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HOW ENTREPRENEURS LEVERAGE INSTITUTIONAL INTERMEDIARIES IN EMERGING ECONOMIES TO ACQUIRE PUBLIC RESOURCES

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Research summary: *Governments in emerging economies often use institutional intermediaries to promote entrepreneurship, and bridge the void between ventures and public funding. While prior literature describes what institutional intermediaries do, it leaves open how intermediaries support different types of entrepreneurs. By comparing science park and non-science park firms in Beijing and across China, we distinguish which entrepreneurs benefit from certification versus capability-building through the introduction of two new constructs: skill adequacy and context relevance. Broadly, our study adds insights at the nexus of emerging economies and entrepreneurship research, and to the tie formation and institutional intermediaries literatures.*

Managerial summary: *A key dilemma facing entrepreneurs is how to finance their ventures. While entrepreneurs in developed economies can seek VC or angel investment, entrepreneurs in emerging economies often need to pursue potential government funding opportunities. Our study highlights three strategies for acquiring government funding. Well-connected entrepreneurs can leverage their political ties to acquire such funding. Less-connected entrepreneurs can leverage science parks that in emerging markets are designed to help governments to identify promising ventures. For returnees whose ample experience abroad may not fit with local ways of doing business, gaining science park admission can certify quality and so ease the path to government funding. For technically skilled local entrepreneurs who lack business skills, science parks can help build such skills, which then ease the path to government funding.*

INTRODUCTION

Governments in emerging market economies often use institutional intermediaries to promote private-sector entrepreneurship and spur economic prosperity (Dutt *et al.,* 2016; Mair, Marti, and Ventresca, 2012; McDermott, Corredoira, and Kruse, 2009). By intermediaries, we mean actors who link two or more parties to bring about activities that could not readily happen otherwise (Dutt *et al.,* 2016). Of interest here are institutional intermediaries that link private entrepreneurial firms with public resources such as business incubators (Dutt *et al.,* 2016), development organizations (Mair *et al.,* 2012), and public-private institutions (McDermott *et al.,* 2009). This research has improved our understanding of how institutional

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intermediaries in emerging economies better integrate the public and private sectors in order to build supportive commercial infrastructure. Yet, this research leaves open how institutional intermediaries bridge the gap between entrepreneurs and the often substantial *public* resources that exist in these economies. This is a critical issue because these economies often lack traditional sources of early-stage financing such as venture capital (George and Prabhu, 2000). Instead, the government frequently controls many available resources that entrepreneurs need to succeed (Dinç, 2005). We address this issue by asking: How do institutional intermediaries support different types of entrepreneurs in obtaining public resources in emerging economies?

We propose two attributes that shape which entrepreneurs are likely to obtain public resources via intermediaries: *skill adequacy* and *context relevance*. These attributes determine the paths (certification versus capability-building) by which institutional intermediaries help entrepreneurs gain public resources. Our arguments draw on several research streams. First, research on *institutional voids* highlights gaps between sectors in emerging economies, and the organizations and relationships that bridge them (Batjargal *et al.,* 2013; Khanna and Palepu, 2000; Xin and Pearce, 1996). Second, research on *institutional intermediaries* emphasizes two mechanisms by which intermediaries benefit entrepreneurs: certification and capability-building (Dutt *et al.,* 2016; McEvily and Zaheer, 1999; Sine, David, and Mitsuhashi, 2007). Network research on *entrepreneurial resource acquisition* highlights how well-connected entrepreneurs link with resource providers by using direct ties while other entrepreneurs use behavioral tactics termed "catalyzing strategies" (Hallen, 2008; Hallen and Eisenhardt, 2012; Zott and Huy, 2007).

For our primary test, we conduct a unique and in-depth field study of 139 science park and non-science park ventures in Beijing's Haidian district. We rely on an instrumental variable (IV) approach as well as complementary event history analysis, qualitative comparative analysis (QCA), and extensive interviews. We bolster these findings with a second study using nationwide archival data and find consistent results.

We contribute at the nexus of two significant phenomena—emerging economies and entrepreneurship. Our core contribution is identifying how institutional intermediaries benefit different types of entrepreneurs. While prior work elaborates what these institutions do (Dutt *et al.,* 2016; Mair *et al.,* 2012; McDermott *et al.,* 2009), we focus on which entrepreneurs are helped. We also introduce new constructs—that is, skill adequacy and context relevance—that characterize entrepreneurs, and extend prior work on institutional intermediaries (Hallen, Bingham, and Cohen, 2016; Sine *et al.,* 2007) by showing how they flexibly offer equifinal paths for different types of entrepreneurs. From a theoretical perspective, we add insights to tie formation in network theory by expanding the "catalyzing strategy" concept (Hallen and Eisenhardt, 2012). Overall, we conclude that institutional intermediaries can create a richly varied "gene" pool of entrepreneurs in a national economy.

Our article follows a "red- state" approach (Mitchell and Tsui, 2012)—that is, we use extant theory to understand more deeply an important empirical phenomenon. Thus, we first describe the empirical context. We then identify relevant theories and formulate hypotheses. We next outline our methods and results, and conclude by discussing our contributions.

EMPIRICAL CONTEXT: CHINESE SCIENCE PARKS AND ENTREPRENEURS

Like Chile, South Africa, India, and other countries, China is an emerging economy. Emerging economies are ones in which the capital markets, legal system, labor markets, and other institutions are transitioning toward economic liberalization (Eesley, 2016; Hoskisson *et al.,* 2000). In the midst of such transitions, these economies often still rely on public resources until private capital markets mature (Dinç, 2005), connections with government officials until legal systems formalize (Xin and Pearce, 1996), and institutional intermediaries until commercial and regulatory institutions can better facilitate market exchange (Khanna and Palepu, 2000). Further, science parks are part of a growing phenomenon of institutional intermediaries that facilitate this transition by linking private-sector activities to public-sector resources (Dutt *et al.,* 2016; Gonzalez-Uribe and Leatherbee, 2015; McDermott *et al.,* 2009).

Like many emerging economies, the Chinese government is a major funding source for

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commercial activity (Dinç, 2005). The Chinese state budget and domestic loans account for about 57 percent of the total annual domestic investment (National Bureau of Statistics of China, 2011). State-owned banks administer approximately 75 percent of all domestic loans (China Banking Regulatory Commission, 2010). Overall, the public sector controls approximately 46 percent of domestic financing. These substantial public resources are dispensed to entrepreneurs through initiatives such as the InnoFund and the High-Tech Enterprise Certification program. In contrast, private equity funding raised in China is only approximately five percent of this total (The British Private Equity and Venture Capital Association, 2011).

Private-sector funding for entrepreneurs is often limited in emerging economies for several reasons. The institutions that provide IP protection and contract enforcement for VCs and other financial intermediaries are often weak. Exit markets for IPOs and M&A are usually under-developed (Bruton and Ahlstrom, 2003; Puffer, McCarthy, and Boisot, 2010). Moreover, there may be only a few experienced early-stage investors (Batjargal and Liu, 2004). Overall, the substantial scale of public resources over private ones is common in emerging economies (Dinç, 2005).

Institutional intermediaries are often essential for bridging between the state and private-sector entrepreneurs (Dutt *et al.,* 2016; McDermott *et al.,* 2009). For example, Start-Up Chile is a key institutional intermediary linking government funds to support about 1,000 Chilean ventures (Gonzalez-Uribe and Leatherbee, 2015). Science parks are often a major intermediary connecting private-sector entrepreneurs with the state. For example, Chinese science parks were legally mandated by the government to identify and commercialize promising scientific research, thus giving them credibility (Baark, 2001; Gu, 1996; Hu, 2007).

The Chinese government's rationale for science parks was that, while state officials were able to provide funding for scientists to launch ventures, they were ill-equipped both to identify the most commercially promising technologies and to help entrepreneurs build the capabilities necessary to be commercially successful. Chinese officials envisioned science parks as a means to bolster connections between government resources and the technology-based ventures that were beginning to form. As Song Jian, scientist and SSTC Chairman, noted:

> These new zones would be magnets to attract young scientists and engineers to come together and develop collectively .... We got China's industrial ministries to put up some money. We understood that hi-tech entrepreneurship was a new kind of managerial system—it had to be nongovernmental, and avoid the planned economy style. "Let the engineers and scientists make their own decisions," I said at the time. "Let these smart, passionate young people decide what to do, what to produce, how to sell it, and whom to employ." (Kuhn, 2010: 282)

Our interviews with government officials and entrepreneurs support these archival insights. One government official noted the government's initial approach of directly funding businesses did not work. In contrast, its later approach of encouraging innovative professors and students to start firms via science parks was much more effective. Several entrepreneurs corroborated these statements by telling us that government officials usually wait to see if a venture has strong positive signals before backing it. As an entrepreneur in educational software noted, "*When you are starving, they [the government] won't help you, but when you look beautiful, they put a flower on your head*" (original Chinese available from the authors).

Our interviews and archival documents also indicate that science park officials spend substantial time cultivating their international business understanding, and use this understanding to select ventures into their parks. For example, one official noted that when first starting the park, he and other officials "*learned a lot from foreign science parks, going to 50–60 science parks worldwide*." From that acquired experience, he noted that science park officials look for ventures with technologies that are "*new in the country, especially for something already available outside China*." Thus, science park officials use their business know-how to select ventures with technologies that allow China to produce goods that could succeed internationally, and to provide extensive services (e.g., management training, networking events, and business model assistance) that educate entrepreneurs in how to do so. Since their inception, science parks have become

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essential and ubiquitous intermediaries by which the Chinese state implements its public policy and directs its resources to private-sector entrepreneurs.

In summary, the governments of many emerging economies such as those in East Asia (Evans, 1995), Central and Eastern Europe (Kogut and Spicer, 2002), and South America (Gonzalez-Uribe and Leatherbee, 2015) as well as China (per above) encourage entrepreneurship as part of their transition to a market-based economy. These governments often work through institutional intermediaries such as science parks to achieve these economic aims.

THEORY DEVELOPMENT AND HYPOTHESES

As background for our hypotheses, we conducted extensive interviews with 36 Chinese entrepreneurs, government officials, science park officials, and venture capitalists. We also interviewed five officials of institutional intermediaries in two other emerging economies, Malaysia and Chile, to enhance generalizability. These qualitative data are a major strength of our research that we use to illustrate (but not make) abstract arguments and enrich the study.

We use three related research streams to develop our hypotheses. First, research on *institutional voids* focuses on gaps in emerging markets such as capital markets, regulatory agencies, and other institutions that aid market exchange (Eberhart, Eesley, and Eisenhardt, 2016; Khanna and Palepu, 1997). Individuals may overcome these voids through social ties (Batjargal *et al.,* 2013; Xin and Pearce, 1996), such as business group and family firm ties (Khanna and Palepu, 2000; Luo and Chung, 2005). Similarly, entrepreneurs may overcome institutional voids through ties to institutional intermediaries such as accelerators (Leatherbee and Eesley, 2014), development organizations (Mair *et al.,* 2012), and business incubators (Dutt *et al.,* 2016). These intermediaries may help entrepreneurs to bridge the gap to the often substantial public resources in emerging economies.

Second, research on *institutional intermediaries* shows that these intermediaries can benefit entrepreneurs in two ways: certification and capability-building. *Certification*—that is, simply being selected by an intermediary confers signals of quality and status that benefit entrepreneurs. For example, in a study of 162 Israeli high-tech firms, the benefits of science parks stemmed from the "prestige and status" that was signaled, not from other benefits (Felsenstein, 1994). Independent power ventures certified by an institutional intermediary (i.e., Federal Energy Research Commission) were more likely to become operators than those without certification (Sine *et al.,* 2007). *Capability-building*—that is, education and connections that entrepreneurs gain via participating with an intermediary—enhances human and social capital, and so aids entrepreneurs (Hallen *et al.,* 2016). In a study of 133 business incubators in 68 emerging countries, intermediaries helped entrepreneurs to gain business capabilities (Dutt *et al.,* 2016). Argentine wine firms that participated with public-private intermediaries gained access to public-sector knowledge that enabled them to upgrade their products (McDermott *et al.,* 2009).

Third, network research on *entrepreneurial resource acquisition* highlights how entrepreneurs connect to providers of the resources essential for success (Cox-Pahnke, Katila, and Eisenhardt, 2015; Zott and Huy, 2007). This work points to equifinal paths for entrepreneurs to gain these ties in developed economies. One path for well-connected entrepreneurs is via their direct or indirect ties to resource providers (Hallen, 2008). A second path for entrepreneurs is catalyzing strategies—that is, behavioral tactics to expedite access to private resources (Hallen and Eisenhardt, 2012). Similarly, entrepreneurs in emerging economies may use institutional intermediaries as a catalyzing strategy to improve their own access to public resources.

Overall, these streams suggest that intermediaries may catalyze the efforts of entrepreneurs to gain public-sector resources along two paths: certification and capability-building. Building on these three streams, our core argument is that entrepreneurial characteristics determine which, if any, of these paths is effective. Specifically, we argue that benefitting from certification versus capability-building depends on *context relevance*, and *skill adequacy*.

We define *context relevance* as whether individuals acquired their capabilities in the same context in which they are currently seeking to apply them. For example, if individuals acquired their capabilities in the same geographic location where they will use them, then the individual's capabilities are likely to have high context relevance. In contrast, if individuals developed their capabilities in different geographic locations where business norms and

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		Skill Adequacy	
		Low	High
Context Relevance	Low	**Necessity-Driven** (inadequate local talent and lack skills; need both certification and capability-building)	**Returnees** (H1: locally unknown but possess highly adequate skills; benefit from certification via institutional intermediaries)
	High	**Local Elites** (H2: locally known but lack adequate skills; benefit from capability-building via institutional intermediaries)	**Politically Connected** (highly adequate skills and locally known; can use government ties to substitute for certification and capability-building via institutional intermediaries)

Figure 1. Summary of theoretical framework

practices are distinctive or in different industries, then the individual's capabilities have lower context relevance. A key point is that low context relevance may make it difficult to apply capabilities effectively and for others in the new context to evaluate them.

We define *skill adequacy* as the degree to which the individuals' capabilities are sufficient for the current task, managing a technology-based venture in our study. For example, if individuals possess substantial technical and business experience, and seek to create a technology-based venture, then they likely possess more than adequate skills. In contrast, if individuals possess only technical capabilities, then they likely have inadequate skills and are less likely to succeed. A key point is that low skill adequacy likely makes it difficult to succeed. We summarize these arguments in a 2×2 table (Figure 1) that previews types of entrepreneurs in this study. We focus our hypotheses on the more intriguing off-diagonal cells. We focus on the off-diagonals of this figure because individuals who possess capabilities that are both high in context relevance and high in skill adequacy likely do not need an intermediary to acquire resources (Hallen, 2008). Individuals whose capabilities are low in both context relevance and skill adequacy likely lack sufficient capabilities to benefit from an intermediary. Prior studies refer to such entrepreneurs as necessity-driven (Baptista, Karaoz, and Mendonca, 2014).

Certification and returnees

Certification is likely to be important for individuals whose preexisting capabilities exhibit high skill adequacy, but low context relevance. If the entrepreneur has skills that are well understood in the local context (i.e., high context relevance), then there is no need for certification because the market can understand the entrepreneur's skills (King, Lenox, and Terlaak, 2005).

Returnees are individuals who have studied or worked abroad and then come back to their home countries (Li *et al.,* 2012). Because returnees often have developed global technical and business skills that can help create successful ventures, governments in emerging economies often encourage their return in hopes of transferring such know-how to the local economy (Filatotchev *et al.,* 2009; Liu *et al.,* 2010). In China, returnees have started many of the country's most successful Internet firms such as Baidu, Sina, and Dangdang. Yet, since their skills may be difficult for locals to assess, returnees may encounter challenges such that locals perceive them as low quality or simply cannot make an evaluation (Wang, 2015). Certification, particularly from a reputable local organization, should reduce the uncertainty about the quality of returnees for locals. This, in turn, improves the chances of "certified" returnees to receive favorable evaluations by officials and access public resources.

Our interviews support these arguments. We interviewed a returnee working on enterprise resource planning (ERP) software who was having trouble breaking into the Chinese market because locals were unsure whether her Japanese experience would apply to business in China. As she lamented, "*16 years in Japan is too long away from China*." An educational software entrepreneur had similar difficulties in convincing locals of his business capabilities related to identifying high-quality entrepreneurial opportunities. He wanted to become what he called the "*eBay for Knowledge*," where people could sell and buy knowledge services on an online platform. He knew that such global knowledge markets existed

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from his time in school and working in the United States. In fact, U.S. VCs had funded such opportunities. Yet, this returnee could not convince Chinese locals who saw "*no market for knowledge*." Thus, although returnees often possess global business and technical capabilities that likely increase their ventures' performance (i.e., high skill adequacy), locals may have difficulty assessing these returnees (i.e., low context relevance) since these locals lack global experience and may not understand business conduct elsewhere.

Returnee entrepreneurs also indicated that certification was crucial in helping them overcome these challenges. The aforementioned educational software entrepreneur told us that once he gained membership in the local science park, it was as if "*he has been 'filtered' and people see him and his company as more trustworthy*." Soon after, he noted that "*being in the science park has made it easier to get subsequent government funding and awards*." Another returnee, who attended a top U.S. engineering university and returned to start a digital publishing company, concurred noting, "*being located in the science park had the main advantages of making it easier to get meetings with government officials*." Another returnee who launched a venture based on a new fiberglass material stated that science park membership, and the uncertainty it alleviated among government officials regarding her quality, created a "*green path*" (meaning an expedited path, original Chinese available from the authors) to public resources. Also, top local talent who were previously unfamiliar with returnees' capabilities or how they might conduct business were now willing to work for such returnees once the returnees were in the park. As another returnee who attended a U.S. college and worked for five years in Silicon Valley before returning to start a semiconductor firm said, entering the park "*aided him with recruiting employees out of the top universities in China*." Overall, certification provides a signal from a reputable local institution (i.e., science parks) that helps alleviate local uncertainty about the returnee's capabilities and approach to business.

In sum, while returnees are likely to possess relatively high global capabilities (i.e., high skill adequacy), they likely lack credibility with many locals (including government officials) who are unable to ascertain their quality (i.e., low context relevance). Since public-resource providers are likely to believe that officials in intermediaries such as science parks can assess these capabilities, entry into a science park improves the likelihood that returnee science park entrepreneurs can gain public resources.

Hypothesis 1 (H1): Science parks are more likely to help entrepreneurs with higher skill adequacy but lower context relevance (returnees) to access public policy resources through certification.

Capability-building and local elites

The capability-building benefit of intermediaries is likely to be important for individuals who have low skill adequacy. While these entrepreneurs may have high context relevance such that they understand their local situation well, they are likely to be constrained in launching successful ventures by their limited business capabilities. This situation is likely to occur in emerging economies, and as prior studies find, institutional intermediaries may be able to supply this knowledge (McDermott *et al.,* 2009).

Local elites are often well educated in top domestic universities, particularly in science and engineering (Hoskisson *et al.,* 2000) as governments often cultivate such talent through major infrastructure investments. For example, China's Project 985 improved leading universities, and explicitly attempted to change students' attitudes and improve their skills regarding technical innovation (Eesley, Li, and Yang, 2016). We see such actions across China and elsewhere in emerging economies where local elites are typically educated in leading domestic universities and take rigorous science or engineering curricula. For example, in China, graduation from prestigious local institutions such as Peking University, Tsinghua University, and institutions affiliated with the Chinese Academy of Sciences is indicative of local elite status. Indian graduates from one of the Indian Institutes of Technology and Chilean graduates from Universidad Católica are similarly local elites.

Yet, although these individuals often possess ample technical skills, local elites may lack adequate business expertise (i.e., low skill adequacy). They typically understand the local context and possess local business ties (Oi, 1995), but often lack managerial skills (Hoskisson *et al.,* 2000). These local elites are similar to academic entrepreneurs—that is, high technical skills, but few business capabilities to achieve commercial success (Toole and Czarnitzki, 2009). This is also consistent with Park and Luo (2001) who find that local Chinese entrepreneurs believe that

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they have similar technology skills to rivals, but lower managerial skills. These arguments suggest that capability-building within institutional intermediaries may particularly benefit local elites.

Our interviews support this view. A local-elite entrepreneur from Tsinghua University recalled his first venture in which his inadequate business skills led to failure. He and some classmates developed an inexpensive, low-technology projector that aimed to be the "*projector for the common people*" that won Tsinghua and national entrepreneurship competitions. With these wins, the team sought to create a more technologically advanced, high-end projector for the market. Yet, despite the team members' strong technical skills, their lack of business skills created challenges. As the local-elite entrepreneur recalled, "*We only wanted to make the best projector, but we didn't know how to combine the product with the market*." They failed to realize that focusing solely on technology brought them into competition with top multinational firms that could also deploy high-quality technology but do so at lower cost. The outcome was a late product and mediocre sales.

Our interviews also suggest that local elites expect and confirm that they can overcome their limited skills via the capability-building within institutional intermediaries. While some local elites saw the science park's "*image/brand*" as useful, they saw much less value in this certification than returnees (see above). Rather, the vast majority of local elites saw much more value in a science park's training services and custom advice about business models, marketing, and other managerial issues. For example, a Tsinghua-educated, software entrepreneur described his venture as "*very outstanding in China, but still had some more to do to catch up with the international competitors*." Yet, he credited entry into a science park with improving his business capabilities and positioning his product more effectively. As he noted, "*After moving to the science park, our products have reached a new level, making competition less relevant*."

Overall, we argue that, while local elites likely possess a strong understanding of the local environment and relevant business connections (high context relevance), they often lack the capabilities, particularly business ones, to succeed (low skill adequacy). Government officials are likely to know this. Thus, while local elites may gain certification benefits from science parks, they are likely to need and benefit from capability-building. These enhanced business skills, in turn, make acquiring public resources more likely for local-elite entrepreneurs.

> *Hypothesis 2 (H2): Science parks help entrepreneurs with higher context relevance but lower skill adequacy (local elites) to access public policy resources through capability-building.*

METHODS

We conducted our study in Beijing's Haidian district in 2011. This district is attractive because it contains both science parks and non-science park complexes. The non-science park complexes simply rent office space. In contrast and as described above, the science parks provide a variety of services and individualized mentoring—all within a shared physical infrastructure. These science parks require neither an equity stake nor a specific residence time. Thus, they can be considered business incubators with a technology focus (Rothaermel and Thursby, 2005). The district also houses the two most elite Chinese universities, Peking and Tsinghua Universities, as well as several Chinese Academy of Sciences institutes. Overall, this setting enables us to study science and non-science park ventures in close proximity using a quasi-experimental design, control for policy differences down to the district level, and investigate the effects of elite educational institutions.

To collect our field survey data, we approached 151 firms in the two Haidian district science parks and obtained 81 responses (54% response rate). Regarding non-science park firms, we approached 318 firms and obtained 65 responses (20% response rate). This led to a sample of 146 firms. Seven had missing data and were excluded. This left a final sample of 139 firms (77 science park firms and 62 non-science park firms). We conducted these surveys in Chinese, and translated the survey into Chinese and then back into English to ensure linguistic accuracy.

To address response bias, we developed several measures related to acquiring public resources. We first obtained comprehensive directories for the science park and non-science park complexes to ascertain all firms that could have responded to our survey. Next, we searched for databases that might provide information about nonrespondents. We found two: one of all Chinese

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patents (http://search.cnpat.com.cn/) and the other of all of Beijing's registered companies (http://qyxy.baic.gov.cn) where we could obtain patent counts and registered capital. In comparing respondents to nonrespondents, we found no statistically significant differences in patents or in registered capital. Thus, our sample reasonably reflects science- and non-science park ventures along these two key measures influencing attractiveness to public-resource holders.

Dependent and independent variables

Our dependent variable is *Public policy resource access*. This variable is measured by whether the focal firm participated in the two major government programs that provide public resources to technology-based ventures. Consistent with our interviews and archival sources, these programs are: High-Tech Enterprise Certification Program and the Innovation Fund for Small and Medium High-Tech Enterprises (commonly known as "InnoFund").

High-tech certification provides resources via a tax subsidy—that is, once a venture receives this certificate, it qualifies for a 40 percent corporate tax reduction. An entrepreneur must apply for this certificate, meet stringent hurdles such as three to six percent of revenues dedicated to R&D, and pass a government audit. InnoFund provides prestigious and lucrative financial grants to support small- and medium-sized firms to commercialize technology, and is similar to the U.S. SBIR. It is run by the Ministry of Science and Technology. To obtain an award, an entrepreneur must pass hurdles such as the percentage of employees with PhDs, and a proposal process involving an expert panel. The awards are then competitive. In our sample, only eight percent receive such grant funding.

We accessed information from the complete directories of all firms that received high-tech enterprise certification and InnoFund grants at the national and municipal (Beijing) levels. Since funding amount by firm is unavailable, we use a count. That is, we measure *Public policy resource access* by the number of these sources from which a venture received funding: 0 (none) to 3 (obtained high-tech certification, and local and national InnoFund grants).

Our independent variables are *Science park, Returnee,* and *Local elites*. We measure *Science park* by whether the focal venture is located in and a member of a science park 1, otherwise 0. Consistent with prior research (Li *et al.,* 2012), we measure *Returnee* by whether the respondent received an educational degree outside of China. Our returnees received degrees from 34 different universities abroad. We confirmed that each returnee had received a degree from abroad and worked abroad. This work experience included starting firms, working for new firms, and working for multinational corporations such as GE and Microsoft in their North American or European offices. Such observations are consistent with our argument that returnees have high skill adequacy, yet since they spent years outside of China gaining their education and business experience, have low context relevance.[1] We measure *Local elites* by whether the respondent received a degree from Tsinghua University, Peking University, or a Chinese Academy of Sciences university or institute, the leading institutions in China (Zhou, 2008).

Controls

First, we control for two factors that science park officials said they used to select ventures and that may affect *Public policy resource access*—diverse top management teams (TMT) and education. Consistent with prior research (Eesley, Hsu, and Roberts, 2014; Eisenhardt and Schoonhoven, 1990), we measure *TMT Diversity* as the founding team's prior entrepreneurial, sales, finance, managerial, marketing, technical, and/or CEO/TMT experience. This is measured as a percentage of the total possible number of roles. Founders with a graduate technical degree are more likely acquire resources (Hallen, 2008), so we control for *Tech grad degree,* coded as 1 if any founder has a graduate technical degree, and 0 if not.

Second, ventures at a later stage of development are more likely to acquire resources (Kazanjian, 1988), so we measure *Development stage* as the venture's stage when it first entered its current location ([1] R&D/planning: developing product prototype, [2] pre-revenue: product prototype but still developing the product, [3] early revenue: finished product shipped to at least one customer, [4] initial profits: sales just surpass costs, [5] growth: five percent or more profitability).

[1] It is possible that some returnees need capabilities. If so, Hypothesis 1 is a conservative test. For the local elites needing certification, Hypothesis 2 does not preclude certification and is a conservative test.

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Third, previously being in a science park may influence our results because non-science park firms may have gained the benefits of a science park and then moved out. We measure *Science park before* as 1 if a non-science park respondent was previously in a science park.

Fourth, past research argues that firms with government ties may acquire resources more easily (Li and Zhang, 2007; Park and Luo, 2001; Peng and Luo, 2000), so we measure *Government ties* as 1 if any founder or any founder's parents has government experience. *Firm age* is included as the number of years since founding. We also include industry controls and science park fixed effects.

In our QCA analysis, since our interest is entrepreneurs' characteristics, we split *TMT diversity* into two measures of business experience. The first, *Prior CEO/TMT experience,* measures whether any founding team member was previously a CEO or TMT member, and the second, *Prior managerial experience*, measures whether any founding team member had supervised others. We added a measure, *Prior technical experience,* to capture whether any founding team member had prior technical experience in a business. Combined with *Technical grad degree*, we account for both academic and industry technical experience.

Empirical approaches

Instrumental variable

We use an instrumental variable (IV) approach as our primary analysis. Since we have a treatment/control experimental design but the firms are not randomly assigned to the science park and non-science park conditions, selection may influence the results. To conduct our IV analysis, we use the previously discussed controls in both the first-stage and second-stage regressions, and an instrument in the first-stage regression to predict *Science park* for use in the second-stage regression model. We also add *Returnee* as a control in our first-stage selection model because, if our certification hypothesis is valid, then we should observe a significant selection effect of returnees into science parks (H1).

We use *Science park entry help* as our instrument—that is, whether respondents had a business contact in the science park who could or did help them to enter the science park (1if Yes, 0 if No). This instrument is likely to predict selection into the science park, but not predict *Public policy resource access*. IV analysis is useful because the instrument by design rules *out* selection, and so allows us to distinguish certification (H1) and capability-building (H2). Certification is a selection effect where the benefits largely emanate from entering a science park, not from activities once inside the park. Thus, if entrepreneurs benefit from certification, their results should be significant in the non-IV analysis, but not the IV analysis. In contrast, capability-building is an incubation effect where the benefits largely emanate from activities after selection and once inside the park, not just from entry. Thus if entrepreneurs benefit from capability-building, their results should be significant in both non-IV and IV analyses. We provide more econometric and theoretical justification for this instrument in Appendix S1.

Since there could be other unobserved characteristics (not our instrument) driving the results, we re-ran our analyses using matched samples from the full data set to improve covariate balance and reduce the effects of any unobservable characteristics. The matched sample tests are consistent. We discuss these tests in Robustness Checks, and provide results in Appendix S1.

Since Science park entry help is a binary instrument and *Public policy resource access* is a count variable, we have a nonlinear instrument and a nonlinear dependent variable.[2] We also use OLS for both the first- and second-stage regressions (OLS-OLS). These specifications all produce similar results. We specify all models as general linearized models (GLM) and report heteroskedasticity-consistent standard errors.

Event history

As a robustness analysis, we use event history methods to assess the time until a firm gains its first public resources. As argued above, returnees benefit from science parks through certification (H1) while local elites also benefit from

[2] Handling nonlinear instruments is much debated (Lenox, 2006; Wooldridge, 2002), especially when both the instrumental and dependent variables are nonlinear (Angrist and Krueger, 2001; Bascle, 2008; Bowden and Turkington, 1984; Imbens and Angrist, 1994). Based on the most comprehensive recommendations that we could obtain (Angrist, 2001; Mullahy, 1998), we used two specifications: first-stage probit regression and then either a second-stage OLS regression (probit-OLS), or a log-linear regression (probit-log-linear).

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capability-building (H2). Since relative to certification, capability-building requires time to develop skills, we expect that returnees will access public resources *faster* than local elites.

To test this argument, we use a Cox-proportional hazard analysis with all returnee and local-elite firms in science parks. We chose this analysis because it is a semi-parametric approach that does not impose distributional assumptions. A firm enters the risk set when it enters the science park and "fails" when it obtains its first public resources. Firms without a "failure" remain at risk. We code *Returnee* as 1 if the entrepreneur is a returnee, 0 if a local elite.

Qualitative Comparative Analysis (QCA)

As a second robustness check, we use Qualitative Comparative Analysis (QCA), which is a set-theoretic method using logic structure that is especially appropriate for configurations of variables and equifinal paths to an outcome. While regression approaches imply additive effects, linearity, and single paths, QCA reveals synergistic relationships among variables (consistent with configurations) and equifinality (Fiss, 2007). In contrast, regression is often uninterpretable with more than three-way interactions. Also, regression approaches assume that independent variables are competing explanations, and look for unique contribution from each variable. In contrast, QCA allows for the possibility that two or more variables may combine in more complex ways to explain an outcome (Ragin and Davey, 2014). Finally, QCA is attractive because as a logical, not statistical method, it is useful for moderately sized samples.

We ran a crisp-set QCA using our independent variables (*Returnee, Local elites, Science park, Government ties)* and other controls likely to influence whether the venture obtains public resources (*Development stage, Tech grad degree*). To capture natural breakpoints, we simplified *Development stage* with two categories: stages 1–3 (= 0), and stages 4 and 5 (= 1).

RESULTS

The descriptive statistics and pairwise correlations for our study are in Table 1. We ran all interaction models with mean-centered main effect variables to mitigate multicollinearity concerns (VIF > 5). We use Cohen's f^2 (Cohen, 1992) to test whether the sample size is sufficient. Based on effect size f^2 for our regression models (see Appendix S1 for details and Figure A1 for the power graph), our sample size has a sufficient statistical power (i.e., power > 87% for all models) which is above the standard 80 percent threshold (Cohen, 1992).

Our primary examination of Hypotheses 1 and 2 is an IV analysis. In the first-stage regressions (Table 2), firms are more likely to join a science park if they lack government ties, which suggests that government ties are an alternative path to acquiring public resources. In the partial second-stage regressions (Appendix S1, Table A1), the controls, *Firm age* and *Development stage*, are generally significant, positive predictors of *Public policy resource access*.

Table 3 shows the full second-stage regression models that test Hypotheses 1 and 2. In Hypothesis 1, we argue that science parks particularly help returnees to access public resources through certification. Thus, we expect a positive and significant relationship between the interaction term *Science park x Returnee* and *Public policy resource access* in the second-stage models without controlling for selection (Non-IV: Table 3, Models a–b) but *not* in the second-stage models that control for selection (IV: Table 3, Models c–e). The results support Hypothesis 1 (Non-IV *p*-values: 0.0003–0.0002; IV *p*-values: 0.27–0.36). That is, the benefits of science parks for returnees are captured solely by selection, consistent with certification (H1).

In Hypothesis 2, we argue that science parks particularly help local elites to access public resources through capability-building. Thus, we expect a positive and significant relationship between the interaction term *Science park* × *Local elites* and *Public policy resource access* in the second-stage models without controlling for selection *and* (unlike H1) in the second-stage models that control for selection. The results suggest support for Hypothesis 2 (Non-IV *p*-values: 0.0009–0.002; IV *p*-values: 0.00104–0.03). That is, the benefits of science parks are captured at least partially by treatment, consistent with capability-building (H2).

We also interpret the coefficients of the fully specified models. All else equal, returnees in science parks have about a 16 percent increase in obtaining public resources over those returnees not in science parks. As per Hypothesis 1 results, this is solely a certification effect. In contrast, all else

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Table 1. Descriptive statistics and pairwise correlational matrix

	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9	10	11
Controls															
1. Science park before	0.12	0.33	0	1	1										
2. Technical grad degree	0.77	0.42	0	1	0.01	1									
3. Firm age	4.41	2.88	1	11	0.11	−0.02	1								
4. TMT diversity	0.48	0.29	0	1	−0.06	−0.00	−0.11	1							
5. Government ties	0.32	0.47	0	1	−0.03	−0.01	0.00	0.26	1						
6. Development stage	2.67	1.37	1	5	0.02	−0.05	0.38	0.05	0.00	1					
Instrument															
7. Science park entry help	0.35	0.48	0	1	0.12	0.34	−0.17	−0.12	−0.06	−0.01	1				
Independent variables															
8. Local elites	0.45	0.50	0	1	0.17	0.27	−0.14	−0.07	−0.19	0.02	0.33	1			
9. Returnee	0.25	0.44	0	1	−0.07	0.21	−0.13	0.06	−0.09	−0.08	0.17	−0.01	1		
10. Science park	0.55	0.50	0	1	−0.04	0.22	−0.28	−0.12	−0.16	−0.16	0.60	0.33	0.46	1	
Dependent variables															
11. Public policy resource access	0.36	0.68	0	3	−0.10	0.05	0.27	0.06	−0.01	0.34	0.06	0.12	0.16	0.12	1

Table 2. First-stage regression (probit regressions unless otherwise stated)

	M1a	*M1b (OLS)*	*M1c (logit)*
Intercept	0.97[0.19]	0.54[0.00004]	2.03[0.12]
	(0.74)	(0.13)	(1.32)
Firm age	−0.10[0.22]	−0.02[0.15]	−0.17[0.24]
	(0.08)	(0.01)	(0.15)
Science park before	−0.87[0.25]	−0.06[0.41]	−1.62[0.30]
	(0.76)	(0.08)	(1.58)
Technical grad degree	−0.40[0.37]	−0.04[0.61]	−0.89[0.32]
	(0.45)	(0.08)	(0.88)
TMT diversity	−1.09[0.08]	−0.13[0.21]	−1.83[0.12]
	(0.62)	(0.11)	(1.17)
Government ties	−1.02[0.0008]	−0.117[0.039]	−1.79[0.003]
	(0.30)	(0.06)	(0.61)
Development stage	−0.21[0.27]	−0.02[0.37]	−0.45[0.22]
	(0.19)	(0.02)	(0.37)
Science park entry help (instrument)	3.68[1×10^{-9}]	0.54[3×10^{-17}]	6.61[8×10^{-7}]
	(0.60)	(0.07)	(1.34)
Returnee	2.73[0.000008]	0.39[3×10^{-9}]	4.90[0.00007]
	(0.61)	(0.07)	(1.23)
Industry controls	*Included*	*Included*	*Included*
Pseudo-R^2	***0.68***	***0.59***	***0.68***
N	***139***	***139***	***139***
Residual df	***125***	***125***	***125***

p-values in squared brackets (two-tailed); standard errors in parentheses.

equal, local elites in science parks have about a 25 percent increase in the likelihood of obtaining public resources over local elites outside science parks. When we control for certification effects (i.e., selection via IV analysis), the advantage increases to about 34 percent. Thus, while local elites benefit from certification (albeit less than returnees), they benefit more from capability-building (H2).

Robustness analyses: national sample

To ensure generalizability, we also conducted an event history analysis on a national sample (Appendix S1, Tables A2 and A3). This national study has a larger, nationally representative sample than our primary Beijing study, but less precise measures. We model the time to acquire the first public resource using a Cox-proportional hazard

Table 3. Second-stage full models on public policy resource access (log-linear regression unless otherwise specified; partial models in Appendix S1, Table A1; permutations not shown yield consistent results)

	M1a	*M1b (OLS)*	*M1c (IV, probit-log-linear)*	*M1d (IV: probit-OLS)*	*M1e (IV, OLS-OLS)*
Intercept	−0.33[0.003] (0.11)	−0.54[0.003] (0.19)	−0.06[0.70] (0.17)	−0.12[0.65] (0.27)	−0.41[0.08] (0.24)
Firm age	0.03[0.0018] (0.01)	0.05[0.004] (0.02)	0.02[0.07] (0.01)	0.03[0.11] (0.02)	0.04[0.09] (0.02)
Science park before	−0.14[0.07] (0.08)	−0.25[0.04] (0.12)	−0.14[0.07] (0.08)	−0.26[0.04] (0.13)	−0.31[0.02] (0.13)
Technical grad degree	−0.01[0.86] (0.07)	−0.01[0.95] (0.11)	0.02[0.81] (0.07)	0.05[0.67] (0.11)	0.02[0.86] (0.12)
TMT diversity	0.02[0.87] (0.09)	0.01[0.92] (0.16)	−0.06[0.54] (0.09)	−0.11[0.49] (0.16)	−0.03[0.83] (0.16)
Government ties	0.03[0.61] (0.06)	0.04[0.69] (0.10)	0.02[0.79] (0.06)	0.01[0.90] (0.10)	0.02[0.82] (0.10)
Development stage	0.09[0.00003] (0.02)	0.14[0.00004] (0.03)	0.08[0.00006] (0.02)	0.14[0.00009] (0.04)	0.14[0.0001] (0.04)
Science park	0.19[0.02] (0.09)	0.36[0.02] (0.15)	−0.26[0.08] (0.15)	−0.418[0.098] (0.25)	−0.12[0.64] (0.26)
Returnee	0.07[0.23] (0.06)	0.11[0.26] (0.10)	−0.14[0.15] (0.10)	−0.21[0.18] (0.16)	−0.15[0.41] (0.18)
Local elites	−0.05[0.43] (0.06)	−0.11[0.30] (0.10)	0.62[0.08] (0.36)	1.01[0.09] (0.60)	−0.05[0.90] (0.37)
Science park × returnee	0.44[0.00003] (0.11)	0.67[0.0002] (0.18)	−0.40[0.27] (0.37)	−0.68[0.28] (0.62)	0.41[0.36] (0.45)
Science park × local elite	0.34[0.0009] (0.10)	0.55[0.002] (0.17)	0.43[0.00104] (0.13)	0.68[0.002] (0.22)	0.56[0.03] (0.25)
Science park fixed effect	*Included*	*Included*	*Included*	*Included*	*Included*
Industry controls	*Included*	*Included*	*Included*	*Included*	*Included*
Pseudo-R^2	***0.31***	***0.28***	***0.30***	***0.27***	***0.26***
N	***139***	***139***	***139***	***139***	***139***
Residual df	***121***	***121***	***121***	***121***	***121***

p-values in squared brackets (two-tailed); standard errors in parentheses.

model to determine if *Returnees* in science parks acquire public resources faster than local elites in science parks (consistent with H1–2—i.e., certification is faster than capability-building). As with our primary study, our secondary study results are consistent with Hypotheses 1 and 2. As expected, these results (Appendix S1, Table A3) indicate returnee firms are significantly more likely to be faster to acquire public resources than local-elite firms—both in Beijing and throughout China (Beijing: $p = 0.009$; All Mainland China: $p = 0.002$). These *p*-values indicate less than a 0.9 percent chance of seeing these results in a random distribution. Regarding effect sizes, there is no simple interpretation of a Cox model in terms of time such as months (Klein and Moeschberger, 2005; Teachman and Hayward, 1993: 345). Thus, we use a rough estimate that relies on simple average time descriptive statistics that are unadjusted by controls (Table A2, Appendix S1). This estimation indicates that returnees on average acquire resources nine months or 25 percent faster (36 versus 45 months) in Beijing, and five months or 11 percent faster (44 versus 49 months) across mainland China.

Robustness analyses: event history and acquiring public resources

We conducted robustness analyses in our primary data set as well, using event history. The event history analysis for all science park firms is in Table A4, Appendix S1. As argued, since returnees benefit from science parks through certification, they are likely to access public resources faster than local elites who also benefit from capability-building (a more time-consuming process). As expected (H1–2), the results indicate returnees are likely

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to be faster to acquire resources than local elites ($p = 0.04$).

Robustness analyses: QCA and equifinal paths to public resources

We report our QCA analyses in Table A5 (Appendix S1), with each column indicating a configurational path to public resources, *Public policy resource access.* We use a crisp-set analysis to determine viable paths with a stringent 0.80 consistency threshold (Fiss, 2011). Firms at advanced development stages *(Development stage)* and with technically-experienced founders *(Technical grad degree, Prior technical experience)* are likely to obtain public resources regardless of path. Thus, these factors are necessary (but not sufficient) conditions.

In Column 1, we report the first path: *Returnees* in science parks with both high technical and business experience (*Prior managerial experience, Prior CEO/TMT experience*) (i.e., high skill adequacy). This path is consistent with certification (H1), but (as expected) not capability-building. Unexpectedly, this path includes government ties, suggesting that being abroad creates a very high hurdle requiring the combination of high business experience, science park membership, and government ties to overcome. In Column 2, we report the second path*: Local elites* in science parks with high technical capabilities *but* low business experience (i.e., low skill adequacy). This path is consistent with capability-building (H2). As anticipated, these talented locals have technical experience at top Chinese universities, but this is insufficient to tap public resources. Rather, they require capability-building in a science park to develop their business skills. In Column 3, we report the third path: *politically-connected* locals outside science parks. This path is consistent with our first-stage (Table 2) regressions that indicate government ties as an alternative path. This path shows that politically-connected locals (especially with high technical and business experience) can acquire public resources without joining a science park. We term these entrepreneurs "Politically Connected" in Figure 1.

These QCA results are robust to fuzzy-set specifications and other variable combinations (available from authors). In further analysis of the more competitive Innofund resources (10% of firms), three similar paths predicted over 70 percent of recipients—well above chance. Overall, the QCA findings enhance the IV and event history analyses by providing added richness into the precise nature of the most likely paths to public resources.

Other robustness checks

We ran further robustness checks (Appendix S1, Tables A6 and A7). First, we ran an analysis differentiating between local elites who acquired their core competency before versus after entering the science park. This check is helpful because it further confirms the capability-building mechanism. We asked: "For your company's core competency (product or concept), did the competency arise before or after you arrived at your current location? (1 if After, 0 if Before)." Consistent with capability-building (H2), the significant interaction between *Local elites* and *Science park* is driven by those local elites who learned *after* entering the science park.

Second, we assessed robustness by re-running our primary analyses using a matched sample. Matched sampling improves the covariate balance between the science and non-science park groups. It is especially useful when the sample size is relatively modest because it helps to limit extraneous variance across groups that might not occur or would be controlled in large samples (Stuart and Rubin, 2008). We use *Industry* and *Firm age* as the matching criteria. We also ran eight other matching criteria combinations, including *Development stage* and firm size (number of employees in year prior to survey), each producing similar results. Consistent with others (Marx, Singh, and Fleming, 2015), we match firms using coarsened exact matching (CEM). The matched sample includes only non-science park firms with one or more science park firm matches and vice versa. The resulting matched sample is 91 firms (47 science park firms and 44 non-science park firms). We examined this matched sample for imbalance (Iacus, King, and Porro, 2012). Finding none, we ran the analyses for Hypotheses 1 and 2 using the matched sample and confirmed our original results.

Results summary

Taken together our results support Hypotheses 1 and 2. For Hypothesis 1 (certification), our primary IV (and CEM) analyses show that returnees benefit from only "*selection*" by science parks. This is

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consistent with the event history analyses indicating that returnees obtain resources faster than local elites in both the primary and national studies. QCA adds depth to this path: returnees in science parks with preexisting technical and business experience are particularly likely to obtain public resources. Thus, we find support for a returnee-certification path to public resources (H1).

For Hypothesis 2 (capability-building), our primary IV (and CEM) analyses support that local elites benefit from "*selection*" and especially "*treatment*" by science parks. Consistently, our event history analyses indicate that local elites in science parks obtain public resources more slowly than their counterpart returnees in both the primary and national study. Our added robustness analysis also supports capability-building: local elites report developing their key competencies *after* science park entry. QCA adds depth to this path: local elites in science parks with initially weak business experience, but strong technical experience, are particularly likely to obtain public resources. Thus, we support the local-elite capability-building path to public resources. Overall, in using multiple empirical methods, two quantitative studies plus qualitative evidence (see Theory Development and Hypotheses), our data support two paths by which institutional intermediaries (science parks) help entrepreneurs with distinct characteristics to access public resources.

DISCUSSION AND CONCLUSION

Our core contribution is identifying how institutional intermediaries benefit different types of entrepreneurs. This is an important issue that joins two significant phenomena—that is, emerging market economies that are pervasive, yet understudied (Dutt *et al.,* 2016; Hoskisson *et al.,* 2000), and entrepreneurship that is widely viewed as essential to a vibrant national economy (Ahlstrom and Bruton, 2006). Overall, while prior research on institutional intermediaries in emerging economies elaborates what these intermediaries do (Dutt *et al.,* 2016; Mair *et al.,* 2012), we highlight which entrepreneurs they help and how.

Emerging economies and entrepreneurship

We make several contributions at the nexus of emerging economies and entrepreneurship. First, we contribute by specifying how institutional intermediaries support different types of entrepreneurs. Prior research shows that institutional intermediaries, like incubators and accelerators (Hallen *et al.,* 2016), provide two benefits: certification of quality (Sine *et al.,* 2007), and capability-building (McEvily and Zaheer, 1999). In emerging economies, research points to a third activity, development of market and institutional infrastructure (Armanios and Eesley, 2016; Dutt *et al.,* 2016). Our contribution is to link the certification and capability-building mechanisms to the benefits that are received by particular types of entrepreneurs. Specifically, we identify for whom institutional intermediaries are particularly effective by contributing two new constructs: *context relevance* and *skill adequacy.* These entrepreneurial attributes determine the paths (certification versus capability-building) by which entrepreneurs benefit from institutional intermediaries, and shape which entrepreneurs follow which paths.

Second, we contribute by emphasizing the *equifinality* and *flexibility of institutional intermediaries*. Prior work on institutions is often grounded in the rigidity of the "iron cage" (DiMaggio and Powell, 1983). In contrast, we highlight the flexibility of institutional intermediaries in emerging economies—that is, they flexibly provide equifinal paths to resources that strategically astute entrepreneurs can travel. The first path is certification via an intermediary which returnees (i.e., high skill adequacy, low context relevance) use well. A second path to public resources is capability-building, which local elites (i.e., low skill adequacy, high context relevance) use well. These two paths within institutional intermediaries are different and yet can lead to equifinal benefits like public sector resources. In sum, while institutional research often emphasizes rigid institutional logics (Cox-Pahnke *et al.,* 2015), our contribution is to emphasize how varied entrepreneurs exploit flexible and equifinal paths within institutional intermediaries.

Third and consistent with our "red-state" approach, we contribute by providing empirical insights into two other types of entrepreneurs (Figure 1). Our empirical analysis suggests that "politically-connected" locals use a third path to gain public-sector resources. These entrepreneurs who have both high task relevance and skill adequacy can bypass institutional intermediaries, and still gain access to public-sector resources

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directly. Finally, our empirical analysis indicates that entrepreneurs with low context relevance and skill adequacy lack a viable path to public-sector resources. Termed "necessity-based" (Baptista *et al.,* 2014), these entrepreneurs may have been forced into entrepreneurship despite lacking important entrepreneurial attributes. Future work could explore how intermediaries could address the challenges of these entrepreneurs.

Finally, we emphasize the role of *public resources* in emerging economies. Research in developed economies describes how entrepreneurs gain resources from venture capitalists and other private-sector investors (Hallen, 2008; Zott and Huy, 2007). In contrast, these financial intermediaries may be underdeveloped or not exist in emerging economies. As one Chinese VC described to us, "Early stage companies are at high risk and require experience, so many investors avoid them." Our contribution is to show how institutional intermediaries like science parks fill this void by connecting early-stage entrepreneurs to the extensive public resources in emerging economies.

In sum, we contribute at the nexus of emerging economies and entrepreneurship research with a more complete understanding of how entrepreneurs succeed in these economies. We extend prior research in emerging economies (Dutt *et al.,* 2016; Eesley, 2016; Mair *et al.,* 2012; McDermott *et al.,* 2009) by characterizing key features of entrepreneurship: (1) Understanding how intermediaries aid different types of entrepreneurs, (2) highlighting the "flexibility" of equifinal paths within intermediaries, (3) indicating which entrepreneurs do *not* benefit from intermediaries, and (4) emphasizing how public resources provide early-stage financing.

Most significant, our study indicates that institutional intermediaries significantly expand market access in emerging economies beyond the well-studied politically-connected locals to include new arrivals (i.e., returnees) and the talented (i.e., local elites). Such intermediaries like incubators, development organizations, and accelerators are likely to increase the variety of entrepreneurs, and the richness of the entrepreneurial "gene pool" in emerging economies.

Implications for tie formation and network theory

Beyond our "red-state" (Mitchell and Tsui, 2012) emphasis on emerging economies and entrepreneurship, we also contribute to understanding tie formation in network theory. Prior network research on entrepreneurs seeking ties in developed markets shows that these individuals form ties with private-sector resource holders such as VCs in two ways: exploiting direct ties for the well-connected entrepreneurs, and catalyzing strategies like networking and accomplishments to accelerate tie formation for the less-connected (Hallen and Eisenhardt, 2012).

We contribute by extending the concept of "catalyzing strategies" to two new catalyzing strategies (certification and capability-building) that involve institutional intermediaries. More broadly, there may be a repertoire of context-relevant catalyzing strategies, including some relevant to emerging economies and others to advanced economies. Thus, we extend the core network insight that both direct ties (Gulati and Gargiulo, 1999) and catalyzing strategies (Hallen and Eisenhardt, 2012) drive tie formation by elaborating catalyzing strategies for emerging economies.

CONCLUDING COMMENTS: GENERALIZABILITY AND NEXT STEPS

Our primary study is limited by a modest sample size although we try to compensate with in-depth field data, multiple analytic approaches, and a second larger sample. We also recognize that China is unique and changing. Yet, China shares important common features with other emerging economies. For example, these economies have a similar reliance on public-sector resources (Dinç, 2005), and a related institutional void around lack of early-stage funding for entrepreneurs (George and Prabhu, 2000). Emerging economies also share similar approaches to filling that void such as by institutional intermediaries (Dutt *et al.,* 2016; Mair *et al.,* 2012). Our interviews with officials in Malaysia and Chile confirm these observations. For example, government initiatives such as Malaysia's MaGIC and Chile's CORFO and StartUp Chile have created institutional intermediaries (e.g., incubators and accelerators) to help entrepreneurs signal quality, build capabilities, and obtain public

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funding. A next step is to assess the generalizability of our results in systematic studies across countries.

The governments of emerging economies often use institutional intermediaries to spur entrepreneurial activity and economic prosperity. Building on research about institutional voids, institutional intermediaries, and resource acquisition in network theory, we conducted a "red-state" study of how Chinese science parks help entrepreneurs gain access to public-sector resources. The core insight is that such intermediaries support different types of entrepreneurs in distinctive ways. The implication for policymakers is to ensure multiple paths to essential venture outcomes so that a variety of entrepreneurs, not just the politically-connected, can flourish.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix S1. Additional Discussion on Secondary National Sample, Instrumental Variable Analysis, Qualitative Comparative Analysis (QCA), Power Analysis, as well as Other Robustness Checks.