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FOREIGN OWNERSHIP AND PRODUCTIVITY IN CHINESE NEWLY LISTED FIRMS: THE MODERATING ROLES OF FOUNDER'S HUMAN CAPITAL AND SOCIAL TIES

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Abstract

This paper studies the effects of foreign ownership on firm-level productivity and examines the different moderating roles of the firm-founder's human capital and social ties on the foreign ownership - productivity link. Leveraging a unique sample of 428 small and medium-sized firms listed on the Growth Enterprise Market in the Shenzhen Stock Exchange between 2009 and 2016, we find that the foreign ownership's contribution to productivity is not linear and varies across different quantiles of the productivity distribution. Our findings also show that the founder's education and foreign experience strengthen the foreign ownership - productivity link, while the founder's political and managerial ties weaken it. Our results reveal the strategic importance of the founder and contribute to an improved understanding of why firms vary in their ability to enhance productivity in emerging economies.

Keywords: Founder, Human Capital, Social Ties, Foreign Ownership, Productivity

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INTRODUCTION

What determines firm-level productivity? Extant literature has studied this question by exploring the external effects of technological factors and foreign competition on productivity levels (e.g. Javorcik, 2004; Schmitz, 2005; Syverson, 2004; Syverson, 2011). Another stream of research has studied the interaction between the firms' internal factors and productivity by investigating the roles of ownership structure (Bircan, 2019; Sheu & Yang, 2005) and workers' human capital (Chowdhury, Schulz, Morgan, & Van De Voort, 2014; Onkelinx, Manolova, & Edelman, 2016) on productivity. Yet, research on how foreign ownership influences firm-level productivity via its interaction with internal, firm-specific characteristics remains relatively less studied.

Foreign ownership has long been viewed as a potential source of productivity growth (Dimelis & Louri, 2002; Djankov & Hoekman, 2000; Rao & Tang, 2005). Because foreign investors are mainly from developed countries where the industry structure is typically technologically advanced (Jefferson, Hu, Guan, & Yu, 2003), many studies have found that foreign ownership contributes to productivity growth through technological and managerial knowledge diffusions (Liu, Wang, & Wei, 2009; Javorcik, 2004; Jefferson et al., 2003; Spencer, 2008; Wei, Xie, & Zhang, 2005; Zhang, Li, Li, & Zhou, 2010). Prior studies, however, have generally focussed on the spillover effects of foreign direct investment at the industrial-level on indigenous firm's productivity and innovation (Zhang et al., 2010; Li and Tanna, 2018). As such, researchers have not thoroughly explored the direct link between foreign ownership and firm-level productivity.

Recent studies have also argued that foreign ownership's beneficial effects do not arise automatically (Carney, Estrin, Liang, & Shapiro, 2019) since the magnitude of success is contingent upon the recipient's characteristics (Blalock & Simon, 2009). For instance, it has been suggested that a firm's ability to absorb new knowledge and connect it with existing skills is determined by its human capital (Meyer & Sinani, 2009). A firm's human capital, embedded in employees' education, experiences and skills, is thus a potent force in influencing the focal firm's ability to recognize the value of new information, assimilate it, and apply it to commercial ends (Cohen & Levinthal, 1990). While prior research has articulated the role of human capital with industry-level productivity among established firms (Blalock & Simon, 2009; Debrulle, Maes, & Sels, 2014), few studies have recognised the critical role of the founder(s), the most important player in the early stage of the firm's life cycle, in shaping the effects of foreign ownership on firm-level productivity particularly in emerging economies.

Addressing the aforementioned research gaps, this paper aims to articulate the role of the firm-founder in influencing the foreign ownership - productivity relationship among newly listed firms in the world's largest emerging economy, China. Specifically, we ask: *how do a founder's human capital and social ties shape the effects of foreign ownership on productivity in Chinese newly listed firms*? As previous studies have highlighted, a founder is the architect of an organisation's initial structure and strategy (Nelson, 2003) and, by implication, has a profound influence on the firm's outcomes in the early stage of its life cycle (Block, 2012; Delmar & Shane, 2006; Dencker & Gruber, 2015; Fern, Cardinal, & O'Neill, 2012; He, 2008; Ling, Zhao, & Baron, 2007; McKelvie & Davidsson, 2009). A firm's initial strategic development is inextricably linked to its founder because the founder not only designs the firm's mission and goals,

but also normally serves as a day-to-day manager (Eddleston, 2008). A large number of studies have asserted that founders would have a lasting imprint on firm outcomes (Bamford, Bruton, & Hinson, 2006; Hsu & Lim, 2014; Jayaraman, Khorana, Nelling, & Covin, 2000; Ling, et al., 2007; Nelson, 2003).

Our paper focuses on newly listed firms, which are undergoing a major transition from an entrepreneurial firm to a public listed firm. Conventional view suggests that the founder should cede control to professional managers as the firm's growth requires more expertise and resources than its founder can possibly provide (Chahine, Filatotchev, & Zahra, 2011; Daily & Dalton, 1992; Gedajlovic, Lubatkin, & Schulze, 2004; Hendricks, Howell, & Bingham, 2019; Zahra & Filatotchev, 2004). However, it has been found that in a majority of newly listed firms in emerging economies, founders typically demand more control and continue to lead the firm either as a CEO or as a chairman after the initial public offering (Liu, Ahlstrom, & Yeh, 2006; Wang & Song, 2016; Young, Peng, Ahlstrom, Bruton, & Jiang, 2008). This widespread prevalence indicates the distinctive role of the founder in leading newly listed firms in emerging economies, compared to the counterparts in developed economies where ceding managerial control is relatively more common.

We contribute to the literature in two important ways. First, we suggest a contingent approach to understanding the association between foreign ownership and productivity through examining the role of the founder in emerging economies. Compared to many previous studies which assert that foreign-owned firms tend to perform better than domestic counterparts (e.g., Jefferson et al., 2003; Megginson & Netter, 2001), we argue that the effects of foreign ownership on the firm's productivity are contingent upon the expertise of the firm's founder. Specifically, the impact of

foreign ownership on firm's productivity is expected to differ as a consequence of the heterogeneity in the founder's human capital and social ties.

Second, we explicitly examine the importance of the founder's role to extract benefits from foreign investment and then shaping the firm's productivity. There are on-going debates on the effects of top management team or the chief executive officer's demographics on firm's strategy and performance in developed economies (Carpenter, Geletkanycz, & Sanders, 2004; Hendricks et al., 2019). The effects of the founder on a firm's outcomes in emerging economies are, by comparison, relatively under-researched. This paper shows that the founder's human capital and social ties are relevant attributes in influencing firm productivity.

THEORETICAL BACKGROUND

The initial public offering represents a vital stage in the evolution of a company when it evolves from the entrepreneurial stage to the professional firm stage (Filatotchev & Wright, 2005). Rather than a one-time transaction that raises additional funding through the capital market, public listing represents a board transformation with long-term impacts on a firm's ownership structure and decision-making processes (Bruton, Filatotchev, Chahine, & Wright, 2010). In the early stage of the firm's life cycle, the entrepreneurial firm has a narrow resource base as it is funded, owned and controlled by the founder and/or private investors (Filatotchev, Toms, & Wright, 2006). The public listing immediately infuses the firm with financial capital and widens the firm's access to other resources from the external market. Compared with entrepreneurial firms, newly listed firms have to confront with greater external market pressures to enhance productivity due to greater transparency (Croce, Martí, & Murtinu, 2013; Wu, 2012).

The core issue for a newly listed firm is not how to deepen its resource pool, but rather how to allocate resources between tasks and utilise the resources effectively to exploit strategic opportunities. Therefore, the top management team of newly listed firms should balance different stakeholder interests and endeavour to enhance firm's productivity and performance in order to attract capital for future development. Wu (2012), for instance, argues that greater access to financial and strategic resources is likely to increase a newly listed firm's innovative productivity.

Foreign ownership and productivity

Extant literature has long studied the effects of foreign ownership, a source of greater access to financial and strategic resources for the entrepreneurial firms, on their productivity. Many researchers propose the beneficial role of foreign ownership in conveying technological and management know-how via market transactions with financial and technology investment (Li, Lu, & Ng, 2009; Liu et al., 2009). Foreign ownership improves productivity by directly transferring advanced know-how to small entrepreneurial firms through employee training, quality control, and production management (Blalock & Simon, 2009). This approach focuses on the convergence effect of the technological and management know-how gap between domestic firms and foreign partner, whereby a larger gap will stimulate domestic firms to catch up with foreign affiliates. Djankov and Hoekman (2000) find that foreign investments have a positive impact on the productivity in Czech firms. Arnold and Javorcik (2009) also suggest that foreign ownership has a positive impact on firm productivity in Indonesia.

However, as argued above, some studies assert that the benefits of foreign ownership do not occur automatically but depend on the characteristics and capabilities

of domestic firms (Meyer & Sinani, 2009). Blalock and Simon (2009) find that firms with greater R&D investment and human capital gain more from foreign investment, whereas firms with superior production capabilities gain less. Zhang et al. (2010) discern the importance of firm size and technology gap in strengthening the relationship between foreign owners' origins and the productivity of domestic firms. Gao, Xu, and Yang (2008) suggest that a firm with high absorptive capacity is more likely to successfully exploit new knowledge and produce more innovations.

The abovementioned studies have addressed the contingency effects of the recipient firms' characteristics, but the findings were limited to the established firms. Previous literature on the link between foreign ownership and productivity has generally overlooked newly listed entrepreneurial firms with less aggregated resources and typically led by the founder in emerging economies. To appreciate how the founder benefits the entrepreneurial firm, the next section discusses the founder's role in influencing the firm's outcomes.

The imprinting role of the founder

In 1965, Stinchcombe invoked the concept of imprinting from biological ecology and applied it to organizational research. Stinchcombe (1965, p.142) asserted that organizations are imprinted with the characteristics of "groups, institutions, laws, population characteristics, and sets of social relationships" during the founding period of the organization. Marquis and Tilcsik (2013) define imprinting as a process where a focal organization develops characteristics that reflect prominent features of the environment or an influential individual of the organization during a susceptible period.

The imprinted characteristics persist in the long term despite significant environmental and organizational changes (Milanov & Fernhaber, 2009).

While the initial focus of imprinting concept was that organizations bear imprints of their founding conditions (e.g., economic, technological, and institutional environment), recent studies have examined how the founder can leave lasting marks on the new ventures (Hsu & Lim, 2014; Marquis & Qiao, 2018). Large number of studies have suggested that organizational founders impose persistent influence to the firm through the creation of business models and organizational structure (Baron, Hannan, & Burton, 1999; Johnson, 2007; Marquis & Tilcsik, 2013).

A founder plays the most important role in a firm's initial conceptualization and start-up (Eddleston, 2008; Gimmon & Levie, 2010; Nelson, 2003). At the start-up stage, the founder establishes the organisational routines and structures that support organisational development and product launch (Ahmed & Brennan, 2019; Delmar & Shane, 2004; Hoang & Gimeno, 2010; Lee & Tsang, 2001; Rubenson & Gupta, 1997; Yang, Li, Stanley, Kellermanns, & Li, 2020). Such routine and structure are based on the founder(s)'s own experience and background, which lay the foundation of organisational value and determine the organisational value and strategic orientation (Schein, 1983). In other words, the founding period is the key sensitive time when the organization is making the fundamental transition from nonexistence to existence (Marquis & Tilcsik, 2013). During the founding period, the founder structures the firms and devises strategic plans in ways that are consistent with their personal beliefs and values (Hambrick & Mason, 1984). Once formulated and articulated, a founder's organisational blueprint is likely to be locked and would consistently influence on decision-making and performance (Baron et al., 1999). Given the founder's important

role for firm's growth and development, researchers have expected that founders would have an individual impact on firm outcomes (Bamford et al., 2006; Jayaraman et al., 2000) and such influences would not diminish over time (Nelson, 2003).

Empirical studies have investigated the imprinting effects of the founder on organizational culture (Schein, 1983), firm performance (Dencker & Gruber, 2015; Ling et al., 2017), corporate governance (He, 2008; Nelson, 2003), IPO speed (Teng & Li, 2020), and innovation (Hsu & Lim, 2014; Lee, Kim, & Bae, 2020). Their results demonstrate that the founder plays an essential role in driving a firm's strategy and influencing performance.

HYPOTHESES DEVELOPMENT

Foreign ownership and productivity

Existing literature has explored the role of foreign ownership on firm's productivity in emerging economies (Choi, Lee, & Williams, 2011; Douma, George, & Kabir, 2006; Greenaway, Guariglia, &Yu, 2014; Tam and Tan, 2007; Wei et al., 2005). The results in general show that foreign ownership has a positive influence on performance. The positive role of foreign ownership on firm-level productivity can be attributed to two reasons (Heugens, Essen, & Oosterhout, 2009). First, foreign ownership provides valuable resources, such as management and technical know-how, together with the financial capital to the focal firm (Choi, Park, & Hong, 2012; Douma et al., 2006; Xia & Walker, 2015). Compared with foreign investors from developed economies, firms in emerging economies generally have inadequate technology knowledge and insufficient managerial expertise (Chen, Li, Shapiro, & Zhang, 2014). The transferred

management and technical know-how can enhance quality control and production management, which in turn improve productivity (Djankov & Hoekman, 2000).

Second, foreign ownership may contribute to productivity improvement by introducing good corporate governance practices to the focal firms (Chiang & Lin, 2007; Cowling, 2003; Gaitán, Herrera-Echeverri, & Pablo, 2018; Tian & Twite, 2011). Foreign owners are normally from developed countries with strong institutions and good governance and thus have relevant know-how to set an appropriate standard for corporate governance in the focal firms (Douma et al., 2006). Foreign ownership can invoke the "best practices" of corporate governance from the home markets and implement to the focal firm in the host market (Heugens et al., 2009). Foreign ownership has been found to contribute to enhanced corporate governance practice and led to more transparent information disclosure, more sophisticated accounting auditing, and more independent board (Mangena & Tauringana, 2007).

The argument that foreign ownership is linked to enhanced corporate governance has its underlying premise drawn from agency theory (Jensen & Meckling, 1976), which argues that managers are self-interested individuals who are likely to engage in opportunistic and inefficient behaviour without appropriate discipline. Managers in a firm with more transparent information disclosure and more sophisticated accounting auditing will be more accountable for the decisions which they make. Increased disclosure of information and sophisticated auditing make it easier for the shareholders and other stakeholders (including foreign owners) to assess and oversee the management, which, in turn, pressurise the management to improve productivity and performance (Min & Smyth, 2014).

There is also broad consensus in the conceptual corporate governance literature that, irrespective of the firm's ownership structure, effective board of directors should be comprised of greater proportion of independent directors (Jensen & Meckling, 1976). Independent directors are industrial or professional experts who are not employed by the focal firm and do not have an affiliation with its management. A board comprised of a larger proportion of independent directors is more likely to provide effective oversight of the firm's top management team (Dalton, Daily, Ellstrand, & Johnson, 1998). As inside directors are affiliated or even employed by the firm, they are thus less likely to put pressure on the management because of their own career prospects within the firm (Jensen & Meckling, 1976). By contrast, independent directors are outsiders who, being more independent than their inside counterparts, can contribute to productivity enhancement by increasing boards' monitoring power and objectivity in evaluating managerial performance (Cowling, 2003; Gaitán et al., 2018; Min & Smyth, 2014; Tian & Twite, 2011). A more independent board structure is, therefore, more likely to discipline managerial actions that are consistent with the interests of the owners, especially when foreign ownership is involved. In this sense, foreign ownership is likely to bring in more independent directors, one of the "best practices" of corporate governance, in order to ensure effective monitoring of the management.

In addition to the monitoring and controlling functions, corporate governance researchers have reviewed the board of directors' resource role for newly listed firms and suggested that boards can extend their involvement to the provision of ongoing advice and expertise to the firm (Filatotchev, 2006; Zahra & Filatotchev, 2004). Min & Smyth (2014), for example, argue that independent directors bring quality expertise, information, attributes, knowledge and social status, which insides may lack. Foreign

investors, therefore, may reply on independent directors to facilitate the adoption of the local context and gain legitimacy with a new set of stakeholders. Superior managerial expertise and local connection can accelerate the technological transfer from the foreign partners and, in turn, enhance productivity.

Drawing upon the arguments above and discounting the role of the founder characteristics for now, we can propose our first hypothesis by suggesting that foreign ownership leads to better productivity by offering valuable resources which serve to facilitate knowledge diffusion and improve corporate governance.

Hypothesis 1: There is a positive relationship between foreign ownership and firm's productivity.

While the literature has generally acknowledged the beneficial role of foreign ownership in conveying technological and management know-how in emerging economies, our further hypotheses proposed below articulate the role for founders' human capital and social ties which condition the focal firms' ability to extract productivity benefits from foreign ownership.

Foreign ownership and productivity: A contingent perspective of the founder's human capital

Despite the arguments in favour of a positive relationship between foreign ownership and productivity, recent studies nevertheless propose a contingent view and assert that the presence of foreign ownership *per se* may not accelerate the diffusion of knowledge and performance enhancement (Chen, Lin, Lin, & Hsiao, 2016; Xia & Walker, 2015). The beneficial role of foreign ownership in conveying technological and management know-how in emerging economies is conditioned by the focal firm's

human capital (Cohen & Levinthal, 1990; Lane, Salk, & Lyles, 2001; Zahra & Hayton, 2008). Thus, a firm with stronger human capital may gain more from observing foreign partners' technologies and management practices (Blalock & Simon, 2009).

Human capital, embedded in one's education and experiences, plays an important role in organisational decision-making process and has been consistently viewed as the key driver of firm's strategy formation and performance (Carpenter, Sanders, & Gregersen, 2001; Hitt, Bierman, Shimizu, & Kochhar, 2001; Rauch, Frese, & Utsch, 2005; Unger, Rauch, Frese, & Rosenbusch, 2011). Human capital, therefore, is considered a source of generic abilities, intelligence, and skills (Ahmed & Brennan, 2019; Debrulle et al., 2014; McKelvie & Davidsson, 2009; Yan, Schiehll, & Muller-Kahle, 2019).

Most entrepreneurial firms start with very limited resources (Zahra & Filatotchev, 2004). Due to narrow technological repertoire and knowledge capacity, many firms typically rely on its founder to cultivate capabilities and nurture the knowledge base of the firm (McKelvie & Davidsson, 2009). Even in circumstances where the firms are not constrained by resource endowments, a founder with stronger human capital normally leads to superior decisions in recognizing opportunities and allocating existing resources appropriately. We thus assert that the founder's human capital strengthens the effects of foreign ownership on the firm's productivity in two specific ways.

First, the founder's educational level influences information retrieval and value judgment (Lyles & Salk, 1996), which determines the ability of opportunity recognition and information evaluation (Ucbasaran, Westhead, & Wright, 2008; 2009). Education

level constructs one's knowledge base and lays the foundation for stronger capabilities in absorbing new opportunities (Bhagavatula, Elfring, Van Tilburg, & Van De Bunt, 2010; Ucbasaran et al., 2008). An individual with a higher level of formal educational training tends to have greater cognitive ability which facilitates better opportunities to identify and evaluate information (Westhead, Ucbasaran, & Wright, 2009).

In newly listed firms where decision-making is more centralized than in more mature counterparts, the founder plays an essential role in directing the strategic orientations (Chahine et al., 2011). The founder's education, as an important type of human capital, defines the firm's ability of opportunity recognition and information evaluation (Ucbasaran et al., 2008). In emerging economies, local firms normally improve productivity through observing and imitating foreign partners' technologies and management practices (Luo, 2002). Higher education level is required for effective knowledge identification and evaluation before innovatively integrating exposed information with existing resources to enhance productivity. A founder with higher education level is thus more likely to leverage his/her knowledge and skill to identify valuable but unmerged information from foreign ownership.

Hypothesis 2a: Founder's education level positively moderates the relationship between foreign ownership and firm's productivity.

Second, the founder's prior experience conditions a firm's ability to absorb new and transferred knowledge. Absorbing new knowledge is a cumulative process and is path-dependent on the experience of the organisation's individual members (Cohen & Levinthal, 1990; Mowery & Oxley, 1995). Individual member's experience determines the locus of information search and influences the development of knowledge

acquisition capabilities (Lane, Koka, & Pathak, 2006). The central proposition of Cohen & Levinthal (1990) is that individuals of an organisation acquire new knowledge, then share and communicate internally (Lane et al., 2006). In this sense, exposure to new knowledge *per se* does not guarantee effective knowledge grafting (Zahra & George, 2002). Organisational members' capabilities determine the dimension of acquiring and assimilate new knowledge. Zahra and George (2002) assert that past experience determines the locus of knowledge search, which, in turn, influence the development of knowledge acquisition capabilities. Lyles and Schwenk (1992) and Carpenter et al. (2001) underscore the importance of experience in enhancing new knowledge acquisition. In a newly listed firm, the founder with foreign experience can better hook to the foreign investors and smooth knowledge acquisition and grafting process. Based on the above discussion, we posit that:

Hypothesis 2b: Founder's foreign experience positively moderates the relationship between foreign ownership and firm's productivity.

Foreign ownership and productivity: A contingent perspective of the founder's social ties

Social ties reflect an actor's ability to obtain benefits through a network of social relationships (Portes, 1998). Researchers increasingly acknowledge the importance of social ties and view social ties as unique resources to gain competitive advantage and in emerging economies (Bamford et al., 2006; Bhagavatula et al., 2010; Florin, Lubatkin, & Schulze, 2003; Lahiri, Mukherjee, & Peng, 2020; Li, Poppo, & Zhou, 2008; Li, Chen, Liu, & Peng, 2014; Li, He, Lan, & Yiu, 2012; Mukherjee, Makarius, & Stevens, 2018; Peng & Luo, 2000). The obvious benefit of social ties is resource and information accession (De Carolis & Saparito, 2006; Gedajlovic, Honig, Morre, Payne, & Wright,

2013). Stronger social ties assist individuals and organisations to occupy a predominant position in the network of social exchanges and allow them to gather resources to bear on problems in a more timely and effective manner. Moreover, social capital helps firms to reduce transaction costs through the facilitated exchange of resources (Peng & Luo, 2000).

As discussed above, foreign ownership contributes to firm-level productivity through introducing good governance practices to the focal firm. We propose that stronger social ties of the founder facilitate the firm's access to domestic resources (Lahiri et al., 2020) but impede the transference of good governance from the foreign investors, which, in turn, weaken the positive effects of foreign ownership on productivity. Following prior studies (Li & Zhang, 2007; Peng & Luo, 2000; Sun, Mellahi, Wright, & Xu, 2015), we distinguish the founder's managerial ties with political ties and, accordingly, propose two avenues for the negative moderating effect.

First, the founder's managerial ties may diminish the involvement and effectiveness of outside directors (Johnson, Hoskisson, & Hitt, 1993; Johnson, Schnatterly, & Hill, 2013). As noted above, corporate governance literature suggests that board independence is an important driver of 'good' corporate governance (Dalton et al., 1998). Outside directors who are not employed by the focal firm and do not have an affiliation with its top management increase boards' objectivity in evaluating managerial performance and protecting shareholders' interests (Johnson et al., 1993). In addition to the monitoring functions, the outside directors can bring information and resources to the focal firm and are often considered as the substitute of the top executives' social connection (Filatotchev, 2006).

However, the founder with social ties often considers the firm as his/her lifetime achievement, and this intrinsic mentality makes the founder determined to maintain strict managerial control over the firm (Liu et al., 2006; Wang & Song, 2016; Young et al., 2008). Managerial ties help the firm to gain access to the resource and knowledge (Chen, Chen, & Huang, 2013) and ensure effective information extraction in a timely manner (Li & Zhang, 2007; Luo, 2003). A founder with strong social ties is less likely to cede control and create a more independent board because the founder's managerial ties would serve that function to facilitate and bridge the external information and resources with the focal firm and improve information and resources' quality, relevance, and timeliness (Li et al., 2008; Li et al., 2014; Luo, 2003). Furthermore, managerial ties may even harm other aspects of corporate governance. For example, Wilbanks, Hermanson, & Sharma (2017) find that managerial social ties impede the audit committee's action to assess management integrity.

Hypothesis 3a: Founder's managerial ties negatively moderate the relationship between foreign ownership and firm's productivity.

Second, political ties may have negative effects on corporate governance. Political ties spoil the focal firm with resources and valuable business opportunities (Li et al., 2008), which can help to generate superior performance compared to firms with weak or even no political ties. Founders with strong political connections are less willing to disclose the company's information and employ more outside directors because transparent information disclosure and effective monitoring could reveal politically-motivated appropriation (Liedong & Rajwani, 2018). Founders with strong political ties would therefore tend to reduce the firm's visibility in order to avoid scrutiny from a good corporate governance system.

Moreover, political ties might generate significant costs imposed by government interference (Sun, Mellahi & Thun, 2010; You & Du, 2012). The government may inflict its own political or socio-economic goals on firms through social ties and promote strategies that might be optimal from the government's point of view, but suboptimal to the firm's performance (Okhmatovskiy, 2010). Therefore, we argue that the founder with stronger political ties may hinder the positive influence of foreign ownership on the firm's productivity.

Hypothesis 3b: Founder's political ties negatively moderate the relationship between foreign ownership and firm's productivity.

METHODOLOGY

Data sources and sample

We manually collected founder-related data from 511 firms listed on the Growth Enterprise Market (GEM) on the Shenzhen Stock Exchange in China. The sample includes all firms which underwent initial public offering (IPO) from 2009 to 2016[1]. Most of the firms listed on the GEM are small and medium-sized enterprises (SMEs). Following previous studies (e.g., Daily, Certo, Dalton, & Roengpitya, 2003; Deeds, Mang, & Frandsen, 2004; Lester, Certo, Dalton, Dalton, & Cannella, 2006; Teng & Li, 2020; Yang, Zimmerman, & Jiang, 2011), founder-related data are primarily obtained

[1] Although dictated by data availability (as the Growth Enterprise Market is a sub-market of Shenzhen Stock exchange and was launched on 30 October 2009), the chosen period (2009-2016) marks an important stage in the development of China's position in attracting foreign investment. In 2009, China became the world second largest market in terms of receiving foreign direct investment – a leading position it has retained up to now (OECD International Direct Investment Statistics Database). Thus, the economic scale and the time period make China an important contextual environment to study.

from the IPO prospectus. The IPO prospectus is part of the requirements for listing and most of the prospectuses have a standard format. The detailed information about the founder or founding team makes the IPO prospectus the fundamental document for this research. Additional data regarding the firm's financial performance, productivity, and institutional factors covering the period 2009-2016 were sourced from the China Stock Market & Accounting Research (CSMAR) database and the China Statistical Yearbook.

To construct our unique dataset about the founder(s), we adopted a multi-stage sample collecting procedure. The most challenging task was to distinguish a firm with founder(s) from those firms without the founding team. Some firms were originally established by governments or reformed from state-owned firms. In other cases, the founders had retired, resigned, or died. The selection process was based on three criteria: (1) the existence of a founder in the history section of the prospectus, (2) the founder holds a position on the board after the IPO, and (3) the founder holds share ownership after IPO flotation. We triangulated the information from the IPO prospectus with each company's website and other published news to ensure that the founder's information was accurate and firms without founding teams were eliminated from the sample. This process left us with 428 firms, out of the initial 511, with founder(s). Furthermore, after discarding missing values, we ended up with a sample of 1305 firm-year observations for empirical estimation. It should be noted that our final sample is inherently an unbalanced panel because the IPO time-frame of firms listed on the GEM is different[2].

[2] For example, in our sample, 93 firms were listed (the IPO time) in 2009. So, most of them have 7 years of observations up to 2016. In the year 2015, 55 firms had their IPO, which means a maximum of 2 observations available for these firms.

Dependent variable

Our dependent variable in regressions is firm-level total factor productivity (TFP). Our empirical strategy for testing the above hypotheses relies on estimating firm-level productivity and regressing it on relevant explanatory variables including founder characteristics and foreign ownership, as well as a number of control variables. As the capacity of the firm to supply goods and services depends on the quantities and qualities of the primary inputs into the production process – capital and labour – and on the efficiency with which they are combined, TFP is as an ideal empirical measure to capture the productivity of the firm (Sickles & Zelenyuk, 2019).

The values of TFP are derived from estimation using the Levinsohn and Petrin (2003) (LP) method. In estimating TFP, a production function is invoked and TFP is obtained as a residual in the regression of the output on the inputs. There are four main variables, namely output, material input, number of labour and capital input, used for estimating TFP. The data for output (sales) and materials input (costs of goods sold) are deflated by provincial producers' price indices of industrial product; while the capital input (tangible assets) is deflated by provincial price indices of investment in fixed assets. The price indices are obtained from the China Statistical Yearbook.

To briefly illustrate the process of TFP calculation, we assume a basic Cobb-Douglas production function: $Y_{it} = A_{it}K_{it}^{\beta_k}L_{it}^{\beta_l}M_{it}^{\beta_m}$, where Y_{it}, K_{it}, L_{it}, and M_{it} denote physical output, capital input, labour input, and intermediate input, respectively, of firm i in year t; A_{it} represents the unobservable efficiency level of the firm and $ln(A_{it}) = \beta_0 + \varepsilon_{it}$, where β_0 is the average efficiency level of firms over the period; and ε_{it} denotes the error term, which can be further decomposed into w_{it}, firm-level

productivity, and μ_{it} which is i.i.d. Hence, the production function (represented in logarithmic form using lower cases) becomes $y_{it} = \beta_k k_{it} + \beta_l l_{it} + \beta_m m_{it} + \beta_0 + w_{it} + \mu_{it}$. Firm-level TFP can be estimated as $\widehat{w}_{it} = y_{it} - \hat{\beta}_k k_{it} - \hat{\beta}_l l_{it} - \hat{\beta}_m m_{it}$. However, using OLS to estimate TFP in this way will produce biased results since the classical assumptions stipulate that all inputs are exogenous and evolve independently of the efficiency level of firms. In practice, inputs are likely to be determined by productivity, leading to a potential endogeneity problem. Although the bias induced by OLS can be overcome by using fixed effects, instrumental variables or Generalised Method of Moments (GMM) estimations, they generally have poor performances (Van Beveren, 2012). Thus, we apply the LP method which relies on using intermediate inputs as proxies to address the endogeneity and simultaneity problems (of inputs and unobserved productivity evolving jointly). The functional form for the intermediate inputs can be expressed as $w_{it} = f_t(k_{it}, m_{it}) = m_t^{-1}(k_{it}, w_{it})$ and the production function is then $y_{it} = \beta_k k_{it} + \beta_l l_{it} + \beta_m m_{it} + \beta_0 + f_t(k_{it}, i_{it}) + \mu_{it}$. We assume that productivity follows a first-order Markov process, which yields unbiased TFP estimates using the two-stage estimation method implicitly involved in the process.

Independent variables

Foreign ownership. We measure foreign ownership using the percentage of foreign shares to the total capital of the firm. We acknowledge the potential endogeneity problem in second-stage estimation with this measure owing to the possibility of both reverse causality (i.e., firms with higher productivity tend to attract more foreign investors) and simultaneity (i.e., other variables correlated with both TFP and foreign ownership are omitted from the regression). Therefore, following the approach used in prior studies (e.g., Long, Yang, & Zhang, 2015), we use lagged foreign ownership and

also include various firm-level and regional-level control variables in the regressions to mitigate the potential endogeneity biases[3].

Founder's human capital and social ties. We measure the founder's *human capital* using education and foreign experience. Education, as an important source of human capital, has been associated with improvement in the firm's performance and strategies (Hitt et al., 2001; Johnson et al., 2013). Consistent with previous studies (Debrulle et al., 2014; Ucbasaran et al., 2008), our education measure relates to the level of education reported in the IPO prospectuses. We created an ordinal variable with a range from 0 to 3 to measure the highest degree owned by founder: 0, graduated from high school or below; 1, graduated from college institute or university (e.g., a three-year college degree, BA or BSc); 2, earned a master degree or equivalent (e.g., MA, MSc, MBA, or EMBA); and 3, earned a PhD degree. In instances where multiple founders were involved, we adopted the average value of educational attainment the founding team had achieved[4]. In our sample, 34.5 per cent of the founders graduated from high school or below; as for the rest, the percentages of founders holding a three-year college or bachelor degree, master degree or equivalent, and PhD degree are 31%, 29% and 25.5% respectively.

Experience is also an important element of human capital (Dietz & Bozeman, 2005; Kor & Sundaramuthy, 2009). Skills learnt from studying and working overseas

[3] One could use instrumental variable (IV) estimation which is admittedly a better approach to address the endogeneity problem. However, finding proper set of instruments is generally difficult and we do not have adequate firm-level data to create such instruments.

[4] In this regard, to mitigate measurement biases, we conduct robustness tests using alternative measures of the founder(s) education, such as using the highest value or the value representing a weighted average based on the number of shares owned by different founder.

can generate profound influence in dealing with foreign investors (Carpenter et al., 2001). Following previous studies (e.g., Magnusson & Boggs, 2007; Piaskowska & Trojanowski, 2014; Reuber & Fischer, 1997), we coded this variable as 1 if the founder (or the founding team) has study or work experience abroad, and 0 otherwise. We observe that only less than 12 per cent of the founders have foreign experience.

In our unique dataset, we also distinguish the founder's managerial ties from political ties (Li & Zhang, 2007; Li, Zhou, & Shao, 2009; Peng & Luo, 2000; Sun et al., 2015). Founder's managerial ties is measured by the sum of executive positions and board memberships held by the founder outside the focal firm (Filatotchev, 2006). In the case of multiple founders, we use the mean of these positions. We find that one-third of the founders have no managerial ties since they do not have concurrent positions outside their own firms while about 8 per cent of the founders have strong managerial ties (amounting to values more than 10). The influence of firm's political ties, which has been investigated in a large number of studies for emerging counties (e.g., Li et al., 2008; Li et al., 2012), is measured using a dummy variable, coded as 1 if the founder (or the founding team) has political connections – i.e., was the member of the National People's Congress or the member of Chinese People's Political Consultative Conference, or worked in the local or central government department or military department, and 0 otherwise. Around 20 per cent of the founders in our sample have political connections.

Control variables

We included a number of control variables capturing the effects of founder characteristics (other than human capital and social ties), firm-level factors and industry

level differences reflecting the role of institutions, FDI spillovers and unobservable fixed effects.

Among the founder characteristics, a founder's age can influence firm's performance (Lévesque & Minniti, 2006). We calculate the founder's age by using the born year of the founder reported in the IPO prospectuses. Also empirically examined in prior studies (e.g., Block, 2012; Nelson, 2003) is the impact of the founder's ownership on firm performance. We use the ownership percentage to measure the founder's ownership. Founder-CEO status can also have an influence on firm performance (Fischer & Pollock, 2004). We use a dummy variable to represent this effect, coded as 1 if the founder is the CEO, and 0 otherwise.

Among firm-level factors, firstly independent directors are considered as imported compensation for the lack of social connection and experience of the founder and the firm (Zahra & Filatotchev, 2004). Board independence is measured by the number of independent directors divided by the board size (Joseph, Ocasio, & McDonnell, 2014). Second, the effect of financial slack is also important to firm productivity (Lungeanu, Stern, & Zajac, 2016). We use the current ratio to capture such an effect. Third, firm size can exert an effect on productivity (Garicano, Lelarge, & Van Reenen, 2016). The natural logarithm of total assets is used to control for the effect of firm size. Fourth, firm age can affect the firm's attitude towards innovation which is related to the growth pattern of productivity (Cucculelli, Mannarino, Pupo, & Ricotta, 2014). We calculate the firm age by using the established year of the firm reported in the IPO prospectuses. Fifth, R&D intensity has been proved highly correlated to productivity in prior studies (Wakelin, 2001). We use the ratio of R&D expenditure to sales to measure firm's R&D intensity. Sixth, as we focus on firms listed on GEM,

venture capital is essential to firm's performance after a successful IPO (Croce et al., 2013). The effect of venture capital is measured by the ratio (percentage) of venture capital (before IPO) to total equity. Finally, firm's profitability is expected to be correlated to firm's productivity, and we use the firm's return on assets (ROA) to measure profitability.

Among the industry level characteristics, we emphasise the importance of formal institutions to control for regional differences in the external environment. We use annual data for provincial institutional quality measured by the relationship between government and market, which capture the effects of marketization, corporate tax burden, government interventions to enterprises and the scale of government. Next, we control for industry-level FDI spillover effects measured by the amount of FDI inflows to specific industry and, finally, for industry-specific and geographic (location) fixed effects using dummy variables.

Table 1 provides the summary statistics of the variables, indicating that most of the observations in the sample are within reasonable limits (i.e., no outliers). Furthermore, the pairwise correlation coefficients included Table 1 show no serious issues of multicollinearity among the variables.

[Insert Table 1 about here]

Model specification

We first estimate the linear relationship between foreign ownership and firm-level TFP while accounting for the effect of founder's social ties and human capital using OLS estimation.

$$TFP_{it} = \beta_1 Foreign_{it} + \beta_2 Founder_{it} + \beta_3 Z_{lt} + \beta_4 Dummies + \beta_0 + \varepsilon_{it} \quad (1)$$

where $Foreign_{it}$ represents ownership of foreign capital in firm i at year t; $Founder_{it}$ captures the effect of founder's human capital and social ties; Z refers to a set of control variables; and $Dummies$ represent location and industry fixed effects, and origin of foreign ownership[5].

Apart from endogeneity concerns, empirical studies investigating firm-level productivity have to also address the existence of significant heterogeneity across firms. A consequence of this heterogeneity is that the distribution of TFP could be far from symmetrical or normal, as assumed under OLS estimation. Thus, a conditional mean function of the TFP distribution implied by OLS regression is unlikely to provide reliable results. We conduct several analyses on TFP data which suggest departing from the standard conditional regression analysis and employing quantile regressions (QR) instead. Specifically, the p-value of Skewness/Kurtosis tests is close to 0, indicating that that the distribution of TFP is skewed. This result suggests (also confirmed by further inspection of the data) that the majority of the firms in our sample stack in the low-tech range, while only a few firms exhibit high levels of TFP. According to De Jorge Moreno, Castillo, and De Zuani Masere (2010), one of the advantages of using the QR method is that it enables different slope coefficients to be estimated at different quantiles alongside the conditional distribution of the dependent variable (i.e. TFP in our case). This is particularly valuable when estimating the effects of founder covariates on the IPO firms with different levels of TFP, where one may expect, for example, low-TFP firms to be affected differently by (say) foreign ownership than high-TFP firms. Such heterogeneity in the effects of the conditioning variables can be accommodated by

[5] Based on the place of origin, we classify all the foreign firms in our sample into three categorisations, namely Asia, the West, and other.

allowing estimated slope parameters to differ at different quantiles of the conditional TFP distribution, which the QR method ensures.

Accordingly, following previous studies (Benli, 2016; Goedhuys & Sleuwaegen, 2010; Paniagua, Figueiredo, & Sapena, 2015), we apply the QR technique developed by Koenker & Bassett (1978). A quantile regression involves the estimation of the conditional quantile functions of TFP, i.e., models in which quantiles of the conditional distribution of TFP are expressed a function of observes covariates. To represent the model in this form, we rewrite equation (1) (with X denoting all right-hand-side regressors) as:

$$TFP_{it} = \beta_\theta X'_{it} + \varepsilon_{\theta it},\ Quant_\theta(TFP_{it}|X_{lt}) = \beta_\theta X'_{it} \qquad (2)$$

where $Quant_\theta(TFP_{it}|X_{lt})$ stands for the conditional quantile of TFP. The optimisation problem for efficient estimation of β_θ for the θ^{th} quantile is

$$\min_\beta \frac{1}{n}\left\{\sum_{i,t:TFP\geq\beta X'} \theta|TFP_{it} - \beta_\theta X'_{it}| + \sum_{i,t:TFP<\beta X'} (1-\theta)|TFP_{it} - \beta_\theta X'_{it}|\right\} \qquad (3)$$

which is solved via linear programming. As θ varies in the (0,1) range, one can trace the conditional distribution of TFP, implying that QR can reveal different slope coefficients for different quartiles of the conditional distribution. We estimate the QR at five different quantiles, namely 10th, 25th, 50th, 75th and 90th percentiles of the conditional distribution[6].

[6] Note that median estimator, that is, the estimation of β_θ for the 50th quantile, is similar (but not identical) to the OLS estimator, since it minimizes the sum of absolute residuals rather than the sum of squared residuals.

RESULTS

We present our empirical results in Tables 2, 3 and 4. Our strategy for investigating the above hypotheses relies on presenting the base results first with foreign ownership and the basic set of control variables in Table 2, and then including interaction effects to allow for the moderating influences of founder's human capital and social ties (along with additional characteristics) in Tables 3 and 4, respectively. The results for each hypothesis are displayed using OLS estimates (column 1) alongside the estimates of QR for 10%, 25%, 50%, 75% and 90% quantiles (columns 2-6).

In Table 2, while the OLS results show that foreign ownership does not have a statistically significant effect on TFP, the QR estimates reveal that its effect is positive and significant in the 10%, 25% and 90% quantiles, with coefficient values 0.0008, 0.0004, and 0.0036 respectively. Although the degree of statistical significance varies according to the quantile (ranging from 10% level at 25% quantile to 1% at 95% quantile), this outcome, which may appear to provide support for hypothesis 1, implies that foreign ownership contributes, albeit in a limited sense, to increasing productivity in firms which have either low or high levels of productivity, while such a productivity enhancing effect is insignificant in firms with relatively moderate levels of productivity.

Among the control variables, financial slack, R&D intensity, ROA all have a highly significant and uniformly positive effect, while firm size has a negative effect, on TFP. By contrast, the effects of firm's age and venture capital are mixed and varies from quantile to quantile. For instance, firm's age has a positive and statistically significant effect on TFP in the 75% quantile but the effect turns negative and significant in the 90% quantile. Similarly, the influence of venture capital on TFP is negative and significant under OLS and in the 75% quantile, while becoming positive

and significant in the 25% quantile, under QR. The effect of board independence on TFP is insignificant. Among the industry-level factors, the effect of institutions is significant and positive under OLS and in the 10%, 25% and 90% quantiles under QR, while the effect of FDI spillover is insignificant.

[Insert Table 2 about here]

The moderating effects of the founder's human capital and social ties

Apart from a direct effect of foreign ownership on TFP, there may be indirect influence contingent on founder's human capital and social ties. As we propose in hypotheses 2a and 2b, the founder's education and foreign experience may have moderating influences on the relationship between foreign ownership and firm's productivity. The same applies to the founder's managerial ties and political ties, as postulated in hypotheses 3a and 3b. To investigate these hypotheses, we add interaction effects and report the results in Tables 3 and 4, using relevant proxies for these founder attributes. We also add extra control variables related to founder's characteristics in these regressions, some of which (particularly Founder's age) are statistically significant although the effects of the other control variables are similar to those shown in Table 2. Henceforth, we focus our analysis on the influence of the interaction (and constitutive) terms. Using the results for a selected quantile among those presented in each panel of Tables 3 and 4, we also plot in Figures 1a-1d the respective interaction graphs to aid our interpretation of the moderating effects.

The moderating role of founder's education and foreign experience. The results reported in panel (a) of Table 3 suggest that foreign ownership interacting with founder's education has a statistically significant and positive effect on TFP in all but

the highest quantile (90%) of the TFP distribution under QR estimation. Using the estimates of the 75% quantile, Figure 1a reveals the range of the impact of foreign ownership on TFP for high and low values of founder's education. Since the direct effect of foreign ownership on TFP is negative, founder's education level therefore positively moderates the relationship between foreign ownership and firm's productivity, which provides support to hypothesis 2a.

Panel (b) of Table 3 reveals that foreign ownership interacting with founder's foreign experience has a positive and statistically significant effect under OLS and in the 90% quantile of QR estimation (where Figure 1b highlights the impact of foreign ownership on TFP for high and low values of founder's foreign experience). The positive interaction effect serves to moderate the negative direct effect on foreign ownership on TFP. Although the effect is not statistically significant in all quantiles, the results tend to provide support for hypothesis 2b.

Taken together, the results in Tables 3 show a degree of complementarity in the effects of founder's education and foreign experience in influencing the relationship between foreign ownership and productivity, as the positive significances of the interaction effects appear to affect firms at different levels of productivity.

[Insert Table 3 about here]

[Insert Figure 1a about here]

[Insert Figure 1b about here]

The moderating role of founder's managerial ties and political ties. The results reported in panel (a) of Table 4 suggest that foreign ownership interacting with founder's managerial ties has negative and statistically significant effects on TFP under

OLS and in all but the 10% quantile of QR estimation. Here the negative interaction effect serves to moderate the direct influence of founder's managerial ties as well as the relationship between foreign ownership and TFP. Figure 1c reveals the impact range of TFP values of a unit change in foreign ownership for high and low values of founder's managerial ties. The results support hypothesis 3a.

Finally, the results in panel (b) of Table 4 confirm a negative and statistically significant impact of the interaction of foreign ownership with founder's political connection, under OLS and in the 10%, 75% and 90% quantiles of QR estimation. The negative interaction effect offsets the positive direct effect of founder's political connection on TFP, found to be significant in the 10%, 75% and 90% quantiles. Figure 1d highlights the impact of foreign ownership on TFP for high and low values of founder's political ties. The results support hypothesis 3b.

[Insert Table 4 about here]

[Insert Figure 1c about here]

[Insert Figure 1d about here]

Robustness check

To test the robustness of our findings, we performed several additional estimations using interaction effects[7]. First, we employed the Unconditional Quantile Regression (UQR) method developed by Firpo, Fortin, and Lemieux (2009). The results confirm, as in Tables 3 and 4, the positive moderating effect of the founders' human

[7] To conserve space, we do not report the results of these robustness tests. They are available from the corresponding author upon request.

capital and the negative moderating influence of the founders' social ties on foreign ownership-induced productivity, with both interaction effects being statistically significant[8].

Second, we extended the models in Tables 3 and 4 by including two other interaction terms in each regression to control for the moderating effects of founder's human capital/social ties with industry-level FDI spillovers (in addition to firm-level foreign ownership). Again, the results are broadly similar.

Third, although we used the one-period lagged value of foreign ownership in the above estimations to mitigate the endogeneity problem, we found that the results are robust when using the current value of foreign ownership. In particular, the sign and significance of the interaction terms were almost the same and the coefficient estimates change only slightly.

Finally, in order to assess the consistency of the results in Table 3, we used two alternative measures of education to represent human capital, namely the highest value of educational achievement and the weighted average value of educational achievement of founders. The re-estimations confirm a robustly positive and significant moderating influence of founders' human capital offsetting the negative direct effect of foreign ownership on TFP. We also conducted a joint test of the moderating effects of founder's human capital variables (including interactions of foreign ownership with both founder's education and foreign experience) and a joint test of the moderating

[8] We focussed mainly on the sign and statistical significance of the interactive terms' coefficients, even though this unconditional QR approach allows us to obtain more accurate coefficient estimates of each independent variable than the standard conditional QR approach.

effects of founder's social ties (including both founder's managerial and political ties). Again, the results were essentially unchanged.

DISCUSSION

This paper aims to understand better the effects of foreign ownership on firm-level productivity in emerging economies. By exploring the connections with founders' influence among newly listed firms in China, the world's largest emerging economy, the paper has opened an interesting avenue to extend and deepen our understanding of the complexities of the link between foreign ownership and productivity, highlighting moderating effects in the relationship.

This paper's findings make two contributions to our knowledge. We first offer a contingent view of the effects of foreign ownership on productivity. The novelty of our argument lies in its attempt to explicitly 1) investigate the relationship between foreign ownership and firm-level productivity in newly listed firms; 2) articulate the different roles of a founder's human capital and social ties in shaping the relationship. A commonly shared belief in the international business field is that foreign ownership benefits the recipient firm in emerging economies through industry-level spillovers.

By contrast, our findings reveal the more direct, firm-level effects of foreign ownership by emphasizing the importance of financial contribution, advanced technical and managerial know-how transfer embedded in the role of the founders (Choi et al., 2011; Douma et al., 2006). This line of research is still in its infancy. Though foreign ownership has long been viewed as a potential source of firm-level productivity growth (Dimelis & Louri, 2002; Djankov & Hoekman, 2000; Rao & Tang, 2005) due to

advanced technical and managerial knowledge transfer, the absorptive capacity literature questions the proactivity and effectiveness of resource and know-how transfer between foreign investors and focal firms; and argues that the benefits of foreign ownership depend on the focal firm's ability to absorb new and transferred knowledge. Extant literature views employees' human capital and R&D activities as indicators of absorptive capacity and emphasizes the effects of the firm's aggregated knowledge pool and innovation intensity on new know-how absorbing.

In contrast to prior studies, this paper asserts the imprinting effects of the founder and suggests that a firm's founder pre-determines the firm's ability in allocating and utilizing its resources to absorb new and transferred knowledge from foreign ownership. Extant literature has studied the imprinting effects of the founder on a number of organizational outcomes (e.g., Schein, 1983; Lee et al., 2020; Nelson, 2003; Teng & Li, 2020). However, very few studies have explored the role of the founder in shaping productivity among newly listed firms. We propose that a founder with high education level and foreign experience can bridge existing resources with new knowledge bought by foreign partners, leading to an improvement in firm-level productivity.

In addition, our results reveal the founder's importance and explain how a founder, being the most powerful actor, can shape firm-level productivity. Prior studies have examined founder's role in forming board of directors (Chahine et al., 2011), choosing founder CEO vs. non-founder CEO (Jain & Tabak, 2008), and more importantly in influencing firm's financial performance (He, 2008; Gimmon & Levie, 2010; Jayaraman et al., 2000). This stream of studies typically addresses the direct effects of the founder's observable characteristics on firm's corporate governance and

strategic orientations in developed market economies. In contrast with these studies, this paper distinguishes between the founder's social ties and human capital and views the founder as a moderating force influencing the nexus between foreign ownership and productivity in an important emerging economy. In particular, we make and substantiate the case that founder's human capital positively shapes firms' productivity through technology and knowledge diffusion associated with inward foreign investment. Therefore, it is of critical importance to account for the role of founder when investigating newly listed firms' strategies and behaviours in emerging economies.

Implications

Our findings have important implications. First, we indicate the importance of the founder's human capital towards the relationship between foreign ownership and productivity among newly listed firms. Founder thus needs to continually invest in skill development training and formal education in order to better grasp the know-how spilled from foreign partners.

Moreover, our findings reopen the debates on founder's inadequate ability in managing the firm in the post IPO stage. Conventional wisdom advocates the founder's inability in dealing with opportunities and threats in the post-IPO phase and suggests the founder should hand over the control to professional managers. Our results, however, reflect the beneficial role of founders in emerging economies and imply that the founder's characteristics are critical in coping with challenges after public listing.

Limitations and future research directions

This paper is subject to two limitations, which provide promising avenues for future research. First, our sample contains firms on the GEM in China and our findings

therefore are limited to Chinese entrepreneurial founders and newly listed firms. It has been found that in a majority of newly listed firms in emerging economies, the founder views the firm s/he created as the life-time achievement and hence is less likely to exit via the IPO. Therefore, an interesting extension would be to include newly listed firms from other emerging economies, where formal institutions and corporate governance are less developed. This would provide further confirmation of our findings across a wider population. The second limitation is that we do not capture the influence of the founder in the long term after the IPO. Our research focuses on the early stage of public listing (i.e Year 2009 onwards). Future research could extend this line of research to explore the longer-term effects of the founder on foreign ownership-induced productivity.

CONCLUSION

Our study examined the effects of foreign ownership on firm-level productivity among Chinese newly listed firms wherein we also studied the moderating effects of founder's human capital and social ties on the foreign ownership - productivity link. While the founder with stronger human capital encourages intra-organisational learning, and enhances productivity, the founder with strong social capital is less likely to facilitate knowledge transfer and hence fails to generate productivity improvement. In conclusion, our results reveal significant founder's influences driving foreign-induced firm-level productivity in emerging economies.

Data Accessibility Statement
The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declaration of Conflicting Interest
The authors declare that there is no conflict of interest.

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Table 1 Summary statistics

Variable	Mean	SD	Obs	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Foreign ownership (%)	2.54	9.77	1317	1																	
2. FDI Spillover	23.49	1.368	1317	0.034	1																
3. Institutions	7.28	1.19	1317	0.112***	0.025	1															
4. TFP	-1.57	0.43	1317	-0.017	-0.168***	-0.077***	1														
5. Board independence	0.37	0.05	1317	0.046*	-0.127***	0.025	0.022	1													
6. Financial slack	2.70	3.39	1317	-0.042	-0.095***	-0.096***	0.256***	0.003	1												
7. Firm size (Millions CNY)	1466.65	1362.44	1317	0.017	0.085***	-0.061**	-0.261***	-0.064**	-0.104***	1											
8. Firm age	10.65	3.99	1317	0.011	0.011	0.051*	0.041	0.050*	0.046*	-0.116***	1										
9. R&D intensity	0.06	0.04	1317	-0.059**	-0.253***	-0.134***	0.431***	0.007	0.163***	-0.062**	0.018	1									
10. Venture capital	0.23	1.57	1317	-0.007	-0.100***	0.025	-0.051*	0.245***	-0.02	0.080***	0.110***	-0.055**	1								
11. ROA	0.18	0.10	1317	0.012	-0.077***	0.014	0.548***	0.049*	0.054*	-0.199***	0.070**	0.128***	-0.02	1							
12. Education	1.44	0.72	1305	0.117***	0.019	-0.008	0.098***	0.036	0.029	0.041	-0.039	0.126***	0.157***	0.107***	1						
13. Foreign experience	0.17	0.38	1305	0.345***	0.133***	0.036	-0.009	-0.039	-0.034	0.008	-0.110***	-0.007	-0.014	-0.004	0.184***	1					
14.Managerial ties	6.44	4.92	1305	0.027	0.066**	0.048*	0.032	0.057**	0.047*	0.027	-0.027	-0.009	-0.050*	-0.004	-0.151***	0.049*	1				
15.Political ties	0.71	0.46	1305	0.022	-0.190***	0.056**	0.105***	0.034	0.109***	-0.110***	-0.113***	0.116***	-0.110***	0.069**	-0.074***	-0.126***	-0.136***	1			
16. Founder ownership	28.37	19.90	1305	-0.236***	-0.028	-0.022	0.042	0.070**	0.081***	-0.071***	0.072***	0.003	-0.116***	0.01	-0.116***	-0.118***	-0.114***	-0.094***	1		
17. Founder age	53.77	6.66	1305	0.148***	0.190***	-0.02	0.02	-0.066**	-0.109***	0.027	0.196***	-0.113***	-0.061**	0.007	-0.195***	0.083***	0.158***	-0.156***	-0.132***	1	
18. Founder CEO	0.60	0.49	1305	-0.112***	-0.075***	0.079***	0.021	0.078***	0.096***	0.012	-0.053*	0.098***	0.061**	-0.018	0.120***	-0.123***	-0.102***	0.107***	0.145***	-0.334***	1

Notes: ***Statistical significance at 1% level (p-value < 0.01). **Statistical significance at 5% level (p-value < 0.05). *Statistical significance at 10% level (p-value < 0.1)

Table 2 The impact of foreign ownership on productivity

	1 OLS	2 Q(0.1)	3 Q(0.25)	4 Q(0.5)	5 Q(0.75)	6 Q(0.9)
Foreign ownership	0.0005	0.0008**	0.0004*	0.0000	0.0002	0.0036***
	(0.0006)	(0.0004)	(0.0002)	(0.0004)	(0.0008)	(0.0005)
Board independence	-0.1507	-0.0237	-0.0464	0.0428	0.0478	-0.1083
	(0.1709)	(0.1510)	(0.0762)	(0.1091)	(0.1218)	(0.1993)
Institutions	0.0387*	0.0229**	0.0183***	0.0132	0.0244	0.0480***
	(0.0215)	(0.0100)	(0.0066)	(0.0104)	(0.0151)	(0.0136)
FDI spillover	0.0096	0.0244	-0.0124	-0.0152	-0.0312	-0.0089
	(0.0229)	(0.0302)	(0.0156)	(0.0114)	(0.0276)	(0.0185)
Financial slack	0.0211***	0.0049***	0.0064***	0.0244**	0.0613***	0.0848***
	(0.0057)	(0.0014)	(0.0022)	(0.0121)	(0.0052)	(0.0113)
Firm size	-0.0969***	-0.1326***	-0.1251***	-0.1051***	-0.0802***	-0.0855***
	(0.0158)	(0.0087)	(0.0066)	(0.0080)	(0.0125)	(0.0124)
Firm age	-0.0037	-0.0011	-0.0016	0.0000	0.0031**	-0.0031*
	(0.0023)	(0.0015)	(0.0010)	(0.0013)	(0.0013)	(0.0017)
R&D intensity	3.2907***	1.5555***	1.9751***	2.4822***	4.0636***	5.7378***
	(0.4611)	(0.2800)	(0.2057)	(0.2525)	(0.5277)	(0.6970)
Venture capital	-0.0047*	0.0052	0.0033**	-0.0033	-0.0078**	-0.0051
	(0.0027)	(0.4631)	(0.0013)	(0.0020)	(0.0034)	(0.0035)
ROA	1.9224***	1.0488***	1.1865***	1.4710***	1.8617***	2.6773***
	(0.1886)	(0.0826)	(0.0581)	(0.1028)	(0.1430)	(0.1716)
Constant	-0.4983	-0.0686	0.6396*	0.3308	0.0964	-0.5614
	(0.6436)	(0.7114)	(0.3840)	(0.3909)	(0.7006)	(0.5356)
Origin	Yes	Yes	Yes	Yes	Yes	Yes
Location	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
N	1317	1317	1317	1317	1317	1317
R2(Pseudo)	0.5197	0.3319	0.3201	0.3339	0.3917	0.4898

Notes: Dependent variable is the natural logarithm of TFP (ln TFP). Estimations are by pooled OLS (column 1) and QR (columns 2-6) with robust standard errors reported below estimates (in parentheses). ***Statistical significance at 1% level (p-value < 0.01). **Statistical significance at 5% level (p-value < 0.05). *Statistical significance at 10% level (p-value < 0.1).

Table 3 The moderating role of founder's human capital

	(a) Interaction between foreign ownership and founder's education						(b) Interaction between foreign ownership and foreign experience					
	1 OLS	2 Q (0.1)	3 Q (0.25)	4 Q (0.5)	5 Q (0.75)	6 Q (0.9)	1 OLS	2 Q (0.1)	3 Q (0.25)	4 Q (0.5)	5 Q (0.75)	6 Q (0.9)
Foreign ownership* Founder's education	0.0014	0.0034***	0.0020***	0.0021**	0.0038***	0.0021						
	(0.0010)	(0.0009)	(0.0007)	(0.0008)	(0.0013)	(0.0017)						
Foreign ownership* Founder's foreign experience							0.0034**	-0.0010	-0.0000	0.0007	0.0044**	0.0093***
							(0.0016)	(0.0013)	(0.0008)	(0.0014)	(0.0021)	(0.0033)
Foreign ownership	-0.0028*	-0.0050***	-0.0027***	-0.0036***	-0.0070***	-0.0023	-0.0030**	0.0016	0.0001	-0.0005	-0.0034**	-0.0055**
	(0.0016)	(0.0013)	(0.0011)	(0.0011)	(0.0017)	(0.0035)	(0.0014)	(0.0010)	(0.0007)	(0.0013)	(0.0014)	(0.0027)
Founder's education	0.0158	0.0041	0.0159**	0.0281***	0.0069	-0.0133	0.0195	0.0105	0.0197***	0.0300***	0.0050	-0.0001
	(0.0141)	(0.0080)	(0.0068)	(0.0065)	(0.0102)	(0.0162)	(0.0137)	(0.0093)	(0.0073)	(0.0069)	(0.0118)	(0.0162)
Founder's foreign experience	0.0115	0.0103	0.0041	0.0270**	0.0326*	0.0337	-0.0006	0.0013	-0.0011	0.0290**	0.0218	-0.0261
	(0.0238)	(0.0243)	(0.0113)	(0.0115)	(0.0195)	(0.0290)	(0.0261)	(0.0288)	(0.0155)	(0.0139)	(0.0214)	(0.0387)
Founder's managerial ties	0.0002	0.0018	0.0011	-0.0000	-0.0010	0.0049	0.0002	0.0015	0.0002	0.0000	-0.0009	0.0036
	(0.0018)	(0.0012)	(0.0007)	(0.0008)	(0.0015)	(0.0033)	(0.0018)	(0.0010)	(0.0009)	(0.0009)	(0.0014)	(0.0025)
Founder's political ties	0.0063	0.0092	0.0061	0.0119	0.0055	-0.0017	0.0034	-0.0076	-0.0006	0.0114	0.0059	-0.0152
	(0.0195)	(0.0118)	(0.0094)	(0.0100)	(0.0142)	(0.0253)	(0.0195)	(0.0130)	(0.0102)	(0.0108)	(0.0158)	(0.0217)
Founder's ownership	0.0003	0.0014***	0.0010***	0.0008***	0.0008***	-0.0005	0.0002	0.0013***	0.0008***	0.0008***	0.0007**	-0.0006
	(0.0006)	(0.0003)	(0.0002)	(0.0002)	(0.0003)	(0.0007)	(0.0006)	(0.0003)	(0.0002)	(0.0003)	(0.0003)	(0.0006)
Founder's Age	0.0073***	0.0026***	0.0027***	0.0041***	0.0074***	0.0059***	0.0074***	0.0016*	0.0024***	0.0040***	0.0072***	0.0048***
	(0.0017)	(0.0007)	(0.0008)	(0.0009)	(0.0010)	(0.0017)	(0.0018)	(0.0008)	(0.0009)	(0.0010)	(0.0011)	(0.0016)
Founder-CEO	0.0068	0.0068	-0.0050	0.0256**	0.0071	0.0114	0.0089	-0.0056	-0.0089	0.0270**	0.0091	0.0197
	(0.0192)	(0.0142)	(0.0097)	(0.0105)	(0.0132)	(0.0214)	(0.0192)	(0.0146)	(0.0097)	(0.0110)	(0.0152)	(0.0229)
Board independence	-0.1236	-0.0479	0.0098	0.0690	0.1998**	-0.1166	-0.1585	-0.0795	-0.0224	0.0163	0.1399	-0.1888
	(0.1712)	(0.1009)	(0.0892)	(0.0777)	(0.0895)	(0.2326)	(0.1692)	(0.1526)	(0.0903)	(0.1077)	(0.1222)	(0.1802)
Institutions	0.0377*	0.0207	0.0117	0.0175*	0.0271*	0.0517*	0.0387*	0.0190**	0.0162*	0.0180*	0.0246*	0.0561**
	(0.0215)	(0.0146)	(0.0077)	(0.0091)	(0.0155)	(0.0264)	(0.0216)	(0.0092)	(0.0083)	(0.0096)	(0.0127)	(0.0234)
FDI spillover	0.0110	0.0196	-0.0147	-0.0264***	-0.0373**	-0.0152	0.0109	0.0175	-0.0177	-0.0228*	-0.0276	-0.0140
	(0.0231)	(0.0234)	(0.0179)	(0.0080)	(0.0153)	(0.0178)	(0.0233)	(0.0189)	(0.0182)	(0.0123)	(0.0227)	(0.0140)
Financial slack	0.0224***	0.0050***	0.0070***	0.0208*	0.0562***	0.0973***	0.0224***	0.0053***	0.0069***	0.0194	0.0587***	0.0884***
	(0.0057)	(0.0011)	(0.0025)	(0.0114)	(0.0062)	(0.0151)	(0.0057)	(0.0012)	(0.0023)	(0.0125)	(0.0072)	(0.0218)
Firm size	-0.0961***	-0.1205***	-0.1261***	-0.1114***	-0.0739***	-0.0613***	-0.0951***	-0.1233***	-0.1280***	-0.1092***	-0.0741***	-0.0490***
	(0.0158)	(0.0090)	(0.0070)	(0.0063)	(0.0097)	(0.0148)	(0.0158)	(0.0095)	(0.0068)	(0.0085)	(0.0100)	(0.0149)
Firm age	-0.0055**	-0.0022**	-0.0010	0.0020	-0.0002	-0.0031	-0.0057**	-0.0008	-0.0014	0.0014	-0.0005	-0.0036

	(0.0024)	(0.0011)	(0.0013)	(0.0012)	(0.0014)	(0.0027)	(0.0024)	(0.0015)	(0.0013)	(0.0013)	(0.0015)	(0.0028)
R&D intensity	3.3203***	1.9821***	1.9014***	2.5267***	4.1199***	5.7498***	3.3213***	2.1339***	1.9641***	2.5217***	4.2541***	5.4609***
	(0.4515)	(0.1513)	(0.2162)	(0.2214)	(0.5363)	(0.8166)	(0.4508)	(0.1731)	(0.2059)	(0.2559)	(0.5273)	(0.8244)
Venture capital	-0.0047	0.0085***	0.0027*	-0.0053**	-0.0067**	-0.0040	-0.0050	0.0071***	0.0024	-0.0048**	-0.0057*	-0.0087**
	(0.0031)	(0.0020)	(0.0015)	(0.0023)	(0.0031)	(0.0040)	(0.0031)	(0.0025)	(0.0015)	(0.0021)	(0.0032)	(0.0039)
ROA	1.8874***	1.0592***	1.1390***	1.4349***	1.9220***	2.6683***	1.8988***	1.0642***	1.1872***	1.4583***	1.9631***	2.6045***
	(0.1882)	(0.0614)	(0.0575)	(0.0965)	(0.1370)	(0.1522)	(0.1853)	(0.0748)	(0.0546)	(0.1078)	(0.1387)	(0.1708)
Constant	-0.9425	-0.4439	0.5424	0.3453	-0.3532	-1.2992**	-0.9584	-0.2911	0.6434	0.2501	-0.6288	-1.4256***
	(0.6383)	(0.5960)	(0.4315)	(0.2730)	(0.4342)	(0.6381)	(0.6438)	(0.4768)	(0.4464)	(0.3726)	(0.5539)	(0.5410)
Origin	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305
R2(Pseudo)	0.5313	0.3395	0.3270	0.3454	0.4060	0.5003	0.5317	0.3366	0.3244	0.3434	0.4046	0.5018

Notes: Dependent variable is the natural logarithm of TFP (ln TFP). Estimations are by pooled OLS (column 1) and QR (columns 2-6) with robust standard errors reported below estimates (in parentheses). ***Statistical significance at 1% level (p-value < 0.01). **Statistical significance at 5% level (p-value < 0.05). *Statistical significance at 10% level (p-value < 0.1).

Table 4 The moderating role of founder's social ties

	(a) Interaction between foreign ownership and founder's managerial ties						(b) Interaction between foreign ownership and founder's political ties					
	1 OLS	2 Q(0.1)	3 Q(0.25)	4 Q(0.5)	5 Q(0.75)	6 Q(0.9)	1 OLS	2 Q(0.1)	3 Q(0.25)	4 Q(0.5)	5 Q(0.75)	6 Q(0.9)
Foreign ownership* Founder's managerial ties	-0.0004**	-0.0001	-0.0002***	-0.0002***	-0.0005***	-0.0006*						
	(0.0002)	(0.0006)	(0.0001)	(0.0001)	(0.0001)	(0.0003)						
Foreign ownership* Founder's political ties							-0.0030*	-0.0030*	-0.0011	-0.0005	-0.0077**	-0.0088***
							(0.0017)	(0.0017)	(0.0012)	(0.0007)	(0.0031)	(0.0017)
Foreign ownership	0.0024**	0.0017	0.0016***	0.0014**	0.0036**	0.0049**	0.0022	0.0033**	0.0009	0.0004	0.0070**	0.0079***
	(0.0012)	(0.0036)	(0.0006)	(0.0006)	(0.0016)	(0.0024)	(0.0017)	(0.0016)	(0.0011)	(0.0006)	(0.0030)	(0.0016)
Founder's education	0.0174	0.0099	0.0188**	0.0295***	0.0014	-0.0137	0.0172	0.0092	0.0154**	0.0304***	0.0042	-0.0145
	(0.0137)	(0.0074)	(0.0074)	(0.0076)	(0.0115)	(0.0109)	(0.0137)	(0.0088)	(0.0072)	(0.0067)	(0.0108)	(0.0151)
Founder's foreign experience	0.0090	-0.0111	-0.0024	0.0277**	0.0497**	0.0185	0.0113	-0.0004	-0.0021	0.0295**	0.0382**	0.0327
	(0.0239)	(0.0362)	(0.0145)	(0.0125)	(0.0240)	(0.0209)	(0.0239)	(0.0206)	(0.0130)	(0.0125)	(0.0193)	(0.0288)
Founder's managerial ties	0.0011	0.0028	0.0022**	0.0003	0.0005	0.0051	0.0000	0.0012	0.0001	0.0000	-0.0006	0.0051
	(0.0019)	(0.0020)	(0.0010)	(0.0010)	(0.0016)	(0.0032)	(0.0018)	(0.0010)	(0.0008)	(0.0009)	(0.0015)	(0.0035)
Founder's political ties	0.0034	-0.0106	0.0039	0.0093	-0.0016	-0.0017	0.0115	0.0104	0.0009	0.0113	0.0124	0.0161
	(0.0195)	(0.0278)	(0.0105)	(0.0113)	(0.0153)	(0.0143)	(0.0199)	(0.0140)	(0.0107)	(0.0107)	(0.0139)	(0.0187)
Founder's ownership	0.0003	0.0013*	0.0008***	0.0007***	0.0008**	-0.0007	0.0003	0.0013***	0.0009***	0.0008***	0.0008**	-0.0003
	(0.0006)	(0.0007)	(0.0002)	(0.0003)	(0.0003)	(0.0005)	(0.0006)	(0.0003)	(0.0002)	(0.0002)	(0.0003)	(0.0005)
Founder's Age	0.0073***	0.0019	0.0031***	0.0043***	0.0075***	0.0056***	0.0073***	0.0019**	0.0024***	0.0040***	0.0075***	0.0063***
	(0.0017)	(0.0018)	(0.0008)	(0.0009)	(0.0011)	(0.0011)	(0.0017)	(0.0008)	(0.0009)	(0.0009)	(0.0010)	(0.0018)
Founder-CEO	0.0047	0.0008	-0.0119	0.0257**	0.0199	0.0105	0.0063	-0.0142	-0.0128	0.0283***	0.0098	0.0092
	(0.0191)	(0.0168)	(0.0099)	(0.0105)	(0.0143)	(0.0164)	(0.0192)	(0.0143)	(0.0113)	(0.0107)	(0.0141)	(0.0198)
Board independence	-0.1589	-0.1833	-0.0927	0.0263	0.0525	-0.1698	-0.1321	-0.1221	0.0072	0.0264	0.1766	-0.0495
	(0.1688)	(0.2334)	(0.0942)	(0.0919)	(0.1077)	(0.1792)	(0.1690)	(0.1312)	(0.0896)	(0.0901)	(0.1131)	(0.2009)
Institution	0.0386*	0.0151	0.0121	0.0172	0.0244	0.0555***	0.0378*	0.0185	0.0123*	0.0174	0.0279	0.0564**
	(0.0215)	(0.0128)	(0.0082)	(0.0110)	(0.0173)	(0.0212)	(0.0215)	(0.0148)	(0.0071)	(0.0108)	(0.0178)	(0.0222)
FDI spillover	0.0113	0.0145	-0.0135	-0.0246**	-0.0240**	-0.0136	0.0102	0.0159	-0.0171	-0.0228*	-0.0300	-0.0194
	(0.0233)	(0.0227)	(0.0174)	(0.0107)	(0.0116)	(0.0179)	(0.0232)	(0.0179)	(0.0178)	(0.0126)	(0.0221)	(0.0232)
Financial slack	0.0222***	0.0053***	0.0069***	0.0200	0.0569***	0.0957***	0.0224***	0.0053***	0.0072***	0.0208*	0.0600***	0.0916***
	(0.0057)	(0.0013)	(0.0024)	(0.0122)	(0.0035)	(0.0098)	(0.0057)	(0.0012)	(0.0024)	(0.0123)	(0.0058)	(0.0143)
Firm size	-0.0942***	-0.1170***	-0.1271***	-0.1087***	-0.0836***	-0.0632***	-0.0954***	-0.1202***	-0.1287***	-0.1072***	-0.0730***	-0.0681***
	(0.0158)	(0.0098)	(0.0074)	(0.0084)	(0.0111)	(0.0120)	(0.0157)	(0.0088)	(0.0072)	(0.0085)	(0.0099)	(0.0145)
Firm age	-0.0052**	-0.0016	-0.0009	0.0019	-0.0002	-0.0032*	-0.0053**	-0.0006	-0.0016	0.0014	0.0001	-0.0031
	(0.0024)	(0.0024)	(0.0011)	(0.0014)	(0.0015)	(0.0019)	(0.0024)	(0.0015)	(0.0012)	(0.0013)	(0.0018)	(0.0022)

R&D intensity	3.3276***	2.1088***	1.9613***	2.5467***	4.2821***	5.8263***	3.3344***	2.1565***	1.9414***	2.5028***	4.0548***	5.7089***
	(0.4507)	(0.1650)	(0.2132)	(0.2710)	(0.5313)	(0.7736)	(0.4520)	(0.1802)	(0.2159)	(0.2847)	(0.5670)	(0.6916)
Venture capital	-0.0046	0.0086	0.0031**	-0.0051**	-0.0045	-0.0034	-0.0044	0.0086***	0.0029*	-0.0050**	-0.0065**	-0.0024
	(0.0031)	(0.6750)	(0.0015)	(0.0020)	(0.0030)	(0.0035)	(0.0031)	(0.0024)	(0.0015)	(0.0021)	(0.0030)	(0.0040)
ROA	1.9063***	1.0880***	1.1411***	1.4658***	1.9386***	2.7079***	1.9047***	1.0784***	1.1829***	1.4773***	1.8967***	2.6103***
	(0.1857)	(0.0799)	(0.0675)	(0.1031)	(0.1388)	(0.1544)	(0.1859)	(0.0648)	(0.0543)	(0.1092)	(0.1385)	(0.1521)
Constant	-0.9930	-0.3358	0.5303	0.2569	-0.5358	-1.2809**	-0.9500	-0.3234	0.6779	0.2014	-0.6384	-1.1297*
	(0.6421)	(0.8056)	(0.4364)	(0.3346)	(0.4241)	(0.5201)	(0.6388)	(0.4633)	(0.4341)	(0.3905)	(0.5594)	(0.6358)
Origin	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Location	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305	1305
R2(Pseudo)	0.5321	0.3371	0.3261	0.3452	0.4050	0.5007	0.5315	0.3378	0.3246	0.3434	0.4051	0.5023

Notes: Dependent variable is the natural logarithm of TFP (ln TFP). Estimations are by pooled OLS (column 1) and QR (columns 2-6) with robust standard errors reported below estimates (in parentheses). ***Statistical significance at 1% level (p-value < 0.01). **Statistical significance at 5% level (p-value < 0.05). *Statistical significance at 10% level (p-value < 0.1).