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RESEARCH ARTICLE

The founder as the microfoundation of slack resource and firms' R&D investment

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Abstract

This paper studies the relationship between slack and research and development (R&D) investment by addressing the role of the founder as the 'microfoundation' among Chinese newly listed firms. We propose a contingent approach to understanding the slack-R&D investment relationship by examining the influence of the founder's human capital and social ties, which is distinguished into political and managerial ties. Our results show that the founder's human capital, measured by its educational level, strengthens the relationship between absorbed and unabsorbed slack resources and R&D investment. We also find that the founder's managerial ties strengthen the relationship between resource slack and R&D intensity, whereas political ties weaken that link. Our results demonstrate the founder's crucial role in underpinning resource utilization in newly listed firms and emphasise the importance of social ties in driving firms' R&D activities in emerging economies.

Keywords: founder; microfoundation; slack; social ties; R&D; newly listed firms

Introduction

Slack, the disparity between resources available to the organisation and the minimum necessary to produce a given level of organisational output (Cyert & March, 1963), has been a heavily studied topic (Bentley & Kehoe, 2020; Bradley, Wiklund, & Shepherd, 2011; Lecuona & Reitzig, 2014; Voss, Sirdeshmukh, & Voss, 2008). Slack refers to firms' underutilized and uncommitted resources that can be easily deployed (Carnes, Xu, Sirmon, & Karadag, 2019; Guo, Zou, Zhang, Bo, & Li, 2020). Extant researchers have addressed the importance of slack in buffering internal and external pressures through an excessive level of underutilized resource reservation (e.g., Hambrick & D'Aveni, 1988; Paeleman & Vanacker, 2015; Singh, 1986; Titus, O'Brien, & Dixit, 2022). Slack resources offer firms more initiatives to fund risky projects with uncertain outcomes, thus fostering an environment for innovation (Nohria & Gulati, 1996). Sufficient resources also reduce resource competition among innovative projects and thereby help the employees concentrate on technological innovations (Bradley, Shepherd, & Wiklund, 2011).

Although there has been persistent interest in investigating the relationship between slack and firms' R&D activities and also in distinguishing between different types of slack, such as absorbed and unabsorbed slack (Tan & Peng, 2003), financial and human slack (Vanacker, Collewaert, & Paeleman, 2013), the issue of how and under what conditions slack resources can be leveraged upon to improve firms' R&D investment is yet to be fully explored. Slack can be viewed as the resource pool for a firm's

R&D investment, but these underutilized resources are not automatically deployed to R&D activities. The existing literature has explored contingent factors of the external institutional environment (Du, Kim, Fourné, & Wang, 2022; Vanacker, Collewaert, & Zahra, 2017), venture capital (Vanacker, Collewaert, & Paeleman, 2013), and uncertainty (Voss, Sirdeshmukh, & Voss, 2008) on the relationship between slack and R&D investment, but has thus far neglected the importance of internal driving forces to leverage slack for improving R&D investment.

Moreover, while existing research on slack has primarily focused on examining the effects of slack resources on R&D activities in established firms (Kim, Kim, & Lee, 2008; Lee & Wu, 2016; Shaikh, O'Brien, & Peters, 2018; Teirlinck, 2020), limited attention has been given to newly listed firms founded by entrepreneurs in emerging economies. Newly listed firms, facing dynamic changes and challenges after the flotation, may allocate slack resources to alleviate pressures and uncertainty (Filatotchev, 2006), rather than investing in risky R&D activities. Thus, slack's beneficial effects on R&D do not arise automatically and may be contingent on internal factors which can determine the allocation of slack resources in newly listed firms.

Over the last decade, the 'microfoundations' literature (e.g., Felin & Foss, 2005; Gavetti, 2005) has asserted that the micro-level (represented by the level of individuals and their interactions) is the nested antecedent to collective phenomena at the organisational level. In other words, a firm's innovation, financial performance and international strategies are collective outcomes essentially derived from the individuals' endowment and characteristics (Chittoor, Aulakh, & Ray, 2019; Contractor, Foss, Kundu, & Lahiri, 2019). The microfoundations approach therefore seeks to understand the organisation's outcome by specifying the input of individuals and asserts that organisation and strategy studies should engage in lower, micro levels – that is, individuals and their interactions (Barney & Felin, 2013).

Adopting the microfoundation approach, this paper aims to articulate the slack-R&D investment relationship by exploring the role of the founder in newly listed firms in the largest emerging economy, China. The characteristics of the founders among the newly listed firms in emerging economies, in particular their ability to deploy resources skillfully and their social ties, offer an interesting setting in which to investigate the slack-R&D relationship. Being the creator of the firm, the founder plays an essential role in constructing the initial structure of the firm, gathering resources, and implementing strategies (Abebe, Li, Acharya, & Dasput, 2020; Honjo & Kato, 2022; Jaskiewicz, Block, Miller, & Combs, 2017; Meier & Schier, 2022; Nelson, 2003; Wasserman, 2017). Compared to top executives in established firms where R&D activities are constrained by the organisational routines, the founder is more deeply involved in the firm's resource-gathering activities and has greater discretion in the deployment of resources (Lee, Yoon, & Boivie, 2020; Teng, Li, & Tanna, 2022).

We view the founders' human capital and social ties as important attributes in managing slack resources among the newly listed firms in emerging economies. In developed market economies, large and well-established firms are supported by strong market-supporting institutions and have wider choices of channels to gather resources (Titus, O'Brien, & Dixit, 2022). However, in emerging economies, market-supporting institutions are less rigorous (Peng, Li, van Essen, & Peng, 2020). Hence, social ties, an important dimension of the Chinese concept of *guanxi*, act as the substitutive force for formal institutions which regulate firms to obtain resources and mitigate uncertainty (Peng & Luo, 2000; Wang, Pellegrini, Xue, & Wang, 2020; Zhang, O'Kane, & Chen, 2020). Moreover, newly listed firms are generally relatively smaller entities which rely on their founders' social ties to obtain resources (Li, He, Lan, & Yiu, 2012; Zhang, Qi, Wang, Zhao, & Pawar, 2019). Thus, being the top manager and the key person who accumulates slack resources, a founder plays an important contingent role in determining the deployment of the slack to support firms' risky R&D investment. In this regard, founders are considered the microfoundation of newly listed firms in emerging economies and, accordingly, our aim is to explore their influences in underpinning resource utilization by specifically examining the moderating effects of the founders' human capital and social ties in driving the slack-R&D relationship.

In placing the slack-R&D investment relationship in the context of the newly listed firms in China, and arguing that the founder may assist or constrain the utilisation of slack resources, this paper makes two important contributions. First, we explore the roles of the founders' human capital and social ties as internal contingent forces in moderating the slack-R&D investment relationship. Existing studies have examined how the external environment (Bentley & Kehoe, 2020; Bradley, Shepherd, & Wiklund, 2011; Lecuona & Reitzig, 2014) and external stakeholders (George, 2005; Vanacker, Collewaert, & Paeleman, 2013) shape the effects of slack on R&D and firm performance, but have not explicitly focussed on the key individuals who can leverage the slack resources. As Coase (1937) argues, a firm is 'a system of relationships which comes into existence when the direction of resources is dependent on an entrepreneur (founder)' (p. 393). From this perspective, we view the founders' discretion as critical in the deployment and utilization of excess resources in newly listed firms.

Second, we highlight the heterogenous impact of founders' social ties, distinguished into political ties and managerial ties, in the relationship between slack and R&D investment for an important emerging economy (China). Existing literature has demonstrated the beneficial role of social ties in deriving support and gathering value resources, but neglected the distinctive roles of political and managerial ties in influencing firms' R&D. We reveal that political ties of founders weaken the relationship between slack resources and R&D investment whereas their managerial ties strengthen the slack and R&D linkages. In this sense, the paper demonstrates the *distinctive roles* of social ties by investigating the micro-level within an organisation in terms of how these key elements of founder characteristics (including human capital) are leveraged in newly listed firms (Wang, Zhang, & Shou, 2021).

Theoretical development and hypothesis

Founder as the microfoundation for slack resources

The 'microfoundations' literature (Felin & Foss, 2005; Gavetti, 2005) has asserted that the micro-level, represented by the levels of individuals and their interactions, is the nested antecedent to collective phenomena at the organisational level (Contractor et al., 2019). The microfoundations perspective thus advocates that organizational phenomena are outcomes of interactions at a level lower than the phenomenon itself and are essentially derived from the individuals' endowment and characteristics (Felin, Foss, & Ployhart, 2015). Microfoundations research in strategy emphasizes the role of top management of a company in driving strategic decisions and firm-level outcomes (Barney & Felin, 2013) and explicitly explores the inputs of top management on the organisation's outcomes (Barney & Felin, 2013; Chittoor, Aulakh, & Ray, 2019; Sun, Shi, Ahlstrom, & Tian, 2020). Previous studies in this regard attribute the organisation's outcome to the most important strategic leader, CEO, and assert that CEOs create, embrace, and successfully execute new ideas (Zimmermann, Hill, Birkinshaw, & Jaekel, 2020), which in turn affect firm behaviour (Bendig, Strese, Flatten, Susanne da Costa, & Brettel, 2018; Heavey & Simsek, 2017; Kammerlander, Burger, Fust, & Fueglistaller, 2015; Wales, Patel, & Lumpkin, 2013).

Being the creator of the firm, the founder acts as the most important strategic leader who designs the initial structure and secures funding during the entrepreneurial firm stage (Honjo & Kato, 2022; Meier & Schier, 2022; Nelson, 2003). The founder normally serves as the chief executive and holds key responsibility for determining the strategic direction and making key decisions (Collewaert, Vanacker, Anseel, & Bourgois, 2021; Jayaraman, Khorana, Nelling, & Covin, 2000). The founders' effect is particularly prevalent in emerging economies because of the greater extent of managerial discretion and their stronger influence on firm behaviour even after the flotation (Teng et al., 2022). While a larger proportion of founders exit their firms through the initial public offering (IPO) in developed economies (Chahine, Filatotchev, & Zahra, 2011; Hendricks, Howell, & Bingham, 2019), founders in emerging economies perceive their companies as a lifetime achievement and are thus less likely to exit post-IPO (Young, Peng, Ahlstrom, Bruton, & Jiang, 2008; Teng & Li, 2021). In fact, many

newly listed firms in emerging economies are ultimately owned and managed by their founders (Xu, Yuan, Jiang, & Chan, 2015).

An added factor in emerging economies is the weak role of market-supporting institutions which are generally not well developed and so the government remains a powerful actor (Meyer & Peng, 2016). Interpersonal networks cultivated by managers thus rise to play a significant role to shape their firm's strategic choices (Peng *et al.*, 2020). For example, prior studies have recognized the importance of the social connections of CEOs in driving the strategic orientations of their firms (Bai, Xiao, Pan, Tan, & Zeng, 2023; Zhang, O'Kane, & Chen, 2020; Zhang, Tan, & Wong, 2015).

Being the creator, ultimate owner, and daily manager, the founder is likely to have an individual impact on the organizational structure and strategic direction (Lee, Yoon, & Boivie, 2020; Picken, 2017; Rubenson & Gupta, 1997), which are crucial for the newly listed firm's growth and development in emerging economies (Wang & Song, 2016). Empirical studies also support the strategic importance of the founder to organisational development and outcomes. For example, Ling, Zhao, and Baron (2007) find that the founder's novelty value trend exerts strong beneficial effects in young and small firms while in large and mature firms the collectivism value trend exerts strong effects. Dencker and Gruber (2015) suggest that the interaction between opportunities identification and firm performance is profoundly influenced by the founder. Teng and Li (2021) demonstrate that the founder plays an essential role in driving a firm's IPO. Given the founder's important role in the firm's growth and development, we therefore assert that the founders would have an individual impact in shaping the firm's resource accumulation and reallocation and can be viewed as the microfoundation of the newly listed firm in emerging economies (Bendig *et al.*, 2018; Chittoor, Aulakh, & Ray, 2019; Contractor *et al.*, 2019; Huang, Battisti, & Pickernell, 2021).

Resource slack and R&D intensity

Organisational slack is potentially utilizable resources that can be diverted or redeployed for the achievement of organizational goals (George, 2005, p. 661). In other words, slack refers to the actual or potential resources that an organisation has not committed to expenditure (Bourgeois, 1981). Slack resources act as a buffering mechanism to counter internal and external pressures and also as a facilitator to pursue market and competitive opportunities in the long term.

Organizational slack has been broadly conceptualized in two dimensions, absorbed and unabsorbed slack (Bourgeois, 1981; Singh, 1986). Absorbed slack refers to the resources that have been committed to the firm's specific uses (Voss, Sirdeshmukh, & Voss, 2008). Absorbed slack is constrained resources, which are restricted in their use to the firm's current business. While absorbed slack can be readily used to expand current business, it has less potential to be converted into alternative uses (Singh, 1986). By contrast, unabsorbed slack is currently uncommitted resources, which can be more easily redeployed within the organization (Voss, Sirdeshmukh, & Voss, 2008). Thus, compared to absorbed slack, unabsorbed slack can be readily redeployed and committed to use at managerial discretion by a firm (Tan & Peng, 2003). While unabsorbed slack can also be used to expand the extant business, what distinguishes it from absorbed slack is its comparatively greater potential for being applied to alternative businesses. In this respect, the distinction between absorbed and unabsorbed slack depends on the nature of the redeployed resources. In essence, unabsorbed slack provides more potential than absorbed slack for recombining resources in new ways.

We propose a model – presented in Fig. 1 – of how and when different types of slack can influence R&D investment. The relationship between organisational slack and R&D investment has received much research attention (e.g., Bentley & Kehoe, 2020; Du *et al.*, 2022; Kim, Kim, & Lee, 2008; Lee & Wu, 2016; Lu & Fang, 2013; Teirlinck, 2020; Vanacker, Collewaert, & Zahra, 2017). Researchers advocate a positive role for resource slacks in buffering internal and external pressures, through the excessive level of resource reservation, and argue that increased resources (both absorbed and unabsorbed) enable more initiatives to fund projects with uncertain outcomes, thus fostering better performance (Chen & Miller, 2007; Kim, Kim, & Lee, 2008). Therefore, we propose that:

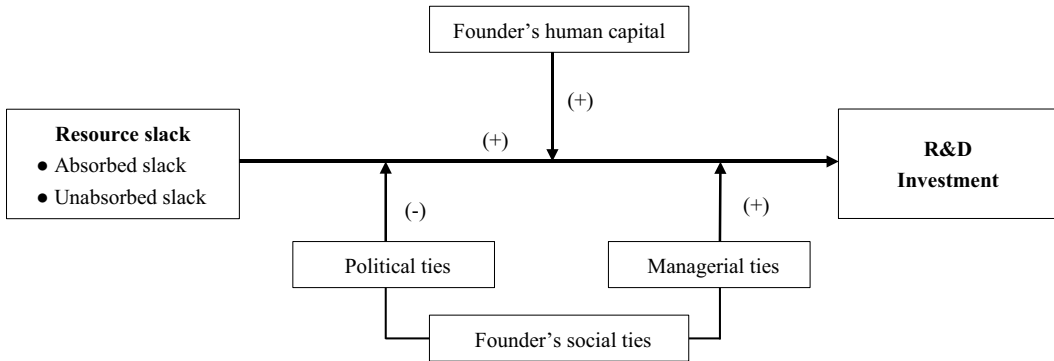


Figure 1. Theoretical framework.

Baseline hypothesis: Resource slacks (both absorbed and unabsorbed) positively affect R&D investment in newly listed firms.

Slack and R&D intensity: the role of the founder

As indicated in Fig. 1, we propose a contingent approach to understand the slack-R&D investment link based on the firm's founder. We argue that the founder's human capital and social ties are likely to have contingency effects on the relationship between absorbed/unabsorbed slack and R&D investment. Specifically, we posit that the founder's human capital strengthens the slack and R&D intensity relationship. Furthermore, with regard to social ties, we distinguish the founder's political ties from managerial ties and propose opposite effects on the slack-R&D link: founder's political ties weaken the relationship between slack and R&D intensity while managerial ties strengthen the slack-R&D relationship.

Founder's human capital

Human capital, which is largely gained from prior education, is considered a source of generic abilities for opportunity recognition (Debrulle, Maes, & Sels, 2014). Education constructs one's knowledge base and lays the foundation of intelligence and skills (Ucbasaran, Westhead, & Wright, 2008). Education enhances the ability for information retrieval and value judgment, which, in turn, supports opportunity recognition (Ucbasaran, Westhead, & Wright, 2008). Thus, extant literature has shown that education increases the capacity to innovate and fosters the adoption of new technologies.

Additionally, a higher level of education can support one's learning capacity and consequently smooth firms' technological progress (Cohen & Levinthal, 1990). The educational level of the firm's key player acts as one of the most important determinants of the firm's ability to acquire, assimilate and profitably utilize existing resources to increase its R&D activities. Therefore, education raises the firm's capacities to acquire, transform and exploit knowledge which can lead to higher R&D investment. Higher educational level strengthens the focal firm's learning and information processing capacity, which, in turn, increases investment in R&D activities (Cohen & Levinthal, 1990).

The above argument suggests that an individual with higher education tends to have a greater ability to recognise external opportunities and employ existing resources. Consequently, in a firm where the founder has a higher level of education, we expect that both types of resources (absorbed firm-specific slack resources and deployable slack resources) can be exploited effectively to meet up with external opportunities. Accordingly, we propose:

H1a: Founder's human capital positively moderates the relationship between absorbed slack and firm's R&D investment.

H1b: Founder's human capital positively moderates the relationship between unabsorbed slack and firm's R&D investment.

Founder's social ties

Drawing from social network theory (Burt, 1997), a large number of studies have examined the effects of managers' social ties and networks on a firm's strategic choices and performance (Haveman, Jia, Shi, & Wang, 2017; Li, Poppo, & Zhou, 2008; Li & Zhang, 2007; Li, Zhou, & Shao, 2009; Yu, Zhang, Tan, & Qi, 2022; Zhang, Tan, & Wong, 2015). The underlying argument from this stream of research is that social ties comprise intellectual and financial resources that can be accessed through an actor's network (Peng & Luo, 2000; Sun, Mellahi, Wright, & Xu, 2015; Zhang, Tan, & Wong, 2015). Social ties condition managers' field of vision and influence their assessment of the environment (Peng & Luo, 2000). Weak social ties insulate a manager from the latest ideas and information and eventually put the firm in a disadvantaged position (Granovetter, 1985). We distinguish the founder's managerial ties from political ties (Li & Zhang, 2007; Peng & Luo, 2000) and argue that they can have different effects in shaping the slack-R&D investment relationship.

In emerging economies, the government controls significant portions of strategic resources and has considerable power to offer support to firms (Bruton, Peng, Ahlstrom, Stan, & Xu, 2015; Yu *et al.*, 2022). Strong political ties facilitate firms' access to privileged information and receive exclusive messages about policy changes (Lester, Hillman, Zardkoohi, & Cannella, 2008). Political ties therefore may place politically well-connected firms in an advantageous position, in which profit may be easily obtained from opportunistic practices, rather than through risky R&D investment.

In addition, the government determines the resource allocation channels. Political ties normally spoil the focal firm with an abundance of resources such as land and financial capital. These resources tend to be generic and are more likely to be redeployed to alternative uses. By strengthening the interaction with the government, strong political ties can help firms gain access to valuable state-controlled resources, consequently mitigating uncertainty.

The above argument suggests that political ties exhibit a strong predilection for unfair competition where well-connected firms tend to leverage their political ties to obtain meaningful support from the government and go against competitors. Founders with political ties may thus seek competitive advantages through opportunistic practices and are less likely to undertake risky strategies such as R&D. Therefore, we propose:

H2a: Founder's political ties negatively moderate the relationship between absorbed slack and firm's R&D investment.

H2b: Founder's political ties negatively moderate the relationship between unabsorbed slack and firm's R&D investment.

Unlike political ties, managerial ties are connections with other firms within or outside of the focal industrial sector, such as suppliers, buyers, and competitors (Peng & Luo, 2000). As mentioned above, social ties – whether political or managerial – serve as conduits for information that shape managers' views of the environment and contribute to the set of alternatives from which strategic choices are made (Geletkanycz & Hambrick, 1997). Managerial ties facilitate access to broader sources of information with timely and comprehensive effects in current market conditions (Wang & Chung, 2013), based on which they can better understand potential technical development and market opportunities for R&D directions (Gao, Shu, Jiang, Gao, & Page, 2017; Zhou & Li, 2012).

Furthermore, managerial ties serve as a bridge for acquiring external knowledge (Shu, Page, Gao, & Jiang, 2012). The knowledge that flows to the entrepreneurial founders, who are embedded in strong business network relationships, are industrial-focused and limit the function of redeploying. From this perspective, the founders' interaction with other business entities can bring important insight

back to their own businesses, which helps the focal firms to improve their R&D procedures and enable them to innovate in a more effective way (Kim & Atuahene-Gima, 2010).

Consequently, the information and knowledge derived from managerial ties are generally business-related and may associate with a designated purpose. Founders with strong managerial ties bridge the external information and knowledge with the focal firm and enhance the quality, relevance, and timeliness of acquired resources (Li, Chen, Liu, & Peng, 2014). With timely information about technical development and external expertise to better recognise the market potential, the founder is more likely to deploy slack resources to R&D investment. Thus, we argue:

H3a: Founder's managerial ties positively moderate the relationship between absorbed slack and firm's R&D investment.

H3b: Founder's managerial ties positively moderate the relationship between unabsorbed slack and firm's R&D investment.

Data and method

Our sample includes 505 high-tech firms, which underwent IPO in the Shenzhen Growth Enterprise Market (GEM) during 2009-2016. (While majority of the data were manually collected, we included as many firms as possible in the data collection process which ended in May 2016.) Shenzhen GEM is a new secondary board of the Chinese stock market which has officially started providing listing and trading services since September 2009. Following several previous studies (e.g., Deeds, Mang, & Frandsen, 2004; Yang, Zimmerman, & Jiang, 2011), the data are primarily obtained from the IPO prospectus of each firm.

We focus on entrepreneurial firms by distinguishing firms with the founder(s) from those which do not have founder(s). Following previous studies (e.g., Deeds, Mang, & Frandsen, 2004; Teng & Li, 2021; Teng et al., 2022), the processes of identifying the founder are that: (1) searching founder(s)-related information from IPO prospectus; (2) checking firm's history and ownership in the section 'Introduction of issuers' of IPO prospectus to confirm whether the firm was previously state-owned (i.e., established by government); (3) using internet search engines to confirm the status of founder(s). Our sample for empirical analysis includes only firms where founders can be identified. Also, we exclude firms where the founders have retired, resigned, or died.

The above criteria left us with 422 of the 505 firms with founder(s). After discarding missing values, we ended up with a sample of an unbalanced panel which has a maximum of 771 firm-year observations. (The sample is inherently unbalanced because the IPO time of firms listed on the GEM is different. For example, the IPO time of 93 firms in our sample is 2009. Therefore, the majority of them have 7 years of observations from 2009 to 2016. However, in 2015, 55 firms had their IPO and so the number of observations available for these firms is only up to 2).

Dependent variable

Our dependent variable, R&D investment, is measured by the ratio of R&D expenses divided by sales. Such a measure is widely used in strategic management studies (e.g., Kim, Kim, & Lee, 2008; Lee & Wu, 2016). The data is drawn from the CSMAR database.

Independent variables

Founder's social ties

We account for founders' social ties by distinguishing between their managerial and political ties (Peng & Luo, 2000). A founder's managerial ties is measured as the total number of executive or director positions held by the founder outside their own firm (Filatotchev, 2006). If there are multiple

founders, the mean value of these positions is used. In our sample, around 30 per cent of the founders have recorded no managerial ties, as they had not held any positions as board members outside their firms. However, about 8 per cent have recorded strong managerial ties by virtue of having more than 10 records of executive work experience.

The importance of the firm's political ties in emerging countries has been examined in large numbers of studies (e.g., Li *et al.*, 2012). Following previous studies (e.g., Teng *et al.*, 2022), we capture the effect of political ties (i.e., the strength of political connections) using an ordinal variable ranging from 0 to 5. This is coded as 0 if the founder does not have any political connection; 1 if the founder had experience being a member of the Local People's Congress/Chinese People's Political Consultative Conference at the township or county level; 2 if the founder had experience being a member of the Local People's Congress/Chinese People's Political Consultative Conference at the city level; 3 if the founder had experience being a member of the Local People's Congress/Chinese People's Political Consultative Conference at the province level; 4 if the founder had experience being a member of the National People's Congress; and 5 if the founder worked in the government/military department.

Founder's human capital

We capture the effects of founder's human capital using the education level of the founder. A common proxy representing the accumulation of human capital, education has a strong influence on the strategies and performance of firms (Johnson, Schnatterly, & Hill, 2013). Consistent with previous studies (Debrulle, Maes, & Sels, 2014), we obtain relevant information on the educational background of the founders from the IPO prospectuses and create an ordinal variable, ranging from 0 to 3, to categorise the level of founder education. The variable is coded 0 if the highest degree held by the founder is high school or below; 1 if the founder graduated from a university or college institute; 2 if the founder has a master's degree or equivalent; and 3 if the founder holds a PhD degree.

Slack

Following prior studies (e.g., Hambrick & D'Aveni, 1988; Singh, 1986), we examine two types of slack. Absorbed slack is measured by the current ratio. Unabsorbed slack refers to the selling, general, and administrative (SG&A) expenses to sales ratio.

Control variables

We include several control variables in the empirical analysis. Following previous studies (e.g., Cucculelli, Mannarino, Pupo, & Ricotta, 2014; Fischer & Pollock, 2004; Garicano, Lelarge, & Van Reenen, 2016; Zahra & Filatotchev, 2004), we account for the effects of founder-CEO status, board independence, firm size, firm age and venture capital. All of these variables have been strongly associated with firm performance. We use a dummy variable to capture the effect of founder-CEO status, coded as 1 if the founder has a CEO position and 0 otherwise. To account for the effect of board independence, we use the number of independent directors divided by the total number of directors on the board. Firm size is measured using the natural logarithm of the total assets of the firm. Firm age is calculated using the natural logarithm of the firm's established days shown in the IPO prospectuses. We use the ratio of venture capital to equity to measure the effect of venture capital with data obtained from the IPO prospectuses. Finally, we control for time-specific and industry-specific effects using appropriate dummies. Table 1 provides the description and data sources of all the variables.

Table 2 reports the summary statistics and the correlations among the independent variables, indicating no serious issues of multicollinearity.

Model specification

To evaluate the effect of founders' human capital and social ties on the slack-R&D relationship, we specify our regression model as follows:

$$RD_{it} = \beta_1 Founder_{it} + \beta_2 Slack_{it} + \beta_3 Founder_{it} \times Slack_{it} + \beta_4 Z_{it} + \beta_5 Dummies + \beta_0 + \varepsilon_{it}, \quad (1)$$

Table 1. Variable definitions and sources

Variable	Description	Expected sign	Source
R&D investment	The ratio of R&D expenses divided by sales	Dependent variable	China Stock Market & Accounting Research (CSMAR) database
Absorbed slack	The ratio of current assets to current liabilities	+	CSMAR database
Unabsorbed slack	The ratio of Selling, general, and administrative (SG&A) expenses to Sales	+	CSMAR database
Founder's managerial ties	The total number of executive or director positions held by the founders outside their own firm. If there are multiple founders, the mean value of these positions is used.	-	IPO prospectus
Founder's political ties	An ordinal variable ranging from 0 to 5, which is coded as 0, if the founder does not have any political connection; 1, if the founder had experience being a member of the Local People's Congress/Chinese People's Political Consultative Conference at the township or county level; 2, if the founder had experience being a member of the Local People's Congress/Chinese People's Political Consultative Conference at the city level; 3, if the founder had experience being a member of the Local People's Congress/Chinese People's Political Consultative Conference at the province level; 4, if the founder had experience being a member of the National People's Congress; 5, if the founder worked in the government/military department.	-	IPO prospectus
Founder's human capital	Founder's education level, measured by an ordinal variable ranging from 0 to 3. The variable is coded as 0 if the highest degree held by the founder is high school or below; 1, if the founder graduated from a university or college institute; 2, if the founder has a master degree or equivalent; and 3, if the founder holds a PhD degree.	+	IPO prospectus
Founder-CEO	A dummy variable, coded as 1 if the founder has a CEO position, 0 otherwise	+	IPO prospectus
Board independence	The ratio of the number of independent directors divided by the total number of directors on the board	+/-	IPO prospectuses
Firm size	The natural logarithm of total assets	+/-	CSMAR database
Firm age	The natural logarithm of the firm's established days shown	+/-	IPO prospectuses
Venture capital	The ratio of venture capital to equity	+/-	IPO prospectuses

where RD_{it} refers to R&D investment in firm i at year t ; $Slack$ represents absorbed slack or unabsorbed slack; $Founder$ denotes the effects of founder's human capital and social ties; Z stands for the set of control variables; and $Dummies$ refer to year and industry-specific factors; β is to the coefficient of each independent variable and ε_{it} is the error term, $\varepsilon_{it} \sim iid(0, \sigma_{\varepsilon}^2)$. The interaction term, $Founder_{it} \times Slack_{it}$, accounts for the moderating effects of founder's human capital and social ties on the relationship between slack and firm performance.

Given the unbalanced panel and the heterogenous nature of firm-level data, we rely on using feasible generalised least squares (FGLS) to estimate the above relationship which effectively accounts for potential heteroskedasticity and autocorrelation in the data (As our dataset incorporates some time-invariant variables such as founder's human capital and managerial ties, fixed-effects OLS estimation cannot be applied and FGLS is considered the most appropriate alternative in this case.) (Symeou, Zyglidopoulos & Gardberg, 2019).

Table 2. Summary statistics

Variable	Mean	Std. Dev.	1	2	3	4	5	6	7	8	9	10	11
1. R&D investment	7.03	7.15	1										
2. Board independence	0.38	0.06	0.02	1									
3. Firm size (million CNY)	1707.44	1734.67	-0.07**	-0.09***	1								
4. Founder CEO status	0.47	0.50	0.11***	0.02	0.02	1							
5. Firm age (days)	3892.86	1438.34	-0.05*	0.03	-0.13***	-0.04	1						
6. Venture capital	0.19	1.49	-0.02	-0.05	0.06*	0.09***	0.10***	1					
7. Absorbed slack	0.23	0.14	0.62***	0.08**	-0.09***	0.03	0.02	-0.05	1				
8. Unabsorbed Slack	5.71	8.05	0.33***	-0.04	-0.21***	0.04	-0.06*	-0.03	0.10***	1			
9. Founder's human capital	1.14	0.89	0.07**	-0.03	-0.01	0.38***	-0.04	0.16***	0.05*	0.09***	1		
10. Founder's political ties	0.72	1.47	-0.12***	-0.03	0.05	0.03	0.06*	0.13***	-0.09***	-0.08**	0.21***	1	
11. Founder's managerial ties	5.29	5.15	0.03	0.03	-0.02	0.16***	-0.04	-0.01	0.04	-0.01	0.25***	0.28***	1

Note: *** Statistical significance at 1% level (p-value < .01).

**Statistical significance at 5% level (p-value < .05).

*Statistical significance at 10% level (p-value < .1).

Table 3. Main results: Interaction between founder's human capital and slack

	Model 1	Model 2	Model 3	Model 4
Board independence	-0.0333*** (0.0084)	0.0103 (0.0061)	-0.0316*** (0.0084)	-0.0059 (0.0063)
Firm size	-0.0062*** (0.0006)	-0.0049*** (0.0006)	-0.0067*** (0.0006)	-0.0064*** (0.0007)
Founder CEO status	0.0121*** (0.0008)	0.0141*** (0.0009)	0.0116*** (0.0009)	0.0135*** (0.0008)
Firm age	-0.0096*** (0.0012)	-0.0054*** (0.0008)	-0.0095*** (0.0012)	-0.0014 (0.0009)
Venture capital	0.0001 (0.0006)	-0.0014*** (0.0002)	0.0001 (0.0006)	-0.0011*** (0.0003)
Founder's human capital	-0.0024*** (0.0003)	0.0011** (0.0005)	-0.0038*** (0.0012)	-0.0065*** (0.0007)
Absorbed slack ($t-1$)	0.2492*** (0.0051)		0.2416*** (0.0084)	
Unabsorbed slack ($t-1$)		0.0033*** (0.0001)		0.0019*** (0.0001)
Absorbed slack ($t-1$)*Founder's human capital			0.0056 (0.0058)	
Unabsorbed slack ($t-1$)*Founder's human capital				0.0011*** (0.0001)
Industry/year	Yes	Yes	Yes	Yes
<i>N</i>	771	771	771	771

Note: Dependent variable is R&D investment. Absorbed slack is measured as selling, general, and administrative expenses to sales ratio. Unabsorbed slack is measured as the current ratio. Estimations are by feasible generalized least squares (FGLS).

***Statistical significance at 1% level (p -value < .01).

**Statistical significance at 5% level (p -value < .05).

*Statistical significance at 10% level (p -value < .1).

Results

Table 3 presents the results for the linear effect of resource slacks on R&D investment as well as the moderating effects of the founder's human capital on the slack-R&D relationship. In columns 1 and 2, both absorbed and unabsorbed slacks have positive and statistically significant influences on R&D investment. In column 3, the insignificant effect of the interaction term, *Absorbed slack*Founder's human capital*, suggests that there is no moderating effect of founder's human capital on the relationship between absorbed/unobserved slack and R&D investment. In column 4, *Unabsorbed slack*Founder's human capital* has a positive and significant effect, indicating that founder's education level positively moderates the relationship between absorbed/unabsorbed slacks and R&D investment.

Among the control variables, firm size and firm age are positively and significantly associated with R&D investment. Founder-CEO status exerts a positive and significant effect on R&D investment. Board independence and venture capital appear to negatively and significantly affect R&D investment.

Table 4 reports the results for the relationship between slacks and R&D investment as well as the moderating effects of the founder's social ties on the slack-R&D nexus. In columns 1 and 2, both absorbed and unabsorbed slacks have positive and significant influences on R&D investment. In columns 3 and 4, the coefficients of the interaction terms, *Absorbed slack*Founder's managerial ties* and *Unabsorbed slack*Founder's managerial ties* record positive significance, suggesting that the founder's work experience positively moderates the relationship between absorbed/unabsorbed slacks and R&D investment. However, both interaction terms, namely *Unabsorbed slack*Founder's*

Table 4. Main results: Interaction between founder's social ties and slack

	Model 1	Model 2	Model 3	Model 4
Board independence	-0.0346*** (0.0081)	0.0062 (0.0070)	-0.0273*** (0.0080)	0.0069 (0.0062)
Firm size	-0.0053*** (0.0007)	-0.0051*** (0.0006)	-0.0071*** (0.0007)	-0.0048*** (0.0006)
Founder CEO status	0.0118*** (0.0008)	0.0143*** (0.0007)	0.0122*** (0.0008)	0.0148*** (0.0006)
Firm age	-0.0086*** (0.0013)	-0.0060*** (0.0010)	-0.0093*** (0.0011)	-0.0036*** (0.0010)
Venture capital	-0.0001 (0.0006)	-0.0013*** (0.0002)	-0.0002 (0.0006)	-0.0015*** (0.0002)
Founder's political ties	-0.0007*** (0.0002)	-0.0032*** (0.0002)	0.0044*** (0.0006)	0.0003 (0.0003)
Founder's managerial ties	-0.0002** (0.0001)	0.0005*** (0.0001)	-0.0008*** (0.0002)	0.0003* (0.0002)
Absorbed slack ($t-1$)	0.2445*** (0.0052)		0.2347*** (0.0097)	
Unabsorbed slack ($t-1$)		0.0032*** (0.0001)		0.0032*** (0.0002)
Absorbed slack ($t-1$)*Founder's political ties			-0.0272*** (0.0038)	
Absorbed slack ($t-1$)*Founder's managerial ties			0.0036*** (0.0012)	
Unabsorbed slack ($t-1$)*Founder's political ties				-0.0005*** (0.0001)
Unabsorbed slack ($t-1$)*Founder's managerial ties				0.0002* (0.0001)
Industry/year	Yes	Yes	Yes	Yes
<i>N</i>	771	771	771	771

Note: Dependent variable is R&D investment. Absorbed slack is measured as selling, general, and administrative expenses to sales ratio. Unabsorbed slack is measured as the current ratio. Estimations are by feasible generalized least squares (FGLS).

***Statistical significance at 1% level (p -value < .01).

**Statistical significance at 5% level (p -value < .05).

*Statistical significance at 10% level (p -value < .1).

political ties and *Unabsorbed slack*Founder's political ties* are negatively and significantly associated with the dependent variable, indicating that the strength of the founder's political connection exerts a negative moderating effect on the slack-R&D nexus.

Robustness check

To assess the consistency of our results, we conduct robustness tests using alternative measures of slacks. Following prior studies (e.g., Daniel, Lohrke, Fornaciari, & Turner, 2004; Tan & Peng, 2003), we use the administrative to sales ratio as the proxy of absorbed slack and the equity to debt ratio as the proxy of unabsorbed slack. The results are reported in Tables 4 and 5, which are broadly similar to the main results, except that *Absorbed slack*Founder's human capital* turns out to be positively and significantly related to R&D investment in Column 3 of Table 5 while the coefficient of *Unabsorbed slack*Founder's managerial ties* becomes insignificant in Column 4 of Table 6.

Additionally, we introduce extra control variables into the model and apply the same empirical method to test the robustness of the results. We include two different measures of firm performance, namely total factor productivity (TFP) and profitability, and institutional quality. Following Teng et al.

Table 5. Robustness check: Interaction between founder's human capital and slack (using alternative measures of slacks)

	Model 1	Model 2	Model 3	Model 4
Board independence	-0.0489*** (0.0045)	-0.0074 (0.0057)	-0.0336*** (0.0054)	-0.0037 (0.0055)
Firm size	0.0010** (0.0005)	-0.0045*** (0.0005)	0.0003 (0.0005)	-0.0058*** (0.0007)
Founder CEO status	0.0107*** (0.0005)	0.0155*** (0.0006)	0.0103*** (0.0006)	0.0131*** (0.0009)
Firm age	-0.0046*** (0.0006)	-0.0042*** (0.0010)	-0.0044*** (0.0008)	-0.0017* (0.0009)
Venture capital	-0.0001 (0.0006)	-0.0014*** (0.0002)	0.0008 (0.0006)	-0.0008*** (0.0003)
Founder's human capital	0.0001 (0.0004)	0.0013*** (0.0003)	-0.0101*** (0.0011)	-0.0103*** (0.0008)
Absorbed slack ($t-1$)	0.5551*** (0.0021)		0.4208*** (0.0124)	
Unabsorbed slack ($t-1$)		0.0037*** (0.0001)		0.0012*** (0.0002)
Absorbed slack ($t-1$)*Founder's human capital			0.0678*** (0.0098)	
Unabsorbed slack ($t-1$)*Founder's human capital				0.0017*** (0.0001)
Industry/year	Yes	Yes	Yes	Yes
<i>N</i>	771	771	771	771

Note: Dependent variable is R&D investment. Absorbed slack is measured as administrative expenses to sales ratio. Unabsorbed slack is measured as the equity to debt ratio. Estimations are by feasible generalized least squares (FGLS).

***Statistical significance at 1% level (p -value < .01).

**Statistical significance at 5% level (p -value < .05).

*Statistical significance at 10% level (p -value < .1).

(2022), we apply the Levinsohn and Petrin (2003) method to estimate the value of TFP. Profitability is measured by the natural logarithm of net profit. We obtain data from the China Market Index Database (<https://cmi.ssap.com.cn/>) for provincial institutional quality to measure the importance of formal institutions related to marketization. The results are presented in Tables 7 and 8, which are similar to those shown in Tables 5 and 6.

Following prior studies (e.g., Janeiro, Proença, & da Conceição Gonçalves, 2013), we also use random-effects maximum likelihood estimation (RE-MLE) as an alternative empirical method to test the robustness of the main results and report the results in Tables 9 and 10, which are broadly similar and consistent.

Discussion

This paper identifies the relationship between slack resources and firm-level R&D investment and explores the role of the founder's educational level, political ties, and managerial ties in shaping the slack-R&D investment effects among newly listed firms in China. In line with previous studies (Chen & Miller, 2007; Kim, Kim, & Lee, 2008), our results reveal the positive effects of both absorbed slack and unabsorbed slack on R&D investment. More importantly, we highlight a contingent approach to understanding the slack-R&D investment relationship by examining the moderating influences of the founder. In emerging economies, including China, interpersonal ties cultivated by managers play a vital role in determining firm strategies and performance due to weak market-supporting institutions (Wang et al., 2020; Xiao & Anderson, 2022; Zhang, O'Kane, & Chen, 2020).

Table 6. Robustness check: Interaction between founder’s social ties and slack (using alternative measures of slacks)

	Model 1	Model 2	Model 3	Model 4
Board independence	-0.0510*** (0.0045)	0.0032 (0.0077)	-0.0385*** (0.0052)	0.0032 (0.0062)
Firm size	0.0012** (0.0005)	-0.0033*** (0.0006)	-0.0010** (0.0004)	-0.0046*** (0.0006)
Founder CEO status	0.0104*** (0.0006)	0.0165*** (0.0008)	0.0101*** (0.0005)	0.0138*** (0.0010)
Firm age	-0.0047*** (0.0006)	-0.0043*** (0.0011)	-0.0045*** (0.0006)	-0.0052*** (0.0011)
Venture capital	0.0001 (0.0006)	-0.0013*** (0.0002)	-0.0001 (0.0006)	-0.0011*** (0.0002)
Founder’s political ties	0.0002 (0.0002)	-0.0032*** (0.0002)	0.0053*** (0.0005)	0.0015*** (0.0003)
Founder’s managerial ties	0.0001** (0.0001)	0.0004*** (0.0001)	-0.0003** (0.0002)	0.0003** (0.0001)
Absorbed slack (<i>t</i> -1)	0.5583*** (0.0014)		0.5187*** (0.0115)	
Unabsorbed slack (<i>t</i> -1)		0.0036*** (0.0001)		0.0040*** (0.0002)
Absorbed slack (<i>t</i> -1)*Founder’s political ties			-0.0451*** (0.0048)	
Absorbed slack (<i>t</i> -1)*Founder’s managerial ties			0.0032* (0.0017)	
Unabsorbed slack (<i>t</i> -1)*Founder’s political ties				-0.0007*** (0.0000)
Unabsorbed slack (<i>t</i> -1)*Founder’s managerial ties				0.0001 (0.0001)
Industry/year	Yes	Yes	Yes	Yes
<i>N</i>	771	771	771	771

Note: Dependent variable is R&D investment. Absorbed slack is measured as administrative expenses to sales ratio. Unabsorbed slack is measured as equity to debt ratio. Estimations are by feasible generalized least squares (FGLS).

***Statistical significance at 1% level (*p*-value < .01).

**Statistical significance at 5% level (*p*-value < .05).

*Statistical significance at 10% level (*p*-value < .1).

Furthermore, the fact that founders typically remain key players post-IPO in China necessitates closer investigation into how founders and their social ties drive the newly listed firm’s activities.

Specifically, we examine the contingent effects of founder’s human capital and social ties and explore how the positive effect of slack resources on R&D investment can be shaped by these elements of founder characteristics in newly listed firms. Our results demonstrate the importance of founder’s education in strengthening the slack-R&D investment linkage. The results also show that founder’s political ties and managerial ties play different contingent roles in dealing with slack resources, the former weakening the relationship between absorbed/unabsorbed slack and R&D investment, while the latter strengthening the relationship. Our findings, therefore, reflect the vital role of the founder in underpinning resource allocation and utilization among newly listed firms in emerging economies and shed new light on revealing the moderating effects in the relationship between slack and R&D investment.

This paper makes important contributions to the organizational slack literature by highlighting the role of the founder as the ‘microfoundation’ of the firm s/he created and arguing that the founder’s human capital and social ties render heterogeneous influences on the focal firm, revealing, in turn,

Table 7. Robustness check: Interaction between founder's human capital and slack (using additional control variables)

	Model 1	Model 2	Model 3	Model 4
Board independence	-0.0209** (0.0090)	0.0143** (0.0056)	-0.0213** (0.0088)	0.0131** (0.0065)
Firm size	-0.0130*** (0.0011)	0.0060*** (0.0011)	-0.0128*** (0.0011)	0.0039*** (0.0010)
Founder CEO status	0.0119*** (0.0009)	0.0126*** (0.0009)	0.0120*** (0.0009)	0.0127*** (0.0009)
Firm age	-0.0109*** (0.0013)	-0.0045*** (0.0010)	-0.0111*** (0.0013)	-0.0029*** (0.0010)
Venture capital	0.0002 (0.0006)	-0.0007*** (0.0002)	0.0002 (0.0006)	-0.0004 (0.0003)
Founder's human capital	-0.0024*** (0.0004)	-0.0003 (0.0005)	-0.0034*** (0.0013)	-0.0088*** (0.0007)
Institutional quality	0.0010*** (0.0003)	0.0008** (0.0003)	0.0011*** (0.0004)	0.0004 (0.0003)
Total factor productivity	-0.0137*** (0.0015)	0.0489*** (0.0019)	-0.0123*** (0.0018)	0.0515*** (0.0022)
Firm profitability	0.0062*** (0.0009)	-0.0052*** (0.0011)	0.0062*** (0.0009)	-0.0044*** (0.0010)
Absorbed slack ($t-1$)	0.2722*** (0.0063)		0.2682*** (0.0089)	
Unabsorbed slack ($t-1$)		0.0030*** (0.0001)		0.0010*** (0.0002)
Absorbed slack ($t-1$)*Founder's human capital			0.0021 (0.0064)	
Unabsorbed slack ($t-1$)*Founder's human capital				0.0012*** (0.0001)
Industry/year	Yes	Yes	Yes	Yes
<i>N</i>	757	757	757	757

Note: Dependent variable is R&D investment. Absorbed slack is measured as selling, general, and administrative expenses to sales ratio. Unabsorbed slack is measured as the current ratio. Estimations are by feasible generalized least squares (FGLS).

***Statistical significance at 1% level (p -value < .01).

**Statistical significance at 5% level (p -value < .05).

*Statistical significance at 10% level (p -value < .1).

the different contingent effects on the slack-R&D investment relationship. Compared to previous studies that examine the slack-performance effect through macro and external factors, we argue that the relationship between slack and firm-level attributes should be understood within the focal firm, especially when the firm is new to the stock market. Specifically, this paper integrates the micro-foundation perspective with slack resource literature and demonstrates how the effects of absorbed and unabsorbed slack on R&D investment can be moderated by founders' characteristics as reflected in their human capital, political ties, and managerial ties. In this context, we regard the founders as key players in terms of deploying and utilizing slack resources by leveraging their human capital and social ties, and substantiate the case that the impact of slack on firms' investment in R&D is contingent upon these founder characteristics.

Founder's human capital (i.e., educational level) empowers the individual with knowledge and expertise for opportunity recognition and information evaluation. A newly listed firm with a well-educated founder is more likely to deploy slack resources on risky R&D to meet external opportunities. Our results show the *distinctive role* of the founder's political ties and managerial ties in driving the relationship between slack and R&D investment in an important emerging economy.

Table 8. Robustness check: Interaction between founder’s social ties and slack (using additional control variables)

	Model 1	Model 2	Model 3	Model 4
Board independence	-0.0286*** (0.0087)	0.0176*** (0.0049)	-0.0181* (0.0094)	0.0180*** (0.0061)
Firm size	-0.0119*** (0.0010)	0.0067*** (0.0009)	-0.0116*** (0.0013)	0.0059*** (0.0012)
Founder CEO status	0.0107*** (0.0009)	0.0119*** (0.0006)	0.0111*** (0.0009)	0.0120*** (0.0009)
Firm age	-0.0091*** (0.0014)	-0.0029*** (0.0009)	-0.0115*** (0.0012)	-0.0042*** (0.0011)
Venture capital	-0.0001 (0.0006)	-0.0007*** (0.0002)	-0.0002 (0.0006)	-0.0008*** (0.0002)
Founder’s political ties	-0.0001 (0.0002)	-0.0020*** (0.0002)	0.0054*** (0.0005)	0.0011*** (0.0004)
Founder’s managerial ties	-0.0000 (0.0001)	0.0002** (0.0001)	-0.0008*** (0.0002)	0.0001 (0.0002)
Institutional quality	0.0010*** (0.0004)	-0.0001 (0.0003)	0.0010*** (0.0004)	0.0001 (0.0004)
Total factor productivity	-0.0084*** (0.0028)	0.0463*** (0.0017)	-0.0034 (0.0033)	0.0480*** (0.0022)
Firm profitability	0.0072*** (0.0010)	-0.0062*** (0.0009)	0.0057*** (0.0010)	-0.0051*** (0.0011)
Absorbed slack (<i>t</i> -1)	0.2638*** (0.0063)		0.2487*** (0.0112)	
Unabsorbed slack (<i>t</i> -1)		0.0031*** (0.0001)		0.0032*** (0.0002)
Absorbed slack (<i>t</i> -1)*Founder’s political ties			-0.0310*** (0.0033)	
Absorbed slack (<i>t</i> -1)*Founder’s managerial ties			0.0032** (0.0015)	
Unabsorbed slack (<i>t</i> -1)*Founder’s political ties				-0.0005*** (0.0001)
Unabsorbed slack (<i>t</i> -1)*Founder’s managerial ties				0.0000 (0.0000)
Industry/year	Yes	Yes	Yes	Yes
<i>N</i>	757	757	757	757

Note: Dependent variable is R&D investment. Absorbed slack is measured as selling, general, and administrative expenses to sales ratio. Unabsorbed slack is measured as the current ratio. Estimations are by feasible generalized least squares (FGLS).

***Statistical significance at 1% level (*p*-value < .01).

**Statistical significance at 5% level (*p*-value < .05).

*Statistical significance at 10% level (*p*-value < .1).

Extant literature has highlighted the beneficial role of social ties in gathering value resources, but neglected the different roles of political ties and managerial ties and the potential shortcoming of social ties in influencing firms’ R&D. We argue that the founder’s political ties smooth a firm’s access to favourable government support. Thus, a firm with a politically well-connected founder is less likely to invest slack resources in R&D due to risky and uncertain outcomes. Rather, the firm can rely on government support for further development. In contrast, a founder’s managerial ties facilitate access to broader sources of information and resources within a specific industry or business sector. We find that a founder’s managerial ties, having a designated purpose, can strengthen the positive link between slack and R&D investment. Our empirical findings therefore add to current studies

Table 9. Robustness check: Interaction between founder's human capital and slack (using the alternative method)

	Model 1	Model 2	Model 3	Model 4
Board independence	-0.0652 (0.0436)	-0.0285 (0.0435)	-0.0652 (0.0436)	-0.0250 (0.0431)
Firm size	-0.0109** (0.0043)	-0.0118*** (0.0044)	-0.0111** (0.0044)	-0.0115*** (0.0043)
Founder CEO status	0.0148** (0.0075)	0.0140* (0.0076)	0.0150** (0.0075)	0.0136* (0.0074)
Firm age	-0.0107 (0.0095)	-0.0042 (0.0097)	-0.0107 (0.0095)	-0.0028 (0.0094)
Venture capital	-0.0006 (0.0026)	-0.0014 (0.0027)	-0.0005 (0.0026)	-0.0012 (0.0026)
Founder's human capital	-0.0023 (0.0042)	-0.0002 (0.0043)	-0.0048 (0.0068)	-0.0055 (0.0044)
Absorbed slack (<i>t</i> -1)	0.2088*** (0.0216)		0.1961*** (0.0342)	
Unabsorbed slack (<i>t</i> -1)		0.0023*** (0.0002)		0.0014*** (0.0003)
Absorbed slack (<i>t</i> -1)*Founder's human capital			0.0100 (0.0209)	
Unabsorbed slack (<i>t</i> -1)*Founder's human capital				0.0007*** (0.0002)
Industry/year	Yes	Yes	Yes	Yes
<i>N</i>	771	771	771	771

Note: Dependent variable is R&D investment. Absorbed slack is measured as selling, general, and administrative expenses to sales ratio. Unabsorbed slack is measured as the current ratio. Estimations are by random-effects maximum likelihood estimation (RE-MLE).

***Statistical significance at 1% level (*p*-value < .01).

**Statistical significance at 5% level (*p*-value < .05).

*Statistical significance at 10% level (*p*-value < .1).

in understanding how the founder acts as the microfoundation of the firm in contributing to firm's strategic outcomes.

Practical implications

This study yields important practical implications. First, our findings show that slack resources can enhance R&D investment in firms where the founder has a higher educational level. Such a finding reflects the importance of human capital to firms' R&D activities. Thus, a firm should place greater emphasis on enriching key players' human capital and understand that merely having adequate resources may be insufficient to promote the firm's R&D investment. The firm's founder and other managers should also accumulate knowledge and skills required through training and education to better mobilize and utilise resources and information for effective value creation.

Second, our results indicate the important role of founder's political ties in weakening, and of managerial ties in strengthening, the transformation of slack resources into R&D investment. The ineffectiveness of political ties in improving a firm's innovative desire suggests that firms should place greater emphasis on developing industrial-based networks to effectively manage and utilize resources. Rather than rely on political ties to gain access to valuable resources, Chinese founders should prioritize the development of social connections (with researchers and other firms) to accelerate R&D activities.

For regulators and policymakers, our study highlights the importance of a well-developed market-supporting system to boost firm's R&D activities. As political ties prevent firms from investing

Table 10. Robustness check: Interaction between founder’s social ties and slack (using the alternative method)

	Model 1	Model 2	Model 3	Model 4
Board independence	-0.0661 (0.0435)	-0.0303 (0.0434)	-0.0680 (0.0431)	-0.0221 (0.0432)
Firm size	-0.0107** (0.0043)	-0.0115*** (0.0044)	-0.0113*** (0.0043)	-0.0119*** (0.0043)
Founder CEO status	0.0139** (0.0069)	0.0138* (0.0071)	0.0117* (0.0069)	0.0132* (0.0071)
Firm age	-0.0101 (0.0095)	-0.0034 (0.0097)	-0.0107 (0.0094)	-0.0024 (0.0097)
Venture capital	-0.0003 (0.0026)	-0.0009 (0.0027)	-0.0008 (0.0026)	-0.0012 (0.0027)
Founder’s political ties	-0.0126 (0.0086)	-0.0138 (0.0087)	0.0268* (0.0140)	-0.0035 (0.0093)
Founder’s managerial ties	-0.0001 (0.0007)	0.0003 (0.0007)	-0.0022* (0.0012)	-0.0001 (0.0008)
Absorbed slack (<i>t</i> -1)	0.2068*** (0.0215)		0.1903*** (0.0300)	
Unabsorbed slack (<i>t</i> -1)		0.0023*** (0.0002)		0.0023*** (0.0003)
Absorbed slack (<i>t</i> -1)*Founder’s political ties			-0.1807*** (0.0514)	
Absorbed slack (<i>t</i> -1)*Founder’s managerial ties			0.0090** (0.0039)	
Unabsorbed slack (<i>t</i> -1)*Founder’s political ties				-0.0018*** (0.0006)
Unabsorbed slack (<i>t</i> -1)*Founder’s managerial ties				0.0001 (0.0001)
Industry/year	Yes	Yes	Yes	Yes
<i>N</i>	771	771	771	771

Note: Dependent variable is R&D investment. Absorbed slack is measured as selling, general, and administrative expenses to sales ratio. Unabsorbed slack is measured as the current ratio. Estimations are by random-effects maximum likelihood estimation (RE-MLE).
 ***Statistical significance at 1% level (*p*-value < .01).
 **Statistical significance at 5% level (*p*-value < .05).
 *Statistical significance at 10% level (*p*-value < .1).

R&D projects, policymakers should establish well-crafted formal institutions to balance the costs of political ties in their endeavour to promote the country’s R&D and innovation growth.

Limitations and future directions

This study has several limitations that suggest directions for future research. First, our studied sample is the newly listed firms in a single economy, China. Future studies should extend the sample selection by investigating unlisted firms and other economies to further generalise the findings. In addition, future studies should explore the persistency effects of the founder to test whether founders’ influence will diminish after the initial stage of flotation.

Second, while we adopt multiple measures for our key variable, resource slack, our measures on social ties and human capital are relatively thin due to the limitation of secondary data. Thus, it is likely that our findings capture only a partial picture of human capital and social ties and their function in R&D activities. Future research could consider conducting qualitative analysis to gain more insights into the effects of different types of human capital and social ties on firm’s innovative outcomes.

Conclusion

Resource slack helps firms to facilitate investment in R&D and mitigate the effects of institutional uncertainty. However, merely having slack resources does not necessarily promote effective R&D investment. It is thus important to understand how and under what conditions slack produces value for firms. This study addresses the firm's founder(s) and views the founder(s) as the 'microfoundation' in deploying the slack resources in newly listed firms. We propose a contingent approach to understand the slack-R&D relationships by examining the founder's human capital and social ties. Our empirical results indicate that, in newly listed firms, the founder's educational level, as one proxy for human capital, strengthens the relationship between both absorbed and unabsorbed slack resources and R&D investment. We also find that the founder's managerial ties strengthen the relationships between resource slack and R&D intensity while political ties weaken such relationships. This study enlightens future research by shifting the focus of understanding the firm's activities from examining external factors to the firm's key players, such as the founder.

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