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Political association, managerial power heterogeneity, and corporate risk-taking in China

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ABSTRACT

This article investigates the impact of political association and managerial power heterogeneity on corporate risk-taking using data of listed companies in China from 2006 to 2015. Politically associated companies demonstrate higher corporate risk-taking, and the impact of managerial power thereon depends on the source thereof. Structurally speaking, board of directors' supervision, and shareholders' supervision power are positively associated with corporate risk-taking, but ownership, expert, and prestige power are negatively associated. Political association weakens the influence of structural and prestige power on corporate risk-taking and strengthens the impact of ownership and expert power thereon. The article adds to the literature on political association, managerial power, and corporate risk-taking.

1. Introduction

In recent years, risk-taking has become a focus for theorists and practitioners. It has been shown that firms enhance their competitive advantage by investing more in R&D and capital expenditures, which induces them to take a higher level of corporate risk (Bargeron, Lehn, & Zutter, 2010; Hilary & Hui, 2009). At the same time, research confirms that corporate risk-taking is not only positively correlated with asset and sales growth (John, Litov, & Yeung, 2008), but can also significantly increase the market value of listed companies (Xia, Ma, & Chen, 2015). However, the level of risk-taking in a company often depends on the willingness of management (Khaw, Liao, Tripe, & Wongchoti, 2016). Private companies can gain more investment opportunities and resources by establishing formal or informal contacts with the government, as political connections increase the investment scale and investment efficiency of these enterprises (Chen, Jin, & Dong, 2016; Faccio, Marchica, & Mura, 2016; Qian & Yeung, 2015; Xu & Xiao, 2014).

Early research on risk-taking targeted financial institutions such as banks. In recent years, researchers have focused their empirical work on internal governance mechanisms and the external environment of non-financial listed companies. The internal governance mechanism includes the ownership structure, management incentives, and managers' characteristics. First, previous studies explain that the shareholding structure affects companies' risk-taking behaviour (Boubakri, Cosset, & Saffar, 2013; Li & Yu, 2012). Second, empirical studies on management incentives clarify how to enhance management's willingness to take risks (Choy, Lin, & Officer, 2014; Kempf, Ruenzi, & Thiele, 2009; Li & Zhang, 2014; Liu, Xiao xi, Weng, & Wang, 2016). Third, managers are the direct decision-makers regarding corporate investments, and their personal characteristics significantly affect corporate risk-taking (Cheng, Hsu, & Kung, 2015; Faccio, Marchica, & Mura, 2011).

In addition, the external environment such as market environment uncertainty, the creditor protection mechanism, religious beliefs, official turnover, and corporate social networks all affect the level of corporate risk exposure (Caggese, 2012; Hilary & Hui, 2009; Jian-li, 2009; Jiang, Jiang, Kim, & Zhang, 2015; Mao, Wang, & Hu, 2015; Sun & Lu, 2017).

Next, studies on political connections and investment opportunities focus on the impact of political connections and other regulatory variables on investment efficiency (reducing or improving it); however, research on the relationship between political connections and risk is limited (Fan, Peng, & Liu, 2016; Mao et al., 2015; Qian & Yeung, 2015). Empirical studies on management power and investment opportunities also focus on the impact of management power on investment efficiency. Scholars at home and abroad mostly construct the measure of management power based on management characteristics and the strength of management power, employing this to investigate the impact thereof on investment efficiency (Luo, 2017; Tan & Wei, 2014; Yuan & Dai, 2016).

In summary, both internal and external governance mechanisms and the management characteristics of the company may affect corporate risk-taking. However, the existing literature does not focus on the impact of the heterogeneity of management power on risk-taking. Moreover, political connection has not been neglected in decision-making in corporate investment behaviour. Therefore, this study examines whether political connection will affect the impact of management power heterogeneity on risk-taking. As such, this study focuses on the following questions.

a. Do political connections support private companies to avail more investment opportunities?
b. What is the impact of political connections on investment decisions in private companies?
c. Is there an association between management power and the level of risk-taking in private companies?

To answer these questions, data were collected of A-share private Chinese companies listed on the Shanghai and Shenzhen Stock Exchange for the period 2006 to 2015. Furthermore, a fixed effects regression technique was applied to 1,590 firm-year

observations. The results of this study imply that the role of managerial power in venture capital decision-making in companies is not necessarily negative. Highly educated or experienced managers are more likely to recognise their own project decision-making potential and may be more proactive in capturing high-risk, high-return investment projects. At the same time, political affiliations enhance management's willingness to invest, affecting the role of management power in risk-taking. Therefore, enterprises should rationally allocate and actively supervise the management power structure and make efficient use of the policy resources and investment opportunities provided through political connections. In addition, they should pay attention to investing in riskier projects.

This study is significant, as the data set and time duration are extensive. After the introduction, the article is organised as follows. Section 2 provides a review of the literature and develops the hypotheses. Section 3 clarifies data collection and describes the methodology. Section 4 provides and discusses the empirical results, while in section 5, the conclusion is discussed and policy implications highlighted. Finally, the references are provided.

2. Literature review

Corporate risk-taking is strongly dependent on the input of economic resources. If a company cannot obtain sufficient resources to support its investments, it may face great losses resulting from low investment efficiency and even investment failure. The required resources for a company's risk-taking behaviour include investment projects, capital, technology, land, and the channels of product sales. Politically affiliated companies have political resources (informal relationship with governments), which in the unique Chinese business environment can help private enterprises obtain and reduce the cost of access to additional economic resources (Chen et al., 2016; Wang, Liu, School, & University, 2016). Two performance aspects have been identified regarding political connections. First, political affiliation can bring policy resources (such as more bank loans at a lower interest rate, financial subsidies, and tax preferences) to private companies through increasing corporate social capital (Qian & Yeung, 2015, Faccio et al., 2016). These policy resources provide assurances to companies, leading them to assume a higher level of risk-taking, because higher-risk projects need more economic and political resources. Second, companies with political affiliations usually have lower coordination costs with the government than those not politically affiliated. Political relations can help private enterprises enter the industry, which is controlled by the government, and engage in lower-risk diversification (Luo, 2017). When private companies choose a higher level of risk-taking, they can greatly reduce the uncertainty of investment projects, have lower coordination costs, and have a stronger need to invest in riskier projects by establishing a relationship with the government. The main reason is that a political relationship provides assurance to private companies in terms of acquiring more returns when they engage in higher risk-taking (Fan et al., 2016). Based on the above analysis, the following hypothesis is proposed:

Hypothesis-1: Politically associated companies engage in a higher level of risk-taking behaviour than non-politically associated companies.

2.1. Management power and risk-taking

A typical characteristic of a modern enterprise is the separation of ownership and management. Management has the right to allocate all available resources and select the level of risk-taking. Management power is reflected in the power of large shareholders in Chinese private enterprises (Rui, 2008). Finkelstein (1992) defines management power as the ability of management to perform its own will and delineates this power into four dimensions: prestige power, expert power, ownership power, and organisational power. However, based on the classification by Finkelstein (1992), Frey and Kucher (1999), Wang et al. (2016) and Daft and Daft (2009), this article summarises its roles and divides it into two categories. The first is the power accumulated by managers themselves (including ownership power, prestige power, and expert power), and the second the power authorised by the organisation (including structural power, board of directors' supervision power, and shareholders' supervision power). This is because the management power of private companies mainly stems from the prestige power formed by private entrepreneurs in the process of starting and expanding the company, as well as the ownership power from shareholders as the concurrent executives. If private companies are managed by professional managers, then management power is often bestowed or authorised by the organisation (Liu et al., 2016, Choy et al., 2014, Caggese, 2012).

Management controls corporate investment activities, and investment willingness is influenced by the various sources of management power (Luo, 2017, Yuan & Dai, 2016). Large shareholders have two attitudes toward the companies they control. First, most executives are family members or appointed through a family relationship (Liu et al., 2016). Management receives much surplus control and is closely related with the future of the company. Here, the focus is on the long-term interests of the company, and managers have more management power based on their experience than that bestowed by the organisation. Although management has great power, it pays more attention to the long-term stability and sustainable development of the company, because the management team is also shareholders (Li & Zhang, 2014). To improve long-term performance, managers generally choose capital expenditure and innovation as well as other high risk-taking projects. Second, most management members of the company are professional managers, who have more management power than that based on experience only (Cheng et al., 2015, Faccio et al., 2011, Kempf et al., 2009). As there is a principal–agent problem between shareholders and management, managers may face an ethical risk and adverse selection to maximise their own interests. In addition, the professional managers' power bestowed by the organisation is often short term and only effective during the period of office. Generally, professional managers invest their human capital in one corporation, and it is difficult to disperse human capital across organisations. For the abovementioned reasons, professional managers tend to avoid risks, instead pursuing the stability provided by their remuneration and career. To achieve its own interests, management

often chooses conventional, low-risk investment projects (Cheng et al., 2015). Its willingness to bear risk is weak. Based on the above analysis, the second hypothesis is proposed as follows:

Hypothesis-2a: Managerial power based on managers' own experiences and prestige is positively associated with risk-taking.

Hypothesis-2b: Managerial power authorised by the organisation is negatively associated with risk-taking.

2.2. Political connection, management power heterogeneity, and risk-taking

Corporate risk-taking is not only the result of management choice, but also depends on the size of input resources of a company's investment. Political connections can provide companies' with more external resources than those available through their own capacity (Sun & Lu, 2017, Mao et al., 2015, Caggese, 2012). The political connection is the external capital of the company, while management power belongs to the internal governance. Furthermore, this political connection may influence the relationship between management power and risk-taking. The policy resources provided through political linkages decrease the risk of investment projects, possibly increasing the willingness of management to invest in riskier projects.

Considering the scarcity of political resources, shareholders may not dismiss management when they face the risk of investment failure. Therefore, managers may assume a lower risk to themselves when deciding on the level of risk-taking (Cheng et al., 2015, Faccio et al., 2011). Furthermore, local governments can provide more government subsidies to private companies when these fail to trigger operational risks, as the local government has the responsibility to promote economic growth, increase employment, and other economic and political goals (Hu & Shi, 2008). Local governments may bailout the company should their investment fail. Accordingly, managers with more prestige and expert power may choose high risk-taking projects, because of the low risk to themselves. In addition, managers with more organisational power may also choose high-risk investment projects due to availability of inside information and possible bailouts. Based on the above discussion, the following hypothesis is proposed:

Hypothesis-3a: Political connection strengthens the positive correlation between managerial power (based on managers' own experiences and prestige) and risk-taking.

Hypothesis-3b: Political connection weakens the negative correlation between managerial power (authorised by the organisation) and risk-taking.

3. Data, variables, and research methodology

3.1. Sample selection

The object of this study was A-share private companies listed on the Shanghai and Shenzhen Stock Exchange China for the 10 consecutive years from 2006 to 2015. To this end, the prior four years of rolling standard deviation of return on assets

(R.O.A.) was taken. The data were derived from the C.E.E.R. database, C.S.M.A.R. database, and Sina Finance Channel. Information on political connections was extracted from personal résumés in the management information obtained from the C.S.M.A.R. database and Sina Finance Network. The data were screened according to the following criteria: (1) Exclude the special treatment (S.T.) and particular transfer (P.T.) of private companies, because of their continuous loss during the past two years to avoid financial abnormality and an abnormal level of risk-taking; and (2) Exclude those with more than two missing variables among managerial power, political connection, or other control variables. Based on these criteria and after screening, 1,590 firm-year observations of 318 firms were obtained. Furthermore, we winsorised the data at the 1% level.

3.2. Dependent variable

In this study risk was the dependent variable, which we measured following the methods proposed by John et al. (2008), Faccio et al. (2011), and Faccio et al. (2016). As such, we calculated the R.O.A.s (E.B.I.T./total assets) for each firm in each year. Furthermore, we calculated the mean R.O.A. for each industry in each year, and then deducted the mean industry R.O.A. from the firm R.O.A. for the same year. The industry adjusted R.O.A. was:

$$AdjROA_{i,t} = ROA_{i,t} - \frac{1}{N} \sum\nolimits_{k=1}^{N} ROA_{k,t}$$

where N is the total number of enterprises in an industry to which the company belongs. Furthermore, we calculated the four-year rolling standard deviation of the industry adjusted R.O.A. using equation (1):

$$\sigma(ROA_{i,t}) = \sqrt{\frac{1}{T-1} \sum\nolimits_{t=1}^{r} \left(AdjROA_{i,t} - \frac{1}{T} \sum\nolimits_{t=1}^{T} AdjROA_{i,t} \right)^2} \, T{=}4. \qquad (1)$$

where ROA_{it} is return on assets for ith firm at time t, and σ denotes the standard deviation, i.e., rolling standard deviation over four consecutive years (2006–2009, 2007–2010, 2008–2011, 2009–2012, 2010–2013, 2011–2014, 2012–2015).

3.3. Independent variables

3.3.1. Managerial power

We adopted the method of Xiaofeng and Shinong (2010) and Xia et al. (2015) to measure management power based on management's personal characteristics. We postulated that the exercise of management power would be restricted by the board of directors and shareholders. Following the categories, qualitative measures were taken according to their sources.

1. Managerial power accumulated by managers themselves: (i) Ownership power was measured as the shareholding ratio of the general manager over total shares.

If general managers have a higher shareholding ratio, they would have more impact on voting rights in general meetings and ultimately possess more decision-making power; (ii) Prestige power was measured as managers' highest educational degree. Managers with a high level of education have a stronger ability to manage and operate the enterprise; thus, they ultimately possess more reputational power; and (iii) Managerial expert power refers to the ability to cope with risks and emergencies. We measured this construct as general managers' years of service. The longer the service duration, the more efficient will the general manager be when dealing with risky events and emergencies.

2. Managerial power bestowed by the organisation: (i) Structural power is defined as whether the Chief Executive Officer (C.E.O.) and chairman of the board of directors are the same person. If so, the C.E.O. has a greater impact on the management of the board; (ii) Board of directors' supervision power was measured according to the size of the board. The board can play its supervisory role more efficiently if the size of the board is large; (iii) Shareholders' supervision power was measured as the Z-index (the shareholding ratio of the first largest shareholder over the sum of the shareholding ratio of the second to tenth largest shareholders). When the largest shareholder of the company can control and strengthen the company, managerial power is weakened, as the largest shareholder has more impetus to bolster supervision.

3.4. Control variables

Following other studies (Cheng et al., 2015; Faccio et al., 2011, Faccio et al., 2016; John et al., 2008), we took the average age of directors, supervisors, and senior management as well as their gender ratio, growth rate of income of the main business, asset-liability ratio, Tobin-Q, asset turnover, company age, firm size, industry, and year as control variables. Their proxies and model name are explained in Table 1.

3.5. Political connection

In this study, we defined political connection as senior managers' political affiliations. Political affiliation is defined as a political connection when a company's chairman, C.E.O., or directors served as officials of the central government, local government, industry (bureau), or were Communist Party cadres, or elected deputies or C.P.P.C.C. members (Wu, Wu, Zhou, & Wu 2012; Yu, Li, & Pan, 2013, Fan et al. 2016).

3.6. Model design

The following regression models were employed to test the hypotheses.

Model (1) studied the impact of political connection on the level of corporate risk-taking as follows:

$$Risk_{it} = \alpha_0 + \alpha_1 Politic_{it} + \alpha_2 \sum Cont_{it} + Ind_i + yr_t + \varepsilon_{it}... \qquad (1)$$

Table 1. Description of variables and their symbol.

	Name Risk-taking	Symbol Risk	Description of Variable
Dependent variable			σ (ROA)
Independent Variables	Politic Connection	Politic	1 if a firm has political association, 0 otherwise
	Managerial Power which is accumulated by themselves (Pw1)	Pw1-OP	*Ownership Power:* shareholding ratio of CEO/total shares
		Pw1-PP	*Prestige Power:* level of education of CEO: 4 if CEO has a doctoral degree; 3 if he has a Master's degree; 2 if he has a Bachelor degree; 1 if he has an academic degree; 0 otherwise.
		Pw1-EP	*Expert Power:* years of service of CEO
	Managerial Power which is authorised by the organisation (Pw2)	Pw2-SP	*Structural Power or Duality:* 1 if the chairman and the CEO is the same person, 0 otherwise
		Pw2-BP	*Board of directors' supervision power:* 1 if the number of board members is lesser than the sample average, 0 otherwise
		Pw2-HP	*Holders' supervision power:* Z = - (shareholding ratio of the first largest shareholder/ sum of shareholding ratio of the second to tenth largest shareholders.)[2]
Control variables	Average age of directors, supervisors and senior management.	Mage	Average age of all senior executives of the Company
	Gender ratio of directors, supervisors and senior management	Gender	Number of males/total number of supervisors
	Growth rate of income of the main business	Growth	Growth rate of income of the main business = (current income of main business – former income of main business)/the former income of main business
	Asset-liability ratio	Lev	Total liabilities/Total assets
	Tobin-Q	Tobin-Q	Tobin-Q = market price (stock price)/replacement costs of the company
	Company size	Size	Natural logarithm of total assets
	Years since the company founded	Age	Natural logarithm of the number of years since the establishment of the company
	Asset turnover ratio	Turnover	Current operating income/annual average total assets
	Industry	Ind	Control industry effects, according to the SFC (2001) industry classification, this article covers 13 industries
	Year	Yr	Control the annual effect

where $Risk_{it}$ is the four-year rolling standard deviation of the industry adjusted ROA_{it}, α_0 is a constant term, and $Politic_{it}$ is the dummy variable for political association. The value of $Politic_{it}$ is "1" if a firm has a political connection and "0" otherwise. Furthermore, α_1 is the coefficient for $Politic_{it}$, $Cont_{it}$ is the control variable (mage, gender, growth, lev, Tobin-Q, turnover, age, size), α_2 is the coefficient for $Cont_{it}$, Ind_i is the industry dummy, Yr_t is the year dummy to control for industry and year effect respectively, and ε_{it} is the standard error.

Model (2) was formulated to study the impact of managerial power on corporate risk-taking level:

$$Risk_{it} = \beta_0 + \beta_1 \sum Pw_{it} + \beta_2 \sum Cont_{it} + Ind_i + yr_t + \varepsilon_{it}... \tag{2}$$

where $Risk_{it}$ is the four-year rolling standard deviation of the industry adjusted ROA_{it}, β_0 is the constant term, Pw_{it} represents the different types of managerial power accumulated by managers (Pw1-OP, Pw1-PP, Pw1-EP) and authorised by the organisation (Pw2-SP, Pw2-BP, Pw2-HP), β_1 is the coefficient of Pw_{it}, $Cont_{it}$ represents the control variables (mage, gender, growth, lev, Tobin-Q, turnover, age, size), β_2 is the coefficient of $Cont_{it}$, Ind_i is the industry dummy, Yr_t is the year dummy to control for the effects of industry and year, and ε_{it} is the standard error.

Model (3) was formulated to determine the moderating impact of political connection on the relationship between managerial power and corporate risk-taking:

$$Risk_{it} = \gamma_0 + \gamma_1 Politic_{it} + \gamma_2 \sum Pw_{it} + \gamma_3 Politic_{it}*Pwit$$
$$+ \gamma_4 \sum Cont_{it} + Ind_i + yrt + \varepsilon_{it}... \tag{3}$$

where $Risk_{it}$ is the four-year rolling standard deviation of the industry adjusted ROA_{it}, γ_0 is a constant term, $Politic_{it}$ is the dummy variable for political association. The value of $Politic_{it}$ is "1" if a firm has a political association and "0" otherwise. Furthermore, γ_1 is the coefficient of $Politic_{it}$, Pw_{it} represents different types of managerial power accumulated by managers (Pw1-OP, Pw1-PP, Pw1-EP) and authorised by the organisation (Pw2-SP, Pw2-BP, Pw2-HP), γ_2 is the coefficient of Pw_{it}, $Politic_{it}*Pw_{it}$ is the interaction term of Politic with different types of managerial power and γ_3 the coefficient thereof, $Cont_{it}$ represents the control variables (mage, gender, growth, lev, Tobin-Q, turnover, age, size), γ_4 is the coefficient of $Cont_{it}$, Ind_i is the industry dummy, Yr_t is the year dummy to control for the effect of industry and year respectively, and ε_{it} is the standard error.

We considered the fixed effects technique as appropriate following similar studies (Bayrakdaroğlu, Ege, & Yazici, 2013; Iqbal, Ahsan, & Zhang, 2016; Sheikh & Qureshi, 2014) and the results of the Hausman specification test (Baltagi, 2005).

4. Empirical analysis

4.1. Descriptive statistics

Table 2 presents the descriptive statistics of all the variables. The average of the four-year rolling standard deviation of the R.O.A. of Chinese privately owned companies

Table 2. Descriptive statistics.

Variables	Obs.	Mean	Median	Mode	STD.	Maximum	Minimum
Risk	1590	3.310	2.500	N/A	2.710	15.430	0.510
Politic	1590	0.700	1.000	1	0.460	1.000	0.000
Pw1-OP	1590	1.610	0.000	0	5.300	31.370	0.000
Pw1-PP	1590	2.350	2.000	4	0.880	4.000	0.000
Pw1-EP	1590	3.980	4.000	2	2.840	12.000	0.000
Pw2-SP	1590	0.200	0.000	1	0.400	1.000	0.000
Pw2-BP	1590	0.360	0.000	1	0.480	1.000	0.000
Pw2-HP	1590	−12.570	−4.450	1.38	22.460	−1.010	−142.330
Mage	1590	46.990	47.000	48	3.450	57.000	35.56
Gender	1590	0.830	0.850	0.2	0.110	1.000	0.000
Growth	1590	21.670	11.240	0.19	74.200	626.090	−77.690
Lev	1590	47.670	48.720	0.30	18.500	85.490	6.200
Tobin-Q	1590	2.170	1.730	0	1.320	8.450	0.890
Size	1590	21.840	21.770	N/A	1.030	24.650	19.470
Age	1590	2.740	2.770	2.71	0.280	3.500	1.390
Turnover	1590	72.580	62.550	0.31	51.050	309.800	5.100

Note: The table presents the descriptive statistics of dependent, explanatory and control variables included in our study. Pw2-HP represents Z value (shareholding ratio of the first largest shareholder/sum of shareholding ratio of the second to tenth largest shareholders). We multiply Z value with (−) to have a direct relationship of Holders' supervision power with Risk-taking in line with other two proxies of Managerial Power authorised by the organisation (Pw2) i.e., Structural power or Duality and Board of directors' supervision power.

from 2006 to 2015 is 3.310, with a minimum value of 0.510 and maximum of 15.430. These statistics indicate large differences in the level of risk-taking among companies. Politics scored an average of 0.700, indicating that 70% of the sample companies were politically connected during the sample period. This confirms that most privately owned companies have political connections.

For managerial power, the Pw1-OP has a mean of 1.610, meaning that the average shareholding percentage of the C.E.O. is 1.610%. However, some C.E.O.s owned a maximum of 31.370% of the total shares, while others did not hold a single share. The mean of Pw1-PP was 2.350 and the median 2.000. This indicates that the average educational background of C.E.O.s in the sample was a bachelor's degree, although the maximum educational level of a C.E.O. in any company was a doctorate degree as mode value of Pw1-PP = 4.000. The mean of Pw1-EP was 3.980, indicating that in our sample, the average experience of the C.E.O. was four years. The mean of the Pw2-SP was 0.200, indicating that the chairman of the board also served as the C.E.O. in about 20% of the sample. The mean value of Pw2-BP was 0.360, confirming that the average number of board members in Chinese firms is 4. Pw2-HP scored a mean value of 12.570, meaning that on average, the largest shareholder is 12.570 times the sum of the second to tenth largest shareholder of the firm. This means that the largest shareholder has more ownership, and thus, more supervision power in Chinese firms than the sum of the second to tenth largest shareholders.

For control variables, the mean value of Mage was 47 years, indicating that the average age of the board of directors in Chinese firms is 47 years. The maximum age was 57 years. The mode value for gender was 0.2 with mean (0.83) and median (0.85), meaning that more than 80% of supervisors are male. The mean value of growth was 21.670; thus, the growth rate of the main business of Chinese companies is almost 22%. The mean value of lev is 47.670, showing that on average, 48% of the financing of Chinese firms is debt financing. Tobin-Q scored an average value of

2.170, indicating that Chinese firms have a 2.170 times higher market than book value. The maximum value was 8.5 times. The mean (21.840) and median (21.770) of company size show that almost half the Chinese firms included in our study are of average size. The mean (2.740) and median (2.770) of firm age show that almost half the Chinese companies included in our study are of average age. The mean of the turnover ratio shows that on average, the operating income of Chinese companies is 72.580 times greater than their average total assets.

4.2. Correlation analysis

To initially analyse the relationship between variables, we also conducted a correlation analysis. As shown in Table 3, risk and politics were significantly and positively correlated at the 1% level, indicating that political connections can promote corporate risk *(hypothesis-1)*. The abovementioned relationship is a simple correlation, and a regression analysis is needed to provide a more rigorous explanation of *hypothesis-1*. Moreover, the largest absolute value of any pair-wise correlation coefficient between all variables in the same model was 0.468, indicating that no serious multicollinearity existed between variables in the same model.

4.3. Univariate analysis

Table 4 shows the differences in risk-taking among different groups of companies after they were categorised according to political connection and managerial power. The average level of risk-taking in politically affiliated firms was 3.489, and 2.881 in non-politically affiliated ones. This difference is statistically significant at the 1% level. These results confirm *hypothesis-1* of our study, clarifying that politically affiliated companies take more risk than non-politically affiliated ones. Among the sub-samples of the managerial power group, the mean risk-taking level of the high-shareholding group (mean = 3.358) and group with a lower level of education (mean = 3.275) was higher than that of the low-shareholding (mean = 2.976) and highly educated groups (mean = 3.339) respectively. Furthermore, the difference between the high and low-shareholding groups was statistically significant, while the difference between the highly educated and less educated group was statistically insignificant. Furthermore, the mean of the risk-taking level of the highly experienced group of C.E.O.s (mean = 3.425) was higher than the group of C.E.O.s with less experience (mean = 3.199). This difference was statistically significant at the 10% level, and clarifies that more experienced C.E.O.s take more risk than new or less experienced C.E.O.s.

Moreover, the mean (3.282) of the risk-taking level is lower when the C.E.O. and chairman of the board are different people compared to the mean (3.401) when the C.E.O. is also the chairman. However, this difference was statistically insignificant. Furthermore, the difference between the mean of the risk-taking level of boards with a high or low number of members as well as high and low shareholding ratio by the largest shareholder was statistically insignificant. In addition, we analysed the differences in the median of each group. The results were in line with those for the mean differences, excepting for structural power or duality groups. The test results confirm

Table 3. Correlation matrix.

	Risk	Politic	Pw1-OP	Pw1-PP	Pw1-EP	Pw2-SP	Pw2-BP	Pw2-HP	Mage	Gender	Growth	Lev	Tobin-Q	Size	Age	Turnover
Risk	1.000															
Politic	0.103***	1.000														
Pw1-OP	0.003	0.015	1.000													
Pw1-PP	0.022	0.056**	0.086***	1.000												
Pw1-EP	-0.055**	0.045*	-0.003	0.002	1.000											
Pw2-SP	0.018	-0.033	0.343***	-0.008	0.056**	1.000										
Pw2-BP	0.007	-0.051**	0.022	0.023	-0.035	0.082***	1.000									
Pw2-HP	0.009	0.026	0.112***	0.027	0.007	0.024	0.049*	1.000								
Mage	0.043*	0.109***	-0.025	0.014	0.172***	-0.10***	-0.041*	-0.000	1.000							
Gender	-0.010	0.017	0.046*	0.002	0.004	-0.047*	-0.152***	0.059**	0.193***	1.000						
Growth	0.045*	0.015	0.006	0.028	-0.013	0.024	-0.019	0.023	0.019	0.000	1.000					
Lev	-0.183***	0.018	-0.039	0.020	-0.036	-0.11***	-0.094***	-0.065***	0.036	0.032	0.036	1.000				
Tobin-Q	0.116***	-0.033	0.040	-0.003	-0.020	0.138***	0.073***	0.112***	-0.049**	-0.015	0.003	-0.436***	1.000			
Size	-0.129***	0.031	-0.094***	0.039	0.064**	-0.10***	-0.096***	-0.076***	0.093***	0.056**	0.086***	0.445***	-0.468***	1.000		
Age	0.003	-0.062**	-0.296***	0.030	0.072***	-0.08***	0.028	-0.057**	0.096***	-0.132***	0.006	0.114***	-0.161***	0.125***	1.000	
Turnover	-0.041	0.037	0.056**	0.020	-0.005	-0.041	-0.099***	0.079***	-0.013	0.089***	0.235***	0.090***	-0.025	0.014	-0.094***	1.000

Note: ***, ** and * represent the significance level at 1%, 5%, 10%, respectively.

Table 4. Univariate analysis.

		Obs.	Mean test		Median test	
			mean	T-value	Median	Z-value
Political Connection	Non-Political	478	2.881	–4.125***	2.268	–3.78***
	Political	1112	3.489		2.584	
Ownership Power	Higher Group	1376	3.358	1.917*	2.544	2.081**
	Lower Group	214	2.976		2.271	
Prestige Power	Higher Group	818	3.275	–0.473	2.466	–0.840
	Lower Group	772	3.339		2.525	
Expert Power	Higher Group	753	3.425	1.662*	2.590	1.990**
	Lower Group	837	3.199		2.404	
Structural Power	No duality	1266	3.282	–0.701	2.451	–1.657*
	Duality	324	3.401		2.671	
Board of directors' supervision Power	Higher Group	1021	3.293	–0.263	2.503	–0.506
	Lower Group	569	3.330		2.468	
Holders' supervision Power	Higher Group	376	3.476	1.387	2.590	0.628
	Lower Group	1214	3.254		2.470	

Note: The table represents the results of mean deviation test (*t*-test) and the median deviation test (Wilcoxon rank sum test). ***, ** and * represent the significance level at 1%, 5%, 10%, respectively.

that the median of the two groups was statistically significant at the 10% level which confirm the studies by Chen et al. (2016), Faccio et al. (2016), Cheng et al. (2015) and Caggese (2012).

4.4. Regression analysis

4.4.1. Political connection and risk-taking
Table 5 provides the results of the fixed effects analysis for model (1). Column (1) of Table 5 shows the regression results of the control variables when the dummy $Politic_{it}$ is 0, while column (2) shows the regression results when the dummy is 1. After controlling management characteristics, firm characteristics, industry, and time effect to risk exposure, the regression coefficient for $Politic_{it}$ was 0.373, which is significant at the 1% level. This shows that politically associated enterprises demonstrate a higher level of risk-taking behaviour than non-politically associated ones *(hypothesis-1)*. Furthermore, the relationship of image, gender, Tobin-Q, size, and turnover ratio with risk-taking is insignificant for politically and non-politically connected firms. We also determined a significant positive relationship between growth and risk-taking for both types of companies, verifying that growing firms take more risk, regardless of political association. Moreover, we identified significant negative relationships for lev and age with risk-taking for both types of companies. This implies that highly levered and older companies take less risk, regardless of political association.

4.4.2. Management power heterogeneity and risk-taking
Table 6 provides the results of the fixed effects analysis for model (2). Columns (1)–(3) show the impact of management power (accumulated by managers) on risk-taking. The three regression coefficients of Pw1 were significant and positive, indicating that management's power can raise the level of corporate risk-taking. Columns (4)–(6) show the impact of management's power (accumulated by the organisation)

Table 5. Political connection and risk-taking.

	Non-Politically Connected Firms		Politically Connected Firms	
	Coef.	T-Statistics	Coef.	T-Statistics
Constant	8.094***	(2.62)	8.382***	(2.67)
Politic			0.373***	(4.41)
Mage	−0.001	(−0.04)	−0.005	(−0.20)
Gender	0.854	(1.13)	0.888	(1.21)
Growth	0.002**	(2.08)	0.001**	(2.10)
Lev	−0.016**	(−2.34)	−0.016**	(−2.40)
Tobin-Q	−0.013	(−0.20)	−0.021	(−0.33)
Size	−0.075	(−0.54)	−0.108	(−0.80)
Age	−0.704***	(−3.18)	−0.578***	(−2.80)
Turnover	0.002	(0.92)	0.002	(0.96)
Year	YES		YES	
Industry	YES		YES	
Observations	1590		1590	
R-Square	0.026		0.028	
F(24,317)	48.85		50.75	
Prob > F	0.000		0.000	

Note: The table presents the results of fixed effects model to analyse the impact of political connection on the level of risk-taking. ***, ** and * represent the significance level at 1%, 5%, 10%, respectively.

on risk-taking. The three regression coefficients for Pw2 were significant and negative, meaning that when the organisation empowers management, the level of corporate risk-taking is reduced. These results verify *hypothesis-2a and hypothesis-2b* of our study and explain that managers are more inclined to take a higher level of risk when their power is based on their own experiences and prestige, rather than bestowed or authorised by the organisation.

The significant positive coefficient (0.018*) of Pw1-OP indicates that when general managers/C.E.O.s hold a larger proportion of shares, they may take more risky decisions. This may be because when making investment decisions, management – as owners – considers both its own short-term and long-term interests. The significant positive coefficient (0.192***) of Pw1-PP indicates that the higher the education of C.E.O.s, the more able they are to use their professional knowledge to accurately grasp the expected return on investment projects and risk. Therefore, they may be more inclined to undertake risky projects. The significant positive coefficient (0.025*) of Power1-EP indicates that the level of corporate risk exposure is significant and positively related to the experience of the C.E.O. This shows that a C.E.O. with a longer tenure is considered more experienced to deal with risky events and emergencies, and thus, has a lower probability of investment failure.

Furthermore, we found a significant negative (–0.291***) relationship between Pw2-SP and risk. Thus, when C.E.O.s also serve as the chairman of the board, they take less risky decisions. Possibly, high management power makes them risk averse. The significant negative coefficient (-0.166*) of Pw2-BP indicates that having fewer members on the board of directors provides more power to management, making it risk averse. The significant negative coefficient (0.005***) of Pw2-HP shows that the largest shareholder with a lower ratio of ownership will have less controlling power and consequently, less management concern. Therefore, management will ultimately have greater management power and be more inclined to engage in highly risky investments.

Table 6. Management power heterogeneity and risk-taking.

	(1) Risk	(2) Risk	(3) Risk	(4) Risk	(5) Risk	(6) Risk
Constant	8.258***	7.614**	8.097***	8.555***	8.532***	8.152***
	(2.75)	(2.36)	(2.69)	(3.00)	(2.80)	(2.75)
Pw1-OP	0.018*					
	(1.94)					
Pw1-PP		0.192***				
		(3.08)				
Pw1-EP			0.025*			
			(1.89)			
Pw2-SP				−0.291***		
				(−10.41)		
Pw2-BP					−0.166*	
					(−1.84)	
Pw2-HP						−0.005***
						(−2.97)
Mage	−0.001	0.001	−0.004	−0.003	−0.001	−0.003
	(−0.02)	(0.05)	(−0.14)	(−0.12)	(−0.04)	(−0.09)
Gender	0.830	0.815	0.898	0.864	0.818	0.858
	(1.10)	(1.12)	(1.16)	(1.13)	(1.09)	(1.19)
Growth	0.002**	0.002**	0.001*	0.001**	0.001**	0.001**
	(2.09)	(2.10)	(1.85)	(2.18)	(2.08)	(2.06)
Lev	−0.016**	−0.016**	−0.015**	−0.015**	−0.015**	−0.016**
	(−2.39)	(−2.38)	(−2.17)	(−2.26)	(−2.28)	(−2.42)
Tobin-Q	−0.008	−0.014	−0.013	−0.019	−0.018	−0.008
	(−0.12)	(−0.22)	(−0.21)	(−0.29)	(−0.27)	(−0.12)
Size	−0.076	−0.090	−0.071	−0.100	−0.083	−0.063
	(−0.55)	(−0.65)	(−0.53)	(−0.77)	(−0.58)	(−0.46)
Age	−0.769***	−0.596**	−0.767***	−0.621***	−0.733***	−0.835***
	(−3.86)	(−2.43)	(−3.20)	(−2.80)	(−3.07)	(−3.21)
Turnover	0.002	0.002	0.003	0.002	0.002	0.002
	(0.91)	(0.81)	(1.12)	(0.90)	(0.91)	(0.91)
Year	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES
Observations	1590	1590	1590	1590	1590	1590
R-Square	0.027	0.028	0.027	0.027	0.027	0.027
F(24,317)	51.23	45.67	49.32	50.77	68.35	108.09
Prob > F	0.000	0.000	0.000	0.000	0.000	0.000

Note: The table presents the results of fixed effects model to analyse the impact of different types of management powers on risk-taking level. ***, ** and * represent the significance level at 1%, 5%, 10%, respectively.

4.4.3. Political association, management power heterogeneity, and risk-taking

Table 7 provides the results of the fixed effects analysis for model (3), which explains the impacts of political association and management power heterogeneity on the level of risk-taking. Each column in Table 7 includes the dummy $Politic_{it}$, one type of *Power* variable (Pw1-OP, Pw1-PP, Pw1-EP, Pw2-SP, Pw2-BP, Pw2-HP), and the interaction term of the dummy $Politic_{it}$. The *Power* variable was included in the model plus the control variables.[1] The regression coefficients for $Politic_{it}$ in columns (1)–(6) are positive at the 1% significance level, in line with previous results (model 1). In addition, the regression coefficient for Pw1 in columns (1)–(3) was significant and positive (except Pw1-EP), and that for Pw2 in columns (4)–(6) significant and negative, consistent with previous results (model 2). This similarity between results demonstrates the robustness of the study.

The regression coefficient of Pw1-OP (0.015*) in column (1) was positive at the 10% significance level, while the coefficient of the dummy interaction of Pw1-OP with $Politic_{it}$ (Politic * Pw1 − OP) was significant and positive at the 1% level

Table 7. Political association, management power heterogeneity and risk-taking.

	(1) Risk	(2) Risk	(3) Risk	(4) Risk	(5) Risk	(6) Risk	(7) Results
Constant	7.847**	8.050**	8.702***	9.510***	8.462**	8.408***	
	(2.37)	(2.49)	(2.89)	(3.36)	(2.52)	(2.77)	
Politic	0.367***	0.335***	0.390***	0.324***	0.362***	0.367***	
	(4.12)	(3.38)	(4.37)	(3.72)	(4.66)	(4.77)	
Pw1-OP	0.015*						0.015*
	(1.96)						(1.96)
Politic*Pw1-OP	0.060***						0.060***
	(2.64)						(2.64)
Pw1-PP		0.177***					0.177***
		(2.89)					(2.89)
Politic*Pw1-PP		−0.109**					−0.109**
		(−2.46)					(−2.46)
Pw1-EP			0.020				0.020
			(1.59)				(1.59)
Politic*Pw1-EP			0.069***				0.069***
			(3.42)				(3.42)
Pw2-SP				−0.257***			−0.257***
				(−6.61)			(−6.61)
Politic*Pw2-SP				1.208***			1.208***
				(4.82)			(4.82)
Pw2-BP					−0.146*		−0.146*
					(−1.66)		(−1.66)
Politic*Pw2-BP					−0.249		−0.249
					(−1.11)		(−1.11)
Pw2-HP						−0.005**	−0.005**
						(−2.13)	(−2.13)
Politic*Pw2-HP						0.003	0.003
						(0.35)	(0.35)
Mage	−0.007	−0.002	−0.007	−0.008	−0.004	−0.007	
	(−0.28)	(−0.06)	(−0.25)	(−0.32)	(−0.15)	(−0.25)	
Gender	0.915	0.807	0.936	0.936	0.827	0.919	
	(1.38)	(1.15)	(1.24)	(1.30)	(1.09)	(1.22)	
Growth	0.001**	0.001**	0.001*	0.002**	0.001**	0.001**	
	(2.15)	(2.09)	(1.85)	(2.42)	(2.13)	(2.07)	
Lev	−0.017**	−0.016**	−0.015**	−0.016**	−0.016**	−0.016**	
	(−2.48)	(−2.45)	(−2.20)	(−2.39)	(−2.32)	(−2.50)	
Tobin-Q	−0.010	−0.024	−0.024	−0.017	−0.027	−0.014	
	(−0.15)	(−0.38)	(−0.39)	(−0.27)	(−0.43)	(−0.23)	
Size	−0.093	−0.121	−0.117	−0.153	−0.113	−0.095	
	(−0.69)	(−0.89)	(−0.89)	(−1.23)	(−0.80)	(−0.71)	
Age	−0.494**	−0.519**	−0.696***	−0.587***	−0.500*	−0.707***	
	(−2.49)	(−2.28)	(−2.80)	(−4.23)	(−1.91)	(−3.05)	
Turnover	0.002	0.002	0.003	0.003	0.002	0.002	
	(0.92)	(0.87)	(1.23)	(1.01)	(0.98)	(0.82)	
Year	YES	YES	YES	YES	YES	YES	
Industry	YES	YES	YES	YES	YES	YES	
Observations	1590	1590	1590	1590	1590	1590	
R-Square	0.031	0.0292	0.0289	0.0351	0.0286	0.029	
F(26,317)	80.61	93.83	75.62	50.32	71.77	96.52	
Prob > F	0.000	0.0000	0.0000	0.0000	0.0000	0.0000	

Note: The table presents the results of fixed effects model to analyse the impact of political association combined with different types of management powers on risk-taking level. ***, ** and * represent the significance level at 1%, 5%, 10%, respectively.

(0.060***), indicating that political connection strengthens the impact of management ownership on the level of corporate risk-taking *(hypothesis-3a)*. The regression coefficient of Pw1-PP (0.177***) in column (2) was positive at the 1% significance level, while the coefficient of the dummy interaction of Pw1-PP with *Politic$_{it}$* (Politic * Pw1 − PP) became significant and negative at the 5% level (−0.109**). This

indicates that political connection significantly weakens the positive impact of management's reputation (education) on risk-taking. This could be attributed to the fact that private enterprises can easily gain the benefits of non-market competition by establishing political connections, which weakens the motivation and role of the C.E.O. or management. The regression coefficient of Pw1-EP (0.020) in column (3) was positive, but not significant, while the coefficient of the dummy interaction of Pw1-EP with $Politic_{it}$ (Politic $*$ Pw1 $-$ EP) was significant and positive at the 1% level (0.069***). This indicates that political connection strengthens the impact of management's expertise on the level of corporate risk-taking (hypothesis-3a).

Furthermore, the regression coefficient of Pw2-SP (–0.257***) in column (4) was negative at the 1% significance level, and in contrast, the coefficient of the dummy interaction of Pw2-SP with $Politic_{it}$ (Politic $*$ Pw2 $-$ SP) was significant and positive at the 1% level (1.208***). The relationships described above clarify that when the C.E.O. is the chairman of the board and has a political connection, his/her power is doubled, increasing the level of corporate risk-taking (hypothesis-3b).

The regression coefficient of Pw2-BP (–0.146*) in column (5) was negative at the 1% significance level, while the coefficient of the dummy interaction of Pw2-BP with $Politic_{it}$ (Politic $*$ Pw2 $-$ BP) was negative (–0.249), but insignificant. This insignificant relationship alongside the significantly positive relationship between $Politic_{it}$ and corporate risk-taking indicates that the resources stemming from the political connection will increase the level of corporate risk-taking, but not significantly affect management's investment decisions. The regression coefficient of Pw2-HP (–0.005**) in column (6) is significant and negative at the 5% level, while the coefficient of the dummy interaction of Pw2-HP with $Politic_{it}$ (Politic $*$ Pw2 $-$ HP) is positive, but not significant (0.003). The insignificance of the interaction term between political connection and shareholders' checks clarifies that political connections will not affect the supervisory role of the largest shareholder when considering corporate risk exposure. The regression results in columns (1) and (3) verify hypothesis-3a of our study while the results in column (4), (5) and (6) verify hypothesis-3b.

4.5. Robustness test

We employed two types of managerial power, eight control variables, and political association as a categorical variable. For this large number of variables, autocorrelation and multicollinearity may have been an issue. The results of the variation inflation factor (V.I.F.) provide the highest V.I.F., which is less than 10. As such, multicollinearity was not an issue (Nachane, 2006; Ott & Longnecker, 2001). Furthermore, to ensure the validity and robustness of the results, we performed post-estimation tests including the modified Wald test for group-wise heteroskedasticity in the fixed effect regression model and the Wooldridge test for autocorrelation in the panel data. As a remedy for autocorrelation, we used robust standard errors adjusted for heteroskedasticity, and clustered the robust standard errors adjusted for clusters in panels (firms).

5. Conclusions and policy recommendations

This study examined the impact of political connection and managerial power on the risk-taking behaviour of Chinese listed firms by examining the consecutive A-share non-financial private listed companies in China from 2006 to 2015. The empirical results confirmed the following:

1. The political association of private listed companies in China has a significant positive impact on risk-taking. Companies with political connections tend to engage in aggressive investment decisions. Therefore, they should appropriately handle political connections, use political resources correctly, and adapt to China's transformation environment under the premise of lawful compliance.

2. The managerial power of different sources impacts the risk-taking of private companies in different ways. Specifically, the combination of the general manager/C.E.O. and chairman of the board leads to a lower level of risk-taking, while having a highly educated management team increases the tendency to invest in riskier projects. Accordingly, a highly educated management team will increase the level of risk-taking in private companies and the value of the enterprise. Furthermore, the longer the term of the general manager/C.E.O., the higher is the level of risk-taking in the company. One reason may be that these managers learn how to tackle various situations through experience. Furthermore, the stronger the controlling power of the largest shareholder, the lower the level of corporate risk-taking (Cheng et al., 2015). This shows that large shareholders in a company act as supervisors, restricting management from taking extra risk.

3. Finally, the interaction effect of political connection and managerial power reveals that political connection strengthens ownership, expert, and the board of directors' supervisory power, and consequently, promotes corporate risk-taking. The results also confirm that the management power accumulated by management reinforces their risk-taking behaviour, while that bestowed by the organisation weakens it, making them risk averse. However, reputation power plays a lesser role in risk-taking.

This study has certain limitations as well. Firstly, unique Chinese environment makes the generalisability of the study difficult particularly in developed economies. Secondly, short time span covered also limits the conclusion drawn. Therefore, similar study in developed economy and longer time span will further deepen our understanding of the relationship.

The results of this article imply that highly educated or experienced managers are more likely to recognise their own potential during project decision-making and may be more proactive in capturing high-risk, high-return investment projects. At the same time, political affiliations enhance management's willingness to invest in riskier projects, and an organisation's power structure affects corporate risk-taking. Therefore, enterprises should rationally allocate and actively supervise the management power structure and efficiently use the policy resources and investment opportunities provided through political connections. Finally, they should pay attention while investing in risky projects.

Notes

1. We include the interaction term of *Politic* with one type of Power variable individually in each model to avoid multicollinearity.
2. We multiply Z value with (-) to have a direct relationship of Holders' supervision power with Risk-taking in line with other two proxies of Managerial Power authorised by the organisation (Pw2) i.e., Structural power or Duality and Board of directors' supervision power.

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