

THE ART OF ASKING THE TIGER FOR ITS SKIN: HOW IT ENTREPRENEURIAL FIRMS LEVERAGE POLITICAL INSTITUTIONAL RESOURCES IN EMERGING ECONOMIES

Research-in-Progress

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Abstract

In emerging economies, political institutions (i.e., government and its agencies), act as a major force in defining and mobilizing resources. IT entrepreneurial firms endeavor to obtain resources from political institutions, named as political institutional resources (PIRs), to overcome insurmountable handicap of resource deficiency. However, how PIRs matter remains unclear. Acknowledging this gap, this study examines the influences of PIRs on IT entrepreneurial firms in emerging economies. Drawing on the institution-based view, we first present a comprehensive typology of PIRs in emerging economies. Moreover, we develop a theoretical model to explain how PIRs shape the performance of IT entrepreneurial firms. We further provide more deep insights to see whether the impacts of PIRs depend on IT entrepreneurial firm's internal R&D resources. This study has important contributions to the theory development of the institution-based view and the practices of IT entrepreneurship in emerging economies.

Keywords: Political institutional resources, IT entrepreneurial firms, firm performance, star scientists, the institution-based view

Introduction

It is well acknowledged that in developed economies, resources within firms (e.g., organizational and technological capabilities) and from external commercial parties (e.g., complementary resources and partner endorsement) predict the performance of IT entrepreneurial firms (Stuart 2000; Zahra and Nielsen 2002). However, in emerging economies, it is difficult for IT entrepreneurial firms to accrue sufficient internal and external resources for survival and development (Mahmood and Rufin 2005; Peng and Luo 2000). An emerging economy is defined as a country that experiences a rapid pace of economic development in transition to a more market-driven economy, such as China and India (Hoskisson et al. 2000). Different from developed economies, emerging economies do not have a stable free-market (Peng et al. 2008). The lack of a well-defined property rights-based legal framework, together with the lack of political certainty (Peng and Zhou 2005), hinders resource mobilization in markets in emerging economies.

Political institutions, referring to government and its agencies (Chan et al. 2008), act as a major force in defining and mobilizing resources in emerging economies. For example, the government in China controls significant portions of strategic factor resources and has considerable power to approve projects and allocate resources (Li and Zhang 2007), especially for IT industry (Ring et al. 2005). Similarly, funding for new technology ventures in Russia principally comes from government funds (Ahlstrom and Bruton 2010). Hence, IT entrepreneurial firms in emerging economies may pursue strategies to obtain resources from political institutions, named as political institutional resources (PIRs), as an alternative choice.

While there is increasing appreciation that PIRs significantly shape firm performance in emerging economies (Peng et al. 2008), how PIRs matter remains unclear. Most studies regard political institutions in emerging economies as constraints (e.g., policy uncertainty, government intervention) (Peng and Zhou 2005; Tan and Litschert 1994). However, “institutions need not be viewed solely in terms of their constraining nature, they also enable actions that create opportunities for those who understand and use them” (Bruton and Ahlstrom 2003, p.237). A few studies that view political institutions as resources, however, either regard PIRs as a generic concept (e.g., Lee et al. 2001; Li and Atuahene-Gima 2001; Yiu and Lau 2008), or focus on one specific type of PIRs (e.g., guanxi, see Luo 2003; Peng and Heath 1996). These studies reported a positive relationship between PIRs and firm performance, while new observations suggest that not all types of PIRs lead to better firm performance (e.g., Okhmatovskiy 2010; Sun et al. 2010). There is need to distinguish among different types of PIRs and to compare their different effects. Nevertheless, quite rare studies have examined it. Acknowledging this critical gap in the literature, this study endeavors to answer the three following research questions:

1. What are key PIRs to IT entrepreneurial firms in emerging economies?
2. How do PIRs affect IT entrepreneurial firm performance in emerging economies?
3. Do the impacts of PIRs depend on internal R&D resources of IT entrepreneurial firms?

Drawing on the institution-based view, we first theoretically outline what constitute key PIRs in emerging economies according to the characteristics of IT entrepreneurial firms. Next, we elaborate how each type of PIRs shape the performance of IT entrepreneurial firms. We provide deep insights to see whether the impacts of PIRs depend on IT entrepreneurial firm’s internal R&D resources (e.g., star scientists).

This study makes valuable theoretical contributions. First, most previous research on PIRs examined the overall effect of PIRs and suggests positive relationship between PIRs and firm performance (e.g., Li and Atuahene-Gima 2001; Yiu and Lau 2008). They did not distinguish among different types of PIRs, neither examine the effect of each type of PIRs. However, different types of PIRs may affect IT entrepreneurial firm performance in different ways (Czarnitzki et al. 2010). Our research takes an initial step to articulate what constitute key types of PIRs to IT entrepreneurial firms. It opens the black box of PIRs which have predominately been regarded as a generic concept. This distinguishment is necessary especially when some PIRs would prompt IT entrepreneurial firm performance in emerging economies while others would impede firm performance instead. To our best knowledge, this is the first study to examine the effect of each type of PIRs on IT entrepreneurial firm performance in emerging economies. Second, scholarship (including IS fields) increasingly notices the complex interdependences between private firms and public institutions (Mahoney et al. 2009). However, studies that investigate the interaction between the two are

quite scarce, especially in the IS field (Walsham et al. 2007). Our research contributes to the scholarship by advancing theories of public-private interaction and by identifying institutional and organizational configurations and strategies conducive to intertemporal efficiency and value creation (Mahoney et al. 2009). To do so, our study looks simultaneously at each type of PIRs as well as firm's R&D resources to understand the success of IT entrepreneurial firms in emerging economies. Third, there is lack of IS research that focuses on emerging-economy contexts and develops innovative theories meaningful to the contexts (Tsui 2007; Walsham et al. 2007). By studying indigenous issues in emerging economies, our research aims to develop contextualized theories and contribute to the global management research community (Bruton et al. 2008; Meyer 2006; Walsham et al. 2007).

This study has important empirical implications as well. First, answering them would provide valuable knowledge to IT entrepreneurial firms that are striving for survival and growth in emerging economies. Not only local entrepreneurs, but also international businesses would be able to improve their understanding of how to leverage institutional resources in emerging economies. Second, governments in emerging economies would also benefit from knowing how to advance their institutional resources to achieve the goal of increasing the level of economic activity and technological development of their nations (Mingo 2009).

Theoretical Foundation

Theories of firm performance in the context of developed economies comprise three major perspectives: the industry-based view (Porter 1980), the resource-based view (Barney 1991), and the network-based view (Brass et al. 2004). These three perspectives all assume a relative stable, market-based institutional framework. As researchers increasingly probe into emerging economies, it is evident that markets work imperfectly and the absence of strong institutions is conspicuous (McMillan 2007; Peng et al. 2009). The assumption of a stable free market does not hold. The legal infrastructures are not enough to provide the basis for effective corporate governance and business transactions yet (Hoskisson et al. 2000). Macroeconomic stabilization, a precondition for external financial assistance and other resource transactions, has been particularly difficult to achieve (Hoskisson et al. 2000). All these resulted in thin capital markets, shortages of skilled labor, and insufficiency of other complementary resources (Hoskisson et al. 2000). Firms in emerging economies, are forced to consider how to adapt to the institutional changes for survival and development (Sun et al. 2010). Consequently, studies that simply applied the industry-, resource-, and network-based views to emerging economies have been criticized of their lack of attention to contexts (Peng et al. 2009).

Institution-based View

To address the criticisms, a new perspective – the institution-based view has emerged (Peng et al. 2008). It focuses on the interaction between institutions and organizations (Peng et al. 2008). Traditionally, this view regards institutions as constraints on organizations. Institutions are the humanly devised constraints that structure human interaction (North 1990). They can be formal (rules, laws, constitutions) or informal (norms of behavior, conventions, and codes of conduct) (North 1990). By defining the incentive structure, institutions help to reduce uncertainty, provide meaning, and reduce transaction costs (North 1990; Scott 2008). Firms are motivated to comply with the defined incentive structure (Oliver 1997). Preliminary empirical studies showed that, country effects, as a proxy for institutional effects, are more salient than other effects in explaining the variation in firm performance (Makino et al. 2004).

In the spirit of developing this view, we propose a new position that institutions can also be regarded as resources that can be utilized by firms to identify opportunities and reduce costs. Institutions not only create limits for organizations and individuals but also facilitate opportunities for action (Bruton et al. 2009). Institutions directly determine what arrows a firm has in its quiver as it struggles to formulate and implement strategy and to create competitive advantage (Ingram and Silverman 2002). Although the term of institutional resources has not been made explicit in extant literature, prior studies have used a variety of different terms to talk about institutional resources, such as institutional support (Xin and Pearce 1996), government support (Schlevogt 2001), and political capital (Yiu and Lau 2008).

Why can institutions be critical resources to firms? This is because, by conforming to institutions, firms can earn extra resources and explore potential opportunities in the environment. For example, an empirical study on Brazil's fuel industry showed that firms founded during an industrial policy period were more productive than those founded before that period (Mingo 2009). The industrial policy created opportunities for firms that were founded during the policy period. Moreover, by paying close attention to the payoffs imbedded in institutions, firms can exploit extant resources efficiently and promote favoring activities promising the largest profits. For example, tax credits can avail firms to adjust innovation expenditures to optimize returns on the same set of assets (Czarnitzki et al. 2010). By and large, we posit that: By conforming to institutions, firms can make use of resources from institutions to further explore new opportunities or exploit current resources.

Institutional Resources

We define institutional resources as available assets and capitals derived from or defined by institutions in a society. Given that the institution-based view suggests three kinds of institutions (i.e., political institutions, economic institutions, and social institutions) (Chan et al. 2008; North 1990; Scott 1995), we classify institutional resources into three kinds accordingly: political institutional resources, economic institutional resources, and social institutional resources.

Political institutional resources (PIRs) are institutional resources derived from governments and government-affiliated organizations (Chan et al. 2008). PIRs can be R&D tax credit determined by policy, direct investment from government, and protection from government (Boddewyn and Brewer 1994; Czarnitzki et al. 2010; Djankov et al. 2002; Lee and Osteryoung 2001). Economic institutional resources (EIRs) are institutional resources derived from market intermediaries (e.g., venture capitalists, investment bankers, auditors, solicitors, consultants, brokers, traders, and dealers) (Chan et al. 2008). EIRs can be credit from banks, endorsement from underwriters, and management experience from venture capitals (Arikan and Capron 2010; Carter and Manaster 1990; Stuart et al. 1999). Social institutional resources (SIRs) are those derived from the members of a population associating and interacting extensively with one another to develop recursive practices, such as partners, industry associations, and rivals (Chan et al. 2008). SIRs can be trust from clients, social status conveyed by alliance partners, and technology from alliance partners (Alvarez and Barney 1993; Eisenhardt and Schoonhoven 1996; Gulati and Higgins 2003; Li et al. 2008).

A comprehensive literature review, followed the procedure suggested by Heugens and Lander (2009), yielded 22 studies that investigated the effects of institutional-level resources on firm performance. Only 12 of them focused on emerging economies. Based on the literature review, we discern that the most prominent difference between emerging and developed economies lies in PIRs. This is because the mature free-market in developed economies has already provided plenty of resources to firms. The control of government on resources is relatively weak. Although firms in developed economies may conduct corporate political activities to gain more resources (Lux et al. 2011), entrepreneurial firms with strong EIRs or SIRs but weak PIRs could also survive and grow. However, in emerging economies, the government controls significant portions of strategic factor resources and has considerable power to approve projects and allocate resources (Li and Zhang 2007). As a result, in emerging economies, PIRs become more crucial than EIRs or SIRs. For example, Yiu and Lau (2008) showed that in emerging economies, political institutional support (in terms of government loans and tax relief) has a strong positive relationship with entrepreneurial firm performance while social capital (in terms of the number of strategic alliances) does not. Besides the literature review, we conducted face-to-face interviews with CEOs from 11 IT entrepreneurial firms in China. These interviews echoed with our assertion on the importance of political institutional resources.

Therefore, our study investigates the influences of PIRs on IT entrepreneurial firms, while controlling for EIRs and SIRs. Moreover, the literature review reveals a need to identify different types of PIRs in emerging economies. This need has also been confirmed by our filed interviews. As a result, we will identify different types of PIRs according to the characteristics of IT entrepreneurial firms first, followed by an investigation of the distinct impacts of each types of PIRs.

Theoretical Development and Hypothesis

Typology of PIRs

Given that distinct PIRs might have different influences on firm performance (Czarnitzki et al. 2010), we decompose PIRs into sub-types based on the dimensions that matters to IT entrepreneurial firms. IT entrepreneurial firms are those firms that discover, evaluate, and exploit opportunities of information technologies to create new goods and services (Shane and Venkataraman 2000). Due to high clock-speed of IT industry (Blackburn et al. 1996; Kolb 2010; Mendelson and Pillai 1998; Souza et al. 2004), IT entrepreneurial firms put a strong emphasize on innovation (e.g., R&D and technological leadership) and risk taking (e.g., high risk projects with chances of high rates) (Miller and Friesen 1982). Consequently, IT entrepreneurial firms are usually characterized by two features. First, they often experience dramatic changes in strategic objectives, in order to respond to new technologic development and fast-changing customer needs (Miller and Friesen 1982; Rose 2010). Second, their entrepreneurial decisions should be efficient to prevent competition for the rents associated with a market opportunity from emerging (Alvarez and Barney 2004; Shane and Venkataraman 2000). According to the two characteristics (i.e., dramatic goal changing, and fast decision-making speed), we posit that two dimensions of PIRs become pertinent: the kinds of government involvement in goal setting (specific and general goals) and the kinds of government involvement in resource allocation (tight and loose connections).

First, the kinds of government involvement in goal setting refer to whether the government sets specific objectives of firm outcomes before allocating resources to firms. When the government sets specific goals for firms, the government focuses on particular aspects of firm deliveries, e.g., government issued direct grants on R&D (Czarnitzki et al. 2010). In contrast, when the government sets general goals for firms, its expectation of firm deliveries is not limited in a specific range, e.g., government issued direct grants on entrepreneurial firm performance (Lee and Osteryoung 2001).

The kinds of government involvement in goal setting would determine the incongruence of objectives between the government and firms (Okhmatovskiy 2010). Different from IT entrepreneurial firms whose objective is to maximize economic profits, the government aims to gain the whole welfare of a society (Kernaghan 2003; Moore 1995). The government may set objectives optimal from its own point of view, but suboptimal from the firms' (Okhmatovskiy 2010; Shleifer and Vishny 1998). Moreover, in emerging economies, governments usually make centralized plans to lend support to firms (Hoskisson et al. 2000). The plan making process is costly due to heavily bureaucratic procedures, incompetence of government agencies, and corruption (Czarnitzki et al. 2010; Jong et al. 2010). It is difficult for firms to ask for changes in the requirement of deliveries set by the government. However, IT entrepreneurial firms need to be agile and flexible to adapt their strategies to the fast-changing technologies and consumer needs. With specific goals set by the government, IT entrepreneurial firms may be unable to respond quickly to technological and market opportunities. In contrast, with general goals set by the government, IT entrepreneurial firms could enjoy a higher autonomy and utilize PIRs more efficiently. Overall, IT entrepreneurial firms may find PIRs less efficient with specific goals than general goals.

Second, the kinds of government involvement in resource allocation refer to whether the inter-organizational connections between government and firms in resource allocation are tight or loose. When the connections are tight, government is involved deeply in resource allocation, e.g., government contracts and sales (Okhmatovskiy 2010). In contrast, when the connections are loose, state-owned enterprises (SOEs) or institutions (SOIs), rather than government, allocate resources, e.g., SOE contracts and sales.

The kinds of government involvement in resource would determine the amount of interaction with government (Park and Luo 2001). In emerging economies, interaction with the government is heavily bureaucratic and time-consuming (Czarnitzki et al. 2010; Jong et al. 2010). The tighter connections, the more cumbersome the interaction is. However, to cultivate innovation, IT entrepreneurial firms usually adopt a less bureaucratic communication style. The mismatch between these firms and government's interaction styles may hinder firms from efficiently utilizing PIRs. Hence, IT entrepreneurial firms may find PIRs less efficient if the inter-organizational connections with government are tight than loose.

Based on the two dimensions above, we categorize PIRs into four cells: directive PIRs, associative PIRs, supportive PIRs, and augmentative PIRs (Table 1). Moreover, in each cell, we further divide PIRs into

sub-types according to the sources of resources because they may further affect the benefits and costs associating with each type of PIRs. PIRs can root from transactions between government and firms (Ahlstrom and Bruton 2010), from government's regulation (Li and Atuahene-Gima 2001), from government endorsed reputation (Yiu and Lau 2008), and from political embeddedness (Sun et al. 2010). They are labeled as transactional PIRs, regulative PIRs, reputational PIRs, and embeddedness PIRs respectively. Their detailed effects are discussed in hypothesis development later.

Table 1. Typology and Examples of Political Institutional Resources (PIRs)		
Goal setting Resource allocation	Specific goals set by the government	General goals set by the government
Tight connections to the government in resource allocation	<p>Directive PIRs</p> <p><u>Directive Transactional PIRs</u></p> <ul style="list-style-type: none"> Government contracts and sales <p><u>Directive Regulative PIRs</u></p> <ul style="list-style-type: none"> Government direct subsidies / grants on specific fields (e.g., government issued grants on R&D, loans on IT outsourcing, interest subsidies on IT product export) Government tax subsidies on specific fields (e.g., R&D tax deduction) Government regulatory policies that offer support on specific fields (e.g., license of technology import, patent and copyright protection, product export, financing support, IT training) <p><u>Directive Reputational PIRs</u></p> <ul style="list-style-type: none"> Government issued rewards on specific fields (e.g., incentives for being top-10 R&D enterprise in a city) Government issued credentials, certificates and awards on specific fields (e.g., award of top-10 R&D enterprise in a city) <p><u>Directive Embeddedness PIRs</u></p> <ul style="list-style-type: none"> Political embeddedness such as board member / top manager being former or incumbent manager in government with specific function 	<p>Associative PIRs</p> <p><u>Associative Transactional PIRs</u></p> <ul style="list-style-type: none"> Financial investment by state (e.g., state-owned shares) <p><u>Associative Regulative PIRs</u></p> <ul style="list-style-type: none"> Government direct subsidies / grants on general fields (e.g., government grants on new firms, government issued loan on new firms, regional interest subsidy) Government tax subsidies on general fields (e.g., regional tax deduction) Government regulatory policies that offer support on general fields (e.g., industry development, regional development) <p><u>Associative Reputational PIRs</u></p> <ul style="list-style-type: none"> Government issued rewards on general fields (e.g., incentives for being top-10 high-growth enterprise in a city) Government issued credentials, certificates and awards on general fields (e.g., award of top-10 high-growth enterprise in a city) <p><u>Associative Embeddedness PIRs</u></p> <ul style="list-style-type: none"> Political embeddedness such as board member / top manager being former or incumbent manager in government with general function
Loose connections to the government in resource allocation	<p>Supportive PIRs</p> <p><u>Supportive Transactional PIRs</u></p> <ul style="list-style-type: none"> Sales to state-owned enterprise/institution <p><u>Supportive Regulative PIRs</u></p> <ul style="list-style-type: none"> State-owned enterprise/institution issued direct subsidies / grants on specific fields (e.g., science park issued R&D subsidies) State-owned enterprise/institution issued regulations that offer support on specific fields (e.g., R&D regulations) <p><u>Supportive Reputational PIRs</u></p> <ul style="list-style-type: none"> State-owned enterprise/institution issued rewards on specific fields (e.g., incentives for being top-10 R&D enterprise in a science park) State-owned enterprise/institution issued credentials, certificates and awards on specific fields (e.g., award of top-10 R&D enterprise in a science park) <p><u>Supportive Embeddedness PIRs</u></p> <ul style="list-style-type: none"> Political embeddedness such as board member / top manager being former or incumbent manager in state-owned enterprise/institution with specific function 	<p>Augmentative PIRs</p> <p><u>Augmentative Transactional PIRs</u></p> <ul style="list-style-type: none"> Financial investment by state-owned enterprise/institution (e.g., state-owned legal person shares) <p><u>Augmentative Regulative PIRs</u></p> <ul style="list-style-type: none"> State-owned enterprise/institution issued direct subsidies / grants on general fields (e.g., science park issued subsidies) State-owned enterprise/institution issued regulations that offer support on general fields (e.g., new firm regulations) <p><u>Augmentative Reputational PIRs</u></p> <ul style="list-style-type: none"> State-owned enterprise/institution issued rewards on general fields (e.g., incentives for being top-10 high-growth enterprise in a science park) State-owned enterprise/institution issued credentials, certificates and awards on general fields (e.g., award of top-10 high-growth enterprise in a science park) <p><u>Augmentative Embeddedness PIRs</u></p> <ul style="list-style-type: none"> Political embeddedness such as board member / top manager being former or incumbent manager in state-owned enterprise/institution with general function

Moderation by Star Scientists

PIRs, as external institutional resources, may interact with firm resources (Oliver 1997). Since R&D is a critical means of competitive advantage for IT entrepreneurial firms (Li and Atuahene-Gima 2001), we examine the possible interaction between PIRs and R&D resources. One core R&D resource is star scientists, referring to those scientist employees in a firm who make most of the discoveries that defines the technology of the firm (Hess and Rothaermel 2011; Zucker et al. 2002). In this study, we focus on whether star scientists in an incumbent firm have prior working experiences in state-owned organizations before joining the firm. We posit that star scientists' prior experiences in state-owned organizations help to attenuate the negative effects of PIRs, thus representing significant moderation effects on the relationships between PIRs and firm performance.

First, prior experiences of star scientists influence a firm's ability to link the firm to government in terms of reaching agreements on objectives (Allen and Cohen 1969). Star scientists who have worked in state-owned organizations (e.g., public universities) can provide the incumbent firm with critical connectivity to public universities and other sources of upstream knowledge (Arora and Gambardella 1990; Hess and Rothaermel 2011). As state-owned organizations are under control by the government, their objectives are quite aligned with the objectives of government. Hence, star scientists who have worked in state-owned organizations can act as important boundary spanners, integrate external sources of upstream knowledge from state-owned organizations, and help the incumbent firm to better understand the interests of government. As a result, a firm's hiring star scientists with such experiences would result in reduced incongruence of objectives between firms and government, by which it could moderate the effects of PIRs.

Second, prior experiences of star scientists influence the efficiency of information exchange between firms and government (Hess and Rothaermel 2011). There is a mismatch in coding schemes between private firms and government or state-owned organizations, which usually creates communication difficulties between them (Allen and Cohen 1969). It can be alleviated, however, by the use of individuals who are capable of translating between two coding schemes (Allen and Cohen 1969). Star scientists who have worked in state-owned organizations are familiar with the coding scheme of government. They can function as efficient translators between the incumbent firm and government. As a result, a firm's hiring star scientists with such experiences would bridge the varied coding schemes between the incumbent firm and government, by which it could also moderate the effects of PIRs.

Hypotheses

Directive PIRs refer to political institutional resources with specific goals set by the government and tight connections to the government in resource allocation. On the one hand, directive PIRs can boost IT entrepreneurial firm performance. In particular, directive transactional PIRs serve as a stabilizer for IT entrepreneurial firms and help firms to overcome insurmountable handicap of resource deficiency, especially when the government exerts macro-control and allocates resources unfairly (Okhmatovskiy 2010). Directive regulative PIRs help IT entrepreneurial firms to navigate the uncertain waters of policy better (Peng and Luo 2000). Directive reputational PIRs signal reputation and quality which help IT entrepreneurial firms to gain social status (Ahlstrom and Bruton 2010; Yiu and Lau 2008). Directive embeddedness PIRs provide valuable nonbusiness perspectives on intimate knowledge of the public policy process and access to key decision makers in government (Lester et al. 2008). On the other hand, directive PIRs generally impose large incongruence of objectives and heavy interaction with government. In particular, as deciding and allocating directive transactional/ regulative/ embeddedness PIRs are not visible to the public, the government have large latitude. Firms with these three PIRs are vulnerable to great intervention from the government, which restricts firms' autonomy and harms firm performance. These negative impacts would largely counteract the benefits of PIRs and resulting in a negative pattern. Exceptionally, as for directive reputational PIRs, governments in emerging economies usually propagate promising firms as role models. Due to the public visibility of role models, governments are inclined to select firms based on firm quality. This reduces the incongruence of objectives and interaction with government to moderate levels, implying a positive effect of directive reputational PIRs.

Moreover, directive PIRs, by encompassing large incongruence of objectives between government and firms, and by involving heavy interaction with government, will be more harmful to firms that do not have star scientists with prior experiences in state-owned organizations. In contrast, for firms that have star

scientists with prior experiences in state-owned organizations, the negative effects arising from incongruence of objectives and heavy interaction will be attenuated greatly, resulting in more manifested positive effects of PIRs. Hence, we propose:

H1(a,b,d): (a) Directive transactional PIRs, (b) directive regulative PIRs, and (d) directive embeddedness PIRs have a negative effect on IT entrepreneurial firm performance when star scientists do not have prior experiences in state-owned organizations, and a positive relationship when star scientists have such experiences.

H1(c): Directive reputational PIRs have a positive effect on IT entrepreneurial firm performance when star scientists do not have prior experiences in state-owned organizations, and this effect will be stronger when star scientists have such experiences.

Associative PIRs refer to political institutional resources with general goals set by the government and tight connections to the government in resource allocation. On the one hand, associative PIRs boost IT entrepreneurial firm performance by facilitating access to valuable resources controlled by government. On the other hand, associative PIRs generally impose heavy interaction with government but little incongruence of objectives. In particular, associative transactional/ embeddedness PIRs bring the government into firm governance, which impairs firm autonomy in decision making. Such interaction with government will escalate the inefficiency as associative transactional/ embeddedness PIRs increase. When these PIRs exceed some point, the benefits of PIRs will be counteracted to zero and the total profit may turn negative. Hence, we expect an inverted U-shape effect of associative transactional/ embeddedness PIRs on firm performance. Unlike associative transactional/ embeddedness PIRs, associative regulative PIRs imply moderate levels of interaction with government. This is because, in order to make policies generable to firms, the government needs to learn from firms. This dependence of government on firms may motivate the government to be proactive in resource allocation and improve the cumbersome interaction with firms. Hence, we expect a positive effect of associative regulative PIRs on firm performance. In addition, associative reputational PIRs, as explained earlier, imply moderate levels of interaction and hence have a positive effect on firm performance.

Moreover, as associative PIRs encompass small incongruence of objectives between government and firms, the effects of star scientists on incongruent objectives might be trivial. However, associative PIRs, by involving heavy interaction with government, will be less harmful to firms that have star scientists with prior experiences in state-owned organizations, resulting in more benefits stemming from PIRs. Hence, we propose:

H2(a,d): (a) Associative transactional PIRs and (d) associative embeddedness PIRs have an inverted U-shaped effect on IT entrepreneurial firm performance when star scientists do not have prior experiences in state-owned organizations, and a positive relationship when star scientists have such experiences.

H2(b,c): (b) Associative regulative PIRs and (c) associative reputational PIRs have a positive effect on IT entrepreneurial firm performance when star scientists do not have prior experiences in state-owned organizations, and this effect will be stronger when star scientists have such experiences.

Supportive PIRs refer to political institutional resources with specific goals set by the government and loose connections to the government in resource allocation. On the one hand, supportive PIRs boost IT entrepreneurial firm performance by facilitating access to valuable resources that the government has placed under the management of state-owned enterprises/ institutions (Okhmatovskiy 2010). Exceptionally, as for supportive reputational PIRs, the credentials and rewards issued state-owned enterprises/ institutions may be easy to get and not have so significant benefits. On the other hand, supportive PIRs are supposed to impose large incongruence of objectives but light interaction with government. However, as managers from government-affiliated institutions/enterprises are much more business-minded than government officials (Liu and Sun 2005), they will adjust the objectives of resources and reduce the incongruence of objectives between IT entrepreneurial firms and government to moderate levels. This is especially true for supportive transactional/ regulative/ embeddedness PIRs. After these PIRs exceed some point, the disadvantages will be counteracted and the total profit may turn positive. Hence, we expect a U-shape effect of supportive transactional/ regulative/ embeddedness PIRs on firm performance. In addition, due to the trivial advantages and disadvantages of supportive reputational PIRs, they are expected to have no effects.

Moreover, supportive PIRs, by encompassing heavy incongruence of objectives between government and firms, will be less harmful to firms that have star scientists with prior experiences in state-owned organizations, resulting in more benefits stemming from PIRs. Meanwhile, as supportive PIRs involve little interaction with government, the effects of star scientists on interaction with government might be trivial. Hence, we propose:

H3(a,b,d): (a) Supportive transactional PIRs, (b) supportive regulative PIRs, and (d) supportive embeddedness PIRs have a U-shaped effect on IT entrepreneurial firm performance when star scientists do not have prior experiences in state-owned organizations, and a positive relationship when star scientists have such experiences.

H3(c): Supportive reputational PIRs do not effect IT entrepreneurial firm performance when star scientists do not have prior experiences in state-owned organizations, but have a positive effect when star scientists have such experiences.

Augmentative PIRs refer to political institutional resources with general goals set by the government and loose connections to the government in resource allocation. On the one hand, supportive PIRs boost IT entrepreneurial firm performance by facilitating access to valuable resources under the management of state-owned institutions/ enterprises. On the other hand, all augmentative PIRs imply small incongruence of objectives and light interaction with government. Hence, we expect that they all have a positive effect on firm performance, except for augmentative reputational PIRs which may not have significant advantages.

Moreover, as augmentative PIRs encompass small incongruence of objectives between government and firms and little interaction with government, the effects of star scientists on incongruent objectives or interaction with government might be trivial. However, because these two effects of star scientists are in the same direction, the co-presence of them may complement each other and further facilitate enhanced congruence of objectives and interaction with government, resulting in moderation effects of star scientists on augmentative PIRs. Hence, we propose:

H4(a,b,d): (a) Augmentative transactional PIRs, (b) augmentative regulative PIRs, and (d) augmentative embeddedness PIRs have a positive effect on IT entrepreneurial firm performance when star scientists do not have prior experiences in state-owned organizations, and this effect will be stronger when star scientists have such experiences.

H4(c): Augmentative reputational PIRs do not effect IT entrepreneurial firm performance when star scientists do not have prior experiences in state-owned organizations, but have a positive effect when star scientists have such experiences.

Methodology

Published secondary data is under collection. The sample is composed of 191 firms in China's SMEs board and entrepreneurial board market. Firms' prospectus and annual reports will be used. Firm performance is measured by a set of criteria: short-term performance such as IPO success (Gulati and Higgins 2003), and long-term performance such as three-year average ROA and ROS (Hillman 2005). Measurements for PIRs are self-developed based on Table 1. Star scientists' prior experience in state-owned organizations is a dummy variable; 0 equals to no while 1 equals yes. Control variables include firm age, size, revenues, registration location, year dummies, EIRs and SIRs.

Conclusion

This study has important contributions to both theory and practice. First, it contributes to the institution-based view by developing a typology of PIRs according to the characteristics of IT entrepreneurial firms in emerging economies. Second, by elaborating the contingent effects of different types of PIRs on IT entrepreneurial firm performance, it complements the extant literature that mainly suggests a positive effect of PIRs. Third, it lays a good foundation to develop contextualized theories in emerging economies. Fourth, it provides valuable knowledge to IT entrepreneurs as well as governments in emerging economies.

References

- Ahlstrom, D., and Bruton, G.D. 2010. "Rapid Institutional Shifts and the Co-Evolution of Entrepreneurial Firms in Transition Economies," *Entrepreneurship: Theory and Practice* (34:3), pp. 531-554.
- Allen, T., and Cohen, S.I. 1969. "Information Flow in R&D Laboratories," *Administrative Science Quarterly* (14), pp. 12-19.
- Alvarez, S.A., and Barney, J. 1993. "How Entrepreneurial Firms Can Benefit from Alliances with Large Partners," *Academy of Management Executive* (15:1), pp. 139-148.
- Alvarez, S.A., and Barney, J.B. 2004. "Organizing Rent Generation and Appropriation: Toward a Theory of the Entrepreneurial Firm," *Journal of Business Venturing* (19:5), pp. 621-635.
- Arikan, A.M., and Capron, L. 2010. "Do Newly Public Acquirers Benefit or Suffer from Their Pre-Ipo Affiliations with Underwriters and Vcs?," *Strategic Management Journal* (31:12), pp. 1257-1289.
- Arora, A., and Gambardella, A. 1990. "Complementarity and External Linkages: The Strategies of the Large Firms in Biotechnology," *Journal of Industrial Economics* (38), pp. 361-379.
- Barney, J. 1991. "Firm Resources and Sustained Competitive Advantage," *Journal of Management* (17:1), pp. 99-120.
- Blackburn, J.D., Scudder, G.D., and Wassenhove, L.N.V. 1996. "Improving Speed and Productivity of Software Development: A Global Survey of Software Developers," *IEEE Transactions on Software Engineering* (22:12), pp. 875-885.
- Boddeyn, J.J., and Brewer, T.L. 1994. "International Business Political Behavior: New Theoretical Directions," *Academy of Management Journal* (19:1), pp. 119-143.
- Brass, D.J., Galaskiewicz, J., Greve, H.R., and Tsai, W. 2004. "Taking Stock of Networks and Organizations: A Multilevel Perspective," *Academy of Management Journal* (47), pp. 795-817.
- Bruton, G.D., and Ahlstrom, D. 2003. "An Institutional View of China's Venture Capital Industry: Explaining the Differences between China and the West," *Journal of Business Venturing* (18), pp. 233-259.
- Bruton, G.D., Ahlstrom, D., and Obloj, K. 2008. "Entrepreneurship in Emerging Economies: Where Are We Today and Where Should the Research Go in the Future," *Entrepreneurship: Theory and Practice* (32:1), pp. 1-14.
- Bruton, G.D., Ahlstrom, D., and Puky, T. 2009. "Institutional Differences and the Development of Entrepreneurial Ventures: A Comparison of the Venture Capital Industries in Latin America and Asia," *Journal of International Business Studies* (40), pp. 762-778.
- Carter, R., and Manaster, S. 1990. "Initial Public Offerings and Underwriter Reputation," *Journal of Finance* (45:4), pp. 1045-1067.
- Chan, C., Isobe, T., and Makino, S. 2008. "Which Country Matters? Institutional Development and Foreign Affiliate Performance," *Strategic Management Journal* (29:11), pp. 1179-1205.
- Czarnitzki, D., Hanel, P., and Rosa, J.M. 2010. "Evaluating the Impact of R&D Tax Credits on Innovation: A Microeconomic Study on Canadian Firms," *Research Policy* (In press), pp. 1-13.
- Djankov, S., La Porta, R., Lopez-De-Silanes, F., and Shleifer, A. 2002. "The Regulation of Entry," *The Quarterly Journal of Economics* (117:1), pp. 1-37.
- Eisenhardt, K.M., and Schoonhoven, C.B. 1996. "Resource-Based View of Strategic Alliance Formation: Strategic and Social Effects in Entrepreneurial Firms," *Organization Science* (7:2), pp. 136-150.
- Gulati, R., and Higgins, M.C. 2003. "Which Ties Matter When? The Contingent Effects of Interorganizational Partnerships on Ipo Success," *Strategic Management Journal* (24), pp. 127-144.
- Hess, A.M., and Rothaermel, F.T. 2011. "When Are Assets Complementary? Star Scientists, Strategic Alliances, and Innovation in the Pharmaceutical Industry," *Strategic Management Journal* (32), pp. 895-909.
- Heugens, P.P., and Lander, M. 2009. "Structure! Agency! (and Other Quarrels): Meta-Analyzing Institutional Theories of Organization," *Academy of Management Journal* (52:1), pp. 61-85.
- Hillman, A.J. 2005. "Politicians on the Board of Directors: Do Connections Affect the Bottom Line?," *Journal of Management* (31), pp. 464-481.
- Hoskisson, R.E., Eden, L., Lau, C.M., and Wright, M. 2000. "Strategy in Emerging Economies," *Academy of Management Journal* (43:3), pp. 249-267.

- Ingram, P., and Silverman, B. 2002. "Introduction," in *The New Institutionalism in Strategic Management*, P. Ingram and B. Silverman (eds.). Amsterdam: Elsevier, pp. 1-30.
- Jong, G.d., Tu, P.A., and Ees, H.v. 2010. "Which Entrepreneurs Bribe and What Do They Get from It? Exploratory Evidence from Vietnam " *Entrepreneurship: Theory and Practice* (35:2), pp. 1-23.
- Kernaghan, K. 2003. "Integrating Values into Public Service: The Values Statement as Centerpiece," *Public Administration Review* (63:6), pp. 711-719.
- Kolb, R. 2010. "The Need for Speed: Releasing Products Earlier Using Software Product Lines," *IEEE Software* (27:3).
- Lee, C., Lee, K., and Pennings, J.M. 2001. "Internal Capabilities, External Networks, and Performance: A Study on Technology-Based Ventures," *Strategic Management Journal* (22), pp. 615-640.
- Lee, S.S., and Osteryoung, J.S. 2001. "A Comparison of Determinants for Business Start-up in the U.S. And Korea," *Journal of Small Business Management* (39:2), pp. 193-200.
- Lester, R.H., Hillman, A.J., Zardkoohi, A., and Cannella, A.A. 2008. "Former Government Officials as Outside Directors: The Role of Human and Social Capital," *Academy of Management Journal* (51), pp. 999-1013.
- Li, D., Eden, L., Hitt, M.A., and Ireland, R.D. 2008. "Friends, Acquaintances, or Strangers? Partner Selection in R&D Alliances," *Academy of Management Journal* (51:2), pp. 315-334.
- Li, H., and Atuahene-Gima, K. 2001. "Product Innovation Strategy and the Performance of New Technology Ventures in China," *Academy of Management Journal* (44:6), pp. 1123-1134.
- Li, H., and Zhang, Y. 2007. "The Role of Managers' Political Networking and Functional Experience in New Venture Performance: Evidence from China's Transition Economy," *Strategic Management Journal* (28), pp. 791-804.
- Liu, G.S., and Sun, P. 2005. "Ownership and Control of Chinese Public Corporations: A State-Dominated Corporate Governance System," in *Corporate Governance*, K. Keasey, S. Thompson and M. Wright (eds.). Chichester: John Wiley and Sons, pp. 389-414.
- Luo, Y. 2003. "Industrial Dynamics and Managerial Networking in an Emerging Market: The Case of China," *Strategic Management Journal* (24:13), pp. 1315-1327.
- Lux, S., Crook, T.R., and Woehr, D.J. 2011. "Mixing Business with Politics: A Meta-Analysis of the Antecedents and Outcomes of Corporate Political Activity," *Journal of Management* (37:1), pp. 223-247.
- Mahmood, I.P., and Rufin, C. 2005. "Government's Dilemma: The Role of Government in Imitation and Innovation," *Academy of Management Review* (30:2), pp. 338-360.
- Mahoney, J.T., McGahan, A.M., and Pitelis, C.N. 2009. "The Interdependence of Private and Public Interests," *Organization Science* (20:6), pp. 1034-1052.
- Makino, S., Isobe, T., and Chan, C. 2004. "Does Country Matter?," *Strategic Management Journal* (25:10), pp. 1027-1043.
- McMillan, J. 2007. "Market Institutions," in *The New Palgrave Dictionary of Economics (2nd Ed.)*, L.B.a.S. Durlauf (ed.). London: Palgrave.
- Mendelson, H., and Pillai, R.R. 1998. "Clockspeed and Informational Response: Evidence from the Information Technology Industry," *Information Systems Research* (9:4), pp. 415-433.
- Meyer, K.E. 2006. "Asian Management Research Needs More Self-Confidence," *Asia Pacific Journal of Management* (23), pp. 119-137.
- Miller, D., and Friesen, P.H. 1982. "Innovation in Conservative and Entrepreneurial Firms: Two Models of Strategic Momentum," *Strategic Management Journal* (3), pp. 1-25.
- Mingo, S. 2009. "Essays on Industrial Policy, Strategy, and Entrepreneurship," in: *Graduate School of Business Administration*. Boston, Massachusetts: Harvard University, p. 163.
- Moore, M.H. 1995. *Creating Public Value: Strategic Management in Government*. London, England: Harvard University Press.
- North, D. 1990. *Institutions, Institutional Change and Economic Performance*. New York: Cambridge University Press.
- Okhmatovskiy, I. 2010. "Performance Implications of Ties to the Government and Soes: A Political Embeddedness Perspective," *Journal of Management Studies* (47:6), pp. 1020-1047.
- Oliver, C. 1997. "Sustainable Competitive Advantage: Combining Institutional and Resource-Based Views," *Strategic Management Journal* (18:9), pp. 697-713.
- Park, S.H., and Luo, Y. 2001. "Guanxi and Organizational Dynamics: Organizational Networking in Chinese Firms," *Strategic Management Journal* (29), pp. 455-477.

- Peng, M.W., and Heath, P.S. 1996. "The Growth of the Firm in Planned Economies in Transition: Institutions, or- Ganizations, and Strategic Choice," *Academy of Management Review* (21), pp. 492-528.
- Peng, M.W., and Luo, Y. 2000. "Managerial Ties and Firm Performance in a Transition Economy: The Nature of a Micro-Macro Link," *Academy of Management Journal* (43:3), pp. 486-501.
- Peng, M.W., Sun, S.L., Pinkham, B., and Chen, H. 2009. "The Institution-Based View as a Third Leg for a Strategy Tripod," *Academy of Management Perspectives* (23:4), pp. 63-81.
- Peng, M.W., Wang, D.Y.L., and Jiang, Y. 2008. "An Institution-Based View of International Business Strategy: A Focus on Emerging Economies " *Journal of International Business Studies* (39), pp. 920-936.
- Peng, M.W., and Zhou, J.Q. 2005. "How Network Strategies and Institutional Transitions Evolve in Asia," *Asia Pacific Journal of Management* (22:4), pp. 321-336.
- Porter, M.E. 1980. *Competitive Strategy*. New York: Free Press.
- Ring, P.S., Bigley, G., D'Aunno, T., and Khanna, T. 2005. "Perspectives on How Governments Matter," *Academy of Management Review* (30), pp. 308-320.
- Rose, J. 2010. *Software Innovation - Eight Work-Style Heuristics for Creative System Developers*. http://www.lulu.com/items/volume_68/8174000/8174329/5/print/SI_book_beta_bw.pdf.
- Schlevogt, K.A. 2001. "Institutional and Organizational Factors Affecting Effectiveness: Geoeconomic Comparison between Shanghai and Beijing," *Asia Pacific Journal of Management* (18), pp. 519-551.
- Scott, W.R. 1995. *Institutions and Organizations (Foundations for Organizational Science)*, (1st ed.). Thousand Oaks, CA: Sage Publications.
- Scott, W.R. 2008. *Institutions and Organizations: Ideas and Interests (3rd Ed.)*. Thousand Oaks, CA: Sage.
- Shane, S., and Venkataraman, S. 2000. "The Promise of Entrepreneurship as a Field of Research," *Academy of Management Review* (25), pp. 217-226.
- Shleifer, A., and Vishny, R. 1998. *The Grabbing Hand: Government Pathologies and Their Cures*. Cambridge, MA: Harvard University Press.
- Souza, G.C., Bayus, B.L., and Wagner, H.M. 2004. "New-Product Strategy and Industry Clockspeed," *Management Science* (50:4), pp. 537-549.
- Stuart, T.E. 2000. "Interorganizational Alliances and the Performance of Firms: A Study of Growth and Innovation Rates in a High-Technology Industry," *Strategic Management Journal* (21:8), pp. 791-811.
- Stuart, T.E., Hoang, H., and Hybels, R.C. 1999. "Interorganizational Endorsements and the Performance of Entrepreneurial Ventures," *Administrative Science Quarterly* (44:2), pp. 315-349.
- Sun, P., Mellahi, K., and Thun, a.E. 2010. "The Dynamic Value of Mne Political Embeddedness: The Case of the Chinese Automobile Industry," *Journal of International Business Studies* (41), pp. 1161-1182.
- Tan, J.J., and Litschert, R.J. 1994. "Environment-Strategy Relationship and Its Performance Implications: An Empirical Study of the Chinese Electronics Industry," *Strategic Management Journal* (15), pp. 1-20.
- Tsui, A.S. 2007. "From Homogenization to Pluralism: International Management Research in the Academy and Beyond," *Academy of Management Journal* (50:6), pp. 1353-1364.
- Walsham, G., Robey, D., and Sahay, S. 2007. "Foreword: Special Issue on Information Systems in Developing Countries," *MIS Quarterly* (31:2), pp. 317-326.
- Xin, K.R., and Pearce, J.L. 1996. "Guanxi: Connections as Substitutes for Formal Institutional Support," *Academy of Management Journal* (39:6), pp. 1641-1658.
- Yiu, D.W., and Lau, C.-M. 2008. "Corporate Entrepreneurship as Resource Capital Configuration in Emerging Market Firms," *Entrepreneurship: Theory and Practice* (32:1), pp. 37-57.
- Zahra, S.A., and Nielsen, A.P. 2002. "Sources of Capabilities, Integration and Technology Commercialization," *Strategic Management Journal* (23), pp. 377-398.
- Zucker, L.G., Darby, M.R., and Armstrong, J.S. 2002. " Commercializing Knowledge: University Science, Knowledge Capture, and Firm Performance in Biotechnology," *Management Science* (48), pp. 138-153.

