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The role of state ownership and institutions in the innovation performance of emerging market enterprises: Evidence from China

Jingtao Yi[a], Junjie Hong[b], Wen chung Hsu[c,*], Chengqi Wang[d]

[a] School of Business, Renmin University of China, Beijing 100872, PR China
[b] School of International Trade & Economics, University of International Business and Economics, Beijing, PR China
[c] Department of International Business Studies, National Chi Nan University, No. 470, University Road, Puli, Nantou 54501, Taiwan
[d] Nottingham University Business School, Jubilee Campus, Nottingham NG8 1BB, United Kingdom

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ABSTRACT

Although it has been suggested that institutional context influences a firm's innovation performance, the role of regulatory institutions has been underexplored. Extending previous research, this study investigates whether and how regulatory institutions (i.e. state ownership, region-specific marketization and industry-specific institutional policy) affect innovation performance of emerging market enterprises (EMEs). Evidence derived from a large sample of Chinese manufacturing firms demonstrates that state ownership positively moderates the effect of R & D intensity on innovation performance. However, state ownership is not equally beneficial for all firms. Our analysis shows that region-specific marketization and industry-specific institutional policy enhance the innovation-enhancing effect of state ownership. By revealing the role of regulatory institutions, our study points to the importance of looking beyond firm boundaries to understand why EMEs are able to innovate despite their weak internal capabilities.

1. Introduction

This paper studies how institutional forces affect innovation of firms in emerging markets. Emerging market enterprises (EMEs) have significantly improved their technological capabilities in recent years and are increasingly relying on technological innovation to compete in the global marketplace (Wu et al., 2016; Yi et al., 2013). The Chinese company Huawei, for example, is ranked 17th in the world in terms of the number of patents granted in 2013. Because these firms traditionally do not possess strong internal capabilities (Wang et al., 2012b; Hong et al., 2015), which according to the Schumpeterian view (Schumpeter, 1942) are critical for developing innovation, the emergence of EMEs as innovators raises the following question: What is the role of institutions in EMEs' innovation given that unlike their counterparts in developed countries these firms cannot generally rely on internal capabilities to innovate and also operate in weak regimes of intellectual property rights (IPRs) that often cannot effectively protect innovation? The theoretical significance of this research question derives largely from the importance of understanding the sources of competitive advantages that enable EMEs to develop innovation. In this study, we argue that regulatory institutions at the firm- (namely, state ownership), region- (namely, marketization) and industry-(namely, industry policy) levels compensate for the weak capabilities of EMEs, enabling them to enhance innovation performance.

Our study advances the literature on innovation in emerging markets in two ways. First, while prior studies have focused on the (direct) effect of state ownership on EMEs' innovation (e.g., Choi et al., 2011; Ren et al., 2005), it remains unclear how state ownership affects innovation performance by moderating the effect of R & D intensity of the firm. It is both theoretically and empirically well established that a firm's internal R & D has a positive effect on innovation performance (Schumpeter, 1942; Kafouros et al., 2008; Wang and Kafouros, 2009). It is also well recognized that government as a key shareholder in state owned enterprises (SOEs) plays an important role in developing innovative activities in emerging markets (Mahmood and Rufin, 2005). However, little is known about how state ownership and R & D intensity interact to shape a firm's innovativeness in emerging markets. This research gap is significant because it limits our understanding of the mechanisms through which state ownership influences the relationship between R & D intensity and innovation performance. Viewing it as a firm level innovation-supporting institution (Cui and Jiang, 2012), we argue that state ownership acts as a moderating mechanism in the relationship between R & D intensity and innovation performance. Our approach enables us to explain how internal capabilities and firm-

* Corresponding author.
E-mail addresses: jingtaoyee@hotmail.com (J. Yi), hongjunjie@uibe.edu.cn (J. Hong), wchsu@ncnu.edu.tw (W.c. Hsu), chengqi.wang@nottingham.ac.uk (C. Wang).

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specific institutional idiosyncrasies jointly shape the innovation outcomes of Chinese firms.

Second, previous studies in the subject area have ignored how institutional variations across subnational regions and industries influence the relationship between state ownership and innovation (e.g., Jefferson et al., 2006; Sun and Du, 2010). These studies often implicitly assume that the effect of state ownership on innovation remains similar across different subnational locations and industries within a given country (Li and Tellis, 2016; Yi et al., 2013; Wang et al., 2015b). Because large emerging countries such as China exhibits significant variations in institutional development across subnational regions (Kafouros et al., 2015) which constitute sources of different competitive advantages and institutional pressures on firms (Hermelo and Vassolo, 2010), it is essential not to merely focus on national level institutions and instead to examine the effect of region-level institutional context on firms' innovation performance. We address this lacuna in research and advance the premise that significant institutional variations across regions and industries within a given nation may have a profound impact on the effect of state ownership. Hence, rather than assuming that state ownership is equally beneficial for all firms, we propose that this effect varies depending on location- and industry-specific regulatory institutions, namely, the level of region-specific marketization and industry-specific policy.

Furthermore, although previous studies suggest that institutions influence the availability and cost of innovation inputs and appropriation of value from innovation (e.g., Lu et al., 2008), these studies have not focused on a specific type of institutions and under-theorize the role of regulatory institutions. Building upon prior literature, we specifically account for the effects of regulatory institutions (i.e. state ownership, region-specific institutions and industry-specific institutional policy) which are considered as a key discriminating factor of the success of innovation and entrepreneurial efforts (Mahmood and Rufin, 2005). We contend that, although it is often argued that emerging markets feature institutional voids (Khanna and Palepu, 1997) that may constrain firms' innovative activities, the regulatory environment, particularly government-related institutions, provide distinctive potential for EMEs to pursue nonmarket-based strategies (Hermelo and Vassolo, 2010) and develop innovation.

Our arguments are tested on a sample of 193,506 Chinese firms during 2005–2007. The results indicate that state ownership positively moderates the effect of R & D intensity on innovation performance. Furthermore, region-specific marketization and industry-specific institutional policy enhance the effect of state ownership on innovation performance. These findings highlight the role of regulatory institutions in EMEs' innovation performance and thus provide a novel institution-based explanation for why many capability-constrained EMEs have grown in recent years as innovators.

2. Theoretical framework and hypotheses

2.1. The effects of institutions on innovation

It is well acknowledged that institutional context–defined as the environment that comprises social forms of the economic and political system, created and also used by various actors in a society (Turner, 2006; Fligstein, 2001), influences firms' innovation performance (Mahmood and Rufin, 2005; Wang et al., 2015b). Institution theory suggests that a firm's strategy and behavior is the result of, or response to, a particular institutional context in which a firm is embedded (Alvi, 2012; Scott, 1995). Institutional context influences innovation by defining opportunities, by reducing the unknown, and by increasing or decreasing costs of economic exchanges (North, 1990). For example, institutional factors such as factor markets and protection of IPRs can influence the availability and cost of innovation inputs as well as the protection of innovation outputs (Wang et al., 2015b).

Institutional context has three key dimensions — regulative, normative, and cognitive rules (Scott, 1995). While the role of these three types of institutions is often empirically indistinguishable (DiMaggio and Powell, 1983), it is important to focus on key institutional dimensions which influence the phenomena under study (Kostova and Roth, 2002). Despite market-oriented reforms, Chinese firms still operate in highly regulated environments characterized by high levels of state ownership and strong government institutions (Hong et al., 2015). We therefore focus our attention on the role of the regulatory pillar within which government related institutions and policy represent a strong institutional logic (Alford and Friedland, 1985) and constitute key institutional aspects governing business transactions (Whitley, 1999). In this study, we examine the role of state ownership, region-specific marketization and industry-specific institutional policy in EMEs' innovation performance. These three constructs are closely related to, or are manifestations of, government policy, regulations and laws, and are therefore important regulatory institutions in the light of Scott (1995). For example, because SOEs are, by definition, assets of governments and state ownership is inextricably associated with government policy, regulations and laws, they are in fact integral elements of their country's regulatory environment (Cui and Jiang, 2012; Tõnurist, 2015).

State ownership influences innovation in two important ways. First, government as a shareholder of SOEs exerts various institutional pressures on firms that can influence the *incentives* and *ability* of firms to *develop* innovation. For example, the Chinese government formally introduced the policy of 'indigenous innovation' as part of China's national strategy in 2005 (Bichler and Schmidkonz, 2012: 2). Such regulatory pressures might be higher for SOEs than for other firms because these firms have a greater need to conform to institutional prescriptions (Baum and Oliver, 1991) and serve government objectives (Tõnurist, 2015; Wang et al., 2012b). Such institutional forces also influence firms' ability to develop innovation because firms that conform to such institutional pressures can enjoy a higher level of legitimacy and sociopolitical approval (Aldrich and Fiol, 1994). This in turn helps them create innovation by reducing regulatory uncertainty, securing scarce resources in the quasi-market economy and mitigate agency problems (Shleifer and Vishny, 1998). By contrast, because their relative lack of legitimacy and sociopolitical approval, non-state Chinese firms may be unable to obtain access or have to pay a market price for such resources, which hampers their innovation efforts.

Second, state ownership also affects firms' *ability* to *appropriate* value from innovation. Although IPR protection is a critical element of the regulatory environment for innovation (Bouet, 2015; Zobel et al., 2017), its enforcement in emerging markets is weak and often depends on the status of the firm (Li et al., 2004). State ownership may protect the firm in cases where IPR laws are weakly enforced. Because governments can provide exclusive endorsements and favorable treatment (Sheng et al., 2011), SOEs often receive stronger protection of IPRs (Wang et al., 2012b), enabling them to better appropriate the value of innovation. By contrast, although non-state firms such as private firms may have internal and other external mechanisms to address such agency problems, they suffer from discrimination and have difficulties in protecting and benefiting from their innovations.

Differences in innovation-supporting institutions exist not only between but also within countries (Nelson, 1993). Regions within China differ significantly in the extent to which government is involved in the coordination of economic actors (Hong et al., 2015). Hence, regulatory institutions vary across subnational regions of China. Similarly, the transitional nature of the Chinese economy presents considerable inter-industry variations of key institutional attributes such as government control and industry policy (Wang et al., 2009). These variations arise partly because the Chinese government often formulates industry-specific science and technology policies (Choi et al., 2011) and provides preferential support for the development of high-tech industries. These cross-region and industry differences imply