_1 R_{m,j-2} + \beta_2 R_{m,j-1} + \beta_3 R_{m,j} + \beta_4 R_{m,j+1} + \beta_5 R_{m,j+2} + \varepsilon_{i,j} \tag{6}$$

where $R_{i,j}$ is the return that includes the reinvestment with cash dividends for the firm *i* in the week *j*. $R_{m,j}$ is the average return of all A-shares weighted by the market value in the week *j*. The firm-specific weekly return can be obtained by using Equation (7) (Hutton et al., 2009).

$$w_{i,j} = ln\left(1 + \varepsilon_{i,j}\right) \tag{7}$$

Then, the negative conditional return skewness (NCSKEW) and down-to-up volatility measure (DUVOL) are constructed based on $w_{i,j}$.

$$\mathrm{NSKEW_{i,t}} = -[\mathrm{n(n-1)^{\frac{3}{2}}}\Sigma w_{i.j}^3/]/\left[(n-1)(n-2)(\Sigma W_{i,t}^2)^{3/2}\right] \tag{8}$$

n represents the number of weekly returns during the year *t*.

The "up" weeks ($n|u$) and "down" weeks ($n|d$) represent the number of weeks that the idiosyncratic return $w_{i,j}$ is respectively larger or smaller than the average annual return $w_{i,t}$.

$$DUVOL_{i,t} = log\left\{\frac{(n_u-1)\sum_{Down} w_{i,j}^2}{n_d-1\sum_{up} w_{i,j}^2}\right\} \tag{9}$$

A higher value of NCSKEW and DUVOL indicates a greater crash risk. DUVOL is better, as it is less likely to be overly influenced by extreme weekly returns (An et al., 2015).

4.3.4. Control variables

We added the set of control variables included in the model used by Chyz and Gaertner (2017), which captures the variables shown in existing literature (Cao et al., 2017; Chyz & Gaertner, 2017; Deng et al., 2019; Guo & Masulis, 2015; Tran et al., 2016; Zhang, 2016). We controlled the following variables in the model: SIGMA, RET, MB, LEV, ROA, SIZE, DTURN, TENURE, STATE, FIRMAGE, DUAL and MA_SCORE. In addition, we also controlled the industries' and years' dummy variables. Details of the variable definitions are shown in Table 3.

Table 3. Variable definitions.

Variables	Notation	Definition
Forced CEO turnover	TO_FORCE	TO_FORCE is a dummy variable that equals 1 when a CEO experiences forced turnover, and 0 otherwise.
Crash risk variables	NCSKEW	The negative coefficient of skewness. See equation (8) for details.
	DUVOL	The down-to-up volatility. Details show in equation (9).
Total risk	TOTAL_RISK	Square root of 252 multiplied by the standard deviation of daily stock returns.
Idiosyncratic risk	IDIOSYNCRATIC_RISK	Square root of 252 multiplied by the standard deviation of daily excess stock returns. Excess return is defined using a CAPM estimated over the previous year.
Systematic risk	SYSTEMATIC_RISK	Square root of 252 multiplied by the standard deviation of beta.
Control variables	SIZE	The natural logarithm of the total assets.
	SIGMA	The standard variation of firm-specific weekly return over *t* years. We include stock volatility (SIGMA) since stocks that are more volatile are more likely to undergo a future price crash.
	LEV	Total liability scaled by total assets.
	ROA	Pretax income divided by total assets.
	BM	The book-to-market ratio equals the firm's book value of equity divided by the market value of equity.
	DTURN	The average monthly share turnover for the current fiscal year is minus the average monthly share turnover for the previous fiscal year.
	RET	The means of firm-specific weekly return over the fiscal year.
	TENURE	The number of years in a CEO position.
	STATE	STATE is a dummy variable that equals 1 if the firm is a state-owned enterprise, and 0 otherwise.
	MA_SCORE	MA_ SCORE is a proxy for managerial ability, taken from (Demerjian, Lev, & McVay, 2012).
	DUAL	Coded "1" if the chairman also holds the position of CEO, and "0" otherwise.
	FIRMAGE	The natural logarithm of one plus years since incorporation.

5. Empirical results

5.1. Descriptive statistics

Table 4 presents the descriptive results, including the mean, standard deviation, minimum, median and maximum dimensions. The means of TOTAL_RISK, IDIOSYNCTRIC_RISK and SYSTEMATIC_RISK were 1.929, 1.707 and 5.684, respectively. The average values of NCSKEW and DUVOL were -0.293 and -0.2, respectively, which are generally consistent with previous studies.

Table 4. Descriptive statistics.

VARIABLES	N	mean	sd	min	p50	max
SIZE	15293	22.09	1.214	19.63	21.92	26.06
SIGMA	15293	0.0630	0.0250	0.0140	0.0580	0.232
LEV	15293	0.414	0.201	0.0570	0.406	0.875
ROA	15293	0.0470	0.0530	−0.191	0.0410	0.210
BM	15293	0.919	0.898	0.100	0.628	5.520
DTURN	15293	−0.179	0.491	−2.090	−0.0950	0.941
RET	15293	0.00300	0.0100	−0.0390	0.00100	0.0750
TENURE	15293	5.285	2.669	1	4.830	15.28
STATE	15293	0.381	0.486	0	0	1
MA SCORE	15293	−0.00300	0.153	−0.674	−0.0210	0.475
DUAL	15293	0.267	0.443	0	0	1
FIRMAGE	15293	2.779	0.358	1.609	2.833	3.434
NCSKEW	15293	−0.293	0.701	−2.369	−0.259	1.546
DUVOL	15293	−0.200	0.482	−1.370	−0.199	0.987
TOTALRISK	15293	1.929	0.300	0.918	1.917	2.862
IDIOSYNCRATICRISK	15293	1.707	0.318	0.737	1.707	2.704
SYSTEMATICRISK	15293	5.684	0.260	4.405	5.713	6.552

This table reports descriptive statistics for full samples. TO_FORCE is a dummy variable that equals 1 when a CEO is fired, and 0 otherwise. The crash risk was measured by using NCSKEW and DUVOL. Details of the variable definitions are provided in Table 3.

5.2. Correlations

Table 5 presents the Pearson correlations of the main variables. Consistent with H1, we found that the crash risk indicators (both NCSKEW and DUVOL) were positive and significantly correlated with forced CEO turnover. It is suggested that crash risk is an important indicator that needs to be considered in the CEO's evaluation. Total risk and idiosyncratic risk were positively and significantly correlated with forced CEO turnover, which is consistent with H2. Systematic risk had a negative and insignificant relationship with forced CEO turnover.

This table reports the Pearson correlation coefficients for the full sample, with p-values reported below each correlation. Details of the variables definitions are shown in Table 3.

Table 5. Correlations.

Pairwise correlations						
Variables	1	2	3	4	5	6
(1) TO_FORCE	1					
(2) NCSKEW	0.466*	1				
(3) DUVOL	0.619*	0.901*	1			
(4) TOTAL_RISK	0.768*	0.341*	0.459*	1		
(5) IDIOSYNCRATIC_RISK	0.752*	0.355*	0.467*	0.962*	1	
(6) SYSTEMATIC_RISK	0.008	−0.052*	−0.037*	0.210*	0.110*	1

Note: *** *p<0.01,* ** *p<0.05,* * *p<0.1.*

5.3. Regression results

Columns (1) and (2) in Table 6 show that the coefficients were positive and significant at 1%, which supports H1. The results for TOTAL_RISK and IDIOSYNCRATIC_RISK shown in Columns (3) and (4) are positive and significant at 1%, which is consistent with H2. The systematic risk presented in Column (5) had no impact on forced CEO turnover, which supports H3.

This table presents the results for the main tests, which examined the effects of risks on forced CEO turnover. The regression coefficients are reported above, while the standard errors are reported below. Note that the single, double and triple asterisks denote statistical significance at the 10%, 5% and 1% levels, respectively, for examining H1, H2 and H3. The results in this table were obtained by applying an LPM with robust standard errors to control firm-level clustering. Details of the variable definitions are shown in Table 3.

Table 7 presents the results for non-SOEs, and Table 8 describes the relationships between forced CEO turnover and various risks in SOEs. We can see that crash risk, total risk and idiosyncratic risk have a more significant and positive relationship with forced CEO turnover in non-SOEs than SOEs, which supports H4 and H5.

Table 6. Impact of various risks on forced CEO turnover.

	(1) TO_FORCE	(2) TO_FORCE	(3) TO_FORCE	(4) TO_FORCE	(5) TO_FORCE
SIZE	−0.0206***	−0.0203***	−0.0206***	−0.0203***	−0.0205***
	(−2.8129)	(−2.7742)	(−2.8003)	(−2.7638)	(−2.7738)
SIGMA	0.3385**	0.3186**	−0.0760	−0.0404	0.2488
	(2.1659)	(2.0508)	(−0.3456)	(−0.1810)	(1.5569)
LEV	0.0054	0.0055	0.0029	0.0020	0.0056
	(0.1900)	(0.1940)	(0.1016)	(0.0710)	(0.1994)
ROA	−0.2658***	−0.2647***	−0.2680***	−0.2698***	−0.2650***
	(−3.4524)	(−3.4363)	(−3.4811)	(−3.5062)	(−3.4378)
BM	0.0070	0.0066	0.0083	0.0082	0.0065
	(0.9577)	(0.9095)	(1.1189)	(1.1077)	(0.8834)
DTURN	−0.0072	−0.0071	−0.0080	−0.0086*	−0.0073
	(−1.4098)	(−1.3904)	(−1.5482)	(−1.6511)	(−1.4184)
RET	−0.9666***	−0.9815***	−0.9737***	−0.9470***	−0.9494***
	(−2.9328)	(−2.9756)	(−2.9481)	(−2.8709)	(−2.8656)
TENURE	0.0044	0.0045	0.0045	0.0045	0.0045
	(1.4897)	(1.4967)	(1.5060)	(1.5019)	(1.5028)
STATE	0.0165	0.0168	0.0163	0.0168	0.0163
	(0.5813)	(0.5916)	(0.5724)	(0.5925)	(0.5735)
MA_SCORE	−0.0370	−0.0371	−0.0365	−0.0371	−0.0365
	(−1.1326)	(−1.1348)	(−1.1172)	(−1.1366)	(−1.1161)
DUAL	−0.0236**	−0.0236**	−0.0235**	−0.0236**	−0.0235**
	(−2.2633)	(−2.2596)	(−2.2510)	(−2.2567)	(−2.2439)
FIRMAGE	−0.0354	−0.0356	−0.0355	−0.0342	−0.0351
	(−0.9762)	(−0.9809)	(−0.9745)	(−0.9395)	(−0.9621)
NCSKEW	0.0097***				
	(2.8567)				
DUVOL		0.0128***			
		(2.6806)			
TOTAL_RISK			0.0411**		
			(2.1166)		
IDIOSYNCRATIC_RISK				0.0301*	
				(1.8807)	
SYSTEMATIC_RISK					0.0010
					(0.0887)
_cons	0.6421***	0.6385***	0.5840**	0.6012**	0.6356**
	(2.6616)	(2.6473)	(2.4063)	(2.4728)	(2.5770)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
N	15293	15293	15293	15293	15293
adj. R^2	0.011	0.011	0.011	0.011	0.010
F	3.5772	3.5552	3.5825	3.5606	3.4654

Note: *t* statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7. Non-SOEs only.

	(1) TO_FORCE	(2) TO_FORCE	(3) TO_FORCE	(4) TO_FORCE	(5) TO_FORCE
SIZE	−0.0085	−0.0082	−0.0084	−0.0085	−0.0079
	(−0.9982)	(−0.9536)	(−0.9747)	(−0.9880)	(−0.9128)
SIGMA	0.4025**	0.3832**	−0.0342	−0.0850	0.3021
	(2.2554)	(2.1516)	(−0.1420)	(−0.3534)	(1.6286)
LEV	−0.0018	−0.0012	−0.0033	−0.0047	−0.0020
	(−0.0552)	(−0.0375)	(−0.1022)	(−0.1457)	(−0.0607)
ROA	−0.2194**	−0.2178**	−0.2194**	−0.2238**	−0.2190**
	(−2.4023)	(−2.3831)	(−2.4031)	(−2.4532)	(−2.3946)
BM	0.0009	0.0006	0.0023	0.0037	0.0004
	(0.0813)	(0.0550)	(0.2010)	(0.3171)	(0.0321)
DTURN	−0.0026	−0.0024	−0.0033	−0.0042	−0.0029
	(−0.4815)	(−0.4535)	(−0.6188)	(−0.7821)	(−0.5357)
RET	−0.4918	−0.5059	−0.4995	−0.4696	−0.4608
	(−1.3296)	(−1.3653)	(−1.3496)	(−1.2666)	(−1.2413)
TENURE	0.0114**	0.0113**	0.0115**	0.0114**	0.0113**
	(2.4069)	(2.4064)	(2.4320)	(2.4225)	(2.3867)
MA_SCORE	−0.0130	−0.0128	−0.0129	−0.0131	−0.0123
	(−0.3539)	(−0.3461)	(−0.3503)	(−0.3565)	(−0.3324)
DUAL	−0.0375***	−0.0374***	−0.0372***	−0.0373***	−0.0374***
	(−2.9538)	(−2.9498)	(−2.9237)	(−2.9304)	(−2.9400)
FIRMAGE	−0.0084	−0.0092	−0.0091	−0.0065	−0.0076
	(−0.2040)	(−0.2239)	(−0.2216)	(−0.1582)	(−0.1835)
NCSKEW	0.0144***				
	(3.6910)				
DUVOL		0.0202***			
		(3.8438)			
TOTAL_RISK			0.0409*		
			(1.8970)		
IDIOSYNCRATIC_RISK				0.0398**	
				(2.2406)	
SYSTEMATIC_RISK					−0.0045
					(−0.3349)
_cons	−0.0615	−0.0626	−0.1235	−0.1153	−0.0562
	(−0.2595)	(−0.2640)	(−0.5033)	(−0.4717)	(−0.2261)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
N	9462	9462	9462	9462	9462
adj. R^2	0.015	0.015	0.013	0.014	0.013

Note: *t* statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

This table reports the results for the effects of risks on forced CEO turnover in non-SOEs. The regression coefficients are reported above, while the standard errors are reported below. The single, double and triple asterisks denote statistical significance at the 10%, 5% and 1% levels, respectively, for examining H4 and H5. The results in this table were obtained by applying an LPM (OLS) with robust standard errors to control for firm-level clustering. Details of the variable definitions are shown in Table 3.

Table 8. SOEs only.

	(1) TO_FORCE	(2) TO_FORCE	(3) TO_FORCE	(4) TO_FORCE	(5) TO_FORCE
SIZE	−0.0301*	−0.0302*	−0.0302*	−0.0299*	−0.0306*
	(−1.9231)	(−1.9290)	(−1.9297)	(−1.9089)	(−1.9384)
SIGMA	0.1851	0.1630	−0.1443	0.0288	0.1223
	(0.5773)	(0.5144)	(−0.3054)	(0.0612)	(0.3784)
LEV	−0.0034	−0.0034	−0.0075	−0.0061	−0.0034
	(−0.0575)	(−0.0570)	(−0.1273)	(−0.1035)	(−0.0579)
ROA	−0.3208**	−0.3205**	−0.3280**	−0.3231**	−0.3240**
	(−2.3060)	(−2.3035)	(−2.3599)	(−2.3235)	(−2.3271)
BM	0.0080	0.0079	0.0093	0.0085	0.0082
	(0.8121)	(0.8027)	(0.9200)	(0.8479)	(0.8226)
DTURN	−0.0163	−0.0164	−0.0171	−0.0171	−0.0157
	(−1.1081)	(−1.1161)	(−1.1619)	(−1.1546)	(−1.0616)
RET	−1.9948***	−1.9885***	−1.9942***	−1.9903***	−1.9900***
	(−2.8940)	(−2.8907)	(−2.8944)	(−2.8888)	(−2.8830)
TENURE	−0.0015	−0.0015	−0.0016	−0.0015	−0.0016
	(−0.3810)	(−0.3770)	(−0.3940)	(−0.3835)	(−0.3876)
MA_SCORE	−0.0920	−0.0918	−0.0903	−0.0916	−0.0906
	(−1.5310)	(−1.5278)	(−1.5009)	(−1.5257)	(−1.5026)
DUAL	0.0130	0.0130	0.0125	0.0128	0.0129
	(0.6733)	(0.6755)	(0.6506)	(0.6652)	(0.6667)
FIRMAGE	−0.0048	−0.0044	−0.0081	−0.0066	−0.0046
	(−0.0606)	(−0.0550)	(−0.1009)	(−0.0822)	(−0.0573)
NCSKEW	0.0015				
	(0.2278)				
DUVOL		−0.0013			
		(−0.1415)			
TOTAL_RISK			0.0368		
			(0.9616)		
IDIOSYNCRATIC_RISK				0.0133	
				(0.4488)	
SYSTEMATIC_RISK					0.0116
					(0.5049)
_cons	1.0354**	1.0373**	0.9945**	1.0224**	0.9846**
	(2.4845)	(2.4874)	(2.4001)	(2.4508)	(2.3419)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
N	5831	5831	5831	5831	5831
adj. R^2	0.013	0.013	0.013	0.013	0.013

Note: *t* statistics in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

This table reports the results for the effects of risks on forced CEO turnover in SOEs. The regression coefficients are reported above, while the standard errors are reported below. The single, double and triple asterisks denote statistical significance at the 10%, 5% and 1% levels, respectively, for examining H4 and H5. The results in this table were obtained by applying an LPM (OLS) with robust standard errors to control for firm-level clustering. Details of the variable definitions are shown in Table 3.

The R-squared realizations are low in Table 6, suggesting limited explanatory power. However, according to Brickley (2003), a low R is very common in the CEO turnover literature.

6. Robustness

In this section, we describe a series of additional tests that were performed to ensure the robustness of the results in Table 6.

6.1. Falsification tests

In accordance with Chyz and Gaertner (2017), Table 9 reports the falsification tests to support the primary results in Table 6. We reassessed the main test by replacing the forced CEO replacement with normal CEO turnover (L_UNFORCE). Table 2 shows the 1989 normal CEO turnover events. Normal CEO departures are unrelated to the deliberate action of the board (Fee et al., 2013). The coefficient between risks and turnover is negative and insignificant, which supports the H1, H2 and H3. This is because risks are not positively related to non-forced turnover.

Table 9. Falsification tests.

	(1) NORMAL	(2) NORMAL	(3) NORMAL	(4) NORMAL	(5) NORMAL
SIZE	0.0098	0.0096	0.0097	0.0096	0.0098
	(1.0369)	(1.0150)	(1.0259)	(1.0179)	(1.0457)
SIGMA	0.3298	0.3471*	0.4355	0.4760	0.4158*
	(1.6163)	(1.7079)	(1.4249)	(1.5933)	(1.9440)
LEV	0.0004	0.0003	0.0006	0.0013	−0.0001
	(0.0120)	(0.0095)	(0.0181)	(0.0376)	(−0.0016)
ROA	−0.2289***	−0.2297***	−0.2290***	−0.2280***	−0.2298***
	(−2.7554)	(−2.7648)	(−2.7580)	(−2.7454)	(−2.7672)
BM	−0.0055	−0.0053	−0.0054	−0.0057	−0.0052
	(−0.7602)	(−0.7258)	(−0.7387)	(−0.7773)	(−0.7145)
DTURN	−0.0035	−0.0036	−0.0033	−0.0031	−0.0037
	(−0.5094)	(−0.5177)	(−0.4851)	(−0.4444)	(−0.5277)
RET	−0.2399	−0.2308	−0.2500	−0.2537	−0.2424
	(−0.5254)	(−0.5053)	(−0.5478)	(−0.5551)	(−0.5314)
TENURE	0.0003	0.0003	0.0003	0.0003	0.0003
	(0.0932)	(0.0895)	(0.0846)	(0.0849)	(0.0846)
STATE	0.0288	0.0286	0.0289	0.0288	0.0292
	(0.7914)	(0.7861)	(0.7952)	(0.7909)	(0.8005)

Continued on next page

	(1) NORMAL	(2) NORMAL	(3) NORMAL	(4) NORMAL	(5) NORMAL
MA_SCORE	−0.0208	−0.0207	−0.0211	−0.0209	−0.0213
	(−0.5401)	(−0.5387)	(−0.5481)	(−0.5436)	(−0.5530)
DUAL	0.1364***	0.1363***	0.1363***	0.1363***	0.1362***
	(9.6073)	(9.6064)	(9.6040)	(9.6069)	(9.6001)
FIRMAGE	−0.0061	−0.0059	−0.0063	−0.0066	−0.0057
	(−0.1427)	(−0.1399)	(−0.1491)	(−0.1561)	(−0.1350)
NCSKEW	−0.0069				
	(−1.6030)				
DUVOL		−0.0085			
		(−1.3819)			
TOTAL_RISK			−0.0056		
			(−0.2114)		
IDIOSYNCRATIC_RISK				−0.0087	
				(−0.4160)	
SYSTEMATIC_RISK					−0.0063
					(−0.4312)
_cons	−0.3998*	−0.3973*	−0.3909*	−0.3872*	−0.3705
	(−1.7342)	(−1.7237)	(−1.6568)	(−1.6584)	(−1.5159)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
N	15293	15293	15293	15293	15293
adj. R^2	0.015	0.015	0.015	0.015	0.015
F	14.1946	14.4705	16.0331	15.5541	15.7870

6.2. Logit model

We also tested the relationship between various risks and forced CEO turnover by using a logit model for robustness, which is consistent with the LPM. This paper findings are in line with Bushman et al. (2010), who believes that idiosyncratic risk increases the probability of CEO turnover.

This table shows the results of applying the Logit model for robustness tests.

Table 10. Robustness tests.

ROBUSTNESS TESTS	NCSKEW	DUVOL	IDIOSYNCRATIC_RISK	SYSTEMATIC_RISK
(1) LOGIT MODEL	0.1633***	0.2533***	0.3970***	−0.2241
WITH FULL SAMPLE	(3.2425)	(3.4487)	(1.087)	(−1.4905)
(2) LOGIT MODEL	0.3097***	0.4820***	0.9291***	−0.3897*
WITH NONSOEs	(4.2866)	(4.5376)	(2.5215)	(−1.08131)
(3) LOGIT MODEL	0.0084	0.0160	0.1154	−0.0202
WITH SOEs	(0.1169)	(0.1540)	(0.3696)	(−0.0897)

Note: *t statistics in parentheses; * p < 0.1, ** p < 0.05, *** p < 0.01*

6.3. Changes in risks following forced turnover

In accordance with Chyz and Gaertner (2017), we also conducted an analysis of the impact of forced CEO turnover on future risks (Table 11). If high risks played an important role in the CEOs firing, we expected these trends to be reversed after turnover, corresponding to a negative relationship between forced CEO turnover and future risks. Table 11 shows the results, the negative relationship between forced CEO turnover and future crash risks, although the results are not significant. Total risks and idiosyncratic risks also have negative influences after CEO turnover, suggesting that these firms that have experienced a CEO turnover appeared to decrease risks.

Table 11. Risks changes after forced CEO turnover.

	(1)	(2)	(3)	(4)	(5)
	NCSKEW	DUVOL	TOTAL_RISK	IDIOSYNCRATIC_RISK	SYSTEMATIC_RISK
TO_FORCE	−0.0152	−0.0163	−0.0026	0.0021	−0.0144
	(−0.4611)	(−0.7192)	(−0.2977)	(0.1926)	(−1.4278)
SIZE	0.1588***	0.0854***	−0.0376***	−0.0758***	0.0285***
	(5.6599)	(4.6292)	(−4.6794)	(−7.6264)	(2.6312)
SIGMA	2.0175***	1.1086***	−1.2632***	−1.7106***	−0.3859**
	(3.6629)	(3.0741)	(−9.6405)	(−10.5275)	(−2.2537)
LEV	−0.1679*	−0.0964	0.0661**	0.0828**	0.0612*
	(−1.7569)	(−1.5412)	(2.4190)	(2.4396)	(1.9376)
ROA	0.6625***	0.4593***	−0.3248***	−0.4325***	−0.2501***
	(2.6515)	(2.6464)	(−4.8708)	(−5.2035)	(−2.9529)
BM	−0.1048***	−0.0560***	0.0161**	0.0356***	−0.0175**
	(−4.4979)	(−3.4439)	(2.5389)	(4.5396)	(−2.1351)
DTURN	−0.0235	−0.0062	0.0017	0.0067	0.0096
	(−1.1642)	(−0.4631)	(0.3338)	(1.1178)	(1.6263)
RET	16.5199***	10.7765***	1.6557***	1.4112***	1.1934***
	(14.6764)	(14.0372)	(6.2946)	(4.1993)	(3.5226)
TENURE	0.0186**	0.0128**	−0.0011	−0.0008	−0.0005
	(1.9686)	(2.1461)	(−0.4440)	(−0.2555)	(−0.1816)
STATE	0.1625*	0.0738	−0.0078	−0.0095	−0.0061
	(1.8720)	(1.3288)	(−0.2791)	(−0.2773)	(−0.2781)
MA_SCORE	0.0936	0.0742	0.0315	0.0595	0.0037
	(0.8035)	(0.9598)	(1.0613)	(1.5673)	(0.1090)
DUAL	0.0365	0.0245	−0.0007	0.0015	−0.0001
	(1.1051)	(1.1638)	(−0.0859)	(0.1470)	(−0.0049)
FIRMAGE	−0.0666	−0.0432	−0.0204	−0.0141	−0.0399
	(−0.4852)	(−0.4847)	(−0.4978)	(−0.2767)	(−0.8242)
_cons	−3.8474***	−2.0051***	2.7015***	3.2556***	5.1557***
	(−5.3048)	(−4.0166)	(12.2963)	(11.7379)	(16.6635)
Industry	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
N	11615	11615	11615	11615	11615
adj. R^2	0.067	0.067	0.690	0.479	0.253

This table describes the impact of forced CEO turnover on future risks.

6.4. Pay-for-performance sensitivity and CEO turnover

In accordance with Bushman (2010), we also conducted an analysis of the pay-for-performance sensitivity (PPS) and CEO turnover (Table 12). The results show that the PPS increased for idiosyncratic risk and had no impact on systematic risk, which is consistent with the information content on the performance with respect to the CEO's talent.

Table 12. PPS and CEO turnover.

	(1) TO_FORCE	(2) DUVOL	(3) TOTAL_RISK	(4) IDIOSYNCRATIC_RISK	(5) SYSTEMATIC_RISK	(6) NCSKEW
PPS	−0.0004	0.0003	0.0005***	0.0011***	−0.0010	−0.0006
	(−0.7388)	(0.1276)	(2.6251)	(8.0919)	(−1.2367)	(−0.2635)
SIZE	−0.0213**	−0.0151	0.0057	−0.0064	0.0358***	0.0235
	(−2.5102)	(−0.9321)	(1.4274)	(−1.1523)	(4.2166)	(0.9672)
SIGMA	0.1342	−5.4879***	8.0653***	9.8074***	4.0147***	−9.6477***
	(0.7237)	(−14.2046)	(57.5344)	(56.5623)	(21.6235)	(−16.3990)
LEV	0.0176	0.0247	0.0779***	0.1343***	−0.0450	0.0685
	(0.5533)	(0.4065)	(5.0359)	(6.5434)	(−1.5881)	(0.7639)
ROA	−0.2973***	0.1393	0.1016***	0.1859***	−0.0392	0.3518*
	(−3.4871)	(0.9711)	(2.9578)	(4.1734)	(−0.5967)	(1.6723)
BM	0.0039	−0.0135	−0.0453***	−0.0573***	−0.0132**	−0.0577***
	(0.4824)	(−1.0406)	(−13.6330)	(−11.4529)	(−2.3045)	(−2.9903)
DTURN	−0.0105	−0.0174	0.0315***	0.0716***	−0.0322***	0.0059
	(−1.3204)	(−1.0761)	(8.1931)	(13.8361)	(−4.9749)	(0.2452)
RET	−1.2107***	2.9723***	0.4497***	−0.1789	1.1451***	2.1557**
	(−3.0589)	(3.9086)	(2.6292)	(−0.8001)	(3.7063)	(2.0000)
TENURE	0.0048	0.0027	−0.0005	−0.0002	−0.0003	0.0045
	(1.5248)	(0.4444)	(−0.3720)	(−0.1213)	(−0.1426)	(0.4838)
STATE	0.0106	−0.0276	0.0053	−0.0147	0.0479**	−0.0046
	(0.3754)	(−0.5240)	(0.4507)	(−0.9430)	(2.5402)	(−0.0597)
MA_SCORE	−0.0413	−0.0082	−0.0068	0.0179	−0.0441	−0.0369
	(−1.1881)	(−0.1213)	(−0.4280)	(0.8331)	(−1.3518)	(−0.3839)
DUAL	−0.0295**	0.0115	0.0016	0.0063	−0.0054	0.0214
	(−2.4699)	(0.6078)	(0.3493)	(1.0079)	(−0.5897)	(0.7395)
FIRMAGE	−0.0650*	0.0929	0.0052	−0.0377	0.1058***	0.0578
	(−1.6783)	(1.1480)	(0.2508)	(−1.3103)	(2.6316)	(0.4764)
_cons	0.9837***	0.4834	1.3714***	1.4104***	4.2456***	0.1207
	(3.4956)	(1.1413)	(13.5099)	(10.8419)	(19.7581)	(0.1952)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
N	10894	10894	10894	10894	10894	10894
adj. R^2	0.012	0.089	0.866	0.772	0.304	0.093

6.5. Adding other control variables

Because the director's responsibility is to appoint and evaluate the CEO's talent (Bushman et al., 2010), we also controlled the Board (i.e., natural logarithm of the total number of directors on the board) and Indep variables (i.e., ratio of the number of independent directors to the total number of directors on the board). The results shown in Table 13 are still consistent.

Table 13. Results of adding other control variables.

	(1) TO_FORCE	(2) TO_FORCE	(3) TO_FORCE	(4) TO_FORCE	(5) TO_FORCE
Size	0.0132	0.0139	0.0145	0.0164*	0.0141
	(1.4370)	(1.5204)	(1.5927)	(1.7957)	(1.5301)
Sigma	0.0617	0.0652	−0.3890**	−0.2600	0.0678
	(0.3327)	(0.3515)	(−2.1129)	(−1.4070)	(0.3625)
Ret	1.0439***	1.3257***	−1.7165***	−1.9394***	0.7308*
	(2.6394)	(3.3538)	(−4.2311)	(−4.6312)	(1.8696)
SR	−0.1407***	−0.1359***	−0.1347***	−0.1386***	−0.1448***
	(−2.7135)	(−2.6312)	(−2.6014)	(−2.6833)	(−2.7859)
Dturn	0.0108*	0.0108*	0.0084	0.0107*	0.0104*
	(1.7972)	(1.8058)	(1.4197)	(1.8132)	(1.7289)
Dual	−0.0493***	−0.0494***	−0.0496***	−0.0493***	−0.0488***
	(−4.0747)	(−4.0995)	(−4.1488)	(−4.1085)	(−4.0306)
AR	−0.0018	−0.0038	−0.0256***	−0.0262***	0.0014
	(−0.2474)	(−0.5265)	(−3.5343)	(−3.5855)	(0.1916)
ROA	−0.1166	−0.1140	0.0065	0.0083	−0.1202
	(−1.3333)	(−1.3063)	(0.0745)	(0.0943)	(−1.3729)
FirmAge	−0.0671	−0.0665	−0.0537	−0.0510	−0.0698
	(−1.5424)	(−1.5262)	(−1.2486)	(−1.1771)	(−1.6079)
BM	0.0150*	0.0152*	0.0211***	0.0197**	0.0139*
	(1.8402)	(1.8579)	(2.6553)	(2.4526)	(1.7067)
LEV	−0.0439	−0.0425	−0.0609*	−0.0643**	−0.0460
	(−1.4018)	(−1.3565)	(−1.9597)	(−2.0643)	(−1.4684)
tenure	0.0214***	0.0214***	0.0201***	0.0206***	0.0213***
	(3.2053)	(3.2147)	(3.0898)	(3.1424)	(3.1885)
MA_Score	0.0436	0.0427	0.0418	0.0380	0.0452
	(1.1136)	(1.0940)	(1.0882)	(0.9817)	(1.1536)
Board	−0.0077	−0.0089	0.0016	0.0009	−0.0066
	(−0.2426)	(−0.2784)	(0.0507)	(0.0271)	(−0.2069)
Indep	−0.1139	−0.1167	−0.0940	−0.0949	−0.1130
	(−1.2493)	(−1.2791)	(−1.0530)	(−1.0568)	(−1.2368)
NCSKEW	0.0146***				
	(3.8724)				
DUVOL		0.0361***			
		(6.2354)			

Continued on next page

	(1) TO_FORCE	(2) TO_FORCE	(3) TO_FORCE	(4) TO_FORCE	(5) TO_FORCE
TOTAL_RISK			0.3141***		
			(17.7896)		
IDIOSYNCRATIC_RISK				0.2211***	
				(15.4135)	
SYSTEMATIC_RISK					0.0028
					(0.2104)
_cons	−0.0425	−0.0536	−0.6996***	−0.5309**	−0.0770
	(−0.1801)	(−0.2275)	(−2.9667)	(−2.2520)	(−0.3143)
Year	Yes	Yes	Yes	Yes	Yes
N	15293	15293	15293	15293	15293
adj. R^2	0.012	0.014	0.042	0.033	0.010
F	5.2015	6.2106	17.3095	14.1930	4.6005

Note: *t* statistics in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

6.6. CEO turnover and risk-taking

As was done by Chakraborty et al. (2007), we determined the negative relationship between termination risk and risk-taking. We also evaluated it (Table 14). In accordance with (Zhou et al., 2022), Risk 1 is defined as the volatility of a firm's ROA over 3-year overlapping periods. Risk 2 is the difference between maximum and minimum ROAs over 3-year overlapping periods. Columns (1) and (2) show the full sample results, Columns (3) and (4) represent the relationship in SOEs and Columns (5) and (6) present the relationship in non-SOEs. The results show that the firms that experienced CEO turnover tended to reduce risk-taking, which is also significant in non-SOEs.

Table 14. CEO turnover and risk-taking.

	(1) Risk1	(2) Risk2	(3) Risk1	(4) Risk2	(5) Risk1	(6) Risk2
TO_FORCE	−0.0027**	−0.0045*	0.0001	0.0006	−0.0038**	−0.0083*
	(−2.5596)	(−1.7459)	(0.0765)	(0.2514)	(−1.9696)	(−1.7860)
Size	0.0089***	0.0206***	−0.0008	−0.0029	0.0137***	0.0320***
	(3.5792)	(3.4831)	(−0.2736)	(−0.4287)	(3.7558)	(3.6914)
Sigma	0.1078***	0.2497***	0.0676**	0.1429*	0.0792*	0.1887*
	(3.3131)	(3.2488)	(2.0417)	(1.7559)	(1.8470)	(1.8760)
Ret	0.0492	0.0977	0.0673	0.1268	0.0731	0.1654
	(0.9713)	(0.8118)	(1.1982)	(0.9140)	(0.9665)	(0.9248)
SR	−0.0214**	−0.0507**	−0.2156	−0.5231	−0.0169	−0.0402*
	(−2.0848)	(−2.0942)	(−1.3043)	(−1.3091)	(−1.6380)	(−1.6543)
Dturn	0.0000	0.0002	−0.0014	−0.0030	0.0001	0.0003
	(0.0204)	(0.1094)	(−1.1200)	(−0.9577)	(0.1068)	(0.1221)
Dual	0.0016	0.0043	0.0019	0.0044	0.0017	0.0046
	(0.9828)	(1.0865)	(0.9618)	(0.9263)	(0.7742)	(0.8878)

Continued on next page

	(1) Risk1	(2) Risk2	(3) Risk1	(4) Risk2	(5) Risk1	(6) Risk2
AR	0.0005	0.0013	0.0006	0.0020	0.0004	0.0009
	(0.6868)	(0.7320)	(0.7468)	(0.9360)	(0.4024)	(0.3641)
ROA	−0.0160	−0.0367	−0.0026	−0.0086	−0.0205	−0.0454
	(−0.9955)	(−0.9510)	(−0.1258)	(−0.1728)	(−0.8982)	(−0.8289)
FirmAge	0.0070	0.0128	−0.0186	−0.0475*	−0.0039	−0.0145
	(0.6933)	(0.5258)	(−1.6276)	(−1.7534)	(−0.2921)	(−0.4487)
BM	−0.0030**	−0.0075**	−0.0001	−0.0004	−0.0101***	−0.0245***
	(−2.1021)	(−2.1127)	(−0.1088)	(−0.1573)	(−2.7554)	(−2.7764)
LEV	0.0090	0.0241	0.0113	0.0288	0.0027	0.0102
	(1.1973)	(1.3386)	(1.3512)	(1.4078)	(0.2568)	(0.4070)
tenure	0.0009*	0.0022*	0.0005	0.0012	0.0017	0.0040
	(1.8971)	(1.8847)	(1.5180)	(1.5655)	(1.5201)	(1.5522)
MA_Score	0.0081	0.0171	0.0145*	0.0322	−0.0027	−0.0085
	(1.0337)	(0.8930)	(1.7348)	(1.5937)	(−0.2320)	(−0.2971)
Board	0.0022	0.0026	−0.0073	−0.0188	0.0105	0.0214
	(0.3566)	(0.1749)	(−1.1480)	(−1.2365)	(1.0904)	(0.9605)
Indep	0.0207	0.0427	0.0135	0.0268	0.0303	0.0642
	(1.3783)	(1.1924)	(0.7712)	(0.6357)	(1.2976)	(1.1636)
_cons	−0.1975***	−0.4360***	0.1062	0.2923*	−0.2783***	−0.6245***
	(−3.1182)	(−2.8841)	(1.4957)	(1.7304)	(−3.1117)	(−2.9214)
Year	Yes	Yes	Yes	Yes	Yes	Yes
N	10181	10181	4143	4143	6038	6038
adj. R^2	0.104	0.103	0.048	0.048	0.144	0.145
F	12.4625	12.7189	3.7606	3.8746	11.0848	11.2721

Note: *t* statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

7. Conclusions

Previous studies have extensively investigated the factors that lead to CEO turnover. Few studies analyzed the impact of risks on forced CEO turnover. This work fills this gap and investigated the relationship using Chinese data. We found that the crash risk significantly increases the likelihood of forced CEO turnover. We also discovered that the total risk and idiosyncratic risk increase the possibility of forced CEO turnover, while the systematic risk has no effect on forced CEO turnover. The impact of risks on forced CEO turnover is more significant in non-SOEs than in SOEs. These findings can practically influence the boards, which can help them to evaluate the top managers' ability and competence.

Conflict of interest

The author declares no conflicts of interest in this research.

References

Abu-Ghunmi D, Bino A, Tayeh M (2015) Idiosyncratic Risk and Corporate Governance: Evidence from Jordan. *Emerg Mark Financ Tr* 51: S40–S50. https://doi.org/10.1080/1540496X.2015.1026717

Adams R (2005) Powerful CEOs and Their Impact on Corporate Performance. *Rev Financ Stud* 18: 1403–1432. https://doi.org/10.1093/rfs/hhi030

Aharony J, Liu C, Yawson A (2015) Corporate litigation and executive turnover. *J Corp Financ* 34: 268–292. https://doi.org/10.1016/j.jcorpfin.2015.07.009

Alon I, Wang H, Shen J, et al. (2014) Chinese state-owned enterprises go global. *J Bus Strat* 35: 3–18. https://doi.org/10.1108/JBS-12-2013-0118

Andreou PC, Antoniou C, Horton J, et al. (2016) Corporate Governance and Firm-specific Stock Price Crashes. *Eur Financ Manage* 22: 916–956. https://doi.org/10.1111/eufm.12084

Andreou PC, Louca C, Petrou AP (2017) CEO Age and Stock Price Crash Risk. *Rev Financ* 21: 1287–1325. https://doi.org/10.1093/rof/rfw056

Ang A, Hodrick R, Xing Y, et al. (2008) High idiosyncratic volatility and low returns: International and further U.S. evidence. *J Financ Econ* 91: 1–23. https://doi.org/10.3386/w13739

Angeletos GM (2007) Uninsured idiosyncratic investment risk and aggregate saving. *Rev Econ Dyn* 10: 1–30. https://doi.org/10.1016/j.red.2006.11.001

An Z, Li DH, Yu J (2015) Firm crash risk, information environment, and speed of leverage adjustment. *J Corp Financ* 31: 132–151. https://doi.org/10.1016/j.jcorpfin.2015.01.015

Bali TG, Cakici N (2008) Idiosyncratic volatility and the cross section of expected returns. *J Financ Quant Anal* 43: 29–58. https://doi.org/10.1017/S002210900000274X

Bansal P, Clelland I (2004) Talking trash: Legitimacy, impression management, and unsystematic risk in the context of the natural environment. *Acad Manage J* 47: 93–103. https://doi.org/10.2307/20159562

Bartram SM, Brown G, Stulz RM (2012) Why Are U.S. Stocks More Volatile? *J Financ* 67: 1329–1370. https://doi.org/10.1111/j.1540-6261.2012.01749.x

Bartram SM, Brown GW, Conrad J (2011) The Effects of Derivatives on Firm Risk and Value. *J Financ Quant Anal* 46: 967–999. https://doi.org/10.1017/S0022109011000275

Beatty RP, Ritter JR (1986) Investment Banking, Reputation, and the Underpricing of Initial Public Offerings. *J Financ Econ* 15: 213–232. https://doi.org/10.1016/0304-405x(86)90055-3

Benmelech E, Kandel E, Veronesi P (2010) Stock-Based Compensation and Ceo (Dis)Incentives. *Q J Econ* 125: 1769–1820. https://doi.org/10.1162/qjec.2010.125.4.1769

Bernard Y, Godard L, Zouaoui M (2016) The Effect of CEOs' Turnover on the Corporate Sustainability Performance of French Firms. *J Bus Ethics* 150: 1049–1069. https://doi.org/10.1007/s10551-016-3178-7

Bernile G, Bhagwat V, Yonker S (2018) Board diversity, firm risk, and corporate policies. *J Financ Econ* 127: 588–612. https://doi.org/10.1016/j.jfineco.2017.12.009

Brandt MW, Brav A, Graham JR, et al. (2010) The Idiosyncratic Volatility Puzzle: Time Trend or Speculative Episodes? *Re Financ Stud* 23: 863–899. https://doi.org/10.1093/rfs/hhp087

Brickley JA (2003) Empirical research on CEO turnover and firm-performance: a discussion. *J Account Econ* 36: 227–233. https://doi.org/10.1016/j.jacceco.2003.09.003

Boyd JH, De Nicolo G (2005) The theory of bank risk taking and competition revisited. *J Financ* 60: 1329–1343. https://doi.org/10.1111/j.1540-6261.2005.00763.x

Brown G, Kapadia N (2007) Firm-specific risk and equity market development. *J Financ Econ* 84: 358–388. https://doi.org/10.1016/j.jfineco.2006.03.003

Bushman R, Dai ZL, Wang X (2010) Risk and CEO turnover. *J Financ Econ* 96: 381–398. https://doi.org/10.1016/j.jfineco.2010.03.001

Cai X, Jiang F, Kang JK (2019) Remote Board Meetings and Board Monitoring Effectiveness: Evidence from China. *SSRN Electron J.* https://doi.org/10.2139/ssrn.3450328

Callen JL, & Fang XH (2015) Religion and Stock Price Crash Risk. *J Financ Quant Anal* 50: 169–195. https://doi.org/10.1017/S0022109015000046

Campbell JY, Lettau M, Malkiel BG, et al. (2001) Have Individual Stocks Become More Volatile? An Empirical Exploration of Idiosyncratic Risk. *J Financ* 56: 1–43. https://doi.org/10.1111/0022-1082.00318

Campbell JY, Taksler GB (2003) Equity volatility and corporate bond yields. *J Financ* 58: 2321–2349. https://doi.org/10.1046/j.1540-6261.2003.00607.x

Cao XP, Pan XF, Qian MJ, et al. (2017) Political capital and CEO entrenchment: Evidence from CEO turnover in Chinese non-SOEs. *J Corp Financ* 42: 1–14. https://doi.org/10.1016/j.jcorpfin.2016.11.003

Chakraborty A, Sheikh S, Subramanian N (2007) Termination risk and managerial risk taking. *J Corp Financ* 13: 170–188. https://doi.org/10.1016/j.jcorpfin.2006.04.001

Chang EC, Wong SML (2009) Governance with multiple objectives: Evidence from top executive turnover in China. *J Corp Financ* 15: 230–244. https://doi.org/10.1016/j.jcorpfin.2008.10.003

Chen CL, Kim JB, Yao L (2017) Earnings smoothing: Does it exacerbate or constrain stock price crash risk? *J Corp Financ* 42: 36–54. https://doi.org/10.1016/j.jcorpfin.2016.11.004

Chen H, Miao JJ, Wang N (2010) Entrepreneurial Finance and Nondiversifiable Risk. *Rev Financ Stud* 23: 4348–4388. https://doi.org/10.1093/rfs/hhq122

Chen Z, Petkova R (2010) Does Idiosyncratic Volatility Proxy for Risk Exposure? *SSRN Electron J* 25: 2745–2787. https://doi.org/10.2139/ssrn.1572895

Child J, Tse DK (2001) China's transition and its implications for international business. *J Int Bus Stud* 32: 5–21. https://doi.org/10.1057/palgrave.jibs.8490935

Chung HH, Wynn JP (2008) Managerial legal liability coverage and earnings conservatism. *J Account Econ* 46: 135–153. https://doi.org/10.1016/j.jacceco.2008.03.002

Chyz JA, Gaertner FB (2017) Can Paying "Too Much" or "Too Little" Tax Contribute to Forced CEO Turnover? *Account Rev* 93: 103–130. https://doi.org/10.2308/accr-51767

Clayton MC, Hartzell JC, Rosenberg J (2005) The impact of CEO turnover on equity volatility. *J Bus* 78: 1779–1808. https://doi.org/10.1086/431442

Datta S, Iskandar-Datta M, Singh V (2017) The impact of idiosyncratic risk on accrual management. *Int J Managerial Financ* 13: 70–90. https://doi.org/10.1108/ijmf-01-2016-0013

Demerjian P, Lev B, McVay S (2012) Quantifying Managerial Ability: A New Measure and Validity Tests. *Manage Scienc* 58: 1229–1248. https://doi.org/10.1287/mnsc.1110.1487

Deng SY, Intintoli VJ, Zhang A (2019) CEO Turnover, Information Uncertainty, and Debt Contracting. *Q J Financ* 9. https://doi.org/10.1142/S2010139219500010

Dewatripont M, Maskin E (1995) Credit and Efficiency in Centralized and Decentralized Economies. *Rev Econ Stud* 62: 541–555. https://doi.org/10.2307/2298076

Dumitrescu A, Zakriya M (2021) Stakeholders and the stock price crash risk: What matters in corporate social performance? *J Corp Financ* 67. https://doi.org/10.1016/j.jcorpfin.2020.101871

Farrell KA, Whidbee DA (2002) Monitoring by the financial press and forced CEO turnover. *J Bank Financ* 26: 2249–2276. https://doi.org/10.1016/S0378-4266(01)00183-2

Fee CE, Hadlock CJ, Huang J, et al. (2018) Robust Models of CEO Turnover: New Evidence on Relative Performance Evaluation. *Rev Corp Financ Stud* 7: 70–100. https://doi.org/10.1093/rcfs/cfx018

Fee CE, Hadlock CJ, Pierce JR (2013) Managers with and without Style: Evidence Using Exogenous Variation. *Rev Financ Stud* 26: 567–601. https://doi.org/10.1093/rfs/hhs131

Ferreira MA, Laux PA (2007) Corporate governance, idiosyncratic risk, and information flow. *J Financ* 62: 951–989. https://doi.org/10.1111/j.1540-6261.2007.01228.x

Firth M, Fung PMY, Rui OM (2006) Firm performance, governance structure, and top management turnover in a transitional economy. *J Manage Stud* 43: 1289–1330. https://doi.org/10.1111/j.1467-6486.2006.00621.x

Fisman RJ, Khurana R, Rhodes-Kropf M, et al. (2014) Governance and CEO Turnover: Do Something or Do the Right Thing? *Manage Sci* 60: 319–337. https://doi.org/10.1287/mnsc.2013.1759

Fu FJ (2009) Idiosyncratic risk and the cross-section of expected stock returns. *J Financ Econ* 91: 24–37. https://doi.org/10.1016/j.jfineco.2008.02.003

Gerlach R, Obaydin I, Zurbruegg R (2015) The impact of leverage on the idiosyncratic risk and return relationship of REITs around the financial crisis. *Int Rev Econ Financ* 38: 207–219. https://doi.org/10.1016/j.iref.2015.02.029

Goel AM, Thakor AV (2008) Overconfidence, CEO Selection, and Corporate Governance. *J Financ* 63: 2737–2784. https://doi.org/10.1111/j.1540-6261.2008.01412.x

Gormley TA, Matsa DA (2016) Playing it safe? Managerial preferences, risk, and agency conflicts. *J Financ Econ* 122: 431–455 https://doi.org/10.1016/j.jfineco.2016.08.002

Goyal A, Santa-Clara P (2003) Idiosyncratic risk matters! *J Financ* 58: 975–1007. https://doi.org/10.1111/1540-6261.00555

Guo LX, Masulis RW (2015) Board Structure and Monitoring: New Evidence from CEO Turnovers. *Rev Financ Stud* 28: 2770–2811. https://doi.org/10.1093/rfs/hhv038

Habib A, Hasan MM, Jiang HY (2018) Stock price crash risk: review of the empirical literature. *Account Financ* 58: 211–251. https://doi.org/10.1111/acfi.12278

Haß LH, Vergauwe S, Zhang Z (2017) State-ownership and bank loan contracting: evidence from corporate fraud. *Eur J Financ* 25: 550–567. https://doi.org/10.1080/1351847x.2017.1328454

Huang CW, Ho PH, Lin CY, Yen JF (2014) Firm age, idiosyncratic risk, and long-run SEO underperformance. *Int Rev Econ Financ* 34: 246–266. https://doi.org/10.1016/j.iref.2014.08.009

Huson MR, Malatesta PH, Parrino R (2004) Managerial succession and firm performance. *J Financ Econ* 74: 237–275. https://doi.org/10.1016/j.jfineco.2003.08.002

Hutton AP, Marcus AJ, Tehranian H (2009) Opaque financial reports, R2, and crash risk. *J Financ Econ* 94: 67–86. https://doi.org/10.1016/j.jfineco.2008.10.003

Irvine PJ, Pontiff J (2009) Idiosyncratic Return Volatility, Cash Flows, and Product Market Competition. *Rev Financ Stud* 22: 1149–1177. https://doi.org/10.1093/rfs/hhn039

Jensen MC, Meckling WH (1976) Theory of the firm: Managerial behavior, agency costs and ownership structure. *J Financ Econ* 3: 305–360. https://doi.org/10.1016/0304-405x(76)90026-x

Jenter D, Kanaan F (2015) CEO Turnover and Relative Performance Evaluation. *J Financ* 70: 2155–2184. https://doi.org/10.1111/jofi.12282

Jenter D, Lewellen K (2021) Performance-Induced CEO Turnover. *Rev Financ Stud* 34: 569–617. https://doi.org/10.1093/rfs/hhaa069

Jin L, Myers S (2006) R2 around the world: New theory and new tests. *J Financ Econ* 79: 257–292. https://doi.org/10.1016/j.jfineco.2004.11.003

John K, Litov L, Yeung B (2008) Corporate governance and risk-taking. *J Financ* 63: 1679–1728. https://doi.org/10.1111/j.1540-6261.2008.01372.x

Kato T, Long C (2006) CEO turnover, firm performance, and enterprise reform in China: Evidence from micro data. *J Comp Econ* 34: 796-817. https://doi.org/10.1016/j.jce.2006.08.002

Kim, J. B., Li, Y. H., & Zhang, L. D. (2011a). CFOs versus CEOs: Equity incentives and crashes. *Journal of Financial Economics, 101*(3), 713-730. doi:10.1016/j.jfineco.2011.03.013

Kim JB, Li YH, Zhang LD (2011b) Corporate tax avoidance and stock price crash risk: Firm-level analysis. *J Financ Econ* 100: 639–662. https://doi.org/10.1016/j.jfineco.2010.07.007

Kim JB, Wang Z, Zhang LD (2016) CEO Overconfidence and Stock Price Crash Risk. *Contemp Account Res* 33: 1720–1749. https://doi.org/10.1111/1911-3846.12217

Kim JB, Zhang L (2016) Accounting Conservatism and Stock Price Crash Risk: Firm-level Evidence. *Contemp Account Res* 33: 412–441. https://doi.org/10.1111/1911-3846.12112

Kravet T, Shevlin T (2010) Accounting restatements and information risk. *Rev Account Stud* 15: 264–294. https://doi.org/10.1007/s11142-009-9103-x

Kreps DM, Wilson R (1982) Reputation and Imperfect Information. *J Econ Theory* 27: 253–279. https://doi.org/10.1016/0022-0531(82)90030-8

Lee W, Wang L (2016) Do political connections affect stock price crash risk? Firm-level evidence from China. *Rev Quant Financ Account* 48: 643–676. https://doi.org/10.1007/s11156-016-0563-3

Li HB, Meng LS, Wang Q, et al. (2008) Political connections, financing and firm performance: Evidence from Chinese private firms. *J Dev Econ* 87: 283–299. https://doi.org/10.1016/j.jdeveco.2007.03.001

Li XR, Chan KC (2016) Communist party control and stock price crash risk: Evidence from China. *Econ Lett* 141: 5–7. https://doi.org/10.1016/j.econlet.2016.01.018

Li XR, Wang SS, Wang X (2017) Trust and stock price crash risk: Evidence from China. *J Bank Financ* 76: 74–91. https://doi.org/10.1016/j.jbankfin.2016.12.003

Li YW, Zeng YQ (2019) The impact of top executive gender on asset prices: Evidence from stock price crash risk. *J Corp Financ* 58: 528–550. https://doi.org/10.1016/j.jcorpfin.2019.07.005

Tan M, Liu B (2016) CEO's managerial power, board committee memberships and idiosyncratic volatility. *In Rev Financ Anal* 48: 21–30. https://doi.org/10.1016/j.irfa.2016.09.003

Luo JH, Gong MN, Lin YL, et al. (2016) Political connections and stock price crash risk: Evidence from China. *Econ Lett* 147: 90–92. https://doi.org/10.1016/j.econlet.2016.08.024

Xu Y, Malkiel BG (2002) Investigating the Behavior of Idiosyncratic Volatility. *J Bus* 76: 613–644. https://doi.org/10.1086/377033

Masulis RW, Mobbs S (2011) Are All Inside Directors the Same? Evidence from the External Directorship Market. *J Financ* 66: 823–872. https://doi.org/10.1111/j.1540-6261.2011.01653.x

Milgrom P, Roberts J (1986) Price and Advertising Signals of Product Quality. *J Polit Econ* 94: 796–821. https://doi.org/10.1086/261408

Mishra DR (2020) CEO Private Firm Experience and Idiosyncratic Risk. https://doi.org/10.2139/ssrn.3720156

Morck R, Yeung B, Yu W (2000) The information content of stock markets: why do emerging markets have synchronous stock price movements? *J Financ Econ* 58: 215–260. https://doi.org/10.1016/s0304-405x(00)00071-4

Nguyen P (2011) Corporate governance and risk-taking: Evidence from Japanese firms. *Pac-Basin Financ J* 19: 278–297. https://doi.org/10.1016/j.pacfin.2010.12.002

Panousi V, Papanikolaou D (2012) Investment, Idiosyncratic Risk, and Ownership. *J Financ* 67: 1113–1148. https://doi.org/10.1111/j.1540-6261.2012.01743.x

Patton AJ, Verardo M (2012) Does Beta Move with News? Firm-Specific Information Flows and Learning About Profitability. *SSRN Electron J.* https://doi.org/10.2139/ssrn.1361813

Peters FS, Wagner AF (2014) The Executive Turnover Risk Premium. *J Financ* 69: 1529–1563. https://doi.org/10.1111/jofi.12166

Pi L, Lowe J (2009) Can a powerful CEO avoid involuntary replacement?—An empirical study from China. *Asia Pac J Manage* 28: 775–805. https://doi.org/10.1007/s10490-009-9178-8

Piotroski JD, Wong TJ, Zhang TY (2015) Political Incentives to Suppress Negative Information: Evidence from Chinese Listed Firms. *J Account Res* 53: 405–459. https://doi.org/10.1111/1475-679x.12071

Preuss S, Königsgruber R (2021) How do corporate political connections influence financial reporting? A synthesis of the literature. *J Account Public Policy* 40. https://doi.org/10.1016/j.jaccpubpol.2020.106802

Qian Y, Roland G (1999) Federalism and the Soft Budget Constraint. *SSRN Electron J.* https://doi.org/10.2139/ssrn.149988

Raheja CG (2005) Determinants of board size and composition: A theory of corporate boards. *J Financ Quant Anal* 40: 283–306. https://doi.org/ 10.1017/S0022109000002313

Rajgopal S, Venkatachalam M (2011) Financial reporting quality and idiosyncratic return volatility. *J Account Econ* 51: 1–20. https://doi.org/10.1016/j.jacceco.2010.06.001

Robin AJ, Zhang H (2015) Do Industry-Specialist Auditors Influence Stock Price Crash Risk? *J Pract Theory* 34: 47–79. https://doi.org/10.2308/ajpt-50950

Sassen R, Hinze AK, Hardeck I (2016) Impact of ESG factors on firm risk in Europe. *J Bus Econ* 86: 867–904. https://doi.org/10.1007/s11573-016-0819-3

Suchman MC (1995) Managing Legitimacy—Strategic and Institutional Approaches. *Acad Manage Rev* 20: 571–610. https://doi.org/ 10.2307/258788

Tran QT, Nguyen XM, Nguyen TH (2016) CEO duality, state shareholder and CEO turnover: Evidence from Vietnamese stock market. *Bus Econ Horiz* 12: 113–120. https://doi.org/10.15208/beh.2016.09

Wang Q, Wong TJ, Xia LJ (2008) State ownership, the institutional environment, and auditor choice: Evidence from China. *J Account Econ* 46: 112–134. https://doi.org/10.1016/j.jacceco.2008.04.001

Westphal JD, Deephouse DL (2011) Avoiding Bad Press: Interpersonal Influence in Relations Between CEOs and Journalists and the Consequences for Press Reporting About Firms and Their Leadership. *Organ Sci* 22: 1061–1086. https://doi.org/10.1287/orsc.1100.0563

Wiersema MF, Zhang Y (2013) Executive turnover in the stock option backdating wave: The impact of social context. *Strat Manage J* 34: 590–609. https://doi.org/10.1002/smj.2030

Wooldridge JM (2002) *Econometric analysis of cross section and panel data*.
Xu NH, Li XR, Yuan QB, et al. (2014) Excess perks and stock price crash risk: Evidence from China. *J Corp Financ* 25: 419–434. https://doi.org/10.1016/j.jcorpfin.2014.01.006
Xu YX, Malkiel BG (2003) Investigating the behavior of idiosyncratic volatility. *J Bus* 76: 613–644. https://doi.org/ 10.1086/377033
Wiersema MF, Zhang Y (2011) CEO Dismissal: The Role of Investment Analysts. *Strat Manage J* 32: 1161–1182. https://doi.org/10.1002/smj.932
Zhou M, Jiang K, Chen Z (2022) Temperature and corporate risk taking in China. *Financ Res Lett* 48. https://doi.org/10.1016/j.frl.2022.102862
Zhang X (2016) Income Smoothing, Idiosyncratic Risk & CEO Turnover. *J Math Financ 06*: 1–13. https://doi.org/10.4236/jmf.2016.61001
Zwiebel J (1995) Corporate Conservatism and Relative Compensation. *J Polit Econ* 103: 1–25. https://doi.org/ 10.1086/261973

AIMS Press