Geoforum 75 (2016) 148–158

Contents lists available at ScienceDirect

Geoforum

journal homepage: www.elsevier.com/locate/geoforum

The rise of venture capital centres in China: A spatial and network analysis

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ARTICLE INFO

Article history:
Received 27 November 2015
Received in revised form 12 July 2016
Accepted 19 July 2016

Keywords:
Venture capital
Initial public offering
Institutional context
Beijing
Shenzhen
Shanghai

ABSTRACT

Due to the importance of venture capital (VC) firms in spurring regional economic growth, the geography of VC firms and VC investments have attracted a lot of attention. However, the spatial patterns of cross-regional VC flows have rarely been explored, particularly in the context of emerging economies. Drawing on a unique dataset on VC firms and investments related to domestic initial public offerings (IPOs), this study combines location analysis with network analysis to investigate the spatial patterns of VC activities in China. The results confirm that Beijing, Shenzhen and Shanghai are the leading VC centres in the country. Although Yangtze Delta Area hosts the largest number of investments, Beijing and Shenzhen have a considerable advantage over Shanghai in terms of the number of VC firms, investments, and the number of domestic VC-backed IPOs. Beijing and Shenzhen also appear more central than Shanghai in China's VC networks, with Beijing-Shenzhen representing the most important city-dyad in terms of VC investment flows. The article explains how the dynamics of the VC centres is embedded in China's institutional and cultural context, critical to understanding the evolution and geography of China's VC industry.

1. Introduction

Due to the importance of venture capital (VC) firms in spurring high-tech industries and regional economic growth, the geography of VC firms and VC investments have attracted a lot of research (Florida and Smith, 1993; Florida and Kenney, 1988; Mason and Harrison, 2002; Schwartz and Bar-El, 2007; Zhang, 2011; Martin et al., 2005, 2002; Mason and Pierrakis, 2013; Fritsch and Schilder, 2012; Sorenson and Stuart, 2001). It has been documented that VC activities are highly agglomerated in selected regions of a country. For example, VC firms and companies backed by VC firms in the US are extremely concentrated in San Jose-San Francisco, New York and Boston (Lerner, 2010; Florida and Smith, 1993; Sorenson and Stuart, 2001). Similarly, VC firms and investments are concentrated in the Greater London and South East of the UK (Martin et al., 2005; Mason and Harrison, 2002). A study on China finds that VC activities are highly concentrated in Beijing, Shanghai and Shenzhen (Zhang, 2011).

Existing studies identify the national VC centres, in which VC firms and portfolio companies they invest in are geographically co-located. The co-location of VC firms and the invested companies has largely been explained with the benefits of geographical proximity helping to reduce information asymmetry and transaction costs (Zook, 2002; Florida and Smith, 1993). For targets further away, VC firms often overcome the friction of distance by co-operating with VC firms located close to the target through a process called syndication (Fritsch and Schilder, 2012; Sorenson and Stuart, 2001). Despite the proximity preference, the cross-regional investments still account for a large proportion of all VC investments. For instance, there were substantial VC flows from New York and Chicago to high-technology regions in other parts of the country (Florida and Smith, 1993), and as much as 57% of all VC investments in the US represented cross-regional flows (Chen et al., 2010).

Beyond works on syndication, few studies consider cross-regional flows of information and capital involved in venture capital deals. While the local bias and proximity preference of VC firms have been well understood (Chen et al., 2010), the patterns of cross-regional VC flows have rarely been studied, though they are crucial to understanding VC activities. For example, it is important to know how urban and regional centres of VC are connected with other regions and how they interact with each other. One key concern of existing studies on the geography of VC investments has been the regional disparity in VC activities and the related policy

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http://dx.doi.org/10.1016/j.geoforum.2016.07.013
0016-7185/

interventions (Martin et al., 2002; Mason and Pierrakis, 2013). Understanding the spatial behavior of VC firms in cross-regional investments is key to designing such interventions.

Following studies on city networks (Taylor et al., 2014b, 2002; Derudder et al., 2010, 2003; Taylor and Aranya, 2008; Taylor, 2005), the methodology of urban network analysis could be applied to map and analyze the cross-regional behavior of VC firms as inter-city investments account for a large proportion of VC activities. As pointed out by Taylor et al. (2014b), strategic places can be defined through strategic networks. Thus, the importance of a VC centre is not solely determined by the VC activities occurring within the city, but is also determined by how the city is connected with other cities with regard to VC flows. In addition, city-dyad analysis (Taylor et al., 2014a) could also be used to enhance our understanding of the VC behaviors across cities and regions.

The development of VC industry is embedded in the institutional and cultural context of an economy. Previous studies on China have emphasized the unique institutional and cultural factors that have influenced the development of VC industries (Zhang, 2011; Batjargal, 2007; Ahlstrom et al., 2007; Kambil et al., 2006; White et al., 2005). For instance, it was pointed out that geographical proximity in China might be more important in VC practices as the achievement of a VC investment needs frequent personal interactions to build up and cultivate social capital or *guanxi* (Zhang, 2011; Batjargal, 2007; Kambil et al., 2006). However, how the institutional and cultural context in China have affected the spatial pattern and networks of VC flows in China remains understudied. Given that state still plays a key role in China's economy, this study seeks to provide institutional explanations on the geography of VC activities, and in particular, the rise and dynamics of Beijing, Shenzhen and Shanghai as key centres of China's VC industry. Does China display similar patterns of concentration and cross-regional cooperation in VC activities as the US or UK do? Do particular institutional features explain the distribution of VC activities in China? Drawing on a unique dataset on China's VC firms and their portfolio companies listed on domestic stock exchanges, this study seeks to answer the above questions by combining the location analysis with network analysis. The rest of the paper is organized as follows. The second section briefly introduces the recent boom of VC industry in China, driven primarily by the establishments of two new stock market platforms. The third section describes the data and methodology followed by a section portraying the geography of VC firms and VC investments. The fifth section maps the networks of VC flows across regions. The sixth section provides an institutional explanation of the dynamics of leading VC centres. The last section concludes the paper.

2. Evolution of VC firms in China's institutional context

As an emerging economy, China has experienced a dramatic growth in VC industry in the last decade becoming the second largest VC market across the world (Zhang, 2011). However, domestic VC firms were not quite successful in early years due to the lack of divestment channels. Domestic VC firms started to grow quickly after the establishment of the Small and Medium-Sized Enterprise Board (SMEB) in 2004. The booming of domestic VC firms and the geography of the industry have been shaped by a unique institutional context.

2.1. Slow development of domestic VC firms in early years

China started to develop its VC industry in the 1980s, though at a very slow pace (Ahlstrom et al., 2007). Not surprisingly, governments were highly involved in setting up VC firms. For instance, the National Research Centre of Science and Technology for Development was established in 1984 aimed at developing high-tech industries (White et al., 2005). More venture capital firms backed by state and local government were set up in the 1990s, most of them in national high-tech industry parks across the country (Ahlstrom et al., 2007). However, the development of domestic VC was stifled due to the lack of divestment opportunities, with no Nasdaq-like segment on the Chinese stock market (White et al., 2005).

In contrast to domestic VC firms, foreign VC firms in China experienced rapid growth in the late 1990s and early 2000s, highly related to the strong stock market performance in the US (Pukthuanthong and Walker, 2007). Many foreign VC firms that invested in Internet-related portfolio companies successfully exited via IPOs on overseas stock exchanges (Pan and Brooker, 2014; Zhang, 2008, 2013; Batjargal, 2007). During that period, foreign VC firms found that "big deals with big payoffs are easy to find" (Bloomberg, 2004).[1] However, domestic VC firms had no access to IPO channels on either foreign or domestic stock exchanges (White et al., 2005). Many successful listings on overseas stock exchanges motivated China's policy makers to launch its own Nasdaq-like stock market segment (Pan and Brooker, 2014). During this period, active foreign VC activities were extremely concentrated in several metropolitan areas in east China (Pukthuanthong and Walker, 2007).

2.2. Boom of domestic VC firms after the launch of the new markets

China planned to establish Nasdaq-like stock markets from the late 1990s. It was expected that the second board would be set up in Shenzhen in 2000[2] (China Daily, 2004). However, the bust of the dot.com bubble in the US's capital market delayed this development. In 2004, the SMEB was finally launched, providing an opportunity for domestic VC firms to divest in their portfolio firms through an IPO. The establishment of Chinext in Shenzhen in 2009 was another huge incentive for domestic VC industry. Prior to the launch of the SMEB, the central government used China's stock market to help capitalize and improve transparency of the state-owned firms (Green, 2004; Walter and Howie, 2003). Most firms that conducted IPOs on domestic stock exchanges in this period were state-owned and VC firms rarely had a chance to invest in them. Though the SMEB and Chinext have strict financial requirements for IPO candidates, the launch of the two new boards have become a fundamental driver for the booming domestic VC industry. From then on, domestic IPO has become a major way for domestic VC firms to exit from their investments in China.

Not surprisingly, state-owned VC firms have become dominant in the rapid growth of domestic VC industry since about 2004. In China, the government is highly involved in the economic governance (Naughton, 2011) and plays a significant role in financing[3] (China Daily, 2011). In particular, China has a tradition in setting up government-financed VC firms to support start-ups (White et al., 2005). Domestic VC firms were largely controlled by government bodies at central, regional and local levels, large SOEs or state-owned universities (White et al., 2005). In the meantime, privately-owned VC firms were also emerging, including spin-offs and spin-outs from established VC firms, stock-exchange listed firms and those set up by former government officials.

2.3. IPO regulation system and the role of VC firms in the IPO process

Existing studies demonstrate that VC firms may play a critical role in the IPO process (Gompers, 1996; Gulati and Higgins,

[1] http://www.bloomberg.com/bw/stories/2004-03-21/venture-capitalists-catch-china-fever.

[2] http://www.china.org.cn/english/BAT/98542.htm.

[3] http://www.chinadaily.com.cn/kindle/2011-07/15/content_12911473.htm.