



Network configurations and R&D activities of the ICT industry in Suzhou municipality, China

Y.H. Dennis Wei^{a,*}, Ingo Liefner^b, Chang-Hong Miao^c

^a Department of Geography and Institute of Public and International Affairs, University of Utah, 260 S. Central Campus Dr. Rm. 270, Salt Lake City, UT 84112-9155, United States

^b Justus Liebig University Giessen, Senckenbergstr. 1, 35390 Giessen, Germany

^c Center for Yellow River Civilization and Sustainable Development & College of Environment and Planning, Henan University, Kaifeng 475001, China

ARTICLE INFO

Article history:

Received 21 November 2008

Received in revised form 8 March 2011

Available online 25 June 2011

Keywords:

Globalization

ICT industry

Innovation

Regional development

China

ABSTRACT

This paper analyzes the network structure and R&D activities of the information and communication technology (ICT) industry in Suzhou municipality, known previously for its local state-directed Sunan model of development. Suzhou, however, has been undergoing dramatic restructuring to remake itself into a globalizing production center. We highlight the significance of the Chinese state and local/regional assets in shaping the trajectories of globalization and regional development, and the increasing importance of domestic markets and regional clusters/agglomeration for foreign ventures. We have found that Suzhou's development path, heavily dependent on external forces, has made Suzhou a TNC (transnational corporation) satellite district. We also find that the ICT industry in Suzhou has a dual-structure, segmented between foreign-invested enterprises (FIEs) and domestic firms. TNCs tend to network among themselves and their interfirm networks are increasingly domestic and regionally embedded in the Yangtze River Delta, while the linkages between TNCs and local firms are weak. We argue that there is a series of technological, structural, spatial, and institutional "mismatches" that limits the establishment of "global pipelines" of knowledge exchange. We hold that the nature of global–local networks is contingent upon regional endogenous capacities and the specific ways in which global capital interacts with local institutions. Therefore, perspectives on TNCs' local embeddedness must be positioned in their regional/external networks. We also analyze the constraints placed on Suzhou's development into an innovative city and promote the integration of global and local/regional assets through development of indigenous capacities.

© 2011 Elsevier Ltd. All rights reserved.

1. Introduction

Through its mass production of low value added products such as toys, shoes, and clothes, China has come to be known as the global manufacturing floor or the world's factory. Despite the fact that China is often blamed for job losses, trade deficits and currency manipulation, "Made in China" does not actually challenge the structure of global value chains because developed countries remain the innovators and commanders of the world economy (Froebel et al., 1980). However, China is not satisfied with "Made in China" and has intensified its effort towards "Innovated in China" (Rowen et al., 2008). China has quickly become both one of the world's largest and most rapidly growing producers and consumers in the information and communication technology (ICT) sector. China's effort in knowledge production

echoes the drive of East Asia towards the knowledge economy, which is considered the second round of East Asian development (Yusuf and Evenett, 2002). China's pathways to globalization, innovation and development also have strong theoretical implications for global–local linkages, technological progress, and regional development (e.g., Dicken, 2003; Coe et al., 2004; Wei, 2007).

However, China's achievement towards "Innovated in China" might be exaggerated since the existing knowledge is largely based on Beijing's Zhongguangcun Science Park, referred to as China's "Silicon Valley", and to a lesser extent Shanghai, the core of the Yangtze River Delta (YRD). The YRD is a major center for the ICT industry in China and has empowered the rise of Shanghai. Suzhou, a secondary city in the YRD, is an ancient city of China and known for its Sunan model of development centered on township and village enterprises (TVEs). With the failure of TVEs, the Suzhou government has implemented a series of policies to transform Suzhou into a major destination of FDI, and a rapidly growing manufacturing center. Suzhou's significance in global production has been coined "the Suzhou Price" (Ross, 2006).

* Corresponding author. Tel.: +1 801 581 8218; fax: +1 801 581 8219.

E-mail addresses: wei@geog.utah.edu (Y.H. Dennis Wei), Ingo.Liefner@geogr.uni-giessen.de (I. Liefner), chhmiao@yahoo.com.cn (C.-H. Miao).

This paper analyzes the development and structure of the ICT industry in China through a study of Suzhou Municipality, one of China's leaders in ICT industrial development, with an emphasis on the global–local networks in production and R&D activities. Specifically, we investigate Suzhou's pathway to regional development, the structure of foreign direct investment (FDI) and the ICT industry, and the nature of global–local networks. We ask: (1) What are the structural characteristics of ICT industrial development and innovative activities in Suzhou? (2) What is the nature of global–local linkages and how embedded are transnational corporations (TNCs) in local economies? (3) How structurally different are foreign and domestic firms in R&D activities and what are the effects of TNCs on local R&D activities? (4) What are the constraints on local innovation, and what are the implications of Suzhou's experiences for the trajectories of technological progress and regional development? We also discuss the constraints placed on embedding TNCs and developing Suzhou into an innovative city. We study the ICT sector because it is one of the most globalized, innovative and dynamic industries (Yusuf and Evenett, 2002) and one of the fastest growing industries in China. We examine the ways in which forces of global capital intersect with China's local institutions and places at the sub-national scale.

We argue that Suzhou's development path, heavily dependent on external forces, has made Suzhou a TNC satellite district; that the ICT industry in Suzhou has a dual-structure, segmented between foreign ventures and domestic firms; and that TNCs tend to network among themselves and that the linkages between TNCs and local firms remain weak. We also argue that there is a series of technological, structural, spatial, and institutional “mismatches” which limit the establishment of knowledge exchange between Suzhou and global hot spots. We maintain that the nature of global–local networks is contingent upon the specific ways that global capital interacts with local institutions. Our data come from national and regional statistics, a survey of the ICT industry, and interviews of firms and public officials in Suzhou.

2. Global–local networks, technological progress and regional development

The New Regionalism literature has presented serious challenges to the hyper-globalization thesis. Imprints of New Regionalism are well manifested in the new economic geography scholarship, which emphasizes the importance of regional institutions, local networks and clusters, and local assets and knowledge bases in innovation and development, with various notions such as Marshallian industrial districts, untraded interdependency, innovative milieu, regional systems of innovation, and learning regions (e.g., Storper, 1997; Cooke and Morgan, 1998; Scott, 1998; Porter, 2000). Indeed, for many geographers, distance is alive, path dependence matters, agglomeration is logical, the world is uneven, and divergence is the norm.

However, geography is not equivalent to the local, and not all geographers subscribe to New Regionalism. New Regionalism literature has recently been criticized (Hadjimichalis, 2006; Wei et al., 2007) for its narrow focus on endogenous assets and local networks. There is a long tradition in geography of analyzing regional development through the lens of spatial interaction, interregional dependency, world systems, and global networks. The so-called Manchester School of global production networks (GPNs) places external agents/networks at the heart of technological change and regional development, calling for “globalizing” regional development (Coe et al., 2004). The perspectives of global commodity chains (GCCs), global value chains (GVCs), and GPNs (Gereffi and Korzeniewicz, 1994; Dicken et al., 2001) have emerged as a powerful alternative. However, the GCC/GVC/GPN perspectives tend to

over-emphasize global processes in shaping the trajectories and dynamics of technological change and regional development (Wei, 2010).

Issues central to the debate, and particularly relevant to this research, are the nature of TNCs–local networks, sources of innovation, and their effects on technological and regional development. Based on the perspectives on TNCs, regions and development, below we will analyze in greater detail the specific notions of global–local networks, innovation systems and institutions, and firm decision making, to guide our analyses based on company-level data.

First, the literature in geography and development studies tends to view the TNC–local relationship as dependent, as echoed by the dependency school, world systems perspectives, and GVC/GCC approaches. It is argued that in developing countries, it is often the external agents, either TNCs or external markets, which dominate technological change and regional development. This is the case when TNCs are export-driven and domestic capacities are weak, as evidenced by the Cathedrals-in-the-Desert phenomenon or the satellite industrial platform in Central and Eastern Europe (e.g., Grabher, 1994; Hardy, 1998), the weak integration of local firms with TNCs' production networks existing widely in Latin America (e.g., Lowe and Kenney, 1999), and the dominance of quiescent or branch plant-like subsidiaries in the Asia Pacific region (Poon and Thompson, 2003; Vind, 2008). The satellite district platform hosts foreign branch plants with limited relations to the domestic economy; key decisions are made externally and the state is often subordinated to global TNCs (Markusen, 1996). The notions of industrial districts have also been applied to the research on China, and scholars have questioned whether Suzhou is an innovative neo-Marshallian district with global–local synergies (Wei et al., 2009).

It has also been found that TNCs tend to network among themselves, forming global–local networks of TNCs, rather than networking with local indigenous firms (Jensen, 2004). Taiwanese firms in Suzhou are well integrated with Taiwanese production networks and their global production networks (Wang and Lee, 2007; Yang and Hsia, 2007; Yang and Liao, 2010). In these situations, GVCs or GPNs are rarely integrated with local firms (Wei, 2010), and the effects of TNCs on local economies are limited, mostly taking the form of job creation, and to a lesser extent, capital formation and tax contribution.

These perspectives prompt us to ask whether Suzhou exhibits features of a TNC satellite district and whether TNCs' subsidiaries tend to network among themselves. We analyze the transformation of Suzhou and the structure of the ICT industry and argue that Suzhou's development path, which is heavily dependent on external forces, has made Suzhou a TNC satellite district where TNCs tend to network among themselves.

Second, studies also reveal that TNCs are not reliable sources for technological transfer and export orientation does not necessarily lead to increasing technological capacities. One of the core competitive advantages of TNCs is their R&D and innovation capacity. To remain competitive TNCs must keep their technological edge through R&D investment and protection of intellectual property (IP) rights. It is well known that the innovative activities of TNCs remain mostly in their home countries and that TNCs have little incentive to transfer core technology to developing countries (Gertler, 2003). In addition, the transfer may include “know-how” (production engineering), but not “know-why” (basic design, R&D) (Lall, 1984). Moreover, an export orientation may not transfer the technology to other sectors of the economy (Parthasarathi and Joseph, 2002). TNCs often only reinforce the dependence of the receiving countries on technological progress in developed countries.

TNCs usually enjoy a superior knowledge base and their decisions on cooperation and knowledge transfer are based on

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات