

Building a Competitive City through Innovation and Global Knowledge

The Case of Sino-Singapore Suzhou Industrial Park

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Abstract

Special economic zones can be an effective instrument to promote industrialization if implemented properly in the right context. In China, starting in the 1980s, special economic zones were used as a testing ground for the country's transition from a planned to a market economy, and they are a prime example of China's pragmatic and experimental approach to reforms. One of the great special economic zone success stories in China is the Suzhou Industrial Park, a modern industrial township developed in the early 1990s through a Sino-Singapore partnership.

It is successful not just in the economic sense, but also in terms of urban and social development in an eco-friendly way. One key lesson is that in a weak market environment, a facilitating and reform-oriented host government, coupled with foreign expertise and knowledge as well as a "whole value chain" approach can go a long way in developing urban-industry well-integrated special economic zones. This paper is intended to examine the success factors and key lessons of the Sino-Singapore Suzhou Industrial Park, which can be useful for other developing countries.

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**Building a Competitive City through Innovation and Global Knowledge
– The Case of Sino-Singapore Suzhou Industrial Park**

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Key Words: China, Suzhou Industrial Park, Sino-Singapore Partnership, SEZ, Special Economic Zone, Industrial Park, Innovation, Industrial Zone

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Building a Competitive City through Innovation and Global Knowledge – The Case of Sino-Singapore Suzhou Industrial Park

Douglas Zhihua Zeng

I. Introduction

Special Economic Zones (SEZs) can be an effective instrument to promote industrialization if implemented properly in the right context. The term “SEZ” here covers a broad range of zones, such as free trade zones, export-processing zones, industrial parks, economic and technology development zones, high-tech zones, science and innovation parks, free ports, enterprise zones, and others. In general, SEZs confer two main types of benefits, which in part explain their popularity: “static” economic benefits such as employment generation, export growth, government revenues, and foreign exchange earnings; and the more “dynamic” economic benefits such as skills upgrading, technology transfer and innovation, economic diversification, productivity enhancement of local firms (Zeng 2010), and even structural transformation (Lin and Monga 2010). In China, starting in the 1980s, SEZs were used as a testing ground for China’s transition from a planned to a market economy, and they are a prime example of China’s pragmatic and experimental approach to reforms. One of the great SEZ success stories in China is the Suzhou Industrial Park, a modern industrial township developed in the early 1990s through a Sino-Singapore partnership.

The initial development of Suzhou Industrial Park (SIP), however, was not smooth. After a successful start in 1994, SIP faced problems due to different business models and mindsets, intense regional competition, and the Asian financial crisis of the late 1990s. The Singaporean side blamed Suzhou for ‘bureaucratic shenanigans’ and for pursuing local interests by channeling resources to the Suzhou New District (SND – a different high-tech industrial park sponsored by the local government). On the other hand, Suzhou was interested in exerting more control over SIP and attracting more FDI with global outreach and R&D capacities (Inkpen and Pien 2006). Some local officials even regarded the zone as a colonial practice by the Singaporean government. Conflicts and financial difficulties resulted in a restructuring of SIP in 1999. In 2001, a Chinese consortium, mainly consisting of state-owned enterprises (SOEs), took over the majority stake, with 65% versus Singapore’s 35% (before it was the opposite). Under the new governance structure, however, the project quickly turned around and SIP became profitable the same year (Wei, Lu and Chen 2009).

Despite the difficulties at the initial stage, SIP is now globally recognized as one of the most successful industrial zones in the world, and has inspired many countries/economies to imitate or learn from its success. It is successful not just in the economic sense, but also in terms of urban and social development. Why is it so successful? What can we learn from its success? One of the key lessons is that in a weak market environment, a facilitating host government, coupled with foreign expertise and knowledge through cross-border partnership can go a long way in developing industrial zones. Meanwhile, it shows that in any case, successful international experiences and lessons need to be fully adapted into local context and there is

no ready-made ‘panacea’ in development.

This paper is intended to examine the success factors and key lessons of the Suzhou Industrial Park, which can be useful for other developing countries. It also discusses the key challenges it faces and possible policy solutions for its future development.

II. The Background and Profile of the Suzhou Industrial Park

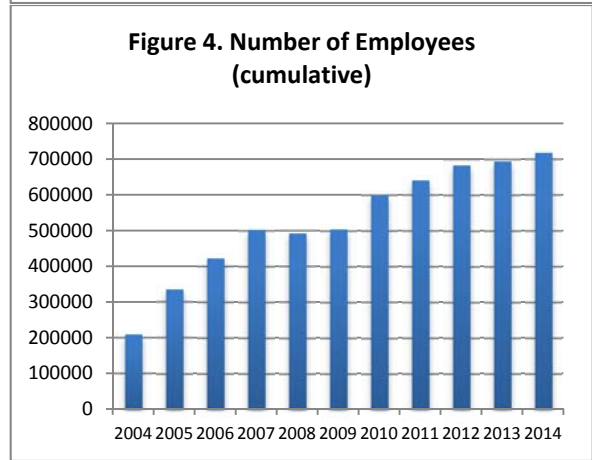
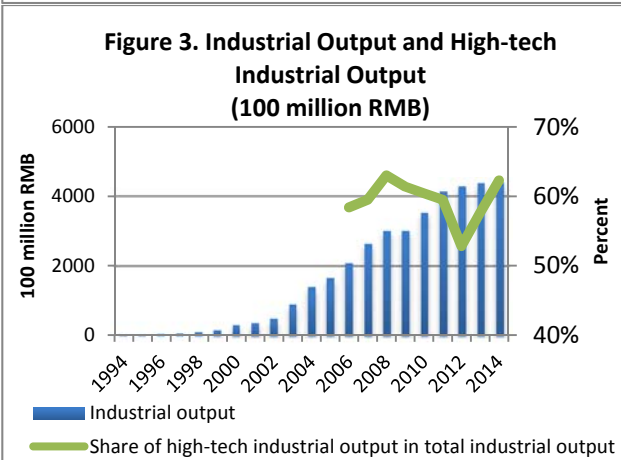
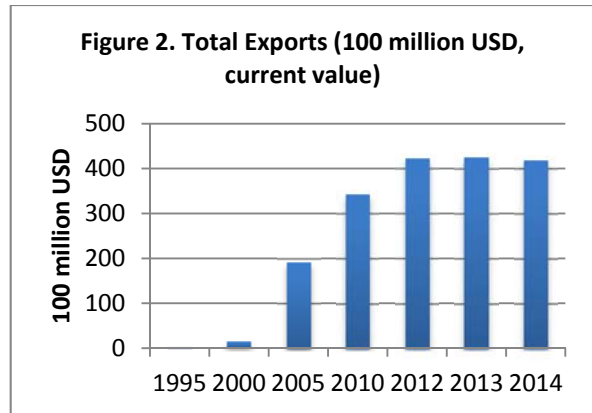
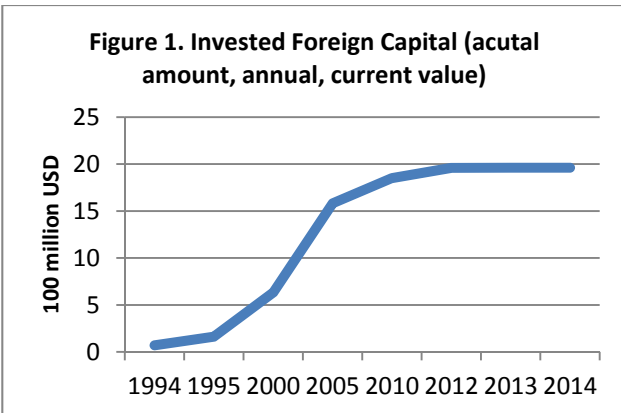
SIP is a “new township” located in East Suzhou, a major industrial city approximately 80 kilometers from the commercial center and port facilities at Shanghai. Launched in 1994, SIP now hosts six functioning areas:

- Jinji Lake-Rim Central Business District (CBD)
- DuShu Lake Innovation District of Science and Technology (11 square kilometers)
- Eastern High-Tech Industrial Area
- Integrated Free Trade Zone (5.28 square kilometers)
- SIP Ecological Science Hub (4 square kilometers)
- Yangcheng Lake Tourism Resort

Of the six functioning areas, Jinji Lake-Rim CBD, Eastern High-Tech Industrial Area, and the Integrated Free Trade Zone are located in the 80-square-kilometer (8,000-hectare) China-Singapore cooperative zone, which covers just over one-fourth of SIP’s total land area. SIP Ecological Science Hub is outside of the core zone, but it was developed by the joint venture development company China-Singapore Suzhou Industrial Park Development Co., Ltd. (CSSD) in 2007 (Zhao and Farole 2011).

Since 2000, the annual foreign capital flow into the SIP has increased rapidly (figure 1). By the end of 2014, SIP has attracted 5,276 foreign investment projects including 92 Fortune 500 companies, with a cumulative actually utilized foreign investment of US\$26.7 billion and contractual foreign investment of US\$47.0 billion, and 27 MNCs have established regional headquarters or hubs in the SIP. In 2014, SIP achieved a GDP of RMB 200.1 billion; total exports reached US\$41.9 billion (US\$42.5 billion in 2013) (figure 2); and the new and high-tech industries accounted for 62.3% of the total industrial output (figure 3). By the end of 2014, the total population in SIP has reached 794,600 with a total employment of 717,108 (figure 4). The per capital GDP in SIP has increased from less than US\$800 in 1994 to around US\$39,000 in 2014, much higher than the average level of around US\$20,000 in the Suzhou municipality (SIPAC 2015). In 2015, SIP contributed a tax revenue of RMB 55.1 billion.²

² SIPAC website: http://www.sipac.gov.cn/government/tjfx/201601/t20160113_407409.htm.



Source: SIPAC 2015.

There has been rapid agglomeration of industries in information and communications technologies (ICT), including integrated circuit (IC), thin-film transistor and liquid crystal display screens, and automotive and aeronautical parts, and in recent years, the zone has shown rapid emergence of high-end sectors, including software, outsourcing services, and pharmaceuticals.

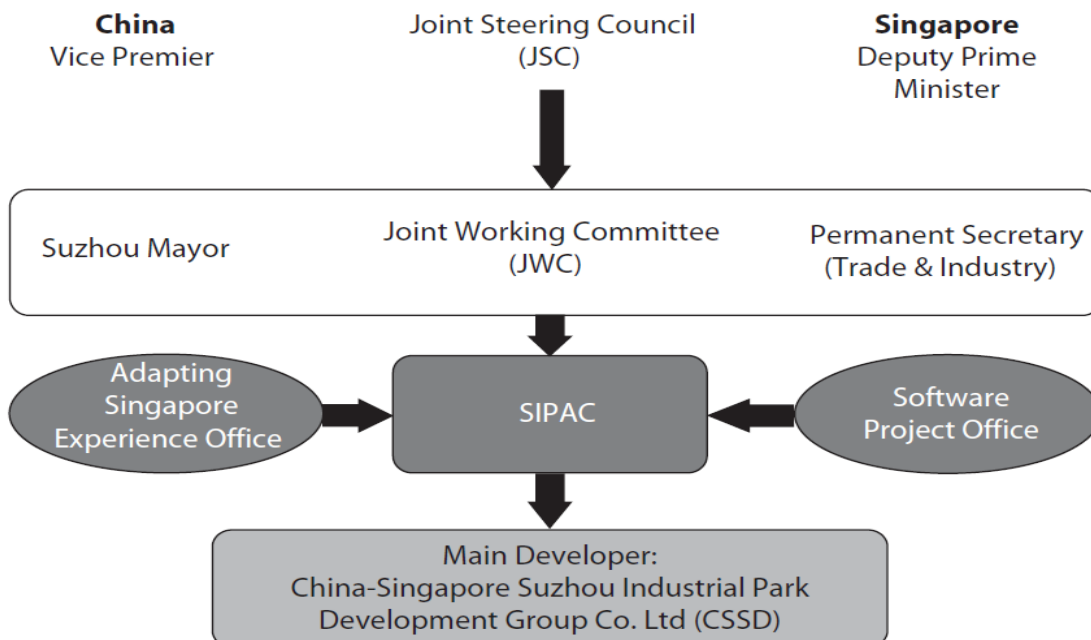
SIP has become a major growth engine of the Suzhou economy, achieving an annual average economic growth of around 30% since its inception. With about only 3.4% of the total land, 7.4% of the population, and 6.3% of the industrial land, SIP contributes about 15% of Suzhou's GDP, 13% of its industrial output, 29% of its total trade, and 16% of its public revenues (Suzhou Municipality 2014a). It has gained the reputation as one of the most business-friendly, environment-friendly and residential-friendly zones in China. For many years SIP has ranked top on the most competitive development zones list in China and, according to the Ministry of Commerce, it ranks the highest in environment protection, social development, and institutional innovation, and second best in terms of the overall development strength and technology innovation among 90 national-level development zones in China in recent years (China Economic Development Zone Association 2012; SIPAC 2015). In October 2015, the State Council designated SIP as the first "open innovation" pilot zone in China, intended to serve as an example for industrial upgrading and innovation-driven economy for the rest of the country.

III. The Sino-Singaporean Partnership and the Governance Structure

The SIP is a joint initiative between the Chinese and Singaporean governments and was launched on February 26, 1994, when Chinese Vice Premier Li Lanqing and Singapore Senior Minister Lee Kuan Yew signed the *Agreement on the Joint Development of Suzhou Industrial Park* in Beijing. On the same day, the *General Agreement on Suzhou Industrial Park* was signed by the both parties, which laid a foundation for the establishment of CSSD – the development arm of SIP. Since then, SIP was viewed a flagship project in economic cooperation between China and Singapore and commanded a high level political support (Zhao and Farole 2011).

SIP was set up with a multilevel governance structure (figure 5). The overall governance responsibility of SIP falls on the China-Singapore Joint Steering Council (JSC), which meets every 12–18 months to review the progress, resolve major implementation issues, and set future development goals. The JSC is co-chaired by the Chinese vice premier and the Singapore deputy prime minister and includes ministerial chiefs of the two countries, senior officials of Jiangsu provincial and Suzhou municipal governments, and the head of Jurong Town Corporation (JTC). At a more operational level, the Joint Working Committee, which was more active during the start-up phase of the SIP, is co-chaired by the mayor of Suzhou and Singapore Ministry of Trade and Industry permanent secretary (Zhao and Farole 2011; Inkpen and Pien 2006; Pereira 2007).

Figure 5. Governance Structure of Suzhou Industrial Park



Source: Zhao & Farole 2011.

Note: SIPAC = Suzhou Industrial Park Administrative Committee.

The management and supervisory body of SIP is the Suzhou Industrial Park Administrative Committee (SIPAC), which is empowered by the Suzhou municipal government as an independent local government authority. SIP covers a total jurisdiction of 288 square kilometers (of which 80 square kilometers belongs to the China-Singapore cooperative zone). SIPAC enjoys high autonomy in terms of policy making and law enforcement. Currently, SIPAC is also the primary land developer of SIP. Initially CSSD was the main land developer and today it is still a major real estate developer and industrial property agent of SIP (see box 1 for details on CSSD).

Box 1. CSSD – A Joint Venture between Chinese and Singaporean Consortia

CSSD is a joint venture between China Suzhou Industrial Park Co., Ltd. (the Chinese consortium) and Singapore-Suzhou Township Development Co., Ltd. (the Singaporean consortium). The Chinese consortium is composed of several large Chinese SOEs at the national, provincial, and municipal levels (Lim 2004). The Singaporean consortium is consisted of 24 companies, of which 10 are government-linked companies and statutory boards (Zhao and Farole 2011). From 1994 to 2000, the Singaporean consortium controlled 65% of the CSSD stake and the Chinese consortium held the rest 35%. But based on an agreement in 1999, the equity stake of the two sides was flipped on January 1, 2001. Following this, the corporate control and management responsibility of SIP also shifted from the Singaporean side to the Chinese side. As of August 2005, CSSD added three more minority shareholders, which took a 20 percent stake, diluting the Chinese and Singaporean consortia to 52 percent and 28 percent, respectively.

Currently, CSSD focuses on four core businesses - primary land development, real estate development, public utilities, and multi-services, and some of the functions are undertaken by its subsidiaries. One important achievement of primary land development by CSSD is the development of SIP Ecological Science Hub. The real estate development includes the industrial properties developed by CSSD headquarters and the residential properties developed by CS-SIP Land Corporate. The public utilities often refer to the water, power, and gas operated by CS-SIP Public Utilities Development Group Corporate. The multi-services mainly include investment promotion, infrastructure development, property management, and international education and training, among others.

Source: Zhao and Farole 2011; Lim 2004; Pereira 2007; Curien and Lorrain 2012.

The Chinese and Singaporean consortia provided important financing for the initial development of SIP, which was mainly financed through three sources: the Chinese and Singaporean consortia, which invested RMB 300 million for the infrastructures in the phase 1 of 8 km²; bank loans with an amount of RMB 200 million from a bank consortium formed under the leadership of the Chinese central bank; and government funding of about RMB 10 million.³ The Singaporean consortium had notably built a power plant and a water treatment plant rather quickly solely for the park's use, which was crucial for the first investors (Pereira 2007; Curien and Lorrain 2012). From 2001, SIP began to make a profit, and in 2014 it achieved a public revenue (net) of RMB 22.8 billion (SIPAC 2015).

³ Based on author's field interview in SIP in November 2014.

IV. Key Success Factors of SIP

Many factors have contributed to the remarkable success of SIP, and key ones include the following.

- 1) Strategic location. Suzhou city is one of the ancient capitals in China, known for its classic gardens and the reputation of “Oriental Venice”, with a history of over 2,000 years. Together with Hangzhou, it formed the Su (Suzhou)-Hang (Hangzhou) region, named “paradise on earth”. Traditionally it had been connected to the thousands of small towns in the region through well-developed transportation networks: roads, canals, and rivers (Johnston 1993). Most importantly, it is very close to Shanghai (about half an hour’s drive), the major economic center of China, and Nanjing, the capital city of Jiangsu Province (about one hour’s drive). Today with the development of high-speed railway, the distance to these major urban and economic centers is even shorter.
- 2) First-class planning and architecture. Building on the Singaporean experience, SIP has placed very high emphasis on scientific planning, and set up a great example for new township building (Shi, et al. 2012). It followed the principles of “master planning for the whole zone but developing in a phased approach” and “first planning then construction”; and “infrastructure, underground networks and public utilities first”, etc. (Pan 2014; Rurien and Lorrain 2012). The total planned area of 70 km² was developed in three phases according to the projected demand: first phase 15.2 km², second phase 16.6 km², and third phase 36.6 km². One important feature is that the SIP was designed as part of the new urban development of Suzhou from the beginning: it is located at the South-East part of Suzhou, with CBD in the center of the park, the residential areas in the middle, and the industrial areas in the outer circle. The transportation and utility networks are well connected with the existing urban areas. Such a design laid a great foundation for its great urban-industry integration. Over the 20 years, the park has developed over 300 specialized plans with a total cost of US\$200 million (Suzhou Municipality 2014b). To ensure the effective implementation of the plans, the SIP administration established a planning commission headed by the master architect to review and oversee the plans. Once approved by the commission, the plans have legal status (Pan 2014; Shi, et al. 2012).
- 3) Effective role of the government and a conducive business environment. The success of SIP is inseparable from the proactive and facilitative roles of various levels of Chinese governments and the Singaporean national government, which helped to create a very conducive business environment.
 - a) Strong commitment from the top leadership. One prominent feature of the SIP project is that it has had strong support from the top leaders in both China and Singapore. In his southern tour in 1992, China’s late paramount leader Deng Xiaoping encouraged learning from Singaporean experiences. In October 1992, Singapore Senior Minister Lee Kuan Yew

visited Suzhou. In April 1993, Premier Li Peng showed support for the establishment of a joint industrial park in Suzhou. In 1994, the SIP project was approved by the State Council and the Agreement on the Joint Development of SIP was signed by Vice-Premier Li Lanqing and Kee Kuan Yew. Although there was some rough time especially at the initial stage, the senior leaders from both sides have never weakened their support and coordination efforts through the China-Singapore Joint Steering Council (JSC). This provided a very stable and positive macro environment for the development of SIP.

- b) Sound legal, regulatory and incentive regimes. Besides the high-level government support and the transnational governance structure, SIP also enjoys a sound legal and regulatory regime and clearly defined incentives, which provide high confidence to investors. In addition to the national level SEZ Act, there are provincial level acts and provisions on economic and technology development zones, including one specifically for SIP issued in 1994. These laws and regulations clearly stipulated the roles and responsibilities of the park/zone administration, developers, and investors, and provided specific guidelines on many park-related issues such as taxation, finance, land, customs, immigrants, etc.

Under these laws, SIP enjoys certain preferential policies. Besides the standard tax incentive of “exemption of income tax for the first 2 years since making a profit and half rate for the following 3 years”, it also gives special tax treatment and refunds for certain new and high-tech sectors. Incentives for firms in the export processing zones within the SIP include exemption of import and export licenses, export taxes, and import duties; subsidized rates for water, power, gas; and fast logistics within and between EPZs: the customs clearance and freight transportation time from port to door was shortened to 5 hours; among others (Wei, Lu and Chen 2009).

- c) Pro-business institutions and effective management with an innovative approach underpinned by local autonomy. Following the international good practice, the SIP separates the functions of regulator and developer(s). Also, like many other SEZs in China, SIP enjoys high-level of autonomy, which gives it the flexibility to carry out many policy and institutional innovations, driven by constant local institutional learning from foreign investors and global experiences.
- SIP is one of the first zones in China to implement a more streamlined approach and a more transparent policy framework. It is famous for its efficient ‘one-stop-shop’ (OSS) services under the SIPAC (box 2). SIP also carried out many experiments in service trade, eco-friendly and smart city development, human resources management, labor relations and social protection and so on. It was the first zone in China to set up a Provident Fund based on personal account deposits (Wei, Lu and Chen 2009).

Box 2. The SIP One-Stop Service Center: A True OSS Living up to Its Name

The success of SIP is inseparable from its highly efficient and innovative ‘one-stop-service center’, which greatly helps to improve the business environment. Run by highly

competent professionals⁴ selected from the local government agencies or recruited from the market, the fully authorized service center provides first-class services from registration, licensing, permit application, taxation to aftercare, etc. It normally only takes 3 working days to register a firm while outside it will take over a month or longer. The one-stop service center consists of business and technical groups. The business group carries on the daily functions on behalf the various agencies of the SIPAC, but when encountering issues beyond their authorization level, they refer them to the technical group to handle or refer to the higher level authority. Today most of the OSS services have been digitized and are available online.

Source: (Pan 2014)

- The zone has an independent customs and bonded logistics center with the complete functions of ‘inland port’ and ‘24*7 non-stop services’ (Wei, Lu and Chen 2009). The turnaround time (including clearance and shipment) for goods between the park and port has been reduced from original 3-4 days to current 3-4 hours (Pan 2014). It is a pioneer in using the electronic data interchange (EDI) system for customs clearance in China.
 - The zone also enjoys certain special authorities which are normally not available in other prefecture-level cities: a) project approval: the SIP is authorized to approve all foreign-invested projects under US\$30 million; b) land allocation: the SIP can approve up to 900 mu (0.6 km²) of land per application since 1994 at a time when prefecture-level cities only had a 50 mu (about 0.03 km²) upper limit (Pan 2014); c) foreign affairs administration power: the park can approve overseas official trip applications, issue official duty passports, and apply for visas from foreign embassies directly.
- d) Infrastructure support. Besides the conducive business environment, SIP also provides world class hard infrastructure. In most zones in China, the infrastructure provision follows the standard of “five connections and one leveling”, the better ones provide “seven connections and one leveling”, but in SIP, it provides “nine connections and one leveling” (road, electricity, water, drainage, waste water disposal/treatment, gas, telecom, heating, cable TV, and land leveling). This was the highest standard for zones in China at that time (Pan 2014). The telecom network offers a wide range of services including international direct dialing (IDD), international roaming, video/telephone conferencing with major cities in China, wireless paging, fax, and the broadband Internet lately. All these greatly help to reduce the production and business costs and make the zone very attractive for investors.
- e) Skills training and human resources support. To secure qualified labor for investors, SIP established a market-based labor market system from the beginning. It formed a human resource corporation, working with a dozens of HR intermediary firms including

⁴ SIP is among the first development zones in China to introduce professional management familiar with international business practices and transaction protocols.

headhunters, to provide advertisement, recruitment, information, and matchmaking services. If firms need large numbers of specialized skills not available locally, the SIPAC will work with relevant colleges and universities nation-wide to arrange targeted recruitment activities. Furthermore, SIP set up its own technical and vocational college. In 1997, it established the SIP Institute of Vocational Technology, which has over 60 majors (including electronics, machinery, engineering, etc.) with more than 10,000 students. The college develops its own curriculum and training materials based on the needs of the enterprises and set up internship and joint teaching programs with firms in the zone. Some firms even set up scholarships in the college to encourage the top performers. As a result, the students from the college are almost 100% employed after graduation and the school is recognized as a “model TVET school” by the Ministry of Education and Ministry of Finance (Pan 2014). Later on, SIP also established a service outsourcing college (box 3), an S&T vocational college and two secondary vocational schools (State Council Development Research Center 2014a). All these, together with those TVET institutions in Suzhou, provided important human resources for SIP. In addition, the local government and park management also serve as a buffer in all issues of industrial relations (Jurgents and Rehbehn 2004).

Box 3. The Suzhou Industrial Park Institute of Service Outsourcing – A Successful Market-driven Approach

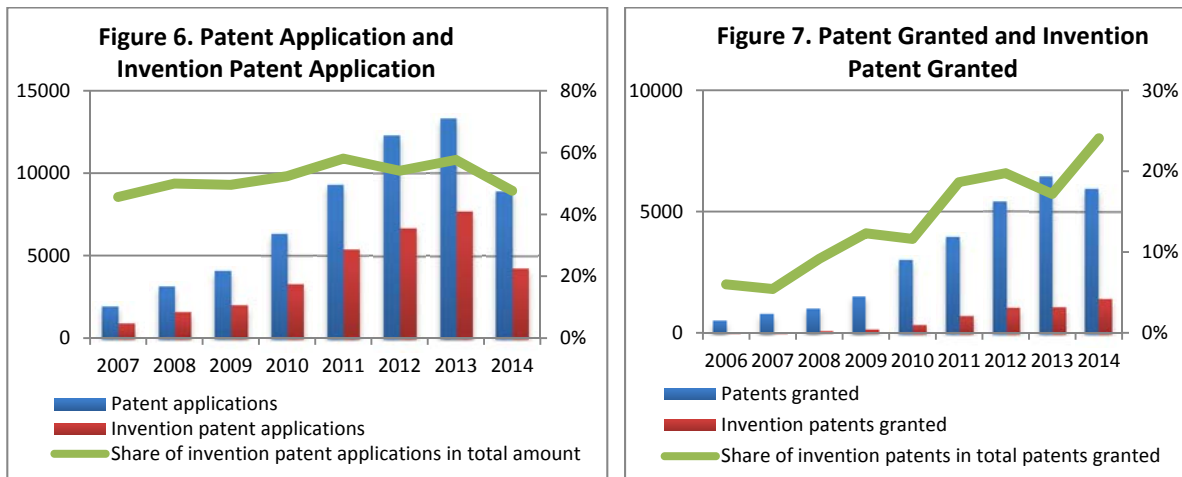
The Suzhou Industrial Park Institute of Service Outsourcing (referred as “Institute” thereafter) is located in Suzhou Dushu Lake Science and Education Innovation Zone within SIP, next to universities and fast-growing industries. The Institute was officially established in 2010 and covers 28 hectares of land. It fully leverages the existing resources of Suzhou and the leading innovation platforms of SIP and adopted the “Education for Industry” and “Open Education” policies. This has helped to shape up a new school system specifically designed for industrial activities, which is part of the “knowledge transfer” program between China and Singapore.

In the era of service-outsourcing, this college has retuned the traditional courses or set up new courses such as “Mobile Services and Operations” and “Bioinformatics and Applications” in accordance with the market needs. This has greatly enhanced the skills relevance and employability of the graduates from the Institute. For two consecutive years, all the students have 100% secured jobs after graduation, and more than 70% of them were employed by outsourcing companies in Suzhou, which shows the strong linkages between the skills supply of the Institute and the actual needs of the local industries.

As the first service outsourcing college in China, the Institute established a tripartite cooperation mechanism among the government, college and enterprises. It has developed cooperative relationships with more than 40 well-known service outsourcing companies and has integrated teaching, training, skill certification, and industrial research all together. As a pioneer innovative training model in China, the Institute has been accredited as the first talent training base of service outsourcing in Suzhou and the second international service outsourcing talent training base in Jiangsu Province. In May 2010, the Institute was accorded as the only “Suzhou Service Outsourcing Practical Training Center”.

Source: Pan 2014.

- f) Technology innovation and industrial upgrading. SIP started with relatively labor-intensive manufacturing, and with the deliberate efforts of the management and local government, it has become one of the top high-tech zones in China, with an increasing share of high value-added services (from 21% in 2000 to 40% in 2013). By 2014, there were 630 new and high-tech enterprises, including Samsung, IBM, Hitachi, etc., accounting over 62% of the total industrial output in SIP. Since 2006, the patents applications have been increasingly steadily (figures 6 and 7). By 2014, there were total 29,611 granted patents, out of which 5,082 were invention patents. Several high-tech clusters have formed in the areas of IC, TFT-LCD automobile and aero-parts, etc., with complete value chain from IC design to chip manufacturing and testing. In 2014, the number of R&D institutions reached 400, and from 2006-2014 the total output of software (including IC design) increased from RMB 5 billion to RMB 62.1 billion. From 2009-2014, the outsourcing (including ICTs) volume increased from US\$545.5 million to US\$3.1 billion (SIPAC 2015).



Source: SIPAC 2015.

These are achieved mainly through the following measures.

- First, establishing S&T bases and platforms. With the support of government, SIP established several funds to invest in S&T, innovation and education. The biggest is GuoChuang Fund (a fund of funds) jointly established with the National Development Bank with a registered capital of RMB 60 billion. With these investments, SIP established 20 state-level innovation bases and over 20 public technology service platforms spread across several cluster-type of parks within SIP: Biobay (biotech), Nanopolis (nanotech), Creative Industrial Park (software, game development and animation), DuShu Lake Innovation District of Science & Technology (education & training, R&D), and Genway I-Park or 'Suzhou 2.5 Industrial Park' (business services), etc. (Pan 2014). These bases and platforms help to attract

- many high-tech firms and R&D institutions.
- Second, attracting high talents through various talents strategies. Through the national “thousand talents plan” and the Suzhou “Jinji Lake two hundreds talents plan” and “leading S&T talents entrepreneurship project”, which provides generous incentives for qualified personnel, SIP has attracted over 11,000 high-end talents (including over 7,000 foreign talents and 4,000 Chinese returnees) which either work full-time or part-time in the zone or set up their own firms (Suzhou Municipality 2014a). These incentives include seed money, housing subsidies, education allowance, research grants, and preferential treatment for “hukou” registration for spouses and dependents, etc. By the end of 2013, a total of about RMB 150 million has been spent through the talents strategy (Suzhou Municipality 2014b, Pan 2014).
- g) Effective investment promotion. Attracting quality investments is crucial for the success of a zone. SIP placed very high emphasis on investment promotion efforts. Initially the investment promotion was mainly carried out by the investment promotion division of CSSD. In 2000, SIPAC also set up an investment promotion bureau to join hands with CSSD. Together, a highly trained, specialized and dedicated marketing and investment attraction professional team was formed within SIP. Learning from Singaporean experience, SIP implemented an investment promotion model with three distinctive features. First, focusing on anchor investors in the priority sectors with a cluster approach. The investment strategy of SIP is closely linked with the regional industrial development strategy, placing emphasis on Fortune 500 firms and their suppliers in the sectors in line with the regional priority (Suzhou Municipality 2014b). Such an approach helps to induce the cluster formation. Second, very targeted and specialized value-chain approach. SIP tried to leverage the good reputation of Singapore and its international business network, and adopted the “knocking-door” approach of Singapore to attract the desired investors. It also formed specialized teams targeting the different segments of the value chains such as production, distribution, S&T and R&D, services (located in CBD), etc. It also uses professional agents or intermediaries for certain specialized areas. Such an approach greatly enhances the efficiency of investment promotion (Suzhou Municipality 2014b). Third, opening doors to the domestic investors. Besides FDIs, SIP also encourages domestic firms (both SOEs and private firms) to invest in the zone. For example, from 1994-1998, 3,110 domestic firms registered within the zone, with a total contractual investment capital of RMB 15 billion (Pan 2014).
- h) Strong environment protection. Complying with the international good practice, SIP established very high standards on environment protection from the beginning. It was the first to pilot ‘circular economy’ and ‘eco-park’ in China. Besides first-class ‘green’ facilities such as air and wastewater treatment, it also has a high quality environment monitoring system, including programs for monitoring chemical use and a flood emergency response plan (Cushing, et al. 2006). Perhaps the most significant symbiotic operation in SIP is the recycling system that was established

between a wastewater treatment plant, a sludge drying station and a cogeneration power plant all located next to each other at the southern part of SIP (Curien and Lorrain 2012). In addition, SIP has implemented very strict environment criteria in investment selection. Since its inception, SIP has rejected over 300 investment projects, with a total amount of US\$2 billion (Pan 2014). To reject a sub-standard project only takes one vote. Such an effort has achieved great results – so far the overall environment quality of SIP has been certified by ISO14000 (Suzhou Municipality 2014c). The environmental infrastructure sharing mechanism in SIP proves to be very cost effective. A study shows that the wastewater treatment plant sharing (WTSP) system in SIP is about 167 times as cost-effective as the conventional individual wastewater treatment plant (IWTP) model (Zhang et al. 2010). It not only helps to improve the competitiveness of firms, but also enhances the environmental performance. Today SIP is one of the best-performing eco-parks in China.

- 4) Knowledge sharing and learning. One of the key objectives of SIP is to share the advanced know-how and experiences of Singapore in doing business and managing the economy and industrial zones to China. The knowledge transfer program covered a wide range of areas, including land-use planning and development control, building control, planning and management of industrial estates, environmental regulation, new towns and public utilities management, human resources management, and many other public management and administration areas (Inkpen and Pien 2006). The knowledge sharing and learning takes place in various forms. The transfer of expatriates to China from Singapore in the early days was an effective way to transfer tacit knowledge. Between 1994 and 2002 over 120 Singaporean managers were rotated through CSSD, many of whom were from elite positions within the Singapore Civil Service. One example of such knowledge transfer is that officials from Singapore's Urban Redevelopment Authority imparted their knowledge of master planning to their counterparts in Suzhou (Inkpen and Pien 2006). Other forms of knowledge sharing including structured trainings either in Singapore or China. Over the 20 years, more than 2,700 SIP personnel were trained in Singapore through 150 trainings (Suzhou Municipality 2014c). Meanwhile, Singapore also sent teams of experts (including senior Singaporean civil servants) to Suzhou to teach officials of SIP and Suzhou city. For more elaborate consultations, in some cases, Singapore officials/experts visiting Suzhou stayed for up to two months at a time (Inkpen and Pien 2006).
- 5) FDIs and Diaspora. Besides strong government support and a cross-border partnership, the success of SIP is also highly indebted to its ability to attract foreign and Diaspora investments. Similar to other cities in the Yangtze River Delta region, FDI in Suzhou was minimal during the 1980s. Since the 1990s and with the establishment of SIP and Suzhou New District (SND), FDI in Suzhou has risen dramatically (Wei, Lu and Chen 2009). The annual actually utilized foreign investments in SIP increased from US\$70 million in 1994 to US\$1.6 billion in 2005 and US\$2 billion in 2013 (with accumulated total amount of US\$25 billion in 2013) (SIPAC 2014). The dominant form of investment was wholly foreign-owned enterprises, accounting for over 90% of the total. The major sources of FDIs are Hong Kong SAR, China; Taiwan, China; and Macao (China), accounting for 41.3% by 2013; the rest of

Asia (30.1%), especially Japan, the Republic of Korea, and Singapore; America (13.3%, mainly the U.S.); and Europe (13.1%) (SIPAC 2014). The main reasons attracting them include lower labor costs, investment incentives, better market potentials, better urban infrastructure, and a location close to major infrastructures, among others (Wei, Lu and Chen 2009). These FDIs and diaspora investments brought the much needed capital, skills, advanced management expertise and technologies, and global market networks, which played very important roles in the zone's success.

- 6) Local supporting industries. According to Michael Porter (1990, 1998), the presence of supporting industries is an important element of competitive industrial clusters. Historically, Suzhou was well known for some light manufacturing industries. In the Ming and Qing dynasties, the city dramatically expanded its modern handicraft industries, such as silk, textiles, food processing and printing. In the 1980s, there was a boom of township and village enterprises (TVEs)⁵ in the Sunan (Southern Jiangsu province), facilitated by human capital and business opportunities provided by nearby Shanghai. By 1985, TVEs produced about 49% of industrial output in Suzhou Municipality (Wei, Lu and Chen 2009). In the late 1990s, with the further economic reforms and opening up, the TVEs were restructured – they were shut down, merged or transformed into private firms or joint ventures. Meanwhile, Suzhou city was dominated with state-owned enterprises (SOEs), which accounted over 50% of industrial output in 1985 (Wei, Lu and Chen 2009). In the early 1990s, many of the SOEs were privatized to make them more market-oriented. With the opening-up of Sunan to FDIs in the 1990s, the roles of local firms and SOEs were greatly reduced in the local economic development, but they provided important support to FDIs and the zone development in the forms of local supplies, intermediate goods, skilled labors and local market access, etc.
- 7) A livable environment with a good balance between economic, urban and social development. SIP is well-known for its 'first-class living environment' and it strives to be an 'internationally competitive high-technology industrial park and a modern, garden-like township'. Thanks to its sound design and planning, the zone is not just an industrial area but also a very livable city, which is essential for attracting high-end investments and talents. Besides well conserved nature and scenic views, which Suzhou has been famous for, SIP boasts high-quality urban and social amenities, as well as education (such as the Suzhou Singapore International School). It has different functional areas - CBD, residence, education and training, and recreation and leisure (culture and art center, museums, opera house, stadium, exhibition center, etc.), and many green land and eco-gardens. It also has well-established service sectors for both industrial and consumer needs, such as banks, schools, hospitals/health clinics, postal services, retailers, and hotels (Pan 2014; Suzhou Municipality 2014b). In addition, SIP distinguishes itself from other zones in the following areas in terms of urban and social development:
- The provident fund system. Based on the Singaporean experience, SIP established the only regional Provident Fund in China in 1997 based on personal account deposits,

⁵ Normally small and medium-sized enterprises with a semi-state yet market-oriented ownership type, which often operate in the suburban and rural areas.

which covers medical, housing, retirement and social assistance. From 2012, the system was gradually integrated with the national social protection system (Pan 2014; Wei, Lu and Chen 2009).

- Neighborhood center. To provide commercial, social and community-based services to the residents, the zone established 17 neighborhood centers financed by the local government, with each center serving 320,000 – 40,000 people (State Council Development Research Center 2014a). The centers have supermarket, restaurants, banks, clinics, etc., related to people’s daily lives.
- Rural-urban integration. To ensure that the resettled former rural people benefit from the zone program, SIP provided various skills training and employment assistance, including entrepreneurship service center, small loans, incubators, etc. By 2012, 95% of the displaced people at employment age (87,000) were employed, and the annual total unemployment rate in SIP has been less than 2% (Suzhou Municipality 2014a; State Council Development Research Center 2014b). All the displaced people are covered with social security system, and resettlement areas are also equipped with community service centers with various urban and social amenities, similar to those in the urban areas. To provide equal educational opportunities, basic and secondary schools (including vocational schools) were set up in the resettlement areas with the same quality as those in the urban areas (State Council Development Research Center 2014b).

V. Major Lessons Learned

The great success of SIP offers many useful lessons that could be relevant to other developing countries/economies in SEZ and urban development. Such lessons include but are not limited to the following.

- ***A sound legal and institutional framework with strong and long-term government commitment.*** Besides the national level legislation, the Jiangsu Province and Suzhou Municipality passed many regulations and provisions (some are specific to SIP) regarding the institutions, planning, development, operations, management, investment incentives, land, labor, customs, environment, performance criteria, etc., to govern the SIP and other zones. Such a legal framework helps to provide a stable macro-environment and gives confidence to the investors. The zone also separates the regulator and manager from the developer and set up strong institutions such as JSC, SIPAC, and CSSD to supervise, manage or develop the zone. These are crucial for the zone’s smooth operation. In addition, strong and long-term government commitment provided additional guarantee for the zone’s success through ensuring policy continuity and adequate provision of various public goods. Despite some difficulties at the initial stage, both the Chinese governments at various levels and the Singaporean government had shown unwavering support throughout the whole process and necessary coordination was provided even at the deputy prime minister levels through the JSC.
- ***A sound business environment inside the zone,*** including efficient services, such as one-stop shop and good infrastructure. One of the key objective of the zones is to overcome the

constraints (both soft and hard) of doing business in an economy. Thanks to a very proactive government and learning from Singaporean experience, the SIP boosts first-class infrastructures and very efficient one-stop-shop services run by a very dedicated and professional personnel selected through strict criteria or recruited through open competitions. The aftercare services are also very effective through the 3-day response system. The zone managers and relevant government officials and technical personnel get regular trainings either on the job or through structured learning on-site or in Singapore. The fast customs clearance and sound trade logistics also help to lower the production and business costs for the investors. Such a conducive business environment is critical for overcoming the binding constraints of business operations and enhance the zone's overall productivity and competitiveness.

- ***Certain level of autonomy at local/zone level coupled with clear objectives and sound monitoring and evaluation.*** While it is important for the central government to define the overall SEZ strategy/planning and put in place the right frameworks, the local/zone level should have certain autonomy to test new reforms/approaches to make zones to work. In China, the initial SEZs even have certain legislative power to pilot reforms to improve the business environment. SIP also enjoys high-level of autonomy in terms of institutional innovation and zone operations, such as project approval, land allocation, customs, human capital management and social protection, etc. Its OSS and public services management are among the best in Chinese zones. While enjoying certain level of flexibility, it is also held accountable for the intended results, measured rigorously against the pre-set targets.
- ***Adapting international knowledge into the local context.*** One of the key factors that Chinese zones are successful is that China does not just copy what other countries have done, instead it tries to adapt the successful international experiences and lessons into the local conditions and circumstances through a pragmatic approach – assess and adopt what works and dismiss what does not work. This was recognized by the late Chinese leader Deng Xiaoping when, in 1985, he told Ghana's President Jerry Rawlings: "Please don't try to copy our model. If we have any experience to introduce, that is that we make policies according to our own national conditions" (Xu 2008). In SIP, the successful experiences of Singapore such as the one-stop-shop, urban planning, provident fund and community centers were effectively implanted into the local context.
- ***Skills training, technology transfer and industrial upgrading.*** This is crucial for zones to acquire sufficient manpower, enhance productivity and sustain long-term competitiveness. SIP has well-equipped technical and vocational college and secondary schools, with market-driven curriculum and management. To maintain the zone's competitiveness, the SIP management and local government have tried to catalyze and facilitate the industrial upgrading by promoting technology innovation/transfer and high-valued sectors catered to the different development stages. These efforts include fostering both "hardware" such as S&T bases and platforms, innovation labs, incubators and pioneering parks, and "software" such as sound regulatory and incentive regimes and, most importantly, the high-end skills attracted through various talents strategies.
- ***Effective investment promotion.*** Besides sound infrastructures and good business environment, effective investment promotion is also an important element for zones' success. Drawing on the experience of Singapore, SIP established a very strong and

competent investment promotion and marketing team and took a flexible but well-targeted investment attraction strategy. The focus on anchor investors and priority sectors definitely helped the cluster formation in the zone, and the specialized approach targeting different segments of the value chain helped to fill the missing links within the zone. Also, it was open to the qualified domestic investors, which helped to build the FDI and local economy linkages.

- **Sound environmental management.** Overall, China has paid a high cost in its rapid industrialization process. However, unlike many other zones (especially those in the early days), which paid less attention on the environmental protection while pursuing high GDP growth, SIP placed great emphasis on ‘green development’ since the beginning and is an environmental exemplar in China. It boasts not only first-class ‘green’ facilities for waste and pollution treatment, but also set up very high standards for investment selection. The “one vote rejection system” for polluting enterprises is one of the most rigorous in the world and has played a very positive role in preserving the environment and making SIP as one of the best eco-parks in China.
- **A good balance between industrial development and social/urban development.** One of the important features of SIP is that the zone program was part of the broad urban development agenda and was included in the urban master planning from early on to ensure good integration between the zone and the Suzhou city in terms of infrastructure and social services. The zone itself has first-class urban and social amenities, such as commercial centers, education and learning areas, leisure and recreation district, hospital and health clinics, banks, hotels and postal services, etc. In recent years, it is trying to build itself into a “smart city” using the modern ICT technologies (Kim and Wang 2014). Learning from Singapore, it also established sound social protection system and community service centers, which were among the best in China. In addition, it also tried to extend the social and urban services to the surrounding resettlement rural areas to ensure high level urban-rural integration. Such measures helped to achieve an inclusive and sustainable development in SIP.

VI. Key Challenges for Future Development

Despite the remarkable success of SIP, there are also some key challenges for the zone to maintain its competitiveness and development momentum, which may include but are not limited to the following:

- 1) Intensive competitions within Suzhou Municipality and the Yangtze Delta region. In Suzhou, besides SIP, there is another prominent national-level development zone – Suzhou High-Tech District or Suzhou New District (SND). SND has similar ‘hard’ and ‘soft’ infrastructures as SIP. About 20 miles away is the Kunshan (part of the Suzhou Municipality) Economic and Technological Development Zone, which is also one of the most successful zones in China. Beyond Suzhou, SIP faces fierce competitions with nearby cities, especially Shanghai and Wuxi. The Zhangjiang Science Park in Shanghai and the Wuxi New District as well as the zones in Suzhou and Kunshan are all targeting high-end FDIs. With rapid development of the high-

tech FDI clustering, these three cities, connected by a highway and high-speed railway network, have formed a high-tech mega region which has become one of the most dynamic and globalizing areas in China (Chou, Chang and Li 2014). Despite some spatial division of labor suggested from the central government planning, all these cities have been focusing on FDIs and R&D activities and seeking industrial upgrading, which leads to inevitable competitions for similar FDIs and resources. While certain level of competition is good for development, too much competition in the similar sectors in the same region may also lead to resource fragmentation and hinder the agglomeration effect of the Yangtze River Delta.

- 2) Heavy reliance on foreign investments and limited local economy linkages. While FDIs have played a critical role in the success of SIP, the zone has also become a 'high-tech enclave' with limited knowledge spillover and learning effect on the local economy. It mainly hosts plants and factories of multinationals, with headquarters located outside the city, and many of these factories are manufacturing assemblers (Wei, Lu and Chen 2009). Despite some supply and skills linkages with the local industries, FDIs in Suzhou seems to share their own global networks with key technological activities largely remaining in their home countries. There are a dozen foreign R&D centers, but they serve as product or process development facilities for Chinese markets. This situation could be one way caused by the strategic manipulation of the multinationals, but on the other hand, it could be the result of the government's over-support strategies for FDI attraction at the expense of domestic firms (Wei, Lu and Chen 2009; Chou, Chang and Li 2014). The globalism favoring FDIs has created an unfair environment for local firms, which were unable to receive governmental preferences due to their limited contributions to exports and GDP. Meanwhile, they had to face unfair competitions from FDIs which enjoyed various preferential treatment from the local government (Chou, Chang and Li 2014).
- 3) Further promoting technology innovation and industrial upgrading. Given the rapidly rising costs of production, especially in the coastal regions, and the transformation of China's development model from a low-cost manufacturing base towards a high-end knowledge and technology-driven economy, there is no other way for SIP to continue its success but further improving its technology innovation capacity and moving up the global value chain. SIP has come a long way from a labor-intensive manufacturing zone to today's eco-park with significant high-tech and new industries dominance. It has built competitive advantages in IC manufacturing, biotech, nanotech and ICTs. However, how to maintain and increase these strengths among the fierce competitions in the Yangtze Delta is a great challenge. Due to the weak domestic sectors and limited spillovers, so far SIP can mainly attract innovative start-ups from outside, not create them locally. Despite substantial government support, the private venture capital sector is still lacking (Wei, Lu and Chen 2009). Meanwhile, to make the transition from industry park to science city, SIP needs to overcome the long-time image of a factory zone and deal with the existing tenants that do not fit the new profile a science city (Windén, et al. 2012).

VII. Reflections for Continued Success

In order to overcome the above-mentioned challenges and maintain its competitiveness among increasingly intensified competitions, SIP needs to focus on the following strategic directions.

- 1) Further improving the business environment. Since SIP no longer enjoys preferential treatment, especially the financial incentives as other SEZs in the coastal region, to compete with other zones and cities for investments and talents, it needs to further improve its business environment through market-oriented institutional innovations. These include adopting the 'negative list' as the Shanghai Free Trade Zone and further opening up different sectors, including finance, education and medical services, etc.; attracting more management skills instead of just technological talents; further improving the efficiency of doing business through regulatory simplifications, electronic customs and digitized logistic services through the 'smart city' initiative, etc. In addition, it is important to allow the private sector to play a bigger role in the zone development, management and service provisions through a PPP (public-private partnership) approach. Recently, Samsung's leading role in the SIP Institute of Vocational Technology (SIPIVT) could be a good example towards this direction.
- 2) A more differentiated development strategy built on local strengths. Given the intense competitions in the Yangtze Delta region, notably between Suzhou and Shanghai and Wuxi, it is necessary for Suzhou/SIP to take a more differentiated development approach. While still maintaining the competitive advantages that SIP has gained in the certain high-tech sectors such as IC, biotech, nanotech, ICTs and precision machinery, it may build on its historic reputation as a tourism and service hub in southern China, and try to expand the high-end service sectors, such as the medical tourism, cultural tourism, creative industries, silk and fashion industry, hospitality, nursing homes, conference and exhibitions, etc. Comparing with Shanghai and Wuxi, Suzhou has many advantages in these sectors and can be complementary to their economies instead of being direct rivals.
- 3) Strengthening the domestic absorptive capacity. To change the situation of 'high-tech enclave', SIP needs to strengthen the absorptive capacity of local firms and universities and R&D institutes. This include creating a level-playing field for domestic firms, especially the small and medium-sized enterprises (SMEs), and improving their access to finance, technology and skills. Meanwhile, Suzhou needs to further strengthen its R&D capacity. As a prefecture-level municipality, Suzhou's R&D capacities are constrained by its lack of top-ranked domestic universities and research institutions. Over the years, Suzhou has created a higher education district to attract local branches of external universities and research institutions such as the Beijing University, Fudan University, China S&T University, Dayton University, etc., and more recently the Xi'an Jiaotong-Liverpool University (a Sino-UK joint venture). However, most of these local branches focus on management and training type of services, catering to the needs of FDIs for workers, with little commitment to basic research (Wei, Lu and Chen 2009). Given this situation, it is necessary to provide incentives to encourage the university branches to focus more on R&D activities, and to encourage FDIs to build more linkages with local firms and R&D institutions and universities through joint R&D, technology transfer and skills training.

- 4) Building a conducive innovation ecosystem. Innovation is not necessarily ‘planned’ or ‘managed’ but creating a conducive ecosystem is crucial for facilitating innovation and R&D activities. SIP has invested large amount of resources in building innovation platforms, science parks, and attracting knowledge workers. However, further efforts can be made to strengthen the innovation ecosystem, which is the key for the long-term competitiveness and industrial upgrading of SIP.
- First, further strengthening the university-business linkages. In SIP, only a limited number of high-tech firms have some collaborative research programs with local universities and R&D institutes, and there is very little labor mobility between business and academia. To overcome this issue, many OECD countries have adopted measures like temporary placements and industry-funded Ph.D projects (Zeng 2008). One example of good practice is the UK’s Business Fellowship scheme through which mainstream academics become business fellows, and are enabled to spend part of their time advising firms on technical or research problems in response to the enterprise’s needs (Zeng 2008; Zhang, Zeng, Mako and Seward 2009).
 - Second, promoting entrepreneurship (spin-offs and start-ups). SIP has managed to attract many overseas Chinese returnees, while this is helpful, in the long run, a more sustainable approach is to foster talents within the ecosystem itself. In Eindhoven (The Netherlands) and Kista (Sweden), local universities develop courses to train entrepreneurial engineers with the skills needed to set up high-tech start-ups. At the Technical University of Eindhoven entrepreneurship courses have been made mandatory for engineering majors (Winden, et al. 2012). To encourage entrepreneurship, academic researchers should be free to try out entrepreneurship without losing their tenure-ship. In SIP it is not difficult to combine an academic position with start-up entrepreneurship, but this is not the result of a healthy system but rather a lack of regulation – in some cases the line between public and private IPR ownership become blur. Clear but flexible regulations are needed to encourage entrepreneurial activities (Winden, et al. 2012).
 - Third, strengthening the venture capital (VC). Despite the high-quality innovation hardware in SIP, it still lacks a well-developed VC community. A state-funded Fund of Funds has been set up to provide VC funds with a base of 30% of their funding, leaving 70% of the funding to be covered by private investors. In cases of losses on the VC investments the government takes the first hit, so only major losses will filter down to private investors (Winden, et al. 2012). While this is helpful, it still requires huge investments from the government side. In the long run, it is important to create a network of private VC investors, and link them with the local start-up community that needs their investments (Zhang, Zeng, Mako and Seward 2009).
- 5) A new branding strategy for Suzhou. There are great efforts to “rebrand” SIP from the old image of a manufacturing park into a hotspot for innovation and R&D. The marketing strategy has evolved from giving seminars and presentations to promoting the ‘park-in-apar’ clusters (such as Biobay, Nanopolis, etc.). In fact, SIP has been branded as a full-fledged city or town (which fits the reality), not as an industrial park from the beginning. However, the given

brand name Suzhou Industrial Park (SIP) creates confusion among target audiences as it is clearly not just an industrial park. There is some discussion about changing the name to Suzhou Innovation Park or Paradise (Windén, et al. 2012). Maybe it is the right time to do so now. In addition, SIP can boost its image by using local ambassadors (for example successful entrepreneurs and universities) and also by giving information and testimonial stories to professional media (especially English ones) and let them tell the story as well. This will require better English skills and experiences in dealing with the international media community.

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