INDUSTRIAL DEVELOPMENT AND SPATIAL STRUCTURE IN CHANGZHOU CITY, CHINA: THE RESTRUCTURING OF THE SUNAN MODEL[1]

Y. H. Dennis Wei[2]
Department of Geography and Institute of Public and International Affairs
University of Utah

Chaolin Gu
Department of Urban Planning
Tsinghua University
Beijing, China

Abstract: This study investigates the transition of Sunan, located in China's southern Jiangsu Province, China using the orthodox Sunan model of development through a case study of Changzhou City. We found that post-Sunan development retains some of the characteristics of the orthodox Sunan model, and the current production map of Sunan is a combination of new development and the legacies of the development and restructuring of township and village enterprises (TVEs). We have identified the emergence of a new form of core-periphery uneven development, indicating that agglomeration is a pervasive force in production and that globalization is centralizing resources as well as development. We also traced the continuous involvement of local states in economic development and discovered evidence of policy convergence in coastal China. The dominance of manufacturing in the economy of Changzhou provides on-the-ground evidence concerning the rise of China as the global manufacturing floor. However, Changzhou's industry is still mainly made up of traditional industries that exhibit industrial isomorphism and a dispersed spatial layout. Industrial development in Changzhou has been handicapped by its semi-peripheral location in the Yangzi River Delta, less successful local policies, and the legacies of the Sunan model. [Key words: Sunan model, economic restructuring, Yangzi River Delta, China.]

China's miraculous rise is spatially uneven, and three well-known models of industrial districts and regional development—the Sunan model, the Pearl River Delta (PRD) model, and the Wenzhou model—have generated considerable scholarly discussion (Fan, 1995; Oi, 1999; Marton, 2000; Wei, 2002, 2009; Wei et al., 2007). The Sunan model attributes the development of Sunan to the local state–directed township and village

[1] We acknowledge funding from the Ford Foundation (10851022) and the Natural Science Foundation of China (40435013; 40428003). We would also like to thank the research assistance of Xiang Chen, Yingru Li, Zhouyang Wang, and Feng Yuan for their research assistance, the support of local government officials in Changzhou, and other graduate students from Nanjing University who were involved in this project.
[2]Correspondence concerning this article should be addressed to Y.H. Dennis Wei, Department of Geography and Institute of Public and International Affairs, University of Utah, 260 S. Central Campus Drive, Room 270, Salt Lake City, Utah 84112-9155; telephone: 801-581-8218; fax: 801-581-8219; email: wei@geog.utah.edu; or Chaolin Gu, Department of Urban Planning, Tsinghua University, Beijing, China; email: gucl@mail.tsinghua.edu.cn

Urban Geography, 2010, **31**, 3, pp. 321–347. DOI: 10.2747/0272-3638.31.3.321

enterprises (TVEs), conceptualized as local state corporatism (Oi, 1999) or development/urbanization from below (Ma and Fan, 1994). However, since the mid-1990s, TVEs have been undergoing ownership restructuring through the processes of marketization and privatization. The drastic restructuring of Sunan has prompted a renewed examination of the Sunan model, and scholars have called for progress "beyond the Sunan model" (Wei, 2002). Suzhou City in particular has become a globalizing urban center dominated by foreign investment, which is exemplified by the establishment of the China–Singapore Suzhou Industrial Park (Pereira, 2003; Wei et al., 2009). At the county level, Kunshan has been transformed into a globalizing, booming high-tech complex (Wei, 2002; Chien, 2007). These two cities have become symbols of post-Sunan model development.

Nonetheless, there is an increasing gap between core and peripheral regions at the intraprovincial level in China (Fan, 1995; Wei, 2000; Lu and Wei, 2007; He et al., 2008). Even the development of the core regions shows remarkably different pathways toward industrialization and regional development. Sunan is a region with three metropolitan areas (Suzhou, Wuxi, and Changzhou) and a population of 14.3 million (2006). Suzhou and Kunshan are only two of the cities in the region, and the transformation of other cities in Sunan has largely escaped the attention of scholars. Changzhou Municipality was a prototype of the Sunan model, especially its Wujin County (currently Wujin District). Changzhou City has been struggling to keep pace with the development of Suzhou and resume its prominence within Sunan.

This study attempts to advance research on the restructuring of development models in China, the Sunan model in particular, through a case study of Changzhou City. We will investigate the economic and industrial restructuring of the city in order to understand the restructuring process, the role of local states, and factors underlying the success or failure of restructuring. We ask the following questions: How has the Sunan model, in this case, Changzhou, been restructured? What are the roles of local states in the restructuring process? What are the legacies of the Sunan model? We will show that Changzhou's path toward post–Sunan model development has been less successful than Suzhou's, even Wuxi's, and that its position in Sunan has been declining. It is argued that in the age of globalization, opportunities are favoring some cities and regions, and that the effects of local states on urban and regional development depend on local geographies and institutions. The success or failure of a city or region to capture new development opportunities greatly shapes its particular pathways of development. We will highlight the significant role of local states in the restructuring process in Changzhou, reflect on the path dependence of its local state–led TVE development process, and analyze the constraints and challenges that Changzhou faces to overcome the limits of the Sunan model. The Changzhou experience adds new dimensions to the restructuring of development models in China and enriches the understanding of urban and regional restructuring and the role of institutions in development.

RESEARCH BACKGROUND AND CONTEXT

It has been increasingly recognized that despite the claims of a borderless world and the hollowing out of nation-states, cities and regions continuously play a pivotal role in the globalization process and serve as the nodes and bases of globalization and localization. The world economy is not a singular global production entity, but a regional world of

production contested by regionalization, reterritorialization, and geographic embeddedness (Cox, 1997; Scott, 1998). On the other hand, competition among regions has intensified, and developing countries like China have become increasingly integrated with the global economy. Three emerging themes of global and spatial change serve as the basis for this research.

First, cities and regions do experience changes and face heightened competition during the processes of globalization and economic restructuring. Whereas globalization has indeed increased spatial interaction and capital mobility, the process is fundamentally uneven and full of tensions. The global map of production is in a state of flux and city-regions in both developed and developing countries have been undergoing restructuring as well (Dicken, 2007). Scott (2006) suggests that the global geography of production is assuming the form of a far-flung mosaic of competing and collaborating agglomerations at various levels of productive capacity and development. The most striking forms of agglomeration today are super-agglomerations or city regions, which are the sites of dense concentrations of interrelated economic activities as well as the drivers of national and global economies (Scott and Storper, 2003). The effects of globalization have been spatially uneven, and there are winners and losers around the world. The most globalized urban cores in developing countries, such as the Yangzi River Delta (YRD) of China, are winning the global competition for capital and human resources (He et al., 2008). They are emerging global city-regions and centers of global production that enjoy locational advantages, and are favored by transnational corporations (TNCs). As such, places within such city regions can benefit from globalization through the infusion of foreign capital and plug into global value chains or production networks.

On the other hand, city-regions are internally diverse and are also in a state of flux; competition among cities in such regions has intensified. They exhibit complex internal structures comprising multiple urban cores, extended suburban appendages, and far-flung hinterlands, themselves often sites of scattered urban settlements (Scott and Storper, 2003). Hall (2001) suggests that a global city-region is a new form of uneven development and division of labor, consisting of a global city, secondary cities, and peripheral cities and areas. Within such a city-region, the map of production is also being constantly redrawn and new forms of uneven development are being reproduced (Knox et al., 2004). Studying the dynamics and diversity of such globalizing city-regions is essential to understanding global change and its evolving economic geography. Following this research thrust, we expect that the restructuring process in the YRD is likely heightened and that this city-region is likely to be more affected by global economic change, while its semi-peripheral zones such as Changzhou likely face greater challenges to development.

Second, agglomerations at a finer level (mesoscale) of productive capacity and development are the industrial districts, which have also been undergoing restructuring in the context of global change. The orthodox notion of industrial districts has been criticized for ignoring the impacts of globalization and large transnational firms, the role of nation-states, and the dynamics of regional development (Whitford, 2001; Hadjimichalis, 2006; Wei et al., 2007). Italian industrial districts as symbols of the success of small-scale, flexible capitalism have been challenged by globalization and changing national contexts, with intensified competition, the formation of delocalized firms and TNCs, and the replacement of local workers by migrant labor (Dunford, 2006; Hadjimichalis, 2006). Eraydin (2001) identified three trajectories of change: loss of competitiveness, mergers

and integration with global production networks, and innovation. The body of research has proposed alternative notions of industrial districts and regional development; scholars have called for "globalizing" or "scaling up" regional development (Yeung, 2005; Wei, 2007). Regions winning the competition, such as London, which are conceptualized as neo-Marshallian districts (Amin and Thrift, 1992), combine a synergy of local and global forces with three structural characteristics: centered places in the global system, key nodes within global economic circuits, and growth centers in the globalized economy. Coe (2001) also shows how industrial restructuring and globalization have transformed the film industry and stimulated the development of a satellite-Marshallian district in Vancouver.

The literature has maintained the significance of path dependence, including historical and spatial legacies in shaping the trajectories of restructuring and development (Martin and Sunley, 2006). In regions that are dominated by old, heavy, specialized industries, such as Baden-Württemberg, local institutional structures may be far less flexible, with the potential of regional lock-in through a process of rigidification and growing inflexibility (Grabher, 1993). Even emerging regions in developing countries like China encounter such problems, which have been conceptualized as intergenerational, relational, and structural lock-ins (Wei et al., 2007). Cities and regions locked into past development models and failing to capture new development opportunities will lose competitiveness and become further marginalized. Accordingly, this research investigates the processes of industrial and spatial restructuring and the influence of the legacies of the Sunan model on development in Changzhou.

Third, regions or industrial districts in developing countries are often characterized by the importance of family circles, active local states, frequent informal networks, the cohabitation of small firms and Fordist giants, and a lower degree of specialization (Park and Markusen, 1995; Rabellotti, 1995; Pietrobelli and Barrera, 2002; Miao et al., 2007). Particularly relevant to this research is the critique that the literature of globalization and industrial districts underappreciates the role of the state in its conceptualizations. In East Asia, the market is "governed," and state capacity lies in policy instruments and institutional links with private enterprises (e.g., Wade, 1990). From Bangalore to Kuala Lumpur to Suzhou, tremendous efforts have been made to transform Asian cities into globalizing high-technology centers. Theoretically, the role of the state has been analyzed through the paradigms of governance, development and entrepreneurial states, the growth machine, and the politics of scale (e.g., Hall and Hubbard, 1996; Jessop and Sum, 2000). Local states in China have become more actively involved in local development, and have been described as development and entrepreneurial states (Duckett, 1998), that even act like "industrial firms" (Walder, 1995).

However, the notion of the East Asian development state is static and aspatial. The state is transitional and the role and effects of the state are defined by changing global and domestic contexts and vary in time and space (Wei, 2007; Yu and Wei, 2008). Chien (2007) argues that the development of local state projects in Kunshan is an evolutionary process, consisting of complex mechanisms of state interactions. Competition between various local states results in regional development with both positive and negative dimensions. Research to date emphasizes the positive roles of states, and largely deemphasizes the notions of failing states and negative effects of state policies on development. Such problems could be generated from rent seeking, state incapacitation, ill-defined policies,

and problems in policy implementation (e.g., Pei, 2006). Recent work on China has documented intense competition among the local states of Sunan and the YRD (Yang and Wang, 2007; Luo and Shen, 2008; Wei et al., 2008), and argues that states do not act in a vacuum and that local state initiatives strongly affect local geographies and institutions (Wei, 2002). Marketization and globalization have triggered the growth of non-state enterprises and entrepreneurs. For the state policies to be effective, non-government economic agencies, smaller domestic investors in particular, have to be nurtured and able to participate in the process of investment and market reforms (Hong, 2004). Therefore, the precise role of the state and the effectiveness of state policies in development have to be analyzed with particular local institutional environments, and in our case, a study of Changzhou. Also, the proper referents for understanding state performance are not only a region's own past and present performance in absolute terms, but its performance relative to other regions at any given time (Carment, 2003).

China's growth is spearheaded by developments along its eastern coastal region, particularly the three leading city-regions: the YRD, the PRD, and the Beijing–Tianjin region. Distinct models of industrial districts and regional development have emerged in China. The PRD model is conceptualized as externally driven development and exo-urbanization (Eng, 1997; Sit and Yang, 1997). The Wenzhou model is known for a development path centered on small-scale family enterprises (Liu, 1992). However, given the velocity of change in China, scholars have mainly studied emerging patterns and processes underlying regional development. The PRD has attempted to "domesticate globalization" through embedding global firms and developing endogenous innovation capacities (Lu and Wei, 2007), and its local clusters driven by various sources of domestic Chinese investment have been reshaped by trans-local dynamics (Yang, 2007). Since the late 1980s, Wenzhou has gone through two major rounds of restructuring (from family enterprises to shareholding cooperatives to shareholding enterprises), including four major types of strategic response: institutional change, technological upgrading, industrial diversification, and spatial restructuring, which challenges the orthodox concept of Marshallian districts and calls for "scaling up" regional development (Wei et al., 2007).

The Sunan model attributes the development of Sunan to the local state–directed township and village enterprises (Han and Pannell, 1997) and is viewed as local state corporatism (Oi, 1999) and development/urbanization from below (Ma and Fan, 1994; Zhang and Gu, 2002). Popularized in the 1980s, TVEs were characterized by local official management, mobilized local populations, and flexible production and marketing. TVEs, being an intermediate ownership form between private and state-owned enterprises (SOEs), enjoyed policy support and market flexibility while avoiding the rigidity of SOEs on one hand and political risks associated with private enterprises on the other. However, with intensified global competition, TVEs lost competitiveness and Sunan has moved "beyond the Sunan model" with the infusion of global capital, represented by the cities of Suzhou (Pereira, 2003) and Kunshan (Wei, 2002; Chien, 2007). An examination of the restructuring process in Changzhou, a semi-peripheral zone of the YRD, can provide a fuller picture of development and change in Sunan.

The Sunan region is also called Su(zhou)–(Wu)Xi–Chang(Zhou), and Changzhou (Fig. 1) is located to the northwest of Suzhou and Wuxi. In 2006, the municipality had a population of 3.55 million and a land area of 4,375 km^2, including the city district

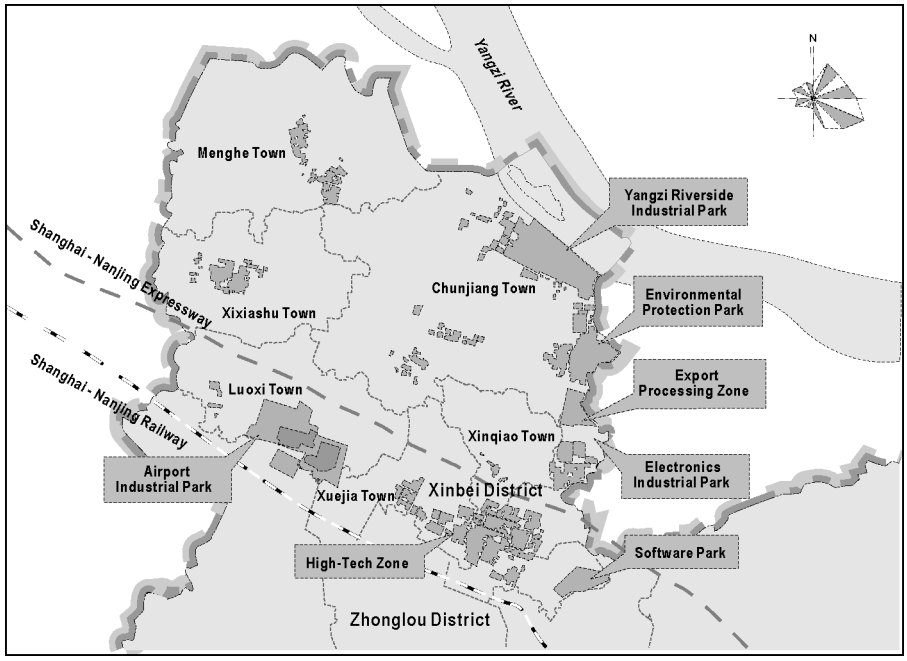

Fig. 1. General location and development zones of Changzhou.

(Changzhou City, with a population of 2.225 million and a land area of 1,864 km^2) and counties (Table 1). Industrial production is critical to Changzhou's economy. The most rapid growth is seen in the private and foreign sectors.

URBAN DEVELOPMENT AND TVE RESTRUCTURING

Changzhou is one of the earliest economic centers of China. Its family-based handicraft industry, with products such as combs, can be traced back to the East Jin Dynasty (317–420). With the construction of the Grand Canal in the Sui Dynasty (581–618), Changzhou became one of the centers of trade and handicraft industries during the Tang Dynasty (618–907), including textiles, clothing, and paper making. In the Ming (1368–1644) and Qing (1644–1911) dynasties, the city expanded its industries. By the eve of the communist revolution, Changzhou was known for its textile and clothing industries, which in 1949 accounted for 69.5% of Changzhou's industrial output (Editorial Committee, 1995). Like the rest of Sunan during the socialist transformation in the early and mid-1950s, many of the small-scale private enterprises in Changzhou were transformed into collectively owned enterprises (COEs), which accounted for 30% of the total number of industries in 1956. Under socialist industrialization, Changzhou became a major manufacturing center and established a group of industries in the 1950s and 1960s that included machinery, metallurgy, electronics, chemicals, and pharmaceuticals. The city's industrial output reached 535 million yuan in 1965, in which textile and clothing as well as machinery

TABLE 1. PROFILES OF SHANGHAI AND THE JIANGSU PORTION OF THE YANGZI RIVER DELTA, 2006

Municipality	Administrative area, km^2	Population, mill.	GDP, bill. yuan	GDP per capita, yuan	Exports, bill. US$	Exports per capita, US$
YRD	109,652	83.24	3,961	47,588	508.4	6,108
Shanghai	6,340	13.68	1,037	75,778	266.6	19,486
			Jiangsu Province			
Nanjing	6,582	6.07	277	45,697	17.4	2,862
Wuxi	4,787	4.58	330	72,066	21.4	4,681
Changzhou	4,375	3.55	157	44,211	7.9	2,223
Suzhou	8,488	6.16	482	78,252	94.7	15,372
Nantong	8,001	7.70	176	22,835	7.2	936
Yangzhou	6,634	4.59	110	23,969	2.4	514
Zhenjiang	3,847	2.69	102	37,974	2.7	989
Taizhou	5,797	5.04	100	19,887	2.2	437

Source: Statistical Yearbooks of Shanghai, Jiangsu, and Zhejiang, 2007.

and electronic products industries accounted for 50.5% and 21.8%, respectively (Editorial Committee, 1995). In the rest the Maoist era, the city expanded its industrial base and scope of production. Products such as chemical fibers, wool fabrics, farm tractors, and bicycles were well known throughout China.

Despite stagnation during the Maoist era, Mao's rural industrialization policies during the late 1950s and early 1970s provided a macro-scale environment for the initial development of TVEs. With the socialist shortage economy creating demand conditions and promoting the locational advantage of proximity to Shanghai's markets, supplies, and human capital, some small-scale TVEs were established in the countryside. In 1976, COEs produced 21% of industrial output. With reforms in the early stage marked by the struggle of the SOE reform and limited private enterprises, TVEs as a semi-state, transitional form blossomed in Sunan, and the result became known as the *Sunan model*, characterized by local state corporatism, development/urbanization from below, and "leaving the land but not the villages" (Fig. 2). TVEs produced 19.8% and 53.1% of industrial output, respectively, in 1985 and 1988 in Changzhou Municipality.

However, the TVEs' structural characteristics (Fig. 2), which shaped the Sunan model in the first place, became obstacles to further development, and TVEs failed to compete with foreign and private enterprises. First, with increasing competition, the TVEs' nature of collective ownership and party control resulted in corruption, mismanagement, and declining profitability (Ho et al., 2003). With the radical reforms toward globalization and marketization in the early 1990s, foreign investment poured into China and private enterprises also received more state support. Moreover, as a major component of institutional reform, the function of the state retreated from direct involvement in business toward increasingly adjusting the market. Finally, TVEs tend to be small in size, employ less-trained labor forces, lack economies of scale and agglomeration, and are less capable

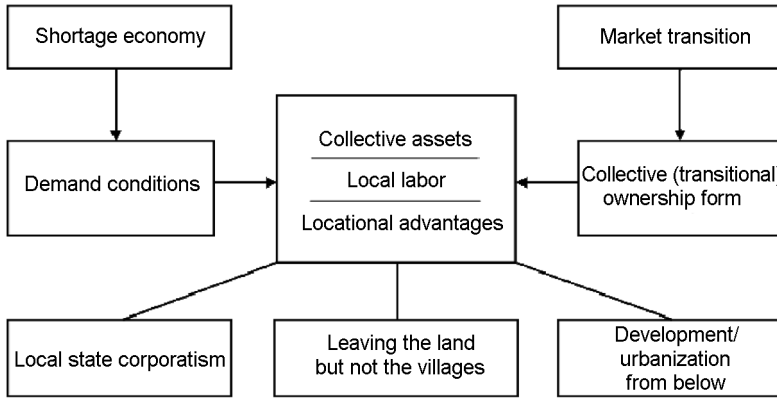

Fig. 2. The characteristics and mechanisms of the orthodox Sunan model.

in terms of technical innovations and improving management than modern corporations (Wei, 2004).

In 1993, restructuring of TVEs was initiated under the policy of "grasp the large, reform the medium, and release the small," and was accelerated in the mid-1990s to "clarify" property rights and improve efficiency by transforming TVEs into multiple ownership forms. These included shareholding enterprises, limited liability corporations, private enterprises, and Sino–foreign joint ventures (Ho et al., 2003; Wei, 2004).

The three major types of industrial restructuring and the development of non-state enterprises in Changzhou can be summarized as follows: *Type I*: Factory Centered, common in traditional industries, such as machinery, textile and clothing, metallurgical, and electronics industries. Firms formed here used their original sites, equipment, and technologies, and some established joint ventures with foreign firms. In the machinery industry, such important enterprises as Dongfeng, Changlin, and Changcai, which were established in the 1950s and 1960s, were transformed from SOEs into private or shareholding enterprises. Another example is that Changzhou's power transmission industry used the Changzhou Transformer Factory as the base to cooperate with Toshiba and Changzhou XD Transformer to improve technology and develop new products.

Type II: Place Centered, usually based on TVEs in small family workshops. These workshops were concentrated in several contiguous villages and towns, forming nascent industrial clusters and local markets. Similar to the Wenzhou model, they mainly produce small, specialized products, and some areas have gradually become influential regional markets. Henlin Town, as the "Capital of Intensive Wood Floor in China," is focused on its floor and furniture industry, and Menghe Town's Auto-Motorcycle Supplies Market was developed based on local, family-based workshops and companies.

Type III: Market Centered, often based on specialized markets. Usually a specialized, local market grew in size and became regionally significant, and consequently factories relying on the market were established. The Zouqu Lighting Market in Zouqu Town is a typical example. With a location near Changzhou City and connected by State Road 312 and Provincial Road 321, a lighting market emerged in the 1980s and became an

TABLE 2. THE SUNAN MODEL AND RECENT DEVELOPMENT

Dimensions	Sunan Model	"New" Sunan Model
Year	1970–1980s	1990s
Geographical base	Rural areas	Cities and regions
Ownership structure	Collective (fuzzy property rights)	Foreign, private, and shareholding (clear property rights)
Industrial structure	Industry (machinery, textiles)	Industry and service (+ technology industry)
Scale economies	Small, in small towns	Larger, in development zones
Growth patterns	Traditional, extensive	Upgrading, technology
Migration	"Leave the land but not the township"	Urbanization, concentration
Urbanization (mechanisms)	Small towns–centered TVEs, bottom-up	Cities-centered, from above and outside
Local states		
A. enterprise	Directly involved	Service, business environment
B. Key level	Township	County
C. Area	Economic growth	Socioeconomic development
D. Format	Resources and policies	Plan, policies

officially recognized market in 1993. It is now one of the largest lighting markets in China, with sales of 1.48 billion yuan in 2004. The market has attracted the relocation of many factories to nearby places such as Niujia, Hengshanqiao, and Lujiaxiang, which also accelerates the development of local lighting factories.

By 1999, most TVEs had been transformed into private and joint ownership forms, which signaled the end of the historical role of TVEs and the orthodox Sunan model of development (Wei, 2002). Some even called it the end of the Sunan model (e.g., Wu, 2001). The restructuring has sustained Sunan's economic status in Jiangsu. Suzhou and Wuxi municipalities' per capita GDPs in 2006 were much higher than the average of the YRD and among the highest in the country (Table 1); they even surpassed Nanjing, the provincial capital of Jiangsu that seems more conservative in economic restructuring and urban development (Luo and Wei, 2006). The number of counties (or county-level cities) included in the State Statistical Bureau's top-ten lists even increased, from five in 2001 to seven in 2005, and Kunshan ranked first (Chu, 2007).

Sunan's development shows new features (Table 2 and Fig. 3), trends, or components (e.g., Qiu and Feng, 2000; Zhang and Gu, 2002) that are regarded by some as the "new" Sunan model (Huang et al., 2007). We elaborate on some of the major characteristics of recent development. First, the role of local states has been transformed gradually from direct involvement in the operation of TVEs toward improving the business environment and providing policy guidance. In general, local states in Sunan remain quite active and

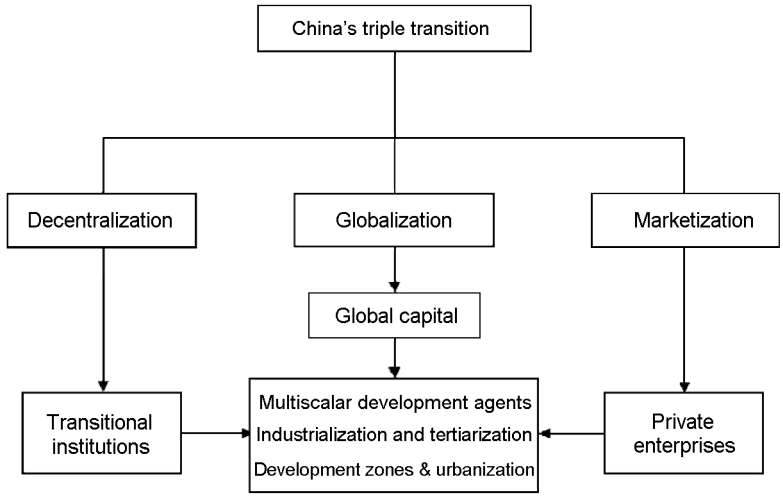

Fig. 3. The characteristics and mechanisms of post–Sunan model development.

TABLE 3. FOREIGN DIRECT INVESTMENT IN SUZHOU, WUXI, AND CHANGZHOU (BILLIONS US$)

	Suzhou		Wuxi		
Year	FDI	Ratio to Changzhou	FDI	Ratio to Changzhou	Changzhou FDI
1999	2.86	4.5	1	1.6	0.63
2000	2.88	5.1	1.08	1.9	0.56
2002	4.81	8.6	1.74	3.1	0.56
2004	4.65	8.7	1.95	3.6	0.54
2006	6.11	4.9	2.75	2.2	1.25

Source: JSB (2000–2007).

more heavily involved in improving local business environments, including providing land resources, which reflects the legacy of the Sunan model.

Second, Sunan's development has become more heterogeneous with multiscalar development agents (Fig. 3). On one hand, TNCs have become a major agent of growth and transformation in Sunan. In 2006, FDI reached US$10.1 billion, accounting for 58% of Jiangsu's totals (Table 3). Within Sunan, Suzhou in particular has moved away from the orthodox model of development centered on TVEs and toward globalization, a new pathway of post-Sunan development called the Suzhou model. The amount of FDI seems to decline with distance from Shanghai, with Changzhou lagging behind. The ownership form has been changed from one centered on SOEs and TVEs with fuzzy property rights to one dominated by foreign, private, and shareholding enterprises. While

TABLE 4. A COMPARISON OF SUZHOU, WUXI, AND CHANGZHOU IN OWNERSHIP FORMS, 2006, IN BILLIONS YUAN

	Suzhou		Wuxi		Changzhou		Sunan	
Ownership form	GVIO[a]	%	GVIO	%	GVIO	%	GVIO	%
State-owned enterprises	3.05	0.2	25.03	3.5	5.55	1.7	33.63	1.5
Collectively owned enterprises	8.86	0.7	93.12	13.1	10.30	3.1	112.28	4.9
Shareholding cooperatives	3.70	0.3	23.83	3.3	18.66	5.7	46.19	2 .0
Joint-ownership enterprises	0.86	0.1	0.63	0.1	1.46	0.4	2.95	0.1
Limited liability corporations	157.86	12.6	75.75	10.6	32.90	10.0	266.51	11.6
Shareholding enterprises	41.63	3.3	24.11	3.4	11.25	3.4	76.99	3.4
Private enterprises	202.85	16.2	220.15	30.9	144.47	43.9	567.47	24.7
Other enterprises	0.30	0.0	0.40	0.1	0.00	0.0	0.70	0.0
Hong Kong-, Macao-, and Taiwan-invested enterprises	184.39	14.7	88.51	12.4	48.18	14.6	321.08	14.0
Foreign-invested enterprises	650.31	51.9	160.94	22.6	56.61	17.2	867.86	37.8
Total GVIO	1,253.85	100.0	712.46	100.0	329.38	100.0	2,295.69	100.0

[a]GVIO: Gross value of industrial output.
Source: JSB (2007).

Suzhou Municipality had 66.6% investment from foreign sources, Changzhou has less FDI (31.8%) but, more importantly, private enterprises (43.9%), shareholding cooperatives (5.7%), and limited liability corporations (10%; Table 4).

Third, Sunan has been actively promoting the development of industrial and high-technology parks, a major policy instrument of local states. Sunan has actively lobbied the central and provincial governments for more national, provincial, and local development zones. By the end of 2006, Sunan established 11 national-level development zones and 26 provincial-level development zones. The municipality has one national-level development zone and nine provincial-level development zones. Those districts and parks are experiencing rapid urbanization and have become new centers of production enjoying effects of clusters and agglomeration. In 2005, these 10 development zones realized a GDP of 32.9 billion yuan, accounting for 25.3 % of the total GDP of the municipality (Chen and Gu, 2007, p. 79).

Fourth, whereas the orthodox Sunan model is centered on industries, known as "no industry, no wealth" (*wu gong bu fu*), recent efforts have mobilized local resources for industrial and service development and developed high-tech industries in development zones. The ICT sector is critically important in Suzhou and Nanjing municipalities (Table 5). In Changzhou, 12 enterprises were listed among the 100 leading high-tech firms of Jiangsu Province. However, as we will analyze in a later section, such policy efforts also come with a heavy price. The municipality has also expanded its economic and spatial structures with rapid urbanization and development of the service sector, adopting policies widely implemented in the rest of China. From 1990 to 2006, the service sector's share of GDP increased from 20.3% to 35.8%.

TABLE 5. PROFILES OF THE ICT INDUSTRY IN SHANGHAI AND THE JIANGSU PORTION OF THE YANGZI RIVER DELTA, 2005

Municipality	Industrial output, bill. yuan	ICT output, bill. yuan	Pct. of all industry	Per capita ICT output, yuan
YRD	6,292	979.3	15.6	11,847
Shanghai	1,577	343.4	21.8	25,251
		Jiangsu Province		
Nanjing	406	95.6	23.5	16,044
Wuxi	572	67.1	11.7	14,804
Changzhou	250	15.6	6.2	4,423
Suzhou	991	328.7	33.2	54,153
Nantong	214	10.1	4.7	1,309
Yangzhou	145	17.6	12.2	3,864
Zhenjiang	133	3.6	2.7	1,328
Taizhou	122	1.1	0.9	221

Source: Statistical yearbooks of municipalities, 2006

INDUSTRIAL LOCATION AND SPATIAL STRUCTURE

The development of Changzhou's manufacturing industry was based on collective capital, strong support of township governments, and traditional production processes. With a changing institutional environment, Changzhou has been diversifying its traditional model of development and promoting the growth of industrial clusters and districts through mergers and acquisitions, technological upgrading, and spatial concentration. Such a pathway of development is common among other coastal cities of China, such as Wenzhou (Wei et al., 2007), and to some extent resembles what is happening in the industrial districts in developed countries (Hadjimichalis, 2006). Its industrial structure has also been broadening, with development in the high-tech sector, a strategy widely pursued by Asian cities (Jessop and Sum, 2000). The largest sectors are the machinery, textiles and clothing, metallurgical, and chemical industries, and together they produced 81.5% of industrial output in 2006. Changzhou's industrial structure is therefore less high-tech oriented than Suzhou.

TVEs in Changzhou were based on townships and villages, and collectively managed by township and village governments. Their land, labor, and capital came mainly from townships and villages as well, and the profits were also retained among them. Therefore, spatially, TVEs were dispersed across townships and villages. During the reform, especially in the early 1990s, a series of development zones were established with special preferential policies, based on existing industries and potential new development. There are one national and six provincial development zones in the city, including Xinbei National High-Tech Development Zone (Fig. 1), the High-Tech Development Zone and Agricultural Development Zone in Wujin District, and provincial development zones in

Zhonglou, Tianning, and Qishuyan districts.[3] Industries and industrial land use have been concentrating in these development zones.

Despite the ownership reform and spatial adjustment of the 1990s, geographic legacies of the Sunan model can still be identified. Industries are still sparsely distributed, even the locations of some large corporations, but there are obvious spatial differences in land use patterns. The manufacturing industry is most highly concentrated in Zhonglou, Tianning, and Qishuyan districts, as well as Hutang Town of Wujin, indicating that there is considerable industrial land in the urban district. Industrial land use is also concentrated in towns such as Yaoguan, Hengshan, and Henglin, located in the eastern part of the urban district. Due to the establishment of the Xinbei National High-tech Development Zone in the northern part of the city, a large and dense industrial zone has begun to emerge in Xinbei District. The southwestern towns are lagging behind, and therefore their industrial activities are more sparsely distributed.

The largest manufacturing sector in Changzhou is the machinery industry. In 2006, there were 9,563 machinery companies that employed 365,447 workers, accounting for 39.4% of all employees in the manufacturing industry. The output value of the machinery industry was 97.17 billion yuan in 2006, or 29.5% of the total manufacturing output. Changzhou's machinery sector primarily consists of general machinery (9.3%), electrical machinery and equipment (9.3%), transportation equipment (4.2%), and specialized equipment (5.2%). Some of the products enjoy scale economies, such as small-sized tractors, transformers, excavators, and air conditioners. However, the machinery industry lacks large, competitive enterprises and equipment manufacturers. The equipment and technology in the traditional industries, especially small firms in electrical machinery, agricultural machinery, and construction machinery, are outdated. The industry faces problems of low technology, insufficient capital, low value added, and low-quality products. In the following, we examine industrial structure and location in Changzhou in greater detail by examining the textiles/clothing and ICT sectors.

Textiles and Clothing

The textile and clothing industry is Changzhou's traditionally dominant industry. During the Maoist era, the state-owned textile and clothing industry already was Changzhou's leading industry. Since the reform, it has developed rapidly with the emergence of foreign and private enterprises. In 2006, the output value of textiles was 35.73 billion yuan, accounting for 10.8% of the city's gross value of industrial output; the output value of clothing was 13.72 billion yuan, accounting for 4.2% of the city's gross value of industrial output (Table 6). Although the literature on the garment industry concentrates on integration with global commodity/value chains, the textile and clothing industry in China can be further classified into two subtypes: (1) large enterprises with better integration vis-à-vis the global market, more advanced technologies, and more adaptive capabilities, such as Heimudan, Yueye, and Donghua; and (2) small, dispersed family workshops, which tend to be more labor intensive and domestic oriented, such as the

[3]Locations of the districts are shown in Figures 4 and 5.

TABLE 6. STRUCTURAL CHANGE OF SELECTED MANUFACTURING INDUSTRIES IN CHANGZHOU CITY (PERCENT)[a]

Sectors	Subsectors	1990	1995	2000	2006
Textile and Clothing	Subtotal	24.7	14.1	14.1	15.4
	Textile	22.7	11.4	10.2	10.8
	Apparel, shoes, hats	1.7	2.2	3.6	4.2
	Leather, fur, feathers, and related products	0.3	0.5	0.3	0.4
Information and Communications	Communications equipment, computer and other electronic equipment	7.1	7.4	8.3	5.9

[a]State-owned or controlled enterprises and non-state enterprises with sales of over 5 million yuan, as defined by the State Statistical Bureau.
Source: CSB (1991, 1996, 2001, 2007).

Hutang textile and clothing industry cluster. Such a pattern of industrial structure reflects the reality of China, which is both globalizing and fostering the growth of its domestic market.

This industry has also been facing new challenges and its share of industrial output has been declining (Table 6). First, competition is very intense for the textile and clothing industry, and Changzhou's competitive edge has been eroding. Developed countries at the top of global value chain dominate high value-added production and control the high-end market with buyer-driven commodity chains, while the apparel industry has become more globally dispersed (Bair and Gereffi, 2003). Production in India, Pakistan, and Indonesia, as well as some countries in North Africa, which is based on cheap labor and trade liberalization, has started to penetrate the low- and middle-end market, and have become China's increasingly powerful competitors. Profit margins in Changzhou's textile and clothing industry have been reduced further by declining export tax rebates, the appreciation of the Chinese yuan, and rising production costs. In addition, although the international textile quota system was abolished, trade barriers are still rampant. The export markets of textile and clothing products are affected by various technical standards, quality specifications, environmental regulations, and intellectual property rights. Changzhou's textile and clothing industry also faces challenges from the domestic market, especially increasing competition from the interior of China. Rising costs in labor, land, and energy have hit the small workshops hardest, the while rising yuan and declining export rebates have reduced profit margins of the export-oriented enterprises drastically; some are even losing money. And rising environmental standards put further pressure on the industry.

Second, the textile and clothing industry is also losing its competitive edge due to the lack of well-known brands and lower profit rates. Changzhou's textile and clothing exports are primarily based on OEMs (original equipment manufacturers) controlled by leading firms based in Western developed countries. Although OEMs help to preserve the clothing industry, Changzhou must depend on export channels. The clothing industry is

mainly based on processing, and lacks more profitable design, marketing, and services. Whereas such characteristics are common among Chinese cities, some like Guangzhou and Ningbo are moving up the value chain more rapidly and establishing conglomerations and industrial groups. The industry is at the middle level in the cities of the Yangzi River Delta, and has over the years gradually lost its initial advantages to cities such as Ningbo, Hangzhou, and Wenzhou that have been more successful in branding strategies and corporation reorganization. The worsening business environment since 2006 has placed the biggest challenge on OEMs, which are more sensitive to changing costs and global market conditions.

Third, the industry's structure and technical innovation capabilities need further improvement. Changzhou's textile industry mainly includes spinning, weaving, knitting, and other processing sectors, and lacks advanced dying, finishing technology, and sufficient capital. Such a structure not only affects the color, feeling, and style of final fabrics, but also directly reduces value-added and profits. Moreover, production equipment in many small and medium-sized factories is outdated, and their technological innovation capability is very limited.

Finally, the industry also has inadequate business management. Changzhou's textile and clothing industry has been undergoing restructuring with the formation of some large industrial groups. However, the majority of firms have not developed adaptive mechanisms for the rapidly changing global market driven by consumer demand, known as "small quantities, multi-varieties, quick delivery, and high quality." In addition, like many Chinese cities, the industry lacks professionals with international experience, partly related to the city's marginal location in the Delta.

In the city district, the land area of the textile and clothing industry in 2004 was 22.4 km^2, or 14% of total manufacturing land, second to the manufacturing of machinery. Spatially, the industry is mainly located in Tianning District and Hutang Town of Wujin District (Fig. 4). In Tianning District, the industry mainly concentrates on Qinglong Subdistrict in the northeastern Qinglong Textile Industrial Park and in Dongnan Economic Development Zone (the shaded areas in Fig. 4). Other textile and clothing manufacturers are located on Longhutang Subdistrict, Xixiashu and Chunjiang towns of Xinbei District, and in Niutan Town of Wujin District. The textile and clothing industry in Niutang Town mainly benefits from the expansion of activity outward from adjacent Hutang Town. In terms of output, places with the highest output value are mainly located in the southern subdistricts of Tianning District and Hutang Town of Wujin District.

Electronics and Information Industry

Changzhou's electronics industry is developing from original SOEs and COEs such as the Changzhou Radio Factory and Changzhou Second Electronics Instrument Factory. Four transitional forms are involved: (1) technicians from previous firms establishing their own factories; (2) mother factories cooperating with foreign companies to form joint ventures; (3) branches of the above factories becoming independent firms; and (4) SOEs disintegrating into small firms.

The electronics industry is another for which Changzhou has some advantages. As a manufacturing base for electronics and information equipment in Jiangsu and China, Changzhou enjoys certain advantages in R&D and production facilities, especially Xinke

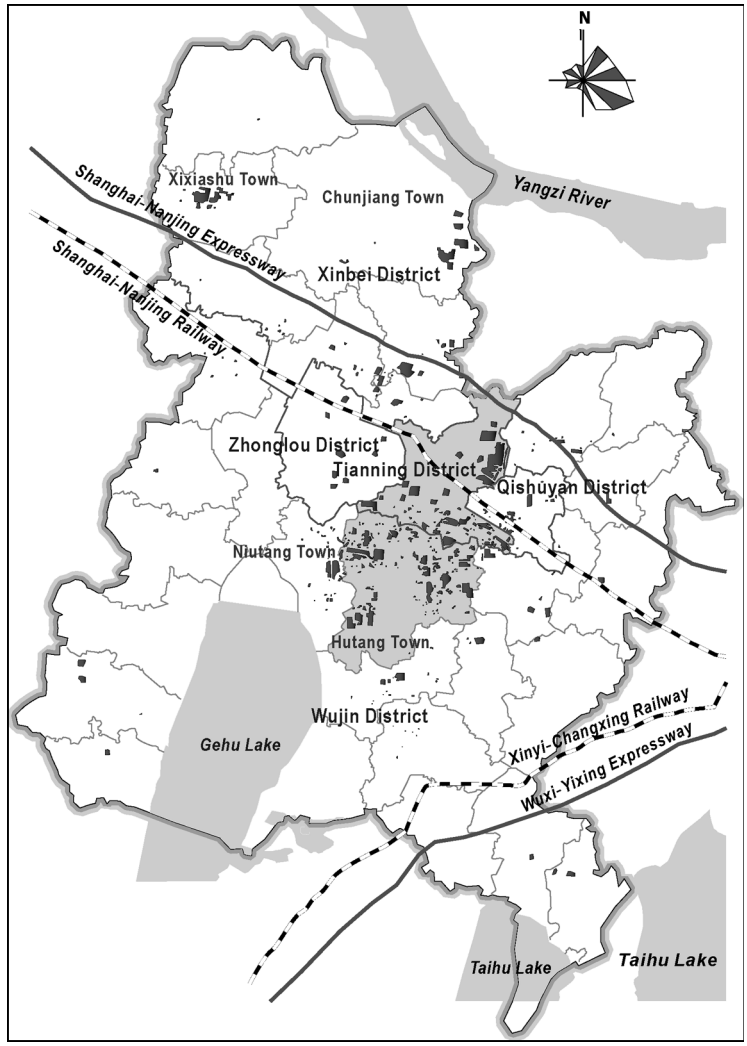

Fig. 4. Land use patterns in the textile and clothing industry, 2004.

Digital, a producer of laser CDs/DVDs and digital stereos, which owns a series of leading domestic technologies and advanced products. In 2005, ICT output in the municipality was 15.6 billion yuan, accounting for 6.2% of total industrial output (Table 5). In 2006, the output value of the electronics industry in the municipality was 19.43 billion yuan, accounting for 5.9% of the total manufacturing output. Annual sales for the electronics industry were 32.2 billion yuan. A large segment of electronics products was for export.

However, Changzhou's electronics and information industry also faces serious challenges. First, this sector lags behind in terms of industrial structure and core technology. In 2004, the product ratio of the investment, consumption, and component categories was a low 8:43:49, which constrains the expansion of the industry. The main product is laser

TABLE 7. ELECTRONICS FIRMS IN CHANGZHOU, 2004

Category	Subcategory	Number of enterprises
Computer manufacturing	Computer network equipment	4
	Computer components	15
Electronic device manufacturing	Electronic vacuum devices	10
	Semiconductor devices	14
	Integrated circuits	2
	Opto-electronic and other electronic devices	23
Electronic components manufacturing	Electronic components	504
	Printed circuit boards	58

Source: CSB (2005)

CDs/DVDs; its markets fluctuate, which produces shrinking profit margins. Electronics components, the dominant subsector of the industry, are mainly low-end items, mass produced and assembly based, that lack advanced technologies to produce high value-added products such as complete sets of equipment, new replacement units, integrated circuits, and optoelectronic components (Table 7).

Second, the industry mainly concentrates on the middle- and low-level products and has short, incomplete production chains, which translates into low scale and agglomeration economies. Unlike Suzhou which has formed a relatively complete electronics cluster and enjoys much higher per capita output in the ICT sector, Changzhou's focus on electronic components makes the sector less profitable and more dependent on external firms and markets. The industry therefore cannot form a complete production chain to produce efficient industrial synergies.

Third, Changzhou's electronics and information industry is also weak in research capacity and lacks independent intellectual property rights and core technologies. Key components, materials, and specialized equipment all depend on imports, especially integrated circuits and new electronic components. Changzhou, as a prefectural-level city, lacks top research institutions, and foreign investors also prefer to place their Chinese R&D centers in leading globalizing cities such as Beijing and Shanghai. Such limits are difficult to overcome in a short period of time.

Fourth, the regional homogeneity of products is also a serious problem. In the Yangzi River Delta, the electronics and information industry is mainly concentrated in the Nanjing–Shanghai corridor. Compared to Shanghai, Suzhou, and Nanjing, Changzhou lacks competitiveness in information, labor, and services. The ICT sector has few advantages over these cities, and Changzhou has to work harder to develop efficient spatial divisions of labor inside and outside the YRD.

Spatially, major electronics producers display a certain degree of clustering, and the industry in general is more clustered that the textile and clothing industry (Fig. 5). In the

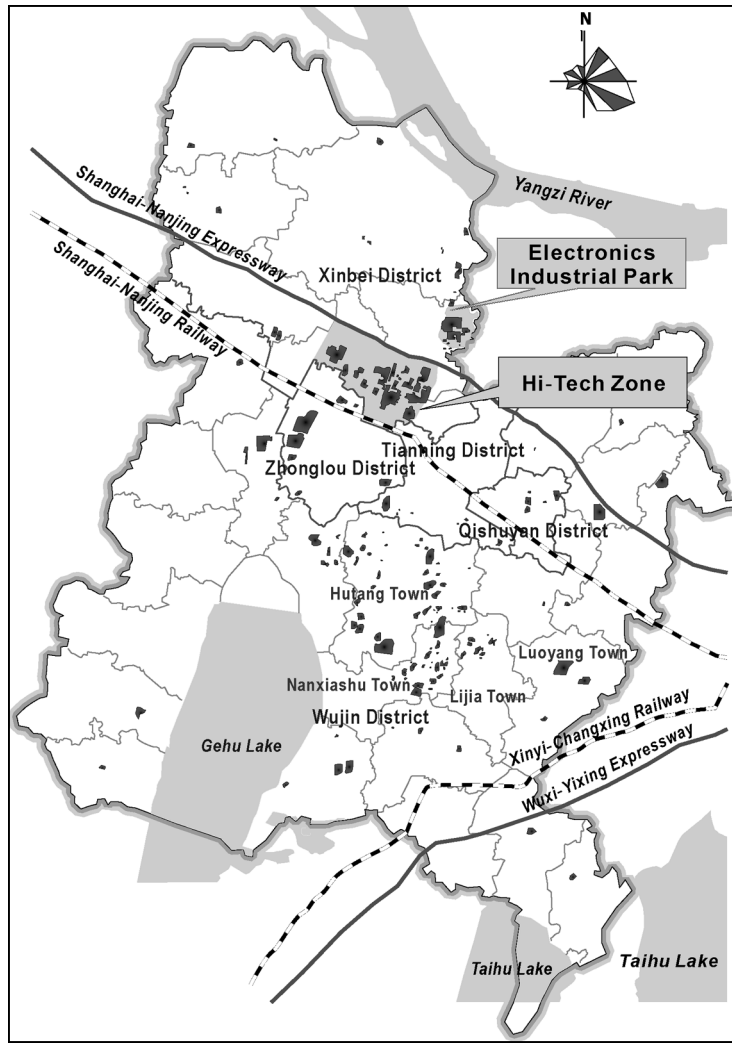

Fig. 5. Land use patterns in the electronics Industry, 2004.

northern part of the city, Changzhou High-Tech Zone and Electronics Industrial Park are two main focii, and contain the heaviest concentrations of electronics firms (Fig. 1). In the southern zone, besides Wujin High-Tech Zone, Hutang, Nanxiashu, Lijia, and Luoyang towns have become an electronics industrial belt, mainly developed on the TVEs (Fig. 5).

LOCAL STATES AND INDUSTRIAL RESTRUCTURING: CONSTRAINTS AND LIMITS

Industrial development and the restructuring of the Sunan model are greatly affected by the initiatives and policies of local states. With the infusion of foreign capital, Suzhou

TABLE 8. CHANGING GDP OF SUZHOU, WUXI, AND CHANGZHOU, 1985–2006 (BILLION YUAN)

City	1985	1990	1995	2000	2006
Suzhou[a]	9.2 (1.8)	20.2 (2.1)	90.3 (2.4)	154.1 (2.6)	482.0 (3.1)
Wuxi[a]	8.0 (1.6)	16.0 (1.7)	75.6 (2.0)	117.7 (2.0)	330.1 (2.1)
Changzhou	5	9.5	37	60.1	156.9

[a]Ratio to Changzhou is indicated in parentheses.
Source: JSB (1986, 1991, 1996, 2001, 2007).

has moved ahead of other Sunan municipalities in economic growth; Changzhou's economic status in Sunan has been declining since reform began. In 1985, Changzhou's GDP was 5 billion yuan, lower than Wuxi's (8 billion yuan) and Suzhou's (9.2 billion yuan; Table 8). These gaps widened further to less than one-third of Suzhou's and one-half of Wuxi's in 2006. The disparities are even wider in FDI and the high-tech sector. In 2006, output in the new high-technology sector in Changzhou was 65.4 billion yuan, far behind Suzhou's 401.7 billion yuan. Its status in the YRD has also been declining, which puts pressure on Changzhou to transform its economic structure. The city launched a series of projects to catch up with other urban areas in Sunan and the YRD. However, a series of erroneous strategic decisions caused a government budget crisis, lost opportunities, and monetary deficit (Chen, 2007).

Burdens of High-Tech Industrial Development

Given its location in Sunan and its relatively strong industrial base, the city established a national-level Changzhou high-tech district (full name: Changzhou High- and New-Tech District) in the north of the city near the Yangzi River in 1992, with a planned area of 5.63 km^2. In 1995, the Xinqu District was established, based on the high-tech district, and its area was expanded to 115.88 km^2. However, the district is locationally disadvantaged. It is situated at some distance from the Hu-Ning transportation networks (connecting Shanghai and Nanjing), with poor local transportation and infrastructure. Few high-tech companies were established in the District during the 1990s, and it faced the danger of losing its title as a national-level high-tech district. To emphasize the development of the District, the city expanded toward the north, reconfiguring the traditional SE–NW development corridor along the Hu-Ning Railroad.

In 2002, Changzhou's Xinbei District was established based on Xinqu District, and includes three subdistricts and six towns with a total area of 439.16 km^2. Xinbei plays an important role in Changzhou's economic development, in 2006 accounting for 13.4% of total industrial output, 17.7% of total infrastructure investment, and 29.8% of total actualized foreign investment (CSB, 2007). The industrial output value and infrastructure investment earnings of Xinbei District in 2006 were 44.23 billion yuan and 16.82 billion yuan, respectively; in that same year, newly approved contractual foreign investment was US$851 million, and actualized foreign investment was US$372 million. Besides the

central zone, there are specialized electronics science, and technology parks; an environmental protection industrial park; a software park; an export processing zone; and an airport industrial park.

In addition, Wujin High-Tech Zone was approved as a high-technology industrial development zone by the Jiangsu provincial government in 1996. The initially planned area of 3.4 km^2 was mostly developed by 2002. In 2003, the Wujin High-Tech Zone was extended to 76 km^2 and many new investment projects were launched. In 2006, the zone's industrial output value was 23.83 billion yuan; major industries included electronics, communication, textile and clothing, machinery, chemical, and pharmaceutical manufacturing.

Wujin, however, like other prefecture-level cities in Jiangsu, does not have well-ranked research and higher educational institutions, which has hindered the development of high-tech industries. Most of the firms in these two high-tech districts are in the manufacturing sector, and few play leading roles in technological development. The southern part of Wujin High-Tech Zone is still in an early growth stage. It is evident from our data that its industrial land uses are scattered and fragmented. Moreover, the pursuit of high-tech industrial development came at the cost of funding shortfall for restructuring existing industries. The latter was further constrained by the commitment of local capital to the failed Tieben project.

The Failure of the Tieben Project

A strategy to achieve Changzhou's ambitious goals is the pursuit of projects with "large production volume and extensive influence" (Tangled, 2004). Tieben Iron & Steel Ltd. planned to build a major iron and steel production facility with an expected capacity of 8.4 million tons per year; named the Tieben Project, it was the largest project planned for the city. Tieben was a small steel factory founded by Dai Guofang in 1996 in Dongan Town of Wujin District. In 2002, Tieben decided to move its factory to Xinbei District and build a blast furnace, with the final production goal set at 8.4 million tons, a plan supported by the local government (ibid.). In 2002, the Tieben project was submitted to various local governments for approval, and in 2003, Tieben changed its name to Jiangsu Tieben Steel Ltd., with a registered capital total of 302 million yuan (ca. US$36 million).

According to *Caijing Magazine* (Tangled, 2004), in April 2004, the State Council sent a special team to investigate the project and discovered many illegal activities. The local government had violated laws and regulations by dividing a project of 10.6 billion yuan (ca. US$1.3 billion) into 22 smaller subprojects, thereby allowing each to be approved at the local level. The local government also illegally approved the use of 5,641 mu (376 hectares) of land for the Tieben project. In principle, the Jiangsu Provincial Office of Land and Resources can only approve 600 mu (40 hectares) of land for a single project. Tieben subdivided the land area among five companies registered in Changzhou in proportion to each company's investment size. Thus rather than one application that would surely have been denied for its outsized limit, more than 10 smaller land use applications were submitted.

Tieben also provided fraudulent financial reports to commercial banks in its applications for credit and loans. Tieben used more than 2 billion yuan (ca. US$242 million) obtained from commercial banks not as floating capital but for fixed asset investment.

Several financial institutions also broke government rules regulating loans for fixed asset investment and cash management. The local government played an important role in pushing through the loans. Tieben also failed to pay its taxes. Unfortunately, its financial problems ultimately led to collapse of the ill-planned Tieben project, which caused financial turmoil in Changzhou and resulted in a government investigation. The Party Secretary of the municipality, the Deputy Director of the Jiangsu Provincial Office of Land and Resources, the General Manager of the Changzhou Branch of the Bank of China, and several other high-ranking officials were either given disciplinary warnings or were dismissed. The failed Tieben project hit Changzhou hard with severe economic, political, and social consequences.

The Limits of Spatial Strategies

The development of Sunan was related to the expansion of modern transportation and industries. In the early 19th century, with the construction of the Jing-Hu Railroad linking Shanghai and Sunan with Nanjing and Beijing, cities in Sunan grew along the SE–NW Hu-Ning transportation corridor. These transportation networks were further strengthened by the development of State Highway 312 and the Hu-Ning Expressway(Shanghai–Nanjing Expressway), providing further mechanisms for spatial expansion along the development corridor.

However, starting in the 1980s, Changzhou began to abandon the orthodox SE–NW development corridor. Due to the limits of administrative boundaries and responding to the provincial government's call for development along the Yangzi River in various urban master plans, Changzhou now planned to grow toward the north and south, especially the north, and de-emphasized E–W development. Such a development strategy had several negative consequences for Changzhou. First, northern Changzhou was traditionally the poorest area of the city and possessed a weak industrial base. The Yangzi riverbank in Changzhou is only 18 km long and does not meet the conditions required for port development. Second, the existing SE–NW transportation networks were not being effectively used. The areas in the north and south had poor transportation and infrastructure, which required huge new investments. Such development also reduces connectivity with Shanghai, Sunan, and Nanjing because northern Changzhou is blocked by the Yangzi River, and southern Changzhou adjoins poorer areas of Sunan and northern Zhejiang. Third, the development of northern Changzhou also reduced funding for the development of the eastern and western sides of the city. The city had failed to anticipate powerful forces underlying this development, and placed a textile and clothing district on the near east side, which soon became part of the city. Residential development, therefore, was forced to expand eastward bypassing the textile and clothing district, causing pollution and traffic problems.

Finally, development problems are also intensified by hasty planning and construction processes. We noticed that newly developed educational institutions were located in both the northern and southern parts of the city. The north side has the advantage of proximity to the high-tech district, but lacks sufficient space. A new educational district was subsequently developed on the south side, mostly for technical schools providing training for technicians and skilled workers. This provided less support for the development of local

research capabilities, but occupies a large land area, further limiting the availability of spaces for industrial and residential development.

Changzhou Agricultural Development Zone is an instructive example that illustrates typical problems of development. Located in the northeastern part of the city, this provincial-level development zone is export oriented, and includes a textile industrial park, an electrical and mechanical industrial park, and a bio-tech industrial park. Its main industrial park is Qinglong Textile Industrial Park, an important textile and clothing production zone in Changzhou, with a land area of 4 km^2 and 15,000 employees. Initially, the Changzhou Agricultural Development Zone was located in the suburban ring of the city. However, the city changed its spatial development strategies, and designated northern Changzhou as an area for future development. Consequently, the Xinbei District and High-Tech Zone in the north were rapidly developed. In addition, the municipal administrative center was relocated from the old city to Xinbei District in 2006, which further stimulated the development of the north side. This change also places the location of Qinglong Textile Industrial Park upwind of Xinbei District, causing pollutants to stream across the latter. Moreover, the city has been expanding in every direction, particularly toward the Qinglong Residential District under construction next to the Qinglong Textile Industrial Park. The industrial district has consequently become part of the city's built-up area and is now mixed with residential land areas, which exacerbates pollution and traffic congestion. The change of development strategies and lack of effective planning and control are leading causes of these development problems.

Spatial Legacies of the Sunan Model

The most important feature of the Sunan model is the rural-based, collectively owned TVE. In principle, TVEs are owned by all members of the township or village and are affiliated with farmers, township governments, and villagers' committees. Such an institutional arrangement enables the concentration and coordinated operations of capital, technology, land, and labor, and thus supports the initial development and capital accumulation in Sunan. However, problems of commons are the obvious disadvantage of collective ownership, which was forced to undergo marketization and privatization with the liberalization of the domestic and global economies. TVEs were based on towns and villages, and therefore were spatially segmented and fragmented. Such a spatial form limited the agglomeration effects and technological advances required for modern corporations. Despite economic restructuring, industrial location and spatial assets are difficult to change in a short period of time, and the spatial legacy of the Sunan model has become another constraint in the development of Changzhou.

The rural-based collective ownership form required TVEs to hire local rural surplus labor, a practice known as "leaving the land but not the township." The main income source for those employees was their salaries from TVEs. Even after enterprise restructuring and radical change of ownership, the spatial and economic associations between the labor force and enterprises have been maintained, at least to some extent. Spatial concentration and integration of small, scattered TVEs would threaten certain workers' benefits and therefore met strong resistance, which is the reason for the existence of some small chemical and machinery enterprises, despite their low profit margins and struggles to survive.

The pursuit of economic growth is prominent at all levels of the government, particularly in Sunan where local governments aggressively interfere with local economies. This phenomenon causes geographic boundaries to act as "invisible walls," blocking interregional flows and regional integration. Political boundaries constrain the spatial configuration and integration of Changzhou's manufacturing industry. First, there exist serious problems of isomorphism (similarity in industrial structure) in township manufacturing industry, as analyzed in previous sections. Second, there is great enthusiasm at all levels of government to create industrial parks and zones with minimal planning and coordination, which underlies the establishment of nine provincial-level development zones in the municipality. Third, intense competition among industrial parks, townships, and villages makes localities "rush to the bottom." Barriers imposed by administrative boundaries further constrain the development of industrial clusters and the scaling up of regional development. The development of wood-floor manufacturing in Henglin Town and the lighting products industry in Zouqu Town have been kept within their township boundaries by administrative restrictions on their expansion and clustering with similar industries in neighboring townships and development zones. And fourth, problems also arise from ineffective land use planning and management. Numerous construction projects in rural areas violated construction standards and regulations due to the misconduct of local governments. In urban areas, decision-makers failed to make rigorous decisions concerning land use control, partly causing the fragmentation and general disordering of manufacturing activities.

CONCLUSION

Sunan has been undergoing dramatic restructuring, and the transition from the orthodox Sunan model demonstrates institutional change and legacies here. We have found that post-Sunan development retains some of the characteristics of the orthodox Sunan model, such as local-based industrial development, common prosperity, and the heavy involvement of local governments. The current production map of Sunan reflects a combination of new development based on local, state-initiated development zones as well as the legacies of TVE development and restructuring. Our study identified the emergence of a new form of uneven development in the Yangzi River Delta, particularly in Sunan where more central areas such as Suzhou are capitalizing from globalization and locational advantages and are moving ahead of more peripheral centers such as Changzhou. This pattern is consistent with the finding at the global scale that agglomeration is a pervasive force in production and that globalization is centralizing resources and development. We also found that the involvement of local governments in economic development in Changzhou is pervasive, and more significant than in other regions of China. We also discovered evidence of the convergence of the content of local policies with those implemented throughout coastal China, which are influenced by changing global and national institutional contexts.

Reflecting global change in production, Changzhou's manufacturing industry experienced a transformation from a structuring dominated by textile and light industries to one oriented toward equipment manufacturing. The secondary sector remains the key component of Changzhou's economy, which provides on-the-ground experience concerning the rise of China as the global manufacturing floor. Besides benefiting from the success of

the Sunan model, Changzhou's manufacturers also rely on improved infrastructure, a skilled workforce, a mixed economic system, and the development of industrial parks.

Spatially, a new map of industrial production has emerged in Changzhou, partly reflecting new policy initiatives and partly a result of TVE restructuring. Manufacturing is more heavily concentrated in Zhonglou, Tianning, and Qishuyan districts, and Hutang Town of Wujin District (e.g., see Figs. 4 and 5), underscoring the massive rise of industry in the urban district. Industrial land use is also intensive in the townships of Yaoguan, Hengshan, and Henglin, located in eastern Changzhou. Due to the presence of the national high-tech development zone in northern Changzhou, a large and dense industrial zone is beginning to emerge in Xinbei (Fig. 1). The southwestern townships are still developing and industrial activities are sparsely distributed there. The machinery industry occupies the largest amount of land, followed by textiles and clothing, chemical, electronics, and metallurgical manufacturing. Land use efficiency is low, and the three main urban districts have the highest average land output values, followed by Xinbei and Wujin districts.

Whereas Suzhou has been utilizing foreign capital to modernize its industries, Changzhou's mainly consist of traditional industries with industrial isomorphism and a dispersed layout. The major sectors, including the machinery and textile and clothing industries, have low profit margins due to noncompetitive technology, changing markets, and the recent appreciation of the yuan. However, as labor intensive industries they have advantages in solving unemployment problems. Those problems reflect the peripheral location of Changzhou vis-à-vis the Yangzi River Delta, as well as the struggle of local states to find suitable strategies and policies for local development.

REFERENCES

Amin, A. and Thrift, N., 1992, Neo-Marshallian nodes in global networks. *International Journal of Urban and Regional Research*, Vol. 16, 571–587.

Bair, J. and Gereffi, G., 2003, Upgrading, uneven development, and jobs in the North American apparel industry. *Global Networks*, Vol. 3, 143–169.

Carment, D., 2003, State failure. *Third World Quarterly*, Vol. 24, 407–427.

Chen, G. P., 2007, Limitations and strategies of improving Changzhou's urban competitiveness. *Jiangsu Shehui Kexue* [*Social Sciences of Jiangsu*], Vol. 5, 232–236.

Chen, X. and Gu, C. L., 2007, Perspectives on the "new Sunan model" and its mechanisms with the case of Changzhou. *Chengshi Fazhan Yanjiu (Urban Development Studies)*, Vol. 14, 7–83.

Chien, S. S., 2007, Institutional innovations, asymmetric decentralization, and local economic development: A case study of Kunshan, in post-Mao China. *Environment and Planning C*, Vol. 25, 269–290.

Chu, D. T., 2007, The economic characteristics of the new Sunan model. In W. H. Huang and Q. W. Wang et al., editors, *Xin Sunan Mushi* [*The New Sunan Model*]. Beijing, China: Renmin Press, 89–116.

CSB (Changzhou Statistical Bureau), 1991–2007, *Changzhou Tongji Nianjian* [*Changzhou Statistical Yearbook*]. Beijing, China: State Statistics Press.

Coe, N., Hess, M., Yeung, H. W., Dicken, P., and Henderson, J., 2004, "Globalizing" regional development. *Transactions of the Institute of British Geographers*, Vol. 29, 468–484.

Cox, K. R., editor, 1997, *Spaces of Globalization*. New York, NY: Guilford Press.

Dicken, P., 2007, *Global Shift*. London, UK: Sage.

Duckett, J., 1998, *The Entrepreneurial State in China.* London, UK: Routledge.

Dunford, M., 2006, Industrial districts, magic circles, and the restructuring of the Italian textiles and clothing chain. *Economic Geography*, Vol. 82, 27–59.

Editorial Committee, 1995, *Changzhou Shi Zhi* (*Changzhou City Gazetteer*). Beijing, China: China Social Science Press.

Eng, I., 1997, The rise of manufacturing towns: Externally driven industrialization and urban development in the Pearl River Delta of China. *International Journal of Urban and Regional Research*, Vol. 21, 554–568.

Eraydin, A., 2001, New forms of local governance in the emergence of industrial districts. In D. Felsenstein and M. Taylor, editors, *Promoting local growth*. Aldershot, UK: Ashgate, 81–101.

Fan, C. C., 1995, Spatial impacts of China's economic reforms in Jiangsu and Guangdong Provinces. *Chinese Environment and Development*, Vol. 6, 85–116.

Grabher, G., 1993, The weakness of strong ties. In G. Grabher, editor, *The Embedded Firm*. London, UK: Routledge, 255–277.

Hadjimichalis, C., 2006, The end of third Italy as we knew it? *Antipode*, Vol. 38, 82–106.

Hall, P., 2001, Global city-regions in the twenty-first century. In A. Scott, editor, *Global City-Regions*. New York, NY: Oxford University Press, 59–77.

Hall, T. and Hubbard, P., 1996, The entrepreneurial city. *Progress in Human Geography*, Vol. 20, 153–174.

Han, S. S. and Pannell, C. W., 1999, The geography of privatization in China, 1978–1996. *Economic Geography*, Vol. 75, 272–296.

He, C. F., Wei, Y. H. D., and Xie, X. Z., 2008, Globalization, institutional change, and industrial location: Economic transition and industrial concentration in China. *Regional Studies*, Vol. 42, 923–945.

Ho, S. P. S., Bowles, P., and Dong, X. Y., 2003, "Letting go of the small": An analysis of the privatisation of rural enterprises in Jiangsu and Shandong. *Journal of Development Studies*, Vol. 39, 1–26.

Hong, L. J., 2004, Chongqing: Opportunities and risks. *China Quarterly*, Vol. 178, 448–466.

Huang, W. H. and Wang, Q. W., et al., 2007, *Xin Sunan Mushi* [*The New Sunan Model*]. Beijing, China: Renmin Press.

JSB (Jiangsu Statistical Bureau), 2000–2007, *Jiangsu Tongji Nianjian* [*Jiangsu Statistical Yearbook*]. Beijing, China: China Statistics Press.

Jessop, B. and Sum, N. L., 2000, An entrepreneurial city in action: Hong Kong's emerging strategies in and for (inter)urban competition. *Urban Studies*, Vol. 37, 2287–2313.

Knox, P. L., Agnew, J., and McCarthy, L., 2004, *The Geography of the World Economy*. London, UK: Arnold.

Liu, A. P. L., 1992, "The Wenzhou model" of development and China's modernization. *Asian Survey*, Vol. 32, 696–711.

Lu, L. C. and Wei, Y. H. D., 2007, Domesticating globalization, new economic spaces, and regional polarization in Guangdong Province, China. *Tijdschrift voor Economische en Sociale Geografie*, Vol. 98, 225–244.

Luo, J. and Wei, Y. H. D., 2006, Population distribution and spatial structure in transitional Chinese cities: A study of Nanjing. *Eurasian Geography and Economics*, Vol. 47, 585–603.

Luo, X. L. and Shen, J. F., 2008, Why city-region planning does not work well in China. *Cities*, Vol. 25, 207–217.

Ma, L. J. C. and Cui, G. H., 2002, Economic transition at the local level. *Eurasian Geography and Economics*, Vol. 43, 79–103.

Ma, L. J. C. and Fan, M., 1994, Urbanisation from below. *Urban Studies*, Vol. 31, 1625–1645.

Martin, R. and Sunley, P., 2006, Path dependence and regional economic evolution. *Journal of Economic Geography*, Vol. 6, 395–437.

Marton, A., 2000, *China's Special Economic Development*. London, UK: Routledge.

Miao, C. H., Wei, Y. H. D., and Ma, H. T., 2007, Technological learning and innovation in China in the context of globalization. *Eurasian Geography and Economics*, Vol. 48, 713–732.

Oi, J., 1999, *Rural China Takes Off*. Berkeley, CA: University of California Press.

Park, S. O. and Markusen, A., 1995, Generating new industrial districts. *Environment and Planning A*, Vol. 27, 81–104.

Pei, M. X., 2006, *China's Trapped Transition*. Cambridge, MA: Harvard University Press.

Pereira, A. A., 2003, *State Collaboration and Development Strategies in China*. London, UK: Routledge.

Pietrobelli, C. and Barrera, T. O., 2002, Enterprise clusters and industrial districts in Colombia's fashion sector. *European Planning Studies*, Vol. 10, 541–562.

Qiu, C. L. and Feng, J., 2000, The development and path dependency of the "Sunan model." *Zhongguo Gongye Jingji* [*China Industrial Economy*], Vol. 7, 51–55.

Rabellotti, R., 1995, Is there an "industrial district model"? *World Development*, Vol. 23, 29–41.

Scott, A. J., 1998, *Regions and the World Economy*. Oxford, UK: Oxford University Press.

Scott, A. J., 2006, The changing global geography of low-technology, labor-intensive industry. *World Development*, Vol. 34, 1517–1536.

Scott, A. J. and Storper, M., 2003, Regions, globalization, and development. *Regional Studies*, Vol. 37, 579–593.

Sit, V. F. S. and Yang, C., 1997, Foreign-investment-induced exo-urbanisation in the Pearl River Delta, China. *Urban Studies*, Vol. 34, 647–677.

Storper, M., 1997, *The Regional World*. New York, NY: Guilford Press.

Tangled story of Tieben. *Caijing Magazine*. Retrieved May 20, 2004, from http://www.caijing.com.cn/newcn/English/Industry/2004–05–20/13917.shtml

Wade, R., 1990, *Governing the Market*. Princeton, NJ: Princeton University Press.

Walder, A. G., 1995, Local governments as industrial firms. *American Journal of Sociology*, Vol. 101, 263–301.

Wei, Y. H. D., 2000, *Regional Development in China: States, Globalization, and Inequality*. New York, NY: Routledge.

Wei, Y. H. D., 2002, Beyond the Sunan model. *Environment and Planning A*, Vol. 34, 1725–1747.

Wei, Y. H. D., 2004, Trajectories of ownership transformation in China. *Eurasian Geography and Economics*, Vol. 45, 90–113.

Wei, Y. H. D., 2007, Regional development in China: Transitional institutions, embedded globalization, and hybrid economies. *Eurasian Geography and Economics*, Vol. 48, 16–36.

Wei, Y. H. D., 2009, China's shoe manufacturing and the Wenzhou Model. *Eurasian Geography and Economics*, Vol. 50, 720–739.

Wei, Y. H. D., Li, W. M., Leung, C. K., and Pan, R., 2008, Institutions, location, and network of multinational enterprises in China: A case study of Hangzhou. *Urban Geography*, Vol. 29, 639–661.

Wei, Y. H. D., Li, W. M., and Wang, C. B., 2007, Restructuring industrial districts, scaling up regional development: A study of the Wenzhou model, China. *Economic Geography*, Vol. 83, 421–444.

Wei, Y. H. D., Lu, Y. Q., and Chen, W., 2009, Globalizing regional development in Sunan, China. *Regional Studies*, Vol. 43, 409–427.

Whitford, J., 2001, The decline of a model? *Economy and Society*, Vol. 30, 38–65.

Wu, X. J., 2001, The historical achievements and ending of the Sunan model. *Xiandai Jingji Tantao* [*Modern Economic Research*], Vol. 7, 28–30.

Yang, C., 2007, Divergent hybrid capitalisms in China: Hong Kong and Taiwanese electronics clusters in Dongguan. *Economic Geography*, Vol. 83, 395–420.

Yang, D. Y. and Wang, H., 2007, The regional variations of farmland property rights transformation in China. *Issues & Studies*, Vol. 43, 117–148.

Ye, X. Y. and Wei, Y. H. D., 2005, Geospatial analysis of regional development in China. *Eurasian Geography and Economics*, Vol. 46, 445–464.

Yu, D. L. and Wei, Y. H. D., 2008, Spatial data analysis of regional development in Greater Beijing, China, in a GIS environment. *Papers in Regional Science*, Vol. 87, 97–117.

Yeung, H. W., 2005, Rethinking relational economic geography. *Transactions of the Institute of British Geographers*, Vol. 30, 37–51.

Zhang, M. and Gu, C. L., 2002, Rural urbanization: A comparison of the "Sunan model" and the "Zhujiang model." *Jingji Dili* [*Economic Geography*], Vol. 22, 482–486.