ZONE FEVER, PROJECT FEVER: DEVELOPMENT POLICY, ECONOMIC TRANSITION, AND URBAN EXPANSION IN CHINA*

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ABSTRACT. With the pursuit for global competitiveness and economic growth, Chinese cities have recorded massive urban land expansion. This article examines the effects of development policies and economic restructuring on urban land expansion in China through a case study of Nanjing, representing the rapidly growing and globalizing coastal cities in China. Wei investigate the development process and changing contents of government policies, and analyze development zones and key projects as privileged, trait making, and even path-breaking elements of the development process. We highlight the transition and paradox of the Chinese state in the urban development process, and the broad contexts underlying urban land expansion in Chinese cities. We see urban expansion in China as a process largely responding to top-down policy change and economic transition initiated by the central government. We hold that the role of the state has to be analyzed to understand urban transformation and land expansion, moving beyond local factors of accessibility and feasibility. Development-zone and project fevers, and lagging administrative reforms, however, have made Chinese cities heavy with debt and led to wasteful development, corruption, and social unrest in China. *Keywords: globalization*, *urbanization*, *urban expansion*, *development zone*, *Nanjing*, *China*.

For decades, scholars have been concerned with rapid urbanization in developing countries, especially for its consequences in income inequality, social conflicts, and sustainable development (for example, Kasarda and Parnell 1993; United Nations 1996). Having difficulty coping with population growth, developing countries have attempted to control urbanization, much the same as former socialist countries influenced by socialist ideology (Wei 2005; Chen and others 2013). While problems with urbanization have continued to trouble developing countries, globalization has transformed urban governments from providers of public goods to developmental and entrepreneurial states promoting economic growth and competitiveness (Hall and Hubbard 1998). Cities have increasingly become centers for globalization and economic growth, and rapid urban land expansion has become a widespread global phenomenon, a new challenge that developing countries rarely faced more than three decades ago (Angel 2011), Asia is urbanizing rapidly, and cities in Asia are engines of growth, posing major development challenges in poverty, inequality, and sustainability (Dahiya 2012). Rapid growth and urbanization have generated renewed debates over the consequences of urbanization and challenges to urban

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sustainability and policy, especially with heightened concerns over global warming and regional resilience.

Since the economic reform initiated in 1978, Chinese cities have been undergoing rapid growth and profound change. Mao's era was heavily influenced by socialist ideology, and China implemented a policy of controlling migration and urbanization, while promoting industrialization (Wei 1994; Zhao and Zhang 1995). Chinese cities were compact and urban land expansion was very limited. However, with economic reforms and globalization, Chinese cities have been undergoing unprecedented growth and restructuring, and millions of rural migrants have flooded into cities (Pieke and Mallee 1999; Fan 2008). More people are now living in cities than in the countryside, although many migrants still hold rural household registration. Chinese cities, whether large or small, have recorded massive urban land expansion (Xie and others 2007; Wei 2012; Yue and others 2014), which has even been called urban sprawl, comparable to the United States (Yue and others 2013). Land loss, unequal development, and environmental problems have resulted in unprecedented corruption and massive social protests (Lin and Ho 2005; Tong and Lei 2013).

This article examines the process and effects of development policies and economic restructuring on urban land expansion in China through a case study of Nanjing. As a major city of the Yangtze River Delta (YRD) that is one of the largest emerging global city regions in the world, Nanjing is representative of rapidly growing and globalizing coastal cities, which are at the forefront of globalization, national reforms, and economic development. We investigate changing contents and effects of government policies, especially project-oriented, development-zone policies, and their effects on urban growth and land expansion. This paper mainly relies on urban statistics and remote sensing data, and we also visited with the Nanjing Municipal Government and various development zones and districts to understand development policies, processes, and mechanisms. We highlight the paradox and transition of the Chinese state in land development, and the broad contexts underlying urban land expansion. We see urban land expansion as a process responding to economic transition and policy change. We hold that the role of the state has to be analyzed within the broad context of globalization and economic restructuring in understanding urban development and expansion, not just local factors of accessibility and feasibility.

Development Policy, Economic Transition, and Urban Expansion

The processes of urbanization and land-use change are increasingly influenced by global processes and institutional change, in dynamic and complicated ways (Wei and Ye 2014). Urban land expansion is no longer a local, physical process mainly influenced by accessibility and the physical environment. It has been widely observed that foreign capital has become a major force of industrial relocation and land development, and often finances "land grabs" (Wei and

others 2013). Other recent research efforts have promoted the development of land-change science and land-system science (Turner and others 2007; Verburg and others 2013) and the reconceptualization in land-use change and urban land expansion. The urban land teleconnections (ULT) framework has potential to link land-use change to global processes, and to advance and broaden the conventional conceptualization of urbanization and land (Guneralp and others 2013). Given the dynamics of economic restructuring in land-use change, scholars have also promoted using economic geography to reinvigorate land-use science (Munroe and others 2014).

Chinese cities have been transformed from socialist cities to transitional cities characterized by transitional institutions, hybrid urbanization, and spatial fragmentation (Ma 2005; Heikkila 2007; Luo and Shen 2008; Wei and Ye 2014). While China has become the engine of the global economy, rapid urbanization of the population has been coupled with even more rapid urban land expansion and spatial restructuring. Problems with the land system and development process have intensified concerns over income inequality, land loss, government corruption, and environmental degradation, leading to huge rise in protests and riots (Lin and Ho 2005; Tong and Lei 2013).

The body of work on urban land expansion in China is fragmented and largely modeling based. Most of the research using GIS and remote sensing analyze the extent, direction, and factors of urban land expansion, and focus on accessibility and physical conditions driving urban growth (for example, see Xie and others 2007; Li and others 2014). This line of research is very fruitful and has documented in great detail patterns and factors of urban land expansion in China. It has also improved our understanding of the forces at work by improving spatial modeling techniques, expanding socioeconomic variables, and incorporating institutional analysis. Such efforts have drastically improved the modeling and understanding of urban land expansion. Globally, this research is making tremendous progress in developing and applying spatially explicit models (Seto and Kaufmann 2003; Luo and Wei 2009).

Modeling approaches typically emphasize the role of accessibility and the physical environment—necessary conditions for urban land expansion, but insufficient for interpretation and understanding. The progress towards incorporating socioeconomic variables and institutional analysis has been limited due to a paucity of data at fine geographical scales. More important, such studies tend to be weak in theorizing and addressing the process of, and forces underlying, urban land expansion, especially the impact of macro and institutional forces. More effort is needed to incorporate socioeconomic and institutional variables, as well as policy analysis.

Alternatively, scholars have adopted institutional and political-economy perspectives and analyzed the state-directed process of urban development and expansion, often based on case studies and policy analysis (see Lin and Ho 2005). The role of the state has been analyzed through the governance

paradigm, the notions of development and entrepreneurial states/cities, the growth machine, and the politics of scale (for instance, Hall and Hubbard 1998; Ma 2002). But case studies tend to be limited and comparative dimensions are still weak.

This articles analyzes institutional forces, particularly government policies, in urban land expansion, influenced by work on institutional economic geography and China's economic transition. We follow Wei's (2002) triple-transition framework, which analyzes institutional change and urban expansion through the processes of decentralization, marketization, and globalization. China's reform has reconfigured the relationship between state and market, and between domestic and global forces. Similar to the global process of state decentralization, in response to the over-centralization of state socialism, China's reform started with decentralization, which, earmarked as fiscal and administrative reforms, has decentralized fiscal responsibilities and administrative power to local governments. With the decentralization of responsibilities, especially after the 1994 fiscal reform and pressure from increasing competition, Chinese local states have become major agents of urban development and transformation, represented by strong mayoral leadership in Chinese cities. The state leads the formulation, pursuit, promotion, and implementation of urban development strategies and policies (Ma 2002; Ng and Tang 2004). China's decentralization has empowered local states to mobilize resources, especially state-owned land and state-directed projects for urban growth, and has therefore become a major process underlying urban land expansion.

The Chinese state also acts within the context of globalization, and China's open-door policy was initiated almost simultaneously with decentralization, starting with special economic zones and coastal open cities centered on development zones. The major purpose of China's open-door policy is to accumulate global capital through attracting foreign direct investment (FDI) and selling Chinese products through export. To attract FDI, the Chinese state has relaxed its control over foreign capital and provided preferential tax policies for FDIs, largely centered on thousands of development zones at various levels, known as development-zone fever (Cartier 2001; Wei and Leung 2005). Scholars have used the concepts of "exo-urbanization" and "externally driven urbanization" to study the process and impact of globalization upon cities in the Pearl River Delta (Sit and Yang 1997), followed by preferential policies granted to Shanghai and the Yangtze River delta, bringing a wave of globalization to the region. Globalization has also intensified the development of and competition within the knowledge/technology economy. Increasingly, the state competes for the development of high-tech and advanced-business service industries by promoting the development of higher-education districts, high-tech zones, and central business districts (CBDs) (Wei 2012). Mega-projects and events have long been encouraged by local states (Altshuler and Luberoff 2003), and globally oriented mega-projects, including the 2008 Beijing Olympics (Grant 2014),

are another symbol of globalization in China—here known as "project fever" (Cartier 2001). All of these efforts and policies have greatly contributed to urban development and urban land expansion.

China has introduced market forces into urban development, and the state is now involved in the market-oriented network of exchanges and flows. The marketization process in urban development is also driven by reform in the land and housing markets, which makes the land the single most important resource for local states and developers (Qian 2008). Land reclamation and development, especially through administrative rescaling and development zones, is the most important instrument of the Chinese development (Ma 2005). Development-zone and project fevers are intertwined with the process of local administrative rescaling, in which central cities take over suburban land through annexing suburban towns and townships—even whole cities and counties—to provide cheap land for development (Ma 2005; Shen 2007), which is also used as a strategy to avoid suburbanization and central-city decline seen taking place in Western countries (Waldner and others 2013). Megaprojects such as the 2008 Beijing Olympic Games and the 2010 Shanghai World Expo are good examples of state projects in the age of globalization and marketization, representing both the visible and invisible hands of the Chinese state.

Lastly, the Chinese state is not static; its policies shift with changing institutional contexts and continuously reconfigure urban space. Wei argues that transitional institutions are underlying the constant revision of urban master plans and the chaotic urban construction and management in Chinese cities (2005). This paper therefore treats Chinese institutions as transitional in time and space, and examines the role of the state in the transitional process of China's economic reforms and urban development. As the process of urban growth and land expansion varies over space, responses of local governments to urban problems also differ across China. The open-door policy was initiated in the special economic zones in southern China in 1980, and expanded to open coastal cities in the mid-1980s, focusing on economic and technological development zones (ETDZs). With the drive towards innovation and technological development, high-tech development zones were initiated, followed by the development of higher-educational districts in the early 2000s. Globalization has also brought new waves of CBD development, new city centers, and export-processing zones. Government policies also build upon the existing resources, location, and spatial structure. The implementation has not escaped the influence of China's socialist legacy, nor has it been free of problems.

Nanjing: Development Process and Government Policies

Located on the fringe of the YRD (Figure 1), Nanjing is an ancient capital of China. Established during the Three Kingdoms (220–280 AD), Nanjing served as a military base to defend against invasion from the north. During the Ming Dynasty (1368–1644), Nanjing served as the national capital for the early years

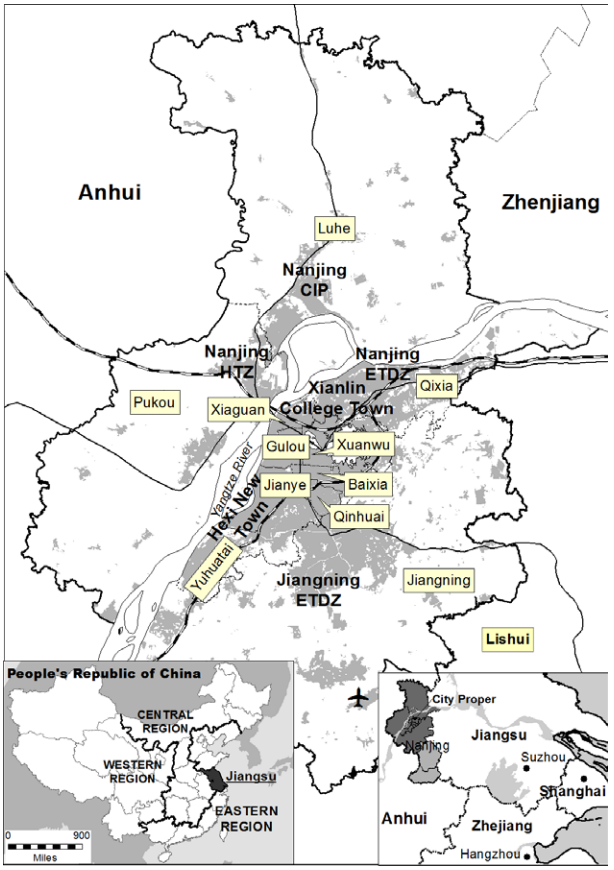

FIG. 1—Location and spatial organization of Nanjing. *Note*: CIP: Chemical Industrial Park; ETDZ: Economic and Technological Development Zone; and HTZ: High-Tech Zone.

(1368–1421), when it was the most prosperous city in China and likely the largest city in the world, contributing significantly to making the YRD the national economic center. Modern industries, such as textile, electricity, and food-processing industries, were established in the late-19th and early 20th centuries in Nanjing. For most of the years between 1912 and 1949, Nanjing was the capital of the Republic of China, a period during which the city's service industry expanded rapidly. Western ideas of urban planning and management were introduced, making Nanjing one of the earliest cities in China with modern urban planning. The city, however, was destroyed under the anti-Japanese war and the civil war in the 1940s.

Nanjing was an important city under the socialist industrialization programs of the 1950s. In 1957–58, with the initiation of the "Great Leap Forward," and influenced by the Soviet model of industrialization, officials proposed that Nanjing be turned into a city emphasizing heavy industry. An array of steel, oil refinery, auto, and chemical factories were built (for example, Nanjing Steel,

Nanjing Oil Refinery, Nanjing Auto), largely in the north of the city around the Yangtze River. The construction of these new factories, and the recovery of established industries, led to the growth of Nanjing's urban population during 1957–60 (Table 1), a phenomenon coined "spurious urbanization" (Zhou and Ma 2000). Industrial construction also enlarged the urban built area. The share of secondary industry in the Nanjing municipality rose from 23.4 percent in 1952 to 68.4 percent in 1978 (Table 2). In the 1960s, however, Chinese cities, including Nanjing, faced economic stagnation and unrest, forcing Nanjing to strictly control rural-urban migration, and even sent urban residents to the rural areas.

In the early 1970s, with the fading of the "Cultural Revolution" and the normalization of U.S.–China relations, some new factories were established to update the industrial infrastructure, such as Yangtze Petrochemical and Panda Electronics. The number of migrants in Nanjing also increased in the late 1970s, when many urban youth previously sent to the countryside returned to cities. The nonagricultural population increased from 1.46 million in 1975 to 1.83 million in 1980 (NSB, 2010). This was a heavy burden and as a result, China formalized its national urbanization policy as "strictly controlling the size of large cities, rationally developing medium-sized cities, and vigorously developing small cities" (Wei 1994; Zhao and Zhang 1995).

Under the influence of the national urban policy, Nanjing stressed the control of urban populations and built-up areas during the late 1970s and 1980s.

Table 1—Growth of Population and Land Area in Nanjing, 1949–2012

	Nanjing municipality			Nanjing city		
Year	Total population (million)	Permanent population* (million)	Metropolitan area (sq. kilometers)	Total population (million)	Permanent population (million)	Built-up area (sq. kilometers)
1949	2.57	-	-	1.07	-	-
1960	3.23	-	-	1.65	-	-
1970	3.61	-	-	1.52	-	-
1980	4.36	-	867	2.03	-	65
1985	4.66	-	867	2.25	-	121
1990	5.02	5.17	947	2.47	-	129
1995	5.22	5.64	976	2.66	-	151
2000	5.45	6.13	1026	2.90	3.62	201
2005	5.96	6.90	4723	5.13	5.99	513
2010	6.32	8.01	4733	5.48	7.02	619
2011	6.36	8.11	4733	5.50	7.22	637
2012	6.39	8.16	4733	5.53	7.30	653

*Permanent population includes local residents with household registration and permanent residents without local household registration.
Source: NSB (1979–2013).

TABLE 2—SELECTED INDICATORS OF NANJING, 1952–2012

YEAR	1952	1978	1995	2012	ANNUAL GROWTH (%) 1952–1978	1978–1995	1995–2012
Nanjing City							
GDP (million yuan)	230	269	44,001	647,260	-	-	-
Per Capita GDP (yuan)	205	1538	16,000	100,263	-	-	-
FDI (US$ million)	-	-	344	3,898	-	-	-
Sectoral Structure of GDP (%)							
Primary	-	2.6	1.4	1.9			
Secondary	-	77.6	52.7	42.6			
Tertiary	-	19.9	45.9	55.5			
Nanjing Municipality							
GDP (million yuan)	393	3442	58,459	720,157	8.1	11.4	13.1
Per Capita GDP (yuan)	155	844	11242	112,980	6.2	8.6	11.8
FDI (US$ million)	-	-	403	4,130	-	-	14.7
Sectoral Structure of GDP (%)							
Primary	40.6	12.7	7.6	2.6			
Secondary	23.4	68.4	52.1	44.0			
Tertiary	36.0	19.0	40.3	53.4			

Notes: The administrative boundary of Nanjing city changed in 2002, and the data on Nanjing city before and after 2002 are not totally comparable.
Sources: NSB (1971–2013); JSB (2010).

The 1980 Master Plan of Nanjing, approved by the state council in 1983, set control objectives for the year 2000 as 1.36 million in population and a built area of 122 square kilometers for the city district. To control population growth, several measures were taken, such as a restriction on industrial allocation, the organization of functional districts, the development of satellite towns, and strictly controlled migration. Consequently, Nanjing's growth in population and land use was limited in the 1980s (Table 1). However, with the rapid growth of the Chinese economy, the planned areas and population-control objectives had to be raised constantly (Table 3).

DEEPENING REFORMS: URBAN DEVELOPMENT AND LAND EXPANSION

China's economic reforms have stimulated economic growth and urban land expansion. Reforms have changed the planning policies of the government towards urban growth and control in Nanjing. The government of Nanjing—especially the mayor, development and reform commission, and financial bureaus—has emphasized economic growth and local spending, with an inflow of capital and labor. Reforms have reduced the instruments Nanjing can use to limit industrial allocation and urban growth. The development of market economies paved the way for rural migrants to work and to live in cities, and rural-urban migration has become a major source of the population growth. Consequently, many Chinese cities have surpassed their year 2010—or even 2020—

Table 3—Nanjiing Master Plans Between 1950 and 2012

YEAR OF APPROVAL OR COMPLETION	NAME OF PLAN	PLANNED AREA (SQ. KILOMETERS)	TARGET POPULATION (MILLION)	TARGET LAND USE (SQ. KILOMETERS)	PLANNED FUNCTIONS
1954	Zoning Plan (draft)	160	1.327	130	Land use planning, focusing on residential and industrial land use, and cultural, education and military facilities.
1957	Nanjing Master Plan (draft)	160	1.3	139	Develop Nanjing into one of the most important industrial cities in China and a cultural, military and political center. Pillar industries include shipbuilding, electronic equipment, food production and textile.
1960	Nanjing Master Plan	4,535	1.2	-	Develop eleven satellite towns, five industrial zones and three mines. The metropolitan region contains a city center, commuting centers and satellite towns.
1961	Nanjing Master Plan (revision)	-	1.0	-	Control the growth of urban population and land area, and support agricultural development.
1975	Nanjing Master Plan	-	1.1-1.2	-	Renew the old city center, emphasize the development of sub-centers, and control the development of suburban areas.
1983	Nanjing Master Plan 1981-2000	4,717	1.36	122	An ancient capital and the political, economic and cultural center of Jiangsu Province.

(continued)

TABLE 3—CONTINUED

YEAR OF APPROVAL OR COMPLETION	NAME OF PLAN	PLANNED AREA (SQ. KILOMETERS)	TARGET POPULATION (MILLION)	TARGET LAND USE (SQ. KILOMETERS)	PLANNED FUNCTIONS
1991	Nanjing Master Plan, 1991–2010	6,516	6.0	243	Promote economic development, build up a beautiful environment, and develop a "Yangtze River" city, with a combination of ancient style and modern civilization.
2001	Nanjing Master Plan revision of the 1991–2010 plan	-	6.8	-	Develop into an economically vibrant city, one of the modern urban centers in the Yangtze River Delta, and an international city with unique cultural and historical characteristics, a high-quality living environment, and a harmonious nature-society interaction.
2009	Nanjing Master Plan 2007–2030	6,582	9.5	-	Become a national historical and cultural city, a transport hub, an important national innovation base, modern regional service center, advanced manufacturing base in the Yangtze River Delta, and a livable city along the Yangtze River.

Sources: Various Nanjing urban planning documents.

population-control objectives. So did Nanjing, with a permanent population of 7 million and a nonagricultural population of 5.4 million in 2010 (Table 1). These figures substantially surpassed the population-control objectives of the master plan (1991) even adjusted for the change of administrative boundaries. In 2010, the urban area of Nanjing reached 619 square kilometers, again substantially larger than the control objectives of the 1991 master plan.

Due to its interior location—compared to other coastal cities—and its status as a political capital, Nanjing was lagging behind other coastal cities in

reforms and globalization in the 1980s and 1990s. Nanjing was not among the fourteen coastal cities opened in 1984, and the first national development zone —Nanjing New and High-Tech Development Zone (NNHTDZ)—was established in 1988, but was slow in development (Table 4), and urban land expansion was compact (Figures 2 and 3) (Luo and Wei 2009). As shown in Table 5, the development intensity in Nanjing was around 1.41 percent in the late 1980s, which was relatively small compared with Suzhou, a city much closer to Shanghai.

However, the national push for greater reforms in the early 1990s prompted Nanjing to launch a series of new policies to promote economic reform and growth, as reflected in the 1991 Nanjing Master Plan (Table 3). The city established a number of national and province-level development zones (Table 4) concentrated in areas located at a distance of five to fifteen kilometers from the city center, where the development zones are mainly located (Figure 4), leading to the rise of expansion intensity away from the city center in the following years, especially in the 2001–2007 period.

With China's joining into the World Trade Organization (WTO) in 2001, another round of reform and globalization took place in Nanjing. Once again, the master plan was revised to reflect the new institutional environment, including the addition of an international city as a goal for the development of Nanjing (Table 3). Jiangning County was incorporated in Nanjing city to

Table 4—Major Development Zones in Nanjing

Development zone	Year of establishment	Planned area (sq. kilometers)
National Level		
Nanjing New & Hi-Tech Development Zone	1988	16.5
Nanjing Economic and Technological Development Zone	1992	11.37
Jiangning Economic and Technological Development Zone	1992	38.47
Nanjing Export Processing Zone	2003	2.7
Nanjing Chemical Industry Park	2001	45
Provincial Level		
Nanjing Lishui Economic Development Zone	1992	60
Nanjing Qixia Economic Development Zone	1992	13.37
Nanjing Pukou Economic Development Zone	1992	12.65
Nanjing Chemical Industry Park	1993	12
Nanjing Luhe Economic Development Zone	1993	10
Jiangsu Gaochun Economic Development Zone	1995	6.73
Nanjing Yuhua Economic Development Zone	2000	4.68
Nanjing Baixia High-tech Industrial Park	2001	1.14
Nanjing Binjiang Economic Development Zone	2003	5.53

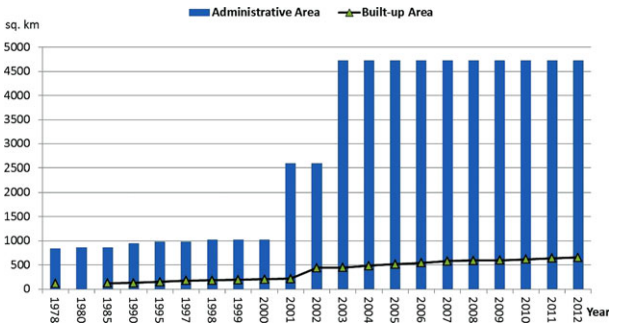

FIG. 2—Changing administrative and built-up areas in Nanjing, 1978–2012.
Sources: NSB (1979-2013); JSB (2013).

provide more land for development, which doubled the administrative area of Nanjing city. The incorporation of Luhe and Jiangpu counties in 2003 provided a significant jump in administrative area (Figure 2), accompanied by the development of university towns and sports projects.

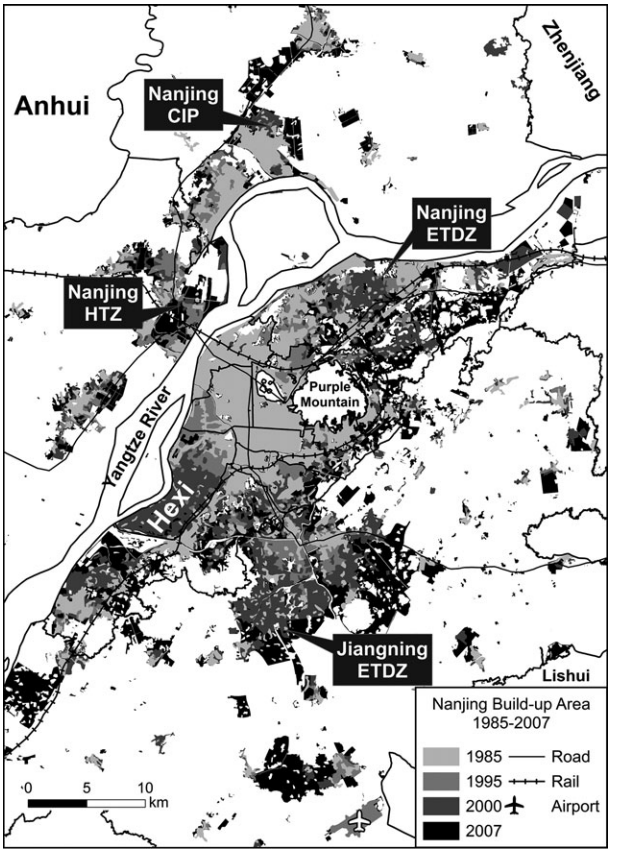

FIG. 3—Urban land expansion in Nanjing City, 1985–2007.
Source: Wei and others (2014).

TABLE 5—URBAN LAND EXPANSION IN NANJING, 1985–2007

INDEX	1985–1995	1995–2001	2001–2007
Total Expansion Area (ha)	11,094	26,342	39,021
Annual Expansion Area (ha)	1,109	4,390	6,503
Relative Expansion Intensity	1.41%	4.90%	5.61%
Absolute Expansion Intensity	0.19%	0.74%	1.08%

Source: Wei and others (2014).

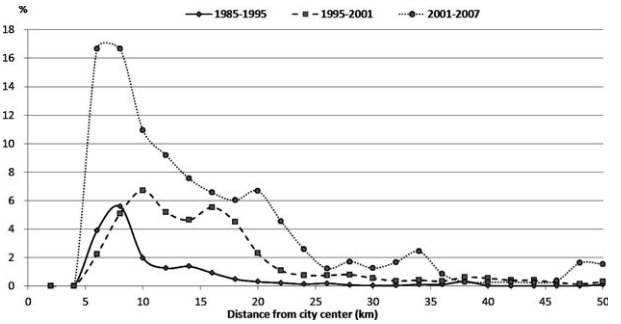

FIG. 4—Land development intensity in Nanjing, 1985–2007.
Source: Wei and others (2014).

As a result of administrative changes and urban development, Nanjing's urban land expansion accelerated in the 2000s, at a faster pace compared to the 1990s and 1980s. The annual expansion area increased from 43.90 square kilometers per year to 65.03 square kilometers per year. This is consistent with reform policies and development strategies (Figure 4). The urban area increased from 201 square kilometers in 2000 to 619 square kilometers in 2010. The fast growth of urban development was accompanied by the huge loss of agricultural land. The agricultural land in Nanjing recorded a remarkable drop from 3,010 square kilometers in 2000 to 2,399 square kilometers in 2010. The recent global financial crisis promoted another wave of planning (a new master plan) and development, focusing on infrastructure, as part of the national policy response.

As we can see from Figure 3, Nanjing's urban land expanded towards the east, north, and the northwest, with massive construction underway in the south of the Yangtze River Delta. The direction of urban expansion in Nanjing is also sensitive to the physical environment, which tends to favor the north-south corridor, constrained by both the city boundary and the Yangtze River. Nanjing's development contrasts with Hangzhou, where a polycentric pattern is emerging (Wei 2012). Nevertheless, the spatial expansion of urban growth is not identical to the master plan. For example, the 2001 plan limits the develop-

ment of areas to the east and south of Nanjing to protect suburban agricultural land and the environment. The developments to the south and northeast of the city were largely beyond the consideration of the master plan, documenting the disparity between planning and urban growth widely taking place in Chinese cities (Wei 2005; Qian 2012).

Capitalizing from Globalization: Development-Zone Fever

Unlike many developed countries where government policies tend to be aspatial, China has used space—especially land—extensively in its process of reform, globalization, and growth. China's open-door policy, however, is spatially uneven, with a strong focus on the coastal cities and centered on development zones. Asian economies such as Taiwan and South Korea were among the earliest in establishing export processing zones, and their success inspired China to establish special economic zones in south China in 1980, and economic and technological development zones (ETDZ) in 1984 in fourteen open coastal cities, as part of China's open-door policy. The early 1990s witnessed the establishment of numerous national and local development and high-tech zones—part of China's push towards greater economic reforms—which triggered development-zone fever (Yang and Wang 2008; Yang 2009). China's development zones are efficiency oriented to capitalize from globalization and tend to locate in more-developed, more-globalized, and higher-ranked administrative centers, such as centrally administrated municipalities and provincial capitals. More than two-thirds of the national development zones are located in coastal China, and FDI and export-oriented development zones are heavily concentrated in coastal cities.

Development zones enjoy lower taxes for foreign investment, higher foreign-exchange retention rates, lower tariffs on imports, tax breaks for exports, and more decision powers and transparency in management, thus becoming focus of FDI in China (Wei and Leung 2005). Their official land-use areas can be large, and the actual land used can even be substantially larger. Punishment for exceeding land-use quotas in national-level development zones is rare. The two major types of development zones in China include economic and technological-development zones, and high and new-technology-development zones (or high-tech districts). China has continued to introduce new types of development zones as new engines of growth, such as the export-processing zones and higher-education districts, as ways to attract external capital and obtain preferential policies. Besides the favorable open-door policy of the central government, Chinese cities have also initiated numerous local policies to attract foreign investment, especially by simplifying approval procedures, local-revenue subsidization, and providing infrastructure support. Provincial and local-level development zones also heavily engage in the cut-throat competition for FDI. Nanjing is no exception. Similar policies implemented by local governments in

China, called local-policy isomorphism (Chien 2008), are clearly guided by the reform policies of the central government.

Nanjing was opened up in the mid-1980s. However, its interior location and the burden of its socialist legacy as a political capital in the province, Nanjing was less attractive to FDI, as compared with Suzhou. The situation has greatly changed in 1990s and especially in the early the 2000s after China's accession into the WTO (Table 5). The total number of national and provincial development zones in Nanjing increased from one in 1990 to nine in 2000 and thirteen in 2010. The 2000s have also witnessed an unprecedented increase of FDI in Nanjing (Figure 5 and Table 2), which rose from US$987 million in 2000 to US$4.13 billion in 2012. More importantly, hundreds of global 500 enterprises—such as Siemens, Philips, Sharp, LG, and SAP—have invested in Nanjing.

Most of the newly developed urban lands are located on the fringe of Nanjing (Figure 4). Four broad hotspots of urban expansion can be identified, including northwest of the river, the southwest, the northwest, and the southeast. These developments are centered on the construction of development zones and the new CBD, which includes the Jiangning Economic and Technological Development Zone (JNETDZ) in the southeast, Nanjing ETDZ in the northeast, Nanjing New and High-Tech Development Zone (NJNHTDZ) in the northwest of the Yangtze River, and the Hexi new town, southwest of the city center.

NJNHTDZ, with a planned area of 16.5 square kilometers, was among the first groups of development zones in China designated for foreign investment. In 2010, there were 320 foreign enterprises in NJNHTDZ with a total output of 25 billion yuan. JNETDZ is another national-level development zone, specifically designed to attract large-size or global 500 TNCs. By 2010, the zone had attracted ninety-one foreign enterprises and their average output value was 400 million yuan, as compared to the average output of the foreign firms in

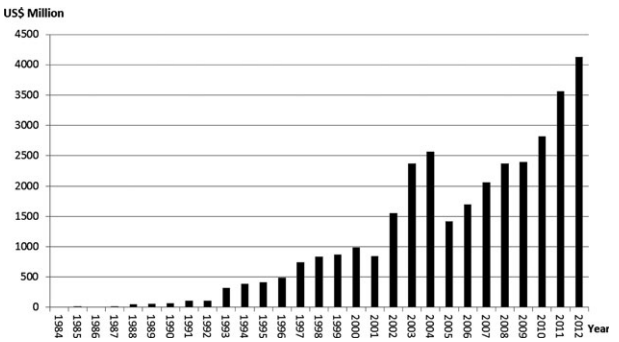

FIG. 5—FDI in Nanjing Municipality, 1984–2012.
Sources: NSB (1979-2013); JSB (2013).

NJNHTDZ, which was 80 million yuan. The provincial-level development zones also experienced dramatic growth, from zero in 1990 to nine in the early 2000s, with the establishment of more specialized development zones (Table 5). The local governments of China have continuously invented new types of development zones, and the most recent development focuses on zones or districts for innovation and advanced-business services.

The Insatiable Demand for Land: "Project Fever"

China has a socialist legacy of industrial allocation and project development. Its economic development during Mao's era, like other socialist countries, was centered on industrial allocation, and urban planning served socialist construction. During the First Five-Year Plan (1953–57), China imported 153 key projects from Soviet Union, and the allocation of these projects laid the foundation for the framework of industrial development. The need for industrial renovation prompted the allocation of large-scale modern industrial facilities imported from the West in the early 1970s—mostly located in coastal cities, including Nanjing. During the reform period, despite decentralization and marketization, project allocation remains a key function of the Chinese government. The largest and most significant are administrated as key projects included in state planning, with the biggest referred to as megaprojects, with tremendous resource commitment from both central and provincial governments.

Flyvbjerg (2014) uses technological, political, economic, and aesthetic sublimes to explain what drove of the global megaproject boom. China's key projects are large-scale constructions and can contribute significantly to the growth of GDP and the landscape of development zones. These projects are largely top-down approved and more likely financed by the central government; they are also expected to have trickle-down effects through their production linkages, technological spillover, service development, and especially the dramatic transformation of urban landscapes. Key projects are also the best instrument for increasing land-use quotes from the central government. They therefore become political-achievement projects (*zhengji gongcheng*), the best instrument to achieve economic growth and urban development, and—consequently—political capital. Such projects go first to provincial capitals, since they are the decision centers and arguably serve the whole provinces. The direct links of provincial leaders to the central government also make it easier for provincial capitals to initiate and receive key point projects. Megaprojects, such as the 2008 Olympics in Beijing and the 2010 World Expo in Shanghai, or gigaprojects, such as the China's high-speed rail project, have national significance and therefore can draw heavy investment from the central government. The project-allocation system is still overwhelmingly directed and even financed by the state; it is therefore a key component of state planning and tied to power centers. The more powerful the city, the more privilege it receives. Megaprojects

are therefore privileged particles of the development process (Hirschman 1995), and even path breaking.

When socialist ideology ruled, China's key projects were in heavy industry and infrastructure development, promoting socialist industrialization and construction. The size of key projects have become larger over time; more importantly, their scope has been expanded dramatically, including administration, information technology, education, finance, sports, and new modes of transportation such as high-speed rail, which can be found in most large cities of China. These are all signs of project fever—a global phenomenon. Infrastructure development is the most effective way to improve urban landscapes, both displaying political achievement and satisfying urban residents' demands for better working and living conditions. Project fever has intensified since the global financial crisis and has become a focus of policy initiatives to revitalize the Chinese economy.

Nanjing is by no means exceptional in the new wave of "project fever" in the 2000s (Table 6). National-level development zones are the largest political-achievement projects, comprehensive megaprojects where manufacturing activities are geographically concentrated. Industrial projects are largely located in development zones. In addition to the development-zone projects, university towns, Hexi new town, and infrastructure development are now the frontiers of urban growth, attracting advanced-service investment and the development of high-tech and headquarter economies in Nanjing.

China has attempted to transform itself from "Made in China" towards "Innovated in China" through promoting indigenous innovation to move up the global value chain (Liefner and Wei 2014). The main channels of research and development and technological development are Chinese research institutions and knowledge transfers from TNCs. The development of university towns has become another major focus of local governments. In Nanjing's case, it demonstrates the city's ambition to be known as an innovation hub with a knowledge-based economy. University towns have also been built to attract overseas returnees and to compete with key provincial capitals in coastal China, such as Hangzhou. University towns, however, are not purely for universities; they have also been used for the development of high-tech industries and residential spaces. There are three university towns located respectively in the districts of Jiangning, Pukou and Qixia. Xianlin University Town is the largest university town in Nanjing, and is planned to be developed into a comprehensive district, with an area of 47 square kilometers. Pukou has largely become a new city district, with a planned area of 93 square kilometers (Table 6).

Given the demand for services, the construction of new CBDs or sub-centers has become another way to stimulate economic growth and obtain land-use allotments. Almost all large Chinese cities have been developing new CBDs. The largest in scale is Shanghai's Pudong District, where Lujiazui is being built as the global financial center. Hangzhou's Qianjiang New City has been under

TABLE 6—MAJOR DEVELOPMENT AND PROJECTS IN NANJING

CATEGORY	PROJECT	YEAR INITIATED	YEAR COMPLETED	PLANNED AREA /LENGTH
New City New Urban Districts	Hexi New City	2004	2014	94 sq. kilometers
	Pukou Urban District	1995	-	93 sq. kilometers
	Xianlin Urban District	1995	-	80 sq. kilometers
	Dongshan Urban District	1995	-	107 sq. kilometers
University Towns	Pukou University Town	1987	-	4 sq. kilometers
	Xianlin University Town	2002	-	47 sq. kilometers
	Jiangning University Town	2002	-	27 sq. kilometers
Infrastructure Sports Events Tourism	Lukou International Airport	1995	1997	9.88 sq. kilometers
	Nanjing Metro	2000	2030	617 kilometers
	Nanjing Olympic Sports Center	2002	2005	0.896 sq. kilometers
	Nanjing South Railway Station	2008	2011	0.458 sq. kilometers
	Shanghai-Nanjing High Speed StationRailway	2008	2010	300 kilometers
	Tenth National Games	2001	2005	-
	Asian Youth Games	2010	2013	-
	Youth Olympic Games	2010	2014	-
	Tangshan International Hot Spring Town	2008	2010	60 sq. kilometers

construction for more than a decade, and from the very beginning it was planned as the new CBD of the city (Wei 2005; Qian 2008). Hexi New Town has been built to the south of Nanjing's city center, with a planned land area of 94 square kilometers (Table 6). It is also a cultural and sports project, since its anchor is the Olympic Sports Complex, although hosting the Olympics was left to Beijing. In any language, "Olympics" is a buzzword for marketing and policy support.

Infrastructure projects have long been key favorites in China, including airport, railway stations, highway stations, and streets, which have become a focus of project fever since the recent global financial crisis. The Nanjing Metro is an ambitious system designed to serve the city; its construction will last for thirty years, from 2000 to 2030. Nanjing South Railway Station

has been built as a transportation hub to stimulate economic growth in south Nanjing.

Residential projects are accompanying most of the project developments, since rising real estate prices have made residential projects the most profitable development in China. Urban comprehensive projects, including shopping, residential, and cultural activities, have also emerged across the city. Golf courses, too, are conspicuous development projects often to the accompaniment of high-end houses and apartments.

It is worth noting that these strategic or image projects, such as university towns and new city districts, reflect the spatial realizations of the marketization, decentralization, and globalization in Chinese cities. Ongoing projects have resulted in a dramatic increase of construction investment and urban expansion in Nanjing. Project fever has brought huge fiscal uncertainty for the municipality government and development corporations in Nanjing, putting the city heavily in debt, since most of the infrastructure, administrative, and even cultural projects are unprofitable. As observed globally, while in demand, megaprojects are often poorly managed and economically inefficient, leading to the wasteful "breaking-fix-mode" of project development (Flyvbjerg 2014), which forces the city to sell more land and borrow more from state-controlled banks. On the other hand, the spillover effects of these projects, especially to small, private enterprises in Nanjing, remain limited.

Conclusion

The urban growth of Nanjing can be seen as a typical scenario of how local Chinese governments attempted to promote economic growth through land development and spatial expansion. This process is collectively driven by local development policies and the triple process of economic transformation: globalization, decentralization, and marketization. The temporal change of urban land use and expansion has been heavily influenced by the reform policies initiated by the central government, while special locations for development are influenced by local development conditions. The assessment of urban development strategies and policies, as is demonstrated by the case of Nanjing, provides another important approach to understanding urban growth and expansion in China.

It has been found that although the spatial pattern of urban expansion in Nanjing was modest and relatively compact in the 1990s, the pace of urban growth has been quickly catching up with other major coastal cities, such as Suzhou and Hangzhou, since the early 2000s. Nanjing shares some common characteristics of urban development with other Chinese cities in developing large development zones and high-tech districts and in promoting Hexi as a new city center. As Nanjing is the provincial capital of Jiangsu and is situated more to the interior of the Yangtze River Delta, Nanjing's urban development has been more domestically driven than Suzhou, where external forces drive

the development of the Singapore Industrial Park and the Suzhou New District. The case of Nanjing highlights the broad forces of globalization and economic transition in China, while displaying the diversity of urban growth pattern and mechanism in Chinese cities.

Nanjing has experienced rapid growth and change, which has shaped and reshaped development and planning activities. China's urbanization policy to control the growth of large cities was a defensive policy in response to the rapid growth of cities and the problems of shortage. It had considerable impact on the planning of Chinese cities in the early 1980s. However, as economic reforms deepen—especially decentralization and the dismantling of orthodox socialist institutions—the ability and willingness of the Chinese central government in control large city growth has declined substantially. On the other hand, reforms and globalization have created a growth-oriented environment, and empowered localities and global investors in pursuit of growth. Local governments of China have become less committed to controlling urban land expansion; indeed, they actively promote urban growth through numerous development zones and projects. Consequently, Chinese cities have recorded dramatic population growth and land expansion.

Such rapid growth, however, has created new problems for Chinese cities. Megaprojects are often poorly managed and unprofitable, encumbering cities with heavy debt and forcing them to sell more land and initiating new projects, leading to the widely observed "breaking-fix-mode" of project development. The top-down development zone and project fevers in Nanjing have further centralized public resources for development, and Nanjing has lagged behind many cities in the Yangtze River Delta in developing private economies and small enterprises. Facing skyrocketing housing prices, widespread traffic jams, complaints over corruption and inequality, and social unrest, many large cities have voiced the need for population control, and a limit on migrant workers. The rapid expansion of urban land use has also raised concerns for land available to future challenges to development and sustainability. Urban planners and managers in China have been forced to respond to reforms and globalization from above and outside; plans, such as those for Nanjing, have to be revised constantly. Problems of coordination exist among different ministries, departments, bureaus, and their branches, and between city-level governments and district/township-level governments. Nanjing is at the crossroads of institutional reforms to make the development process more equitable and sustainable.

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