

Do political connections affect stock price crash risk? Firm-level evidence from China

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Abstract Using a sample of Chinese listed firms in the period from 2003 to 2012, this paper empirically investigates how the presence of politically connected directors affects stock price crash risk. We thereby make a distinction between listed state-controlled firms and privately controlled firms due to their different incentives to appoint politicians as directors on the board. Our empirical results show that politically connected directors exacerbate stock price crash risk in listed state-controlled firms, an effect driven by the appointment of local government officials as directors. In contrast, hiring politicians as directors, particularly central-government-affiliated directors, helps listed privately controlled firms to reduce stock price crash risk. Finally, good quality of institutions does not help to alleviate the positive relationship between political connections and stock price crash risk in listed state-controlled firms. However, it does weaken the role of political connections in reducing crash risk in listed privately controlled firms.

Keywords Political connection · Crash risk · Ownership · Financial opacity · Quality of institutions

JEL Classifications G14 · G38 · K42

1 Introduction

Political connections boost firm performance through various channels, such as preferential treatment from the government including, for example, easing of access to bank loans and raw materials, loose regulation, and lighter taxation. However, as noted by many scholars,

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political connections also generate an adverse influence on connected firms (see Chaney et al. 2011; Ding et al. 2015; Wang 2015). Chaney et al. (2011), as an example, argue that because of the protection brought by political connections, firms with political ties are more likely to remain opaque. As a result, the information quality of politically connected firms is lower than that of their non-connected counterparts.¹ Using a Chinese context, this study explores the relationship between politically connected directors and stock price crash risk. Thus, we take the existing research a step further by identifying a corporate governance channel through which political connections suppress the net flow of negative information to the market in listed companies. Indeed, the suppression of negative information is a deterrent to a firm's corporate governance because it exacerbates the opportunistic behaviors of top managers and dominant owners and makes the monitoring of insiders more difficult for outside investors, while a sudden release of bad news might cause bubble bursting and a stock price crash. In sum, we are interested in the following questions: (1) Do political connections increase or mitigate stock price crash risk? (2) Are these relationships shaped by a firm's ownership structure, i.e., state versus non-state? (3) How do institutional environment and political connections interact to affect crash risk? Notably, our investigation is motivated by the aforementioned profound influence of political connections on firm performance and by academic efforts to forecast extreme outcomes in the capital market.

China provides a specific context to investigate the relationship between political connections and stock price crash risk. First, having politicians as directors on the board is popular among Chinese listed firms, for example, to gain favorable treatment from the government in privately controlled firms and to enhance government control in state-controlled firms. A close state-enterprise relationship, although bringing benefits to connected firms, might also induce financial opacity and lessen the informativeness of the stock price (see also Gul et al. 2010; Boubaker et al. 2014). In particular, a weak information environment might not only signal but also provide opportunities for bad-news concealing conduct by managers and the controlling party in Chinese listed firms. When such bad news stockpiles to a certain point and is then suddenly released, a stock crash occurs (see also Jin and Myers 2006; Hutton et al. 2009; Kim et al. 2011). Second, a large disparity in institutional quality across Chinese provinces and municipalities provides a good context to analyze the role of institutional quality in the relationship between political connections and crash risk. In addition to the cross-regional variation in institutional development, the quality of legal and financial institutions in Chinese regions has also changed rapidly and substantially over time. Overall, good quality of institutions might reduce a firm's incentive to hire politically connected directors, whether to act as an alternative protection mechanism or to enhance government control on the board, thus attenuating the relationship between political connections and crash risk.

Next, a mix of state-controlled firms and privately controlled firms in China enables us to explore whether hiring politicians as directors exerts distinct effects on crash risk in these two types of firms. A key feature of many Chinese listed firms is that they are former state-owned enterprises (SOEs) that became listed through share issue privatization (SIP),

¹ Moreover, Berkman et al. (2010) document that in the Chinese stock market, regulations intended to protect minority rights are much less effective in companies with a closer tie to the government. They attribute this finding to the fact that investors do not expect regulators to enforce these rules when the firms are closely connected with the government. Furthermore, Tang et al. (2011) find a positive relationship between political connections and stock price synchronism in China. They explain that political connections might lead to financial opacity because activities between connected firms and the government are often nonpublic or cannot be revealed.

with the government retaining a significant stake after the firm's partial privatization. It has been shown that, compared with privately controlled firms, SOEs might have a different incentive to appoint government officials as directors on the board. More specifically, in Chinese listed SOEs, the grabbing hand hypothesis suggests that politicians extract resources from SOEs to accomplish their own social or political objectives (see also Shleifer and Vishny 2002). Thus, the appointment of directors affiliated with the state might exacerbate the conflict of interests between the government as a controlling shareholder and stock market investors. In contrast, listed privately controlled firms establish political connections to obtain preferential treatment from the government (see Li et al. 2008; Chen et al. 2011; Shen and Lin 2015). By hiring politically connected directors, privately controlled firms can gain an edge when competing with SOEs. Indeed, empirical studies have documented negative influences of political connections on firm performance in state-controlled firms (Shleifer and Vishny 1994; Fan et al. 2007; Wang 2015) and positive influences in privately controlled firms (Li et al. 2008; Francis et al. 2009; Wu et al. 2012).²

Following previous studies, this paper further explores whether the distinct motivations to hire politically connected directors might affect a firm's stock price crash risk differently. Because the appointment of politically connected directors in listed SOEs enhances the control of the government as dominant owner on the board, it increases the propensity to camouflage the opportunistic activities of controlling shareholders such as tunneling and expropriation. This notion is similar to the managerial entrenchment effect, which induces bad-news hoarding behavior and increases the probability of a crash.³ In addition, collusion between politically connected directors and the government as controlling shareholder enables listed SOEs to be insulated from negative consequences associated with poor financial reporting practices and hampers the ability of regulators to enforce fines and prison terms for opportunistic behaviors. As a result, the presence of politicians as directors incentivizes more-opaque reporting practices in listed SOEs, resulting in a higher crash probability (see also Bushman et al. 2004; Boubaker et al. 2014). Conversely, to the extent that politically connected directors in listed privately controlled firms might also depress net information outflow, their influences are likely to be weaker. The reason is that privately controlled firms are more subject to market pressure for high-quality information because they are less influenced by political forces than are SOEs. In addition, private entrepreneurs are profit-driven when hiring politicians as directors on the board, rendering managers and shareholders in privately controlled firms more sensitive to the costs associated with financial opacity. Conversely, a connection with the state grants advantages to

² Among them, Wu et al. (2012) provide evidence demonstrating that political connections, measured as politically connected managers, exacerbate the over-investment problem in state-owned enterprises but bring about tax benefits for privately controlled firms. Wang (2015) examines the presence of politically connected independent directors in the Chinese listed sector and finds that politically connected independent directors exacerbate the over-investment problem in listed SOEs, and they do not help to promote firm value, indicating an expropriation of minority rights. In contrast, in listed privately controlled firms, the presence of politically connected independent directors is associated with an ease of access to external financing and government subsidies and a higher firm value, suggesting a helping hand from the connection with government.

³ Empirical studies also provide some support to this argument. Fan and Wong (2002) demonstrate that the tunneling incentive of a controlling shareholder, measured as the separation of cash flow rights from control rights, will result in less informative earnings. Attig et al. (2006) find that information asymmetry is more severe and stocks are less liquid in firms that have a conflict of interest between large and small investors. Most recently, both Gul et al. (2010) and Boubaker et al. (2014) recognize that the possibility of an entrenchment effect by controlling shareholders will cause stock price synchronicity.

privately controlled firms over their non-connected counterparts, which reduces the possibility of extremely bad operating outcomes and alleviates stock price crash risk. In summary, in this paper, we would like to investigate whether the effect of appointment of politically connected directors in listed SOEs significantly differs from that in listed privately controlled firms on incentives, influences, and consequences, such as stock price crash risk.

To examine the above ideas, we utilize a sample of firms listed on the Shanghai Stock Exchange (SHSE) from 2003 to 2012. We thereby explore the relationship between politically connected directors and stock price crash risk, making a distinction between state-controlled firms and privately controlled firms. In listed SOEs, we document a positive relationship between politically connected directors and stock price crash risk. In contrast, in listed privately controlled firms, the presence of politically connected directors helps to reduce stock price crash risk. We further classify politically connected directors into local- versus central-government-connected directors and into government officials versus members of the Chinese People's Congress (CPC) and members of the Chinese People's Political Consultative Conference (CPPCC). We find that hiring local government officials as directors significantly increases crash risk in listed SOEs, whereas the appointment of central government officials and members of CPC or CPPCC as directors helps privately controlled firms to reduce stock price crash risk. Finally, we explore whether the effects of political connections on stock price crash risk vary depending on the quality of institutions, measured as legal enforcement of rules, government intervention in business, and stock market development. Overall, we provide limited evidence that good quality of institutions helps to mitigate the positive relationship between politically connected directors and crash risk in listed SOEs. However, the role of politically connected directors in reducing crash risk is less pronounced in Chinese listed privately controlled firms located in a more developed region.

Arguably, the findings of this article contribute to the literature in the following ways. First, our study provides new insights into the growing literature on political connections. Previous studies in the Chinese context primarily focus on politically connected managers, measured as membership in CPC or CPPCC (see, e.g., Fan et al. 2007; Li et al. 2008; Chow et al. 2012). These politically connected managers constitute only a small fraction of managers in listed firms because only the managers from the most 'outstanding' companies are able to join the CPC or CPPCC. Moreover, an analysis of politically connected managers could be noisy due to reverse causality from firm performance to top managers joining the CPC or CPPCC. Therefore, this study focuses on another specific and popular phenomenon among Chinese listed firms, i.e., the appointment of politicians as directors. Because all major decisions start in the boardroom (see also Chen et al. 2011; Wang 2015), it is worthwhile to explore how politically connected directors might influence firm performance and thus stock price crash risk among Chinese listed firms.

Second, the findings of this paper reconcile controversial effects of political connections on firm value and firm performance in previous studies. For example, Li et al. (2008), Francis et al. (2009), and Shen and Lin (2015) among others, document a positive relationship between political connections and firm performance, whereas Shleifer and Vishny (1994), Fan et al. (2007), and Huyghebaert and Wang (2012) find a negative relationship. Indeed, Cheung et al. (2009) note that the government could have both a helping hand and a grabbing hand in business. By exploring different economic consequences (and incentives) of having politically connected directors in Chinese listed SOEs and privately controlled firms, this study contributes to the literature on the helping versus grabbing hand of government/political connections. Finally, by exploring the relationship between

political connections and stock price crash risk, this paper provides illustrative evidence showing that political connections can have more profound effects by influencing asset prices. It also adds to the continuous academic efforts on forecasting extreme outcomes in the capital market. By documenting an incremental explanatory power of political connections on stock price crash risk, this article thus provides an alternative screening technique for investors to avoid extreme losses.

This paper proceeds as follows. Section 2 presents the institutional background in China. Section 3 develops the hypotheses, distinguishing between listed SOEs and privately controlled firms. Section 4 describes our data and variables construction. Section 5 shows the empirical results and the output of additional robustness checks. Finally, Sect. 6 concludes.

2 Institutional background

Hiring politicians as directors is prevalent in China. As an example, on average, 16 % of directors in our sample firms are politically connected through various channels. These affiliated directors could be retired government officials, members of the Chinese People's Congress (CPC) or members of the Chinese People's Political Consultative Conference (CPPCC). Notably, although according to the existing laws and regulations in China, current Party and government officials are prohibited from serving as managers, directors, or supervisors in an enterprise, the employment of retired government officials as directors is popular among China's listed companies. Chinese listed firms also hire quasi-government officials, i.e., current or former members of the CPC and CPPCC, as directors to enhance their connections with the state because the existing regulations do not prohibit the appointment of current CPC and CPPCC members as directors. In particular, the CPC is the national legislature in China, and it is the largest parliamentary body in the world. According to the constitution, its major job is to legislate and to oversee the operations of the government; in theory, it is the highest organ of state power in China. The CPPCC is a political advisory body in China. Its members consist of delegates from a range of political parties and organizations. The CPC and CPPCC together are called 'Lianghui' (two meetings) and make important national-level political decisions; their members are considered quasi-government officials.

2.1 Political connections in listed state-controlled firms

The Chinese domestic stock market remains dominated by former SOEs that became listed through a share issuing privatization (SIP). Since the 1990s, many profitable SOEs have been 'corporatized' and introduced to the stock exchange. Thereby, the Chinese state has adopted a policy of privatizing all but the largest and strategically important SOEs and has typically retained a significant ownership stake after SIP (see also Zhou and Zhou 2010). Although the corporatization reform aims to build a modern governance structure in listed SOEs, in practice, large owners tend to appoint new directors, resulting Chinese boards being well dominated by insiders such as senior managers and representatives of major shareholders. As a result, more than half of directors are appointed by the Chinese state in listed SOEs (see also Bai et al. 2004). Among them, many are retired government officials. These directors are likely to interpret their fiduciary duties in the light of the interest of the state. The problem is more severe in listed SOEs controlled by the local government. To be

promoted, local government officials have a high incentive to use SOEs to achieve their own political or social goals, e.g., by asking a local SOE to over-invest to boost regional GDP or to hire a surplus of labor to reduce the unemployment rate. Due to the opacity of the political environment and of government control over major presses, SOEs, particularly SOEs controlled by the local government, are able to hide these activities in pursuit of political and social goals at the expense of small stock market investors.

2.2 Political connections in listed privately controlled firms

Privately controlled firms in China have grown substantially since 1987, when the 13rd National Congress of the Communist Party of China admitted their legal status. In 2012, there were more than six million privately controlled business entities, accounting for nearly 80 % of total companies and providing nearly 20 million jobs (see the China Statistical Yearbook 2012). There is no doubt that the private sector has become an important pillar of China's economy. Despite its rapid growth, due to historical and ideological reasons, privately controlled firms in China remain discriminated against both politically and economically. It was only as of 2000 that privately controlled firms began to float their shares on a more regular basis. However, unlike listed SOEs with a blood tie with the government, listed privately controlled firms face a hostile institutional environment and are often subject to arbitrary harassment by government cadres. A potential way out for private entrepreneurs is to assign politically affiliated persons as directors to foster connections with the state. As a result, many retired politicians and members of CPC or CPPCC are hired by Chinese listed privately controlled firms as directors because their (previous) work experience in the government enables them to establish important connections with key party and government officials (see, e.g., Fan et al. 2007; Ding et al. 2015). These connections with the government grant private entrepreneurs certain advantages over their non-connected counterparts such as, for example, easing of access to bank loans, tax benefits, and operating licenses (see also Hwa and Lei 2010; Chow et al. 2012). Thus, political connections are considered a valuable resource for Chinese listed privately controlled firms.

3 Development of hypotheses

In this section, we develop hypotheses on the relationship between politically connected directors and stock price crash risk, making a distinction between state-controlled firms and privately controlled firms. Moreover, we are interested in how the quality of institutions might affect the relationship between political connections and stock price crash risk differently in these two types of firms.

3.1 Political connections and stock price crash risk in listed state-controlled firms

We expect that politically connected directors increase stock price crash risk in Chinese listed state-controlled firms because their presence exacerbates the incentive problem between large and small investors and renders the flow of information to outsiders more difficult. First, because politically connected directors are likely to interpret their fiduciary duties in the light of the interest of the state, a large fraction of politically connected

directors on the board might exacerbate the conflict of interest between the government as a controlling shareholder and stock market investors. Indeed, connections imposed by the government—local or central—are to better regulate and control the economy and to achieve imperative social and political objectives, which do not coincide with the value maximization of other investors in listed SOEs (see also Shleifer and Vishny 1994; Wang 2015). As a result, the government as controlling shareholder, with effective control over the boardroom via politically connected directors, has the tendency and power to conceal self-dealing activities (see also Gul et al. 2010). This notion is similar to the classical agency argument, claiming that managerial entrenchment increases crash risk because of bad-news hoarding or excess risk-taking behaviors (see, e.g., Hutton et al. 2009; Kim et al. 2011). Because politically connected directors might collude with the government as controlling shareholder in bad-news concealing, their presence deters firm-specific information flow to the market, leading to the overvaluation of stock prices and thus crash risk.

Second, political connections might aggravate opaque financial reports in listed SOEs to conceal negative information in the short term. Connected firms commonly have an ease of access to bank loans or the capital market and are more likely to be bailed out when they are in financial distress (see, e.g., Faccio et al. 2006; Shen and Lin 2015), regardless of their information quality. Therefore, being partly insulated from the negative consequences of lower information quality (e.g., a higher cost of capital), politically connected firms might devote fewer resources to disclose high-quality information and thus become opaque. For example, Chaney et al. (2011) document a negative relationship between political connections and the quality of earnings reported by politically connected firms. They further show that a low quality of earnings is associated with a higher cost of debt only for non-connected firms. Furthermore, SOEs hiring politicians as directors might face a lower pressure from the security regulatory committee to reveal information, or lighter penalties associated with a low quality of information disclosure. Indeed, previous studies show that the presence of large state ownership in the economy and a high propensity for state expropriation incentivize more opaque reporting practices (see also Bushman et al. 2004; Piotroski et al. 2015). Overall, due to the financial opacity brought by political connections, Chinese listed SOEs have a better opportunity to hide firm-specific information, leading to more severe tunneling activities by controlling shareholders (and by the top management team). However, politically connected firms can only hide bad information to a certain point. Once the accumulated negative information reaches its upper limit, a sudden release of the hidden bad news engenders bubble bursting and a stock price crash (see, e.g., Jin and Myers 2006; Hutton et al. 2009).

Next, good quality of institutions might weaken the effect of politically connected directors on crash risk in listed SOEs. The government as controlling shareholder has an incentive to accomplish imperative social and political objectives at the expense of minority shareholders' interests in listed SOEs (e.g., commanding SOEs to over-invest to boost GDP growth or asking SOEs to hire a surplus of labor). These expropriation activities are less likely to occur in regions with stronger legal enforcement of property rights and less severe government intervention in business because the rights of minority investors are better protected and government power is more restrained. Therefore, the tendency of politically connected directors to exacerbate bad-news-hoarding behavior and thus to increase crash risk could be more evident in regions with weaker legal enforcement of property rights and severe government intervention in business. Moreover, a more developed stock market helps to monitor corporate operations and alleviate information asymmetry between companies and investors; hence, firm-specific information will

become more transparent. This disciplinary effect can restrict listed SOEs' bad-news concealing and thus mitigate crash risk. In summary, we present the following hypotheses:

Hypothesis 1 Politically connected directors exacerbate stock price crash risk in listed state-controlled firms.

Hypothesis 2 Better quality of institutions alleviates the effect of politically connected directors on stock price crash risk in listed state-controlled firms.

3.2 Political connections and stock price crash risk in listed privately controlled firms

Two competing forces help to shape the relationship between politically connected directors and stock price crash risk in listed privately controlled firms. First, unlike listed SOEs, Chinese privately controlled firms build political connections to act as an alternative protection mechanism for property rights, which could avert harassment by government officials. In practice, private entrepreneurs appoint retired government officials or politicians as (independent) directors because these connections with the state help listed privately controlled firms overcome institutional disadvantages and gain preferential treatment from the government. The benefits brought by politically connected directors grant privately controlled firms advantages when competing with their non-connected counterparts, making them less likely to incur extremely bad operation outcomes. This favorable effect on corporate operation brought by political connections reduces the probability of bad news being stockpiled to a certain point and then suddenly being released, resulting in a lower crash possibility. In summary, the presence of politically connected directors tends to lower stock price crash risk in listed privately controlled firms.

Second, as in Chinese listed SOEs, the appointment of politically connected directors enables connected privately controlled firms to be at least partly insulated from negative consequences associated with financial opacity and hampers the ability of regulators to enforce fines and prison terms for opportunistic behaviors. Therefore, privately controlled firms with politically connected directors might find it less costly to remain opaque due to an ease of access to capital markets and lower pressure from the regulatory commission to provide a high quality of information disclosure (see also Chaney et al. 2011). As a result, opaque financial reporting facilitates the expropriation behavior of managers (and controlling shareholders) in listed privately controlled firms, and bad-news hoarding makes firms more prone to crash risk. However, it is also argued that to the extent that politically connected directors in listed privately controlled firms might depress net information outflow, their influence is likely to be weaker compared with that in listed SOEs. This lessened influence is most likely because privately controlled firms are profit-driven when building political connections, rendering private entrepreneurs more sensitive to the costs associated with financial opacity. As a result, privately controlled firms might be more subject to market pressure for a high quality of information. Overall, considering the above-mentioned two opposing effects of political connections, the relationship between politically connected directors and stock price crash risk is not a priori clear in listed privately controlled firms.

Next, good quality of institutions reduces the effects of politically connected directors on stock price crash risk in listed privately controlled firms. More specifically, in regions with stronger legal enforcement of property rights, firms are less likely to seek protection through political connections because property rights are well protected. Additionally, in

regions with less severe government intervention in business, politicians have less power and lower propensity to allocate resources to connected firms discretionarily. Moreover, a more developed stock market facilitates privately controlled firms' access to external financing, making them less reliable on the government's preferential treatment when financing investment projects. Thus, the incremental effect of politically connected directors on enhancing firm value and reducing crash risk becomes relatively small because good quality of institution can substitute for the protection provided by political connections for listed privately controlled firms. Moreover, connected firms might suffer from the negative consequences of remaining opacity in regions with strong legal enforcement, less severe government intervention, and a more developed stock market, due to better protection of investor rights, more restricted government power, and a lower level of information asymmetry. In summary, we present the following hypotheses:

Hypothesis 3 The effect of politically connected directors on stock price crash risk is not a priori clear in listed privately controlled firms.

Hypothesis 4 Better quality of institutions reduces the effect of politically connected directors on stock price crash risk in listed privately controlled firms.

4 Data and sample

4.1 Data source and sample selection

We initially collect data on all Chinese firms listed on the Shanghai Stock Exchange in the period from 2003 to 2012. We start our sampling period in 2003 because the China Securities Regulatory Commission (CSRC) required Chinese listed firms to report the identity of the ultimate controller in the annual report from 2003. Moreover, the detailed profiles of directors in Chinese listed firms have only been available since 2003. Furthermore, in 2013, the Chinese government began to implement an anti-corruption campaign and prohibit the appointment of politicians as independent directors on the board. Because this anti-corruption campaign significantly suppresses rent-seeking behavior between government officials and business, it modifies a firm's incentive and economic consequences to have politicians as directors. Thus, to make our analysis consistent over the study period, we end the sampling period in 2012, which is not affected by this significant political campaign in China. We then exclude 30 financial firms and 50 cross-listed firms from the initial sample because the latter companies are less restricted by local institutions in comparison with firms listed on the domestic stock markets. Finally, we removed 22 firms with missing financial and accounting data and 12 firms become listed in 2012 from the initial sample, resulting in 684 firms and 4680 firm-year observations. Notably, our final sample contains both listed state-controlled firms and privately controlled firms. State-controlled firms are firms with the government as the ultimate controller and holding more than 50 % of voting rights, whereas privately controlled firms are firms with non-government entities as the ultimate controllers and firms with less than 20 % of voting rights controlled by the government.

We retrieve corporate governance data, firm-level accounting information, and stock-price information from the CSMAR database, which is compiled by the University of Hong Kong and GTA Information Technology Company Ltd. Moreover, the information on politically connected directors was hand-collected from annual reports, which are

downloadable from the SHSE website (www.sse.com.cn). The disclosure rules of the CSRC require that annual reports provide the detailed personal background of each director. Next, the data on the regional rule of law and government intervention indices were gathered from Fan et al. (2011), which is the 2011 report on the marketization of China's provinces and municipalities. More specifically, Fan et al. (2011) assess the relative progress in marketization of Chinese districts using a comparative method, considering 23 basic indicators in five fields.⁴ Data for these indicators were obtained from either the National Bureau of Statistics or enterprise and household surveys. Because the latest indices cover the period only to 2009, we then use the 2009 scores to complete the missing data for 2010, 2011, and 2012. This methodology is consistent with Li et al. (2009) and Li and Qian (2013), among others. The data to calculate regional stock market development were also obtained from the CSMAR, whereas the information on regional GDP was collected from the National Bureau of Statistics in China. Finally, we assign firms to regions based upon the province/municipality in which they have their headquarters (see also Li et al. 2009; Ayyagari et al. 2010).

4.2 Variables

4.2.1 Crash risk

To measure crash risk, we first obtain the residual return from the following regression:

$$r_{i,t} = \beta_0 + \beta_1 r_{m,t-1} + \beta_2 r_{m,t} + \beta_3 r_{m,t+1} + \varepsilon_{i,t} \quad (1)$$

where $r_{i,t}$ is the weekly return of stock i in week t and $r_{m,t}$ is the value-weighted Shanghai composite index return compiled by the CSMAR in week t . To allow for non-synchronous trading, we also include the lag and lead term of $r_{m,t}$ in the regression model (see also Dimson 1979). Because the residuals of Eq. (1) are highly skewed, firm-specific weekly return for firm i in week t , denoted as $W_{i,t}$, is defined as the natural logarithm of one plus the residuals from Eq. (1).

We follow prior studies to measure crash risk in two different ways (see, e.g., Chen et al. 2001). The first measure of crash risk is the negative conditional return skewness (NCSKEW). Specifically, we calculate NCSKEW at the firm level by taking the negative of the third moments of firm-specific weekly return for each sampling year, dividing the result by the standard deviation of firm-specific weekly return raised to the third power. For firm i in year t , we calculate NCSKEW as follows:

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

Alternatively, we use 'down-to-up volatility' to measure crash risk, denoted as DUVOL, which captures the asymmetric volatility between negative and positive firm-specific weekly return. Specifically, for firm i in year t , we classify all weeks into two subsamples, i.e., one with weekly return below the annual mean ('down' weeks) and the other with weekly return above the annual mean ('up' weeks), and calculate the standard deviation for

⁴ These five fields include (1) the relationship between the government and the market, (2) the development of the non-state sector in the economy, (3) the development of the product market, (4) the development of the factor market, and (5) the development of market intermediaries and the legal environment. An early version of these data has been used in other studies, including for example Li et al. (2009), Ayyagari et al. (2010), and Huyghebaert and Wang (2012).

each subsample. We then calculate DUVOL by taking the natural logarithm of the standard deviation of down weeks to the standard deviation of up weeks. Expressed mathematically,

$$DUVOL_{i,t} = Ln\left[\frac{\sqrt{\sum_{Down} W_{i,t}^2 / (n_d - 1)}}{\sqrt{\sum_{Up} W_{i,t}^2 / (n_u - 1)}}\right] \quad (3)$$

where n_d and n_u are the number of down weeks and up weeks, respectively.

4.2.2 Political connections

The reliability with which political connections are measured is critical to the accuracy of this study. We develop the measurements of political connections by referring to previous studies in the Chinese context (see, e.g., Fan et al. 2007; Chen et al. 2011; Wu et al. 2012; Wang 2015). Specifically, we define a board member as a politically connected director if he or she formerly (currently) served (serves) in one of the following posts: (1) government official, (2) member of the Chinese People's Congress (CPC), (3) member of the Chinese People's Political Consultative Conference (CPPCC), or (4) military official. Notably, evidence reported in the national leading media in China reveals that government officials might use their power to benefit firms owned by (or having a relationship with) their family members, which exacerbates corruption and brings about unfair market competition. However, in many cases, these family members of government officials might not be directly involved in a firm's business, while asking a representative to sit in the company. This distancing is because according to the existing laws and regulations in China, the relatives of officials are strictly forbidden from making money by using any type of political power, e.g., holding shares in firms or providing a back door for the connected firms. Therefore, the indirect relationship between government officials and the agent of their relatives, and the camouflaged, disguised nature of this type of relationship, make it difficult to include this relationship in our measurement of political connections.

Next, we further classify politically connected directors into central- and local-level connections. Thus, the appointments of ex-government officials and members of CPC and CPPCC at or below the provincial level are considered local-level connections, whereas the appointments above the provincial level are classified as central-level connections. The reason is that the operation of Chinese listed firms is largely influenced by the local government, which has the power to allocate resources in a region. Thus, listed firms tend to appoint more local officials as directors in regions in which the local government has greater discretionary power over resource allocation (see also Chen et al. 2011). In addition, politically connected directors are further classified as government-official connections and quasi-government-official connections. A number of Chinese studies have documented that these two types of political connections have distinct influences on firm performance (see also Du et al. 2010). Specifically, the 'members of CPC and CPPCC' connections are often established by firms voluntarily and help to prop up firm performance, particularly in listed privately controlled firms. Nevertheless, the 'government official' connections facilitate the expropriation activities of the government and thus might impair firm value, particularly in listed SOEs. In summary, the key explanatory variable PCD (politically connected directors) is calculated as the number of politically connected directors on the board divided by the total number of directors. CENTRAL and LOCAL capture central- and local-level connections, respectively. OFFICIAL and QUASI-OFFICIAL reflect government-official connections and quasi-government-official (CPC and CPPCC members) connections, respectively. These variables are calculated as

the number of each type's connected directors on the board divided by the total number of politically connected directors.

4.2.3 *Quality of institutions and control variables*

To examine the mitigation role of institutional quality in the relationship between politically connected directors and crash risk, we explore legal enforcement of property rights, government intervention in business, and stock market development across various Chinese regions. More specifically, legal enforcement of property rights is defined as the number of patents applied for and approved per engineer in a region. As a robustness check, we use an index on the protection of producers to proxy for legal enforcement of rules in a region. Moreover, government intervention in business is measured as the amount of time that a firm's manager spent with local government officials in a region. Alternatively, we consider an index on non-tax payments by local governments to proxy for government intervention in business. Next, following previous studies (see, e.g., Levine and Zervos 1998), we use the total market capitalization to capture stock market development, which is defined as the ratio of total marketization of local firms to regional GDP. Finally, we consider regional stock turnover ratio as an alternative measure of stock market development.

To gauge the effect of politically connected directors on stock price crash risk, we control for corporate governance and firm-level variables. We first consider a series of corporate governance variables: TOP1 (=the fraction of shares held by the largest shareholder over total shares outstanding), TOP2_5 (=the fraction of shares held by the second to fifth largest shareholders over total shares outstanding), and BOARDSIZE (=the natural logarithm of the number of directors on the board). Other firm-level control variables include FIRMSIZE (=the natural logarithm of a firm's market capitalization plus total liabilities), ROE (=return on average equity), MTB (=the market value of equity plus the book value of liabilities divided by total assets), LEV (=the ratio of total liabilities to total assets), and TURNOVER (=the annual average stock turnover ratio). These firm-level control variables are one-year lagged. Finally, following Morck et al. (2000), we include the natural logarithm of GDP per capita in the regression model because this logarithm resembles the macroeconomic condition that might affect stock price crash risk. These control variables are consistent with Chen et al. (2001) and Kim et al. (2011), among others.

Finally, to alleviate the influence of outliers, all variables, except for the institutional variables, are winsorized at 1–99 %.⁵

4.3 Descriptive analysis

Table 1 reports summary statistics for the full sample. As shown in Table 1, the mean (median) values of NCSKEW and DUVOL are -0.173 (-0.157) and -0.060 (-0.061), respectively. We observe that NCSKEW (DUVOL) varies from -2.116 (-0.643) to 1.821 (0.534), with a standard deviation of 0.676 (0.242), which are greater than the variation shown in other international studies. This variation occurs partially because the Chinese stock market is more volatile than other markets in the world. Concerning political

⁵ We have also run the regression models with trimming the data. Our main conclusions concerning the associations between politically connected directors and stock price crash risk remain valid. The outcome of all robustness checks not reported in this paper can be obtained from the authors upon request.

Table 1 Summary statistics on the dependent and explanatory variables

Variables	Mean	Median	Minimum	1st Quartile	3rd Quartile	Maximum	SD
<i>Crash risk measures</i>							
NCSKEW	-0.173	-0.157	-2.116	-0.550	0.227	1.821	0.676
DUVOL	-0.060	-0.061	-0.643	-0.219	0.106	0.534	0.242
<i>Political connections</i>							
PCD	0.160	0.111	0.000	0.000	0.222	0.900	0.151
CENTRAL	0.066	0.000	0.000	0.000	0.000	1.000	0.207
LOCAL	0.659	1.000	0.000	0.000	1.000	1.000	0.454
OFFICIAL	0.547	0.667	0.000	0.000	1.000	1.000	0.459
QUASI-OFFICIAL	0.178	0.000	0.000	0.000	0.250	2.000	0.331
<i>Quality of institutions</i>							
LEGAL	13.545	6.970	-0.620	2.090	25.080	41.470	13.788
GOV	6.193	6.850	-12.950	4.090	9.320	10.130	3.362
CAP	1.021	0.301	0.046	0.156	0.740	21.240	2.466
<i>Control variables</i>							
TOP1	0.397	0.396	0.143	0.227	0.561	0.661	0.178
TOP2_5	0.132	0.102	0.013	0.048	0.205	0.346	0.101
BOARDSIZE	2.240	2.197	1.946	2.197	2.398	2.639	0.185
FIRMSIZE	22.249	22.147	20.689	21.460	22.973	24.147	1.002
ROE	0.058	0.073	-1.121	0.028	0.126	0.437	0.188
MTB	2.126	1.705	0.990	1.280	2.594	4.986	1.141
LEV	0.514	0.515	0.192	0.373	0.652	0.851	0.184
TURNOVER	0.452	0.362	0.051	0.203	0.614	1.468	0.322
Number of observations	4680	4680	4680	4680	4680	4680	4680

This table presents summary statistics on the dependent and explanatory variables. Our sample consists of firms listed on the Shanghai Stock Exchange in the period from 2003 to 2012, totaling 684 firms and 4680 firm-year observations. NCSKEW is the negative skewness of firm-specific weekly return for each firm in a year. DUVOL is the asymmetric volatility between negative and positive firm-specific weekly return for each firm in a year. PCD is the number of politically connected directors on the board divided by the total number of directors. CENTRAL and LOCAL are the ratio of the number of central- and local-government-affiliated directors to the number of politically connected directors, respectively. OFFICIAL and QUASI-OFFICIAL are the ratio of the number of government-official directors and 'CPC and CPPCC member' directors to the number of politically connected directors, respectively. LEGAL measures the legal enforcement of property rights, defined as the number of patents applied for and approved per engineer in a region; a higher score means stronger legal enforcement. GOV measures the extent of government intervention in business in a region, defined as the time that a firm's managers spent with local officials; a higher score means less-severe government intervention in business. CAP measures the access to stock market financing in a region, calculated as the total market capitalization of all listed companies in a region relative to regional GDP. Concerning control variables, TOP1 is the fraction of shares held by the largest shareholder divided by the total shares outstanding. TOP2_5 is the fraction of shares held by the second to fifth largest shareholders divided by the total shares outstanding. BOARDSIZE is the natural logarithm of the total number of directors on the board. FIRMSIZE is the natural logarithm of market capitalization plus total liabilities. ROE is the ratio of return to average equity. MTB is the market value of equity plus the book value of liabilities to total assets. LEV is the ratio of total liabilities to total assets. Finally, TURNOVER is measured as the average monthly turnover ratio for each firm in a year

connections, for an average Chinese listed firm, 16 % of board members are politically connected. Of our sample firms, 72.5 % have at least one politically connected director on the board. Many of these directors are retired local government officials. More specifically, on average, 65.9 % of politically connected directors are local-level connected directors, whereas 54.7 % of them are government officials. In contrast, central-government connections and quasi-government officials only account for a small percent of politically connected directors, i.e., 6.6 and 17.8 %, respectively.

Table 2 reports the outcome of the univariate comparison for state-controlled firms and privately controlled firms in Panel A and for connected firms and non-connected firms in Panel B, respectively. As noted in Sect. 4.1, state-controlled firms are firms with the government as the ultimate controller and holding more than 50 % of voting rights, amounting to 1706 firm-year observations. In contrast, if a firm's ultimate controller is a non-government entity or less than 20 % of voting rights are controlled by the government, we classify this company as a privately controlled firm; the latter account for 2974 firm-year observations. We investigate the significance of differences between the two subsamples by employing a parametric t test and a non-parametric Wilcoxon test. Panel A shows that, without controlling for other factors, there is not a significant difference of crash risk between listed SOEs and privately controlled firms. On average, Chinese listed SOEs appoint more politically connected directors on the board than do privately controlled firms. Interestingly, among politically connected directors in listed SOEs, many are retired government officials at the local level. In contrast, privately controlled firms hire more central-level politicians and more quasi-government officials as directors. A potential reason is that, in reality, privately controlled firms tend to hire CPC and CPPCC members as directors and, among these, many are at the central level. Finally, we find that Chinese listed privately controlled firms are more inclined to locate in regions with stronger legal enforcement of rules and less severe government intervention in business. However, regions with a large number of listed SOEs are associated with an ease of access to stock market financing.

Panel B of Table 2 reports the univariate comparison for connected firms and non-connected firms. Therefore, firms hiring at least one politically connected director are classified as connected firms, accounting for 3393 firm-year observations, whereas firms without politically connected directors are defined as non-connected firms, accounting for 1287 firm-year observations. We do not observe a significant difference in NCSKEW and DUVOL across connected and non-connected firms. For firms having at least one politically connected director, politically connected directors account for 21.3 % of total directors. Among these, 90.9 % are affiliated with local governments, and 75.4 % are government officials. Central-government connections and quasi-government officials only account for 9.1 and 24.6 % of politically connected directors, respectively. Finally, concerning the quality of institutions, connected firms on average locate in regions with weaker legal enforcement of rules and with a less developed stock market.

4.4 Model

We empirically test the effect of politically connected directors on stock price crash risk using the following model:

$$Crash_{i,t} = \alpha_0 + \alpha_1 Connection_{i,t} + \sum_{q=2}^m \alpha_q (q^{th} Controls_{i,t-1}) + \varepsilon_t \quad (4)$$

where $Crash_{i,t}$ is the measure of stock price crash risk (proxied by NCSKEW and DUVOL) for firm i in year t . The key test variable $Connection_{i,t}$ includes three dimensions of

Table 2 Univariate tests for state-controlled firms and privately controlled firms, and for connected firms and non-connected firms

	Panel A						Panel B					
	State-controlled		Privately controlled		<i>t</i> test <i>p</i> value	Wilcoxon <i>p</i> value	Connected firms		Non-connected firms		<i>t</i> test <i>p</i> value	Wilcoxon <i>p</i> value
	Mean	Median	Mean	Median			Mean	Median	Mean	Median		
<i>Crash risk measures</i>												
NCSKEW	-0.179	-0.165	-0.169	-0.154	0.651	0.391	-0.160	-0.156	-0.198	-0.158	0.143	0.320
DUVOL	-0.062	-0.066	-0.057	-0.060	0.533	0.437	-0.057	-0.061	-0.063	-0.062	0.587	0.952
<i>Political connections</i>												
PCD	0.166	0.111	0.157	0.111	0.049	0.132	0.213	0.182	0.000	0.000	0.000	0.000
CENTRAL	0.062	0.000	0.068	0.000	0.351	0.243	0.091	0.000	0.000	0.000	0.000	0.000
LOCAL	0.676	1.000	0.649	1.000	0.058	0.035	0.909	1.000	0.000	0.000	0.000	0.000
OFFICIAL	0.623	1.000	0.502	0.500	0.000	0.000	0.754	1.000	0.000	0.000	0.000	0.000
QUASI-OFFICIAL	0.113	0.000	0.216	0.000	0.000	0.000	0.246	0.000	0.000	0.000	0.000	0.000
<i>Quality of institutions</i>												
LEGAL	13.002	6.300	13.857	7.320	0.041	0.000	13.224	6.900	14.393	6.970	0.011	0.028
GOV	5.955	6.480	6.330	6.850	0.000	0.000	6.212	6.850	6.142	6.850	0.500	0.895
CAP	1.434	6.300	0.785	0.297	0.000	0.000	0.957	0.281	1.190	0.320	0.004	0.000
<i>Control variables</i>												
TOP1	0.577	0.583	0.294	0.264	0.000	0.000	0.399	0.397	0.394	0.381	0.408	0.443
TOP2_5	0.122	0.083	0.137	0.113	0.000	0.000	0.131	0.101	0.132	0.112	0.801	0.444
BOARDSIZE	2.276	2.197	2.219	2.197	0.000	0.000	2.259	2.197	2.189	2.197	0.000	0.000
FIRMSIZE	22.595	22.528	22.050	21.965	0.000	0.000	22.286	22.193	22.150	22.017	0.000	0.000
ROE	0.083	0.082	-0.032	0.066	0.000	0.000	0.039	0.076	-0.064	0.066	0.153	0.000
MTB	1.881	1.542	2.267	1.857	0.000	0.000	2.097	1.673	2.201	1.765	0.006	0.003
LEV	0.500	0.507	0.522	0.521	0.000	0.000	0.516	0.519	0.509	0.505	0.299	0.193
TURNOVER	0.382	0.286	0.495	0.418	0.000	0.000	0.441	0.346	0.488	0.410	0.000	0.000

Table 2 continued

	Panel A				Panel B					
	State-controlled		Privately controlled		Connected firms		Non-connected firms			
	Mean	Median	Mean	Median	Mean	Median	Mean	Median		
Number of observations	1706	1706	2974	2974	3393	3393	1287	1287	4680	4680

The table presents the univariate tests for state-controlled firms and privately controlled firms in Panel A and for connected firms and non-connected firms in Panel B. In Panel A, firms having the Chinese government as their ultimate controller, controlling at least 50 % of the firm's voting rights, are classified as state-controlled firms, accounting for 1706 firm-year observations. Firms with less than 20 % state-owned shares or ultimately controlled by non-government entities are categorized as privately controlled firms, accounting for 2974 firm-year observations. In Panel B, connected firms are firms with one or more politically connected directors, accounting for 3393 firm-year observations. Non-connected enterprises are firms without politically connected directors, accounting for 1287 firm-year observations. All variables are defined in Table 1. We investigate the significance of differences between the two subsamples by employing a parametric *t*-test and a non-parametric Wilcoxon test. *p* values <0.1 are indicated in bold

political connections (i.e., PCD, CENTRAL vs. LOCAL, and OFFICIAL vs. QUASI-OFFICIAL). $Controls_{i,t-1}$ represents a set of control variables as defined in Sect. 4.2.3. We cannot estimate firm-and-year-fixed effects because our measurements of political connections and corporate governance variables show only limited variation over time. Thus, to alleviate any heteroskedasticity problem due to firm-specific effects, we add industry and year dummies to the regression models and clustering standard errors at the firm level. In particular, Petersen (2009) shows that when one data dimension is quite limited (in our case, time variable), clustering by the more frequent dimension can derive nearly the same results as clustering by both firm and time. Nonetheless, to check the robustness of our results, we also re-run the analysis by using the two-dimensional clusters discussed in Petersen (2009) and Thompson (2011); the output is discussed later in the article.

Table 3 presents the correlation matrix of explanatory and control variables. Following Judge et al. (1988), we use 0.7 as the cutoff to decide whether two variables can enter the models at the same time. The correlation coefficients between most variables are not high except for two political connection variables (i.e., LOCAL and OFFICIAL) and two institutional variables (i.e., LEGAL and GOV). To address the too-high correlations between these variables, we enter them separately into the regression model. In addition, we check the variance inflation factor (VIF) of the regression variables. The VIF values of all of the regressions are less than five, indicating that multicollinearity poses no significant problem in our study.

5 Empirical results

5.1 Politically connected directors as the explanatory variable

In this section, we examine the relationship between political connections and stock price crash risk, using the number of politically connected directors on the board scaled by the total number of directors. Table 4 presents the baseline regression results, adding industry and year dummies to the regression model. We report the results for the full sample (columns 1 and 2), for the two subsamples of state-controlled firms (columns 3 and 4) and privately controlled firms (columns 5 and 6). Notably, in the full sample analysis, we further include the identity of the controlling shareholder (Identity), which equals one for listed SOEs and zero otherwise, to examine its interactive effect with politically connected directors on stock price crash risk. As shown in columns 1 and 2 of Table 4, although PCD bears no relationship to crash risk in the full sample, there is a strongly positive interactive effect between politically connected directors and the government as controlling shareholder on crash risk. This result indicates that a large fraction of politically connected directors in Chinese listed SOEs significantly increases crash risk compared with listed privately controlled firms. The regression results for listed SOEs in columns 3 and 4 provide a similar conclusion because we observe a strongly positive relationship between politically connected directors and crash risk. In contrast, we document a strongly negative relationship between politically connected directors and crash risk in the subsample of listed privately controlled firms. These results are consistent using two measures of crash risk.

Table 5 presents the empirical results, adding corporate governance and firm-level control variables to the regression models. Its structure is the same as Table 4. In the full sample, we again observe a strongly positive effect of PCD*Identity on stock price crash

Table 3 Correlation matrix of explanatory and control variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 PCD	1.000															
2 CENTRAL	0.128 (0.000)	1.000														
3 LOCAL	0.585 (0.000)	-0.262 (0.000)	1.000													
4 OFFICIAL	0.467 (0.000)	-0.159 (0.000)	0.794 (0.000)	1.000												
5 QUASI-OFFICIAL	0.234 (0.000)	0.486 (0.000)	0.105 (0.000)	-0.397 (0.000)	1.000											
6 LEGAL	-0.049 (0.001)	0.008 (0.568)	-0.040 (0.006)	-0.047 (0.001)	0.016 (0.283)	1.000										
7 GOV	0.007 (0.633)	0.014 (0.328)	0.003 (0.838)	-0.020 (0.162)	0.041 (0.005)	0.701 (0.000)	1.000									
8 CAP	-0.009 (0.550)	0.048 (0.001)	-0.063 (0.000)	-0.002 (0.912)	-0.054 (0.000)	0.308 (0.000)	0.131 (0.000)	1.000								
9 TOP1	0.036 (0.015)	0.041 (0.005)	-0.007 (0.657)	0.081 (0.000)	-0.098 (0.000)	-0.041 (0.005)	-0.049 (0.001)	0.095 (0.000)	1.000							
10 TOP2_5	-0.030 (0.040)	0.090 (0.000)	-0.045 (0.002)	-0.019 (0.191)	0.022 (0.138)	0.046 (0.002)	0.023 (0.120)	-0.038 (0.010)	-0.088 (0.000)	1.000						
11 BOARD SIZE	0.063 (0.000)	0.055 (0.000)	0.141 (0.000)	0.137 (0.000)	0.036 (0.013)	-0.043 (0.003)	-0.046 (0.002)	0.008 (0.578)	0.063 (0.000)	-0.025 (0.094)	1.000					
12 FIRMSIZE	0.093 (0.000)	0.080 (0.000)	0.024 (0.107)	0.066 (0.000)	-0.009 (0.553)	0.210 (0.000)	0.113 (0.000)	0.190 (0.000)	0.245 (0.000)	0.017 (0.246)	0.206 (0.000)	1.000				
13 ROE	0.018 (0.222)	0.051 (0.001)	-0.002 (0.902)	0.004 (0.767)	0.024 (0.109)	0.073 (0.000)	0.045 (0.002)	0.039 (0.009)	0.142 (0.000)	-0.025 (0.099)	0.039 (0.010)	0.277 (0.000)	1.000			
14 MTB	-0.034 (0.020)	-0.043 (0.003)	-0.020 (0.167)	-0.020 (0.162)	-0.025 (0.082)	0.031 (0.034)	-0.025 (0.088)	0.145 (0.000)	-0.190 (0.000)	0.065 (0.000)	-0.128 (0.000)	-0.015 (0.303)	-0.043 (0.004)	1.000		
15 LEV	0.031 (0.032)	-0.030 (0.038)	0.029 (0.050)	-0.001 (0.923)	0.023 (0.114)	-0.055 (0.000)	-0.047 (0.001)	-0.037 (0.010)	-0.070 (0.000)	0.010 (0.482)	-0.002 (0.903)	0.078 (0.000)	-0.201 (0.000)	-0.097 (0.000)	1.000	

Table 3 continued

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
16 TURNOVER	-0.055 (0.000)	-0.061 (0.000)	-0.034 (0.020)	-0.044 (0.003)	-0.024 (0.099)	0.028 (0.055)	0.029 (0.049)	0.093 (0.000)	-0.173 (0.000)	0.011 (0.460)	-0.094 (0.000)	-0.028 (0.052)	-0.099 (0.000)	0.295 (0.000)	0.040 (0.006)	1.000

This table presents the correlation matrix of explanatory and control variables. All variables are defined in Table 1. *p*-values are reported between parentheses underneath coefficients. Correlations greater than 0.7 in absolute value are indicated in bold

Table 4 Baseline regressions of crash risk on politically connected directors

	Full sample		State-controlled firms		Privately controlled firms	
	NCSKEW (1)	DUVOL (2)	NCSKEW (3)	DUVOL (4)	NCSKEW (5)	DUVOL (6)
PCD	-0.047 (0.064)	-0.031 (0.023)	0.199* (0.115)	0.066* (0.040)	-0.159** (0.077)	-0.078*** (0.028)
PCD*Identity	0.407*** (0.153)	0.165*** (0.055)				
Identity	-0.043* (0.025)	-0.017** (0.009)				
Constant	-0.325*** (0.039)	0.069*** (0.019)	0.020 (0.070)	-0.102*** (0.027)	-0.182*** (0.061)	-0.084*** (0.022)
Industry AND Year	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	4680	4679	1706	1705	2974	2974
Adj. R-square	0.091	0.094	0.105	0.105	0.095	0.099

This table presents the baseline regression output on the relationship between politically connected directors and stock price crash risk. We report the results for the full sample (columns 1 and 2), for the subsamples of state-controlled firms (columns 3 and 4) and for privately controlled firms (columns 5 and 6). The full sample consists of Chinese listed SOEs and privately controlled firms that fit our classification criteria as defined in Table 2. NCSKEW is the negative skewness of firm-specific weekly return at the firm-year level. DUVOL is the asymmetric volatility between negative and positive firm-specific weekly return at the firm-year level. PCD is the number of politically connected directors on the board scaled by the total number of directors. Identity is a dummy variable that equals one for SOEs, and zero otherwise. Robust clustered standard errors are reported in parentheses underneath coefficients. The symbols ***, **, and * denote significance at the 1, 5, and 10 % levels, respectively

risk, showing that the state as controlling shareholder exacerbates the positive relationship between politically connected directors and crash risk. Moreover, we find that PCD is significantly positively associated with our measures of crash risk in the subsample of listed SOEs. In contrast, in listed privately controlled firms, the coefficients on PCD are strongly negative.⁶ Overall, these results are consistent with Wu et al. (2012) and Wang (2015), among others, showing that political connections play a grabbing hand role for SOEs but a helping hand role for privately controlled firms, most likely because politically connected directors are often used by the state to intensify its control over listed SOEs. The collusion between politically connected directors and the government as controlling shareholder might hide bad information on expropriation and deter firm-specific information from flowing to the market, which increases crash risk. This finding supports Hypothesis 1. In contrast, politically connected directors might help to prop up firm performance in listed privately controlled firms without interfering with the rest, which reduces the possibility of extremely bad operation outcomes and thus mitigates stock price crash risk.

⁶ We also re-do the analysis by adding 204 observations in 2013 to the full sample. These observations are less affected by the prohibition of politicians as independent directors in October 2013. Our empirical findings on the relationship between politically connected directors and stock price crash risk remain robust in this additional test.

Table 5 Regressions of crash risk on politically connected directors

	Full sample		State-controlled firms		Privately controlled firms	
	NCSKEW (1)	DUVOL (2)	NCSKEW (3)	DUVOL (4)	NCSKEW (5)	DUVOL (6)
<i>Political connections</i>						
PCD	-0.036 (0.066)	-0.021 (0.024)	0.227* (0.118)	0.077* (0.041)	-0.159** (0.081)	-0.069** (0.030)
PCD*Identity	0.438*** (0.153)	0.173*** (0.055)				
Identity	0.039 (0.036)	0.007 (0.012)				
<i>Control variables</i>						
TOP1	-0.002*** (0.001)	-0.001* (0.000)	-0.004 (0.003)	-0.001 (0.001)	-0.002** (0.001)	-0.000 (0.000)
TOP2_5	0.001 (0.001)	0.001* (0.000)	0.003* (0.002)	0.001** (0.001)	0.002 (0.001)	0.001* (0.000)
BOARDSIZE	-0.041 (0.059)	-0.001 (0.021)	-0.052 (0.098)	-0.007 (0.036)	-0.091 (0.079)	-0.013 (0.028)
FIRMSIZE	-0.034** (0.016)	-0.022*** (0.006)	-0.051* (0.027)	-0.023** (0.009)	-0.022 (0.021)	-0.021*** (0.008)
ROE	-0.005 (0.061)	0.006 (0.023)	-0.007 (0.138)	-0.036 (0.058)	0.015 (0.068)	0.022 (0.025)
MTB	-0.006 (0.012)	-0.003 (0.004)	-0.038 (0.024)	-0.012 (0.009)	0.001 (0.015)	-0.000 (0.005)
LEV	0.056 (0.066)	0.022 (0.023)	0.189 (0.115)	0.056 (0.042)	0.074 (0.081)	0.028 (0.029)
TURNOVER	-0.238*** (0.045)	-0.088*** (0.016)	-0.144* (0.076)	-0.057** (0.027)	-0.308*** (0.056)	-0.109*** (0.020)
GDP per capita	-0.038* (0.020)	-0.008 (0.007)	-0.029 (0.035)	-0.007 (0.013)	-0.035 (0.025)	-0.009 (0.009)
Constant	1.304*** (0.443)	0.577*** (0.148)	1.738** (0.704)	0.523** (0.237)	0.845* (0.477)	0.479*** (0.182)
Industry & Year	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	4527	4526	1693	1692	2834	2834
Adj. R-square	0.103	0.108	0.112	0.113	0.113	0.117

This table presents the empirical results on the relationship between politically connected directors and stock price crash risk in the full sample (columns 1 and 2), in the subsamples of state-controlled firms (columns 3 and 4) and in privately controlled firms (columns 5 and 6). The full sample consists of Chinese listed SOEs and privately controlled firms that fit our classification criteria as defined in Table 2. NCSKEW is the negative skewness of firm-specific weekly return at the firm-year level. DUVOL is the asymmetric volatility between negative and positive firm-specific weekly return at the firm-year level. PCD is the number of politically connected directors on the board scaled by the total number of directors. Identity is a dummy variable that equals one for SOEs, and zero otherwise. Control variables are defined in Table 1. GDP per capita is the real GDP per capita in a Chinese province/municipality. Robust clustered standard errors are reported in parentheses underneath coefficients. The symbols ***, **, and * denote significance at the 1, 5, and 10 % levels, respectively.

5.2 Further classification of politically connected directors

5.2.1 Central versus local politically connected directors

We extend our analysis to examine the effect of different levels of political connections on crash risk. Prior studies document that the strength of political connections affects the benefits brought to connected firms (e.g., Khwaja and Mian 2005; Cheung et al. 2009). We follow Cheung et al. (2009) to classify politically connected directors as central- or local-government connections. Specifically, appointments of ex-government officials and members of CPC and CPPCC above the provincial level are considered central-level connections, whereas appointments at or below the provincial level are classified as local-level connections. CENTRAL and LOCAL are then calculated as the number of connected directors at each level on the board divided by the total number of politically connected directors.

Table 6 presents the regression output for listed SOEs (columns 1–4) and for listed privately controlled firms (columns 5–8) on different levels of connections, i.e., central versus local politically connected directors. As shown in Table 6, local-level politically connected directors significantly increase stock price crash risk in listed SOEs, whereas central-level political connections strongly mitigate crash risk in listed privately controlled firms. These findings are consistent using two measures of stock price crash risk. Thus, directors affiliated with local governments are more likely to interpret their fiduciary duties in the light of the interest of the state, which renders the flow of information to outsiders more difficult and thus exacerbates crash risk in listed SOEs. Conversely, the presence of central-level politically connected directors grants advantages to privately controlled firms when competing with their non-connected counterparts. This favorable outcome on a firm's operation reduces the stockpile of bad news, resulting in a lower crash possibility. Arguably, these findings to some extent support the argument in Cheung et al. (2009), showing that Chinese listed firms are subject to expropriation by local governments, but benefit from transactions with the central government.

5.2.2 'Government official' versus 'quasi-official' directors

Several Chinese studies document that 'government official' connections play a role of grabbing hand, whereas 'members of CPC and CPPCC' connections play a role of helping hand in connected firms, which could be attributed to the differences in how these two types of connections are established. The 'members of CPC and CPPCC' connections are often established by firms voluntarily and bring about favorable economic outcomes. In contrast, the 'government official' connections are used by the state as a controlling shareholder to achieve political and social objectives. Therefore, following previous studies (e.g., Du et al. 2010), we empirically test whether these two types of connections affect stock price crash risk differently. More specifically, OFFICIAL (QUASI-OFFICIAL) is calculated as the ratio of government officials (CPC or CPPCC members) as directors on the board to the total number of politically connected directors.

Table 7 reports the empirical results for listed state-controlled firms (columns 1–4) and for listed privately controlled firms (columns 5–8). The coefficients of OFFICIAL are significantly positive on stock price crash risk in listed SOEs, indicating that listed SOEs appointing retired government officials as directors are more prone to crash risk. The negative coefficients of QUASI-OFFICIAL suggest that the 'CPC and CPPCC member'

Table 6 Regressions of crash risk on central- versus local-level connections

	State-controlled firms			Privately controlled firms				
	DUVOL		(4)	NCSKEW		(6)	DUVOL	
	(1)	(2)		(3)	(5)		(7)	(8)
<i>Political connections</i>								
CENTRAL	-0.019 (0.113)		0.008 (0.033)	-0.098* (0.056)			-0.045** (0.022)	
LOCAL		0.103** (0.043)			-0.009 (0.028)			-0.008 (0.010)
<i>Control variables</i>								
TOP1	-0.004 (0.003)	-0.004 (0.003)	-0.001 (0.001)	-0.002** (0.001)	-0.002** (0.001)		-0.000 (0.000)	-0.000 (0.000)
TOP2_5	0.003 (0.002)	0.003* (0.002)	0.001** (0.001)	0.002 (0.001)	0.002 (0.001)		0.001* (0.000)	0.001* (0.000)
BOARDSIZE	-0.049 (0.098)	-0.077 (0.100)	-0.007 (0.036)	-0.091 (0.079)	-0.090 (0.080)		-0.014 (0.028)	-0.012 (0.028)
FIRMSIZE	-0.047* (0.026)	-0.052* (0.027)	-0.022** (0.009)	-0.024 (0.021)	-0.027 (0.021)		-0.022*** (0.008)	-0.023*** (0.008)
ROE	-0.022 (0.136)	-0.011 (0.138)	-0.040 (0.057)	0.014 (0.069)	0.012 (0.069)		0.022 (0.025)	0.022 (0.025)
MTB	-0.038 (0.024)	-0.038 (0.024)	-0.012 (0.009)	-0.001 (0.015)	-0.000 (0.015)		-0.001 (0.005)	-0.000 (0.005)
LEV	0.179 (0.115)	0.185 (0.115)	0.054 (0.042)	0.067 (0.081)	0.068 (0.081)		0.025 (0.029)	0.026 (0.029)
TURNOVER	-0.144* (0.076)	-0.142* (0.075)	-0.057** (0.027)	-0.310*** (0.057)	-0.307*** (0.056)		-0.110*** (0.020)	-0.109*** (0.020)
GDP per capita	-0.028 (0.035)	-0.030 (0.035)	-0.007 (0.013)	-0.032 (0.025)	-0.034 (0.025)		-0.007 (0.009)	-0.008 (0.009)
Constant	1.681** (0.692)	1.836** (0.717)	0.503** (0.233)	0.844* (0.477)	0.907* (0.474)		0.477*** (0.182)	0.507*** (0.181)

Table 6 continued

Industry & Year	State-controlled firms			Privately controlled firms				
	NCSKEW		DUVOL	NCSKEW		DUVOL		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	1693	1693	1692	1692	2834	2834	2834	2834
Adj. R-square	0.110	0.114	0.111	0.114	0.112	0.111	0.117	0.116

This table presents the empirical results on the effect of different levels of political connections, i.e., central versus local, on stock price crash risk. State-controlled firms and privately controlled firms are classified according to the criteria defined in Table 2. NCSKEW is the negative skewness of firm-specific weekly return at the firm-year level. DUVOL is the asymmetric volatility between negative and positive firm-specific weekly return at the firm-year level. CENTRAL (LOCAL) is the ratio of the number of central-government-affiliated (local-government-affiliated) directors on the board to the number of politically connected directors. All other variables are defined in Table 1. Robust clustered standard errors are reported in parentheses underneath coefficients. The symbols ***, **, and * denote significance at the 1, 5, and 10 % levels, respectively

Table 7 Regressions of crash risk on government-official versus quasi-official connections

	State-controlled firms			Privately controlled firms				
	NCSKEW		DUVOL	NCSKEW		DUVOL		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Political connections</i>								
OFFICIAL	0.119*** (0.042)	-0.057 (0.074)	0.039*** (0.015)	-0.021 (0.024)	0.016 (0.029)	-0.073** (0.033)	-0.000 (0.010)	-0.027** (0.012)
QUASI-OFFICIAL								
<i>Control variables</i>								
TOP1	-0.004 (0.003)	-0.004 (0.003)	-0.001 (0.001)	-0.001 (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.000 (0.000)	-0.000 (0.000)
TOP2_5	0.003 (0.002)	0.003* (0.002)	0.001** (0.001)	0.001** (0.001)	0.002 (0.001)	0.002 (0.001)	0.001* (0.000)	0.001* (0.000)
BOARDSIZE	-0.075 (0.100)	-0.044 (0.098)	-0.015 (0.037)	-0.005 (0.036)	-0.098 (0.080)	-0.086 (0.079)	-0.015 (0.028)	-0.012 (0.028)
FIRMSIZE	-0.053* (0.027)	-0.046* (0.027)	-0.024** (0.010)	-0.022** (0.009)	-0.027 (0.021)	-0.026 (0.020)	-0.023*** (0.008)	-0.023*** (0.007)
ROE	-0.003 (0.139)	-0.020 (0.136)	-0.034 (0.058)	-0.040 (0.057)	0.012 (0.069)	0.016 (0.069)	0.021 (0.025)	0.023 (0.025)
MTB	-0.038 (0.024)	-0.039 (0.024)	-0.012 (0.009)	-0.012 (0.009)	-0.001 (0.015)	-0.001 (0.015)	-0.001 (0.005)	-0.001 (0.005)
LEV	0.191* (0.114)	0.178 (0.115)	0.056 (0.042)	0.052 (0.042)	0.065 (0.081)	0.073 (0.081)	0.025 (0.029)	0.027 (0.029)
TURNOVER	-0.146* (0.075)	-0.145* (0.075)	-0.058** (0.027)	-0.057** (0.027)	-0.308*** (0.056)	-0.313*** (0.057)	-0.109*** (0.020)	-0.111*** (0.020)
GDP per capita	-0.032 (0.035)	-0.028 (0.035)	-0.008 (0.013)	-0.006 (0.013)	-0.033 (0.025)	-0.033 (0.024)	-0.008 (0.009)	-0.007 (0.009)
Constant	1.798** (0.705)	1.655** (0.692)	0.542** (0.236)	0.494** (0.234)	0.918* (0.477)	0.940** (0.475)	0.505*** (0.182)	0.518*** (0.181)

Table 7 continued

	State-controlled firms		Privately controlled firms	
	DUVOL		DUVOL	
	NCSKEW	(2)	NCSKEW	(5)
Industry & Year	Yes	Yes	Yes	Yes
No. of observations	1,693	1,692	2,834	2,834
Adj. R-square	0.115	0.116	0.112	0.113
		(3)	(4)	(6)
		(8)		(7)
				(8)

This table presents the empirical results on the effect of different types of political connections, i.e., government official versus CPC and CPPCC members, on stock price crash risk. State-controlled firms and privately controlled firms are classified according to the criteria defined in Table 2. NCSKEW is the negative skewness of firm-specific weekly return at the firm-year level. DUVOL is the asymmetric volatility between negative and positive firm-specific weekly return at the firm-year level. OFFICIAL (QUASI-OFFICIAL) is the ratio of the number of 'government official' directors ('CPC and CPPCC member' directors) to the number of politically connected directors. All other variables are defined in Table 1. Robust clustered standard errors are reported in parentheses underneath coefficients. The symbols ***, **, and * denote significance at the 1, 5, and 10 % levels, respectively

connections can mitigate crash risk, with this effect more pronounced in the subsample of listed privately controlled firms. Finally, a high correlation between LOCAL and OFFICIAL shown in Table 3 suggests that most politically connected directors in Chinese listed firms are former government officials at the local level. Thus, taking together our findings in Tables 6 and 7, Chinese listed SOEs appointing local government officials as directors are more likely to suffer crash risk, whereas listed privately controlled firms appoint members of CPC and CPPCC because these directors can significantly mitigate crash risk in such firms.

5.3 Role of the quality of institutions

In this section, we explore how the quality of institutions interacts with political connections to affect stock price crash risk. More specifically, we would like to investigate whether good quality of institutions helps to alleviate the influence of politically connected directors on stock price crash risk. Our analysis focuses on three dimensions of institutional quality: legal enforcement of property rights, government intervention in business, and stock market development. To avoid a too-high correlation between the original variables and their interaction terms, we demean the variables when calculating the interaction terms. Moreover, we enter the three measures on institutional quality and their interaction terms with politically connected directors one by one into the regression model. Table 8 presents the empirical results for listed state-controlled firms (columns 1–6) and for listed privately controlled firms (columns 7–12). The regressions include all control variables introduced in the previous section, but for simplicity, we do not tabulate their coefficients.

The empirical results show that strong legal enforcement of property rights significantly reduces crash risk but only in listed privately controlled firms. This result suggests that stronger legal protection of investors helps to avoid extortions by the government, with this effect more pronounced when the ultimate controller is a non-government entity. Moreover, the interaction term PCD*LEGAL has a positive but marginally significant coefficient (column 7), indicating that better protection of property rights can partially substitute for political connections in Chinese listed privately controlled firms. However, we do not observe a strong relationship between legal enforcement and its interaction term with PCD on crash risk in Chinese listed SOEs. Therefore, strong legal enforcement of property rights does not reduce the opportunistic behavior of the government as controlling shareholder and thus fails to mitigate bad-news hoarding behavior or the possibility of a crash in listed SOEs. This failure is consistent with previous studies in the Chinese context, which note that conflicts between public and private interests have commonly been resolved in favor of the former (see also Berkman et al. 2010; Jiang et al. 2010).

Next, as shown in Table 8, government intervention in business bears no relationship with stock price crash risk in either Chinese listed SOEs or privately controlled firms. Moreover, less severe government intervention in business fails to alleviate the positive relationship between politically connected directors and crash risk in Chinese listed SOEs. However, in the subsample of listed privately controlled firms, the interaction term PCD*GOV bears a positive relation with crash risk but is only marginally significant (see also column 11). This result indicates that the role of politically connected directors in mitigating crash risk is reduced among listed privately controlled firms located in regions with less severe government intervention in business. Finally, concerning stock market development, a more developed stock market helps to alleviate stock price crash risk, but only in listed privately controlled firms. Again, a more developed stock market is unable to mitigate the positive relationship between politically connected directors and crash risk in

Table 8 Role of institutional quality in the relationship between politically connected directors and crash risk

	State-controlled firms					Privately controlled firms						
	NCSKEW		DUVOL		(6)	NCSKEW		DUVOL		(12)		
	(1)	(2)	(3)	(4)		(5)	(7)	(8)	(9)		(10)	(11)
PCD	0.229* (0.118)	0.228* (0.119)	0.252** (0.120)	0.078* (0.041)	0.077* (0.041)	0.083* (0.042)	-0.153* (0.080)	-0.169** (0.081)	-0.149* (0.080)	-0.067** (0.029)	-0.072** (0.030)	-0.066*** (0.029)
LEGAL	-0.002 (0.002)	-0.004 (0.007)	-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.002)	-0.004*** (0.002)	-0.004*** (0.002)	-0.004*** (0.002)	-0.001** (0.001)	-0.001** (0.001)	-0.001** (0.001)	-0.001** (0.001)
GOV								0.002 (0.006)			0.000 (0.002)	
CAP			-0.005 (0.006)			-0.001 (0.003)			-0.010* (0.006)			-0.003 (0.002)
PCD*LEGAL	-0.004 (0.010)			-0.002 (0.003)			0.009 (0.007)			0.003 (0.002)		
PCD*GOV		-0.013 (0.041)			-0.009 (0.014)			0.042 (0.036)			0.017 (0.011)	
PCD*CAP			-0.036 (0.033)			-0.009 (0.013)			0.068* (0.037)			0.017 (0.011)
Constant	1.544** (0.742)	1.662** (0.718)	1.626** (0.717)	0.399 (0.252)	0.494** (0.243)	0.493** (0.241)	0.218 (0.528)	0.894* (0.512)	0.713 (0.488)	0.285 (0.202)	0.482** (0.192)	0.436** (0.188)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	1693	1693	1693	1692	1692	1692	2835	2835	2835	2835	2835	2835

Table 8 continued

	State-controlled firms			Privately controlled firms							
	NCSKEW	DUVOL		NCSKEW	DUVOL						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Adj. R-square	0.111	0.111	0.112	0.113	0.112	0.112	0.113	0.114	0.119	0.118	0.118

This table presents empirical results examining the role of quality of institutions in the relationship between politically connected directors and crash risk. State-controlled firms and privately controlled firms are classified according to the criteria defined in Table 2. NCSKEW is the negative skewness of firm-specific weekly return at the firm-year level. DUVOL is the asymmetric volatility between negative and positive firm-specific weekly return at the firm-year level. PCD is the number of politically connected directors on the board scaled by the total number of directors. LEGAL measures the legal enforcement of property rights, defined as the number of patents applied for and approved per engineer in a region; a higher score means stronger legal enforcement. GOV measures the extent of government intervention in business, calculated as the amount of time that a firm's managers spent with local government officials in a region; a higher score means less severe government intervention in business. CAP measures the development of the stock market in a region, calculated as the ratio of total market capitalization of local stocks to regional GDP. We also include corporate governance and firm-level control variables, defined in Table 1 in the regression models, but their coefficients are not tabulated. Robust clustered standard errors are reported in parentheses underneath coefficients. The symbols ***, **, and * denote significance at the 1, 5, and 10 % levels, respectively

listed SOEs. However, in listed privately controlled firms, we discern a strongly positive effect of $PCD*CAP$ on stock price crash risk, showing that firms operating in regions with a less developed stock market are more dependent upon politically connected directors to enhance firm value and reduce crash risk. Overall, our empirical results show that good quality of institutions can partially substitute for political connections in Chinese listed privately controlled firms. However, good institutional quality fails to alleviate the positive relationship between politically connected directors and crash risk in Chinese listed SOEs.⁷

5.4 Robustness checks

First, as another proxy for political connections, Ding et al. (2015) define a firm as politically connected if its chairman of the board is a former government official or member of the CPC or CPPCC. We therefore construct a new variable COB (chairman of the board) that equals one if a firm's chairman of the board is a former government official or the member of the CPC or CPPCC, and zero otherwise. We re-estimate the models in Table 5 using COB as a key explanatory variable to explain stock price crash risk. Although not tabulated for brevity, the results show that COB is significantly positively (negatively) associated with stock price crash risk in listed SOEs (in listed privately controlled firms).

In addition, it is likely that the observed relationships between political connections and stock price crash risk are driven by some omitted variables, for example, low accounting information quality and financial opacity. We therefore add a proxy for financial opacity to the regression model, which is calculated as the three-year moving sum of the absolute value of annual discretionary accruals (see also Dechow et al. 1995; Hutton et al. 2009). The empirical results show that financial opacity is significantly positively associated with stock price crash risk in both listed SOEs and privately controlled firms. Interestingly, in the subsample of listed SOEs, when adding the proxy for financial opacity, the positive relationship between politically connected directors and stock price crash risk becomes only marginally significant (p -value equal to 0.121). This result indicates that the strong relationship between politically connected directors and crash risk is now partially captured by low accounting information quality. In contrast, in listed privately controlled firms, when adding financial opacity to the regression model, the negative relation between politically connected directors and stock price crash risk remains significant (p -value equal to 0.048), again showing that politically connected directors do not impede the quality of financial reports in privately controlled firms.

Next, following Petersen (2009) and Thompson (2011), we re-estimate the models by clustering standard errors at two dimensions of firm and year simultaneously to address possible firm effect and time effect. Our empirical results prove to be robust, except that the negative relationship between central-level connections and crash risk becomes only marginally significant in the subsample of listed privately controlled firms. Moreover, to account for a potential heteroskedasticity problem due to firm-specific effects, we re-estimate the models in Tables 6 and 7 using firm-and-year fixed effect. We again observe a strongly positive relationship between politically connected directors and stock price crash risk in listed SOEs, driven by hiring local government officials as directors. In contrast, in listed privately controlled firms, the negative relationship between politically connected directors and stock price crash risk results from the appointment of CPC or CPPCC

⁷ We also use three alternative measures on the quality of institutions to redo the tests (see also Sect. 4.2.3). The empirical results are consistent with those reported in the paper.

members at the central level as directors. Overall, these findings are consistent with those reported in the paper, showing that our conclusions on the relationship between political connections and stock price crash risk are unlikely to be driven by omitted correlated time-invariant variables.

We also consider an alternative measure of firm-specific crash risk. Specifically, we define crash weeks for each firm in a year as those weeks during which a firm's weekly returns are 3.2 standard deviations below the mean of firm-specific weekly returns over the entire fiscal year. We choose 3.2 times standard deviation to generate a frequency of 0.1 % in the normal distribution (see also Hutton et al. 2009). This additional measure of crash likelihood is a dummy variable which equals one if a firm experiences one or more crash weeks in a fiscal year, and zero otherwise (see, e.g., Hutton et al. 2009; Kim et al. 2011). We thus re-estimate the models in Table 5, and find that the empirical results remain qualitatively the same, except for a weaker significance level in general.

Finally, we try different classifications of SOEs and privately controlled firms to examine the robustness of our results. First, we define SOEs as firms with the government as the ultimate controller and holding at least 20 % of voting rights. Our main findings on the relationship between politically connected directors and crash risk in listed SOEs continue to hold, although they become slightly weaker. Second, we define privately controlled firms as firms without state-owned shares. Our main conclusions on privately controlled firms remain consistent, and the significance level improves considerably. Overall, these findings suggest that government ownership plays an important role in the relationship between political connections and crash risk. A large fraction of state ownership exacerbates the positive relationship between politically connected directors and crash risk, whereas the negative relationship between politically connected directors and crash risk is more pronounced in firms with a small fraction of state-owned shares.

6 Conclusions

In this paper, we empirically investigate how the presence of politically connected directors affects stock price crash risk using a sample of Chinese firms listed on the Shanghai stock exchange over the period of 2003–2012. We thereby distinguish between listed state-controlled firms and privately controlled firms due to their different incentives to appoint politicians as directors on the board. In addition, we investigate how central- and local-level political connections affect stock price crash risk differently, and how 'government official' and 'CPC and CPPCC member' connections differ in the role of affecting crash risk. We also investigate whether good quality of institutions helps to alleviate the influence of politically connected directors on stock price crash risk.

Our empirical results show that the effect of politically connected directors on stock price crash risk is predetermined by a firm's ownership structure. Specifically, Chinese listed privately controlled firms with a large fraction of politically connected directors face a lower level of crash risk than do their non-connected counterparts, whereas politically connected directors in listed SOEs are positively associated with stock price crash risk. In addition, we find that the positive relationship between politically connected directors and crash risk in listed SOEs is primarily driven by hiring local government officials as directors, whereas the negative relationship in listed privately controlled firms is driven by having CPC and CPPCC members and politicians at the central level as directors. Concerning quality of institutions, our results show that in Chinese listed privately controlled

firms, the effect of politically connected directors on crash risk is weakened in regions with stronger legal enforcement of property rights, less severe government intervention in business, and a more developed stock market. However, good quality of institutions fails to affect the relationship between politically connected directors and stock price crash risk in listed SOEs. These findings are robust to a variety of model specifications.

Arguably, the findings of this article enrich our understandings on how political connections affect firm performance from the perspective of the third moment of stock return (i.e., crash risk). Our findings provide empirical support for the argument that political connections play a role of grabbing hand in SOEs but a role of helping hand in privately controlled firms. These results help to reconcile the previous inconsistent findings on the effects of political connections on firm performance. More specifically, the effects of political connections on firm stock market performance are shaped by different types of firms' incentives to establish connections. Moreover, our results add to the continuous efforts of scholars, investors, and regulators to forecast extreme negative returns or crashes. More specifically, consistent with Chaney et al. (2011), we show that politically connected firms are often associated with low accounting information quality and financial opacity. That is, financial opacity induced by political connections facilitates the tunneling activities of dominant owners in Chinese listed SOEs, whereas the bad-news hoarding behavior of the controlling party and the affiliated management team increases crash risk (see also Jin and Myers 2006). Conversely, politically connected directors might act as an alternative protection mechanism for Chinese listed privately controlled firms, and thus help to reduce the crash likelihood.

We also recognize that, although at the firm level, hiring officials as (independent) directors might have proved 'beneficial' in the short term; however, such decisions will not help a company in the changing market environment and do no good in cultivating sound corporate governance. Furthermore, the recent anti-corruption campaign in China shows that due to a cultural emphasis on family relationships, Chinese firms frequently use family relationships of politicians to obtain favorable treatment by the government. This practice raises doubts over ethical conduct and breeds collusion between business and the government. Indeed, rent seeking, corruption, and bribery associated with political connections might lead to further distortion of the allocation of economic resources, which imposes substantial economic costs on society overall (see also Khwaja and Mian 2005; Claessens et al. 2008; Fisman and Wang 2015). Thus, as a future research area, it would be interesting to explore how political connections via family relationships affect the real economy and overall social welfare.

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