Capitalizing on Cities:

The Diffusion of Neoliberal Urban Policies in China

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Dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor of Philosophy in the Department of
Sociology in the Graduate School
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2012
ABSTRACT

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Abstract

The global diffusion of neoliberal economic policies is one of the most significant events in modern history. This research applies current knowledge on policy diffusion to the analysis of the diffusion of two major neoliberal urban policies among Chinese cities, namely land banking and privatization of urban infrastructures. Both policies are believed to have contributed greatly to the rapid growth of China’s urban economy, and reflect the idea of capitalizing a city’s tangible assets and utilizing market institutions to manage them so as to achieve economic gains.

Borrowing insights from existing diffusion theories developed by scholars from different background, this research explores the determinants of the policy innovation decisions by utilizing three theoretical models: (1) The internal determinants model, which presumes that the factors causing a local state to adopt a new policy are political, economic, and social characteristics of the local states. (2) The regional diffusion model, which posits that the geographical proximity affects diffusion by encouraging emulation and competition among neighboring states. (3) Institutional diffusion model, which proposes that a new policy may be adopted to prove the legitimacy of the organization, to cope with environment uncertainties by modeling others, to conform to the will of other organizations on which the adopters depend.

This study emphasizes the role of governments, both at the central and local levels, in building neoliberal market institutions. It pays particular attention to the
effects of provincial governments’ pressure, and shows that local states’ dependency on higher level authorities has limited the effectiveness of such interventions. Moreover, I highlight the influence of horizontal intergovernmental relations, such as competition and emulation, on the diffusion processes, and argue that it is an important factor that has promoted the national-wide expansion of neoliberal policies. The results of this study enrich our understanding on how local policy makings are influenced by complex intergovernmental relations, and how do local states balance between local economic interests and political loyalty to higher levels when they formulate local development agenda.
Dedication

To Ting and my parents
Contents

Abstract ........................................................................................................................................ iv

List of Tables ................................................................................................................................ ix

List of Figures ................................................................................................................................ x

Acknowledgements ................................................................................................................ xi

1. Introduction .......................................................................................................................... 1
   1.1 China Meets Neoliberalism ............................................................................................. 1
   1.2 Capitalizing on Cities: A Neoliberal Policy Paradigm ..................................................... 5
   1.3 Land and Infrastructures: Two Pillars of the New Paradigm ........................................ 11
   1.4 Institutional Context of the Paradigm Change ............................................................... 13

2. Theories and Hypotheses ..................................................................................................... 22
   2.1 Internal Determinants Model ......................................................................................... 23
   2.2 Regional Diffusion Model ............................................................................................. 30
   2.3 Institutional Diffusion Model ......................................................................................... 32

3. Data and Variables ............................................................................................................... 43
   3.1 Data ................................................................................................................................. 43
   3.2 Dependent Variables ....................................................................................................... 47
   3.3 Independent Variables .................................................................................................... 51
   3.4 Control Variables ........................................................................................................... 59

4. The Diffusion of Land Banking System ............................................................................. 62
   4.1 The Development of Land Banking System .................................................................... 63
   4.2 Hypotheses ..................................................................................................................... 71
   4.3 Method ............................................................................................................................ 74
4.4 Results........................................................................................................................................... 77
4.5 Discussion and Conclusions............................................................................................................ 82
5. The Diffusion of Infrastructure Liberalization.................................................................................... 93
5.1 The Liberalization of Infrastructure Sectors.................................................................................... 96
5.2 Hypotheses......................................................................................................................................... 107
5.3 Method............................................................................................................................................... 109
5.4 Results............................................................................................................................................... 112
5.5 Discussion and Conclusions............................................................................................................ 117
6. Variation among Arrangements and Sectors ..................................................................................... 128
6.1 Variation among Contractual Arrangements..................................................................................... 128
6.2 Variation among Sectors .................................................................................................................. 133
6.3 Method............................................................................................................................................... 135
6.4 Results............................................................................................................................................... 137
6.5 Discussion and Conclusions............................................................................................................ 143
7. Variation in the Degree of Liberalization............................................................................................ 150
7.1 The Degree of Private Participation................................................................................................ 152
7.2 Hypotheses......................................................................................................................................... 154
7.3 Method............................................................................................................................................... 159
7.4 Results............................................................................................................................................... 161
7.5 Discussion and Conclusions............................................................................................................ 164
8. Conclusions.......................................................................................................................................... 170
References ........................................................................................................................................... 181
Biography ........................................................................................................................................... 190
List of Tables

Table 1: Keywords Used in Policy Documents Search..................................................47
Table 2: Cox Models Predicting Land Banking Diffusion ........................................87
Table 3: Post-estimation Analyses for Models Predicting Land Banking Diffusion ... 88
Table 4: Comparison of Land Banking Systems in Four Major Cities. ......................89
Table 5: Random-Effects Probit Model on Land Banking Diffusion .........................92
Table 6: Total Projects and Investments by Sectors, 1990-2008 ..............................107
Table 7: Fiscal Subsidies in Shaoxing and Xianyang .............................................121
Table 8: Cox Models Predicting the Infrastructure Privatization ............................123
Table 9: Post-estimation Analysis for Models Predicting Infrastructure Privatization 125
Table 10: Random-Effects Probit Model Predicting Infrastructure Privatization .......126
Table 11: Revenue Assignments between the Central and Local Governments .......127
Table 12: Types of PPI Arrangements ........................................................................132
Table 13: Number of Projects and Investment Amount by Types and Sectors.........132
Table 14: Feasibility of Private Sector Delivery by Infrastructure Segments ..........147
Table 15: Multivariate Probit Models on Different Types of PPI Arrangement ........148
Table 16: Multivariate Probit Model on Different PPI Sectors ..............................149
Table 17: Index of Main Types of Private Participation Models ............................167
Table 18: Determinants of Extensity of Private Participation ...............................168
Table 19: Determinants of Intensity of Private Participation ..................................169
Table 20: A Comparison between Two Diffusion Processes ..................................180
List of Figures

Figure 1: The Position of a Land Banking Center in a Local Land Bureau............... 66
Figure 2: The Adoption of Land Banking Agencies .................................................. 68
Figure 3: Revenue from Land Sales ........................................................................ 69
Figure 4: Share of Urban Infrastructure Investment Financed from the Budget ........ 100
Figure 5: Share of Urban Infrastructure Investment Financed by Fees and Charges.. 101
Figure 6: Share of Urban Infrastructure Investment Financed by Loans ............... 101
Figure 7: Cumulative Number of Projects by PPI Types ......................................... 131
Figure 8: Annual Number of Projects by PPI Types ................................................ 154
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1. Introduction

1.1 China Meets Neoliberalism

The rise of neoliberal policies over the past three decades has been regarded as one of the most significant events in modern history. Almost all states have embraced some version of neoliberal theory and adjusted at least some policies and practices, either voluntarily or in response to institutional pressures (Harvey 2005a). The election of conservative governments in North America and Western Europe, the pursuit of austere stabilization policies in Latin America, and the regime change in Eastern Europe and the Soviet Union, and the market reform in the previous socialist countries have all marked this period as one during which neoliberalism doctrines gradually replace the Keynesianism principles (Campbell and Pedersen 2001).

Neoliberalism is a multifaceted notion. In the first place, it refers to a set of institutionalized normative principles that “proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets and free trade” (Campbell and Pedersen 2001; Harvey 2005a:2). Moreover, neoliberalism is also expressed in state policies: liberalization, deregulation, privatization, and depoliticization. These policies target at promoting unfettered competition by getting the state out of the business of ownership and getting politicians out of business of direct intervention into economic management. By the 1990s, this family of policies was
fairly clearly defined as a now-famous concept “the Washington Consensus”, which advocates trade liberalization, tax reform, fiscal discipline, deregulation, utilizing foreign direct investment and so forth (Mudge 2008; Savas 2005; Williamson 1990; Williamson 1993).

Under the neoliberalism paradigm, the role of state is limited in creating and preserving an institutional framework appropriate to such practices. The state has to guarantee the quality and integrity of money. It must establish defensive forces to protect the legal structure and secure private property rights. The state should also provide public goods such as education, social security, and environmental protection when markets fail to do so. However, beyond these tasks, the state intervention should be kept minimum (Harvey 2005a). All these aspects share a common and distinctive ideological core: the elevation of the market over all other forms of organization (Mudge 2008).

The transition to neoliberalism is highly uneven in its timing, scope and nature. Global transformations and local institutional conditions and dynamics shaped perceptions and necessity of economic liberalization, and also shaped the channels through which the ideas and policies diffuse (Fourcade-Gourinchas and Babb 2002). The rationale for adopting the neoliberal polices relied on different perceptions and assessments of their own economic problems and what the shift to the market was meant to accomplish. In institutionalist term, the emergence and path of the neoliberal policy regime was socially constructed through the mediation of national institutions
and culture (Dobbin 1994; Hall 1989).

While neoliberalism is often considered to be invented in the Anglo-Saxon world, its contemporary origin is as much Chinese as Western. The reform and opening-up policy adopted in late 1978 is regarded as one of the milestone events of neoliberalism expansion. It is even before the election of Margaret Thatcher as British Prime Minister, Paul Volcker’s selection as the chairman of the Federal Reserve, and Ronald Regan’s election as the U.S. president (Harvey 2005a). The rise of neoliberalism in china was driven by the Party’s need to improve the country’s economic performance, which had been seriously affected by the Cultural Revolution and tight state regulations on the market forces. In this historical context, the party fully embraced the market-oriented ideology, and made neoliberalism a useful policy tool for the authoritarian state to promote economic growth and strengthen its legitimacy for political dominance (Gao 2009).

Unlike its Western counterparts, China follows a distinct trajectory of neoliberalism expansion. A striking feature of Chinese neoliberalism is a vibrant neoliberal economy coexisting with a powerful authoritarian state. This contradicts the prevailing neoliberal model in two ways. First, economic liberalization does not go hand in hand with political democratization. While the country’s economy is increasingly open to the global market, its political system has not changed much in the past three decades. Second, although the market power has substantially increased during the
reform era, the state has not relinquished its control over the economy; instead, state intervention is still active and influential and can be easily identified in many economic sectors (Blanchard and Shleifer 2001; Fligstein and Zhang 2011; Hall and Soskice 2001; Yeung 2003). Third, compared with the local states in some developing or transitional economies, the Chinese local states play the role of a “helping hand”, and promote the market development in the local economy (Jin, Qian, and Weingast 2005).

As Campbell and Pedersen (2001) argue, neoliberalism, at the empirical level, is less coherent than it is assumed to be. It is often a loose conglomeration of institutions, ideas, and policy prescriptions from which actors pick and choose depending on prevailing political, economic, social, historical, and institutional conditions. As a result, the specific policy structure is far from uniform, but vary greatly across countries. When it comes to China, one of its unique characteristics is the coexistence of neoliberal institutions with the authoritarian state. Unlike other developing countries which adopt neoliberal economic policies as prescribed in the Washington Consensus and also carry out political democratization, China adopts similar neoliberal economic policies but resists the democratic political change. However, this does not mean that the authoritarian state will be in conflict with neoliberal doctrines. In most cases, the authoritarian state actively uses its political power and institutional resources to implement neoliberal policies. While, at the same time, the authoritarian state has been very cautious in expanding the neoliberal policies to new fields; it tries to ensure that
neoliberalism is nothing more than a policy tool for the state (Gao 2009: 425).

This coexistence leads to a series of questions: (1) what are the key factors that make policymakers at various levels choose to adopt the seemingly “capitalist” economic policies? (2) What are the mechanisms that have facilitated the diffusion of neoliberal policies across the country? (3) How do intergovernmental relationships, both horizontal and vertical, affect the local government’s behavior toward market development? (4) To what extent can state especially local states maintain their autonomy when they use neoliberal policies to pursue economic growth? And (5) to what extent does the Chinese experience confirm, challenge, or enrich our knowledge on policy changes?

1.2 Capitalizing on Cities: A Neoliberal Policy Paradigm

“One hundred years struggle, prosperous north pearl today”, when China’s former president Jiang Zemin wrote down this note for the 100th establishment anniversary of Dalian, he announced the success of a new urban development strategy advocated by major Bo Xilai.

Holding the belief that traditional urban development strategy led by state-owned enterprises (SOEs) is losing its efficacy in the new era, Bo believes that SOEs are state assets, and so are cities. In an his interview with the People’s Daily, Bo argues cities are assets and capital in local state’s hand,
“…Cities themselves are state owned assets, they have economic values, and (we) can make money by managing cities-the state owned assets. Cities worth money and their value can appreciate, and this is not something that unforeseeable.”

He argues that business environment and external investments, including foreign direct investments are crucial to the successful management of the cities’ assets.

“…To my understanding, the combination of good business environment and foreign direct investment (FDI) can improve city’s value. Good business environment means high quality urban infrastructures, i.e. roads, airports, shopping malls, hotels, hospitals, schools, cultural and sports facilities, and natural environment. These are the prerequisites to attract FDI. If FDI flows in, then the city’s value will increase and this in turn will reward enterprises, units as well as urban residents.”

In this process, revenue from urban land is the key financial resources for subsequent investment in business environment.

“…The control of land and land revenue is of great importance, and it has great economic potentials. To better manage cities, (we) need to open our mind and find new profitable ways of earning money, and meanwhile (we) need to save money. We need to stop the misuse of public funds. If we use the money (from land) to buy new cars, construct new office buildings, or use it for various entertainment purposes, then the assets will be wasted. I am from Shanxi (a province that used to have highly developed private financial industry), I believe only when we tightly control the funds (from cities’ assets), can we see real development.”

The official statistics show that during the period of 1992-2000, Dalian has achieved a high growth rate: the city’s available fiscal revenue rose from 2.1 billion to 7.7 billion Yuan, and urban infrastructure investment increased from 86 million to 2.7

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1 From “Bo Xilai explains how to manage cities”. Duan, Xinqiang. People’s Daily (ren min ri bao), May 14th, 2001.
2 Ibid.
3 Ibid.
billion. Backed by huge fiscal investment, the overall investment environment improved significantly. Highways and metro built, university expanded, city library, high schools and hospitals conditions improved, and water supply system upgraded. These improvements established the foundation for the realization of “attract elites to Dalian” strategy: The actual utilized FDI increased from 0.5 billion USD in 1992 to 2.2 billion USD in 2003, with an annual growth rate of 13.7 percent. Residents of Dalian were also reportedly benefited from economic prosperity: one million city residents moved to new apartments, of which 450 thousand enjoyed generous government subsidies; government invested heavily in building urban social security system and provided more fiscal assistance to agriculture sector.4

Before these new development ideas came to the state media’s attention, a few coast cities, such as Qingdao, Ningbo, and Shanghai adopted similar policies, which in fact have been practiced by entrepreneurial cities in North America, Europe, Australia, and Asia (Brenner 2004; Harvey 1989; Jessop and Sum 2000; Owen 2002). Although there is substantial variation in terms of the policy instruments adopted by cities in different countries, some basic policy ideas are widely adopted:

Firstly, public sector resources and powers are utilized to promote economic growth. Traditional regulatory and welfare function of local governments are

marginalized. Secondly, market criteria are used to evaluate the goals and efficiency of government practices, and there is a new emphasis upon improving municipal finances through revenue enhancement in addition to conservative budgetary practices. Thirdly, entrepreneurial cities have identified publicly sponsored land, real estate, and infrastructure development as the main vehicle for both increasing revenues and promoting local economic growth. And finally, despite the different socioeconomic conditions, efforts to stimulate economic growth have been remarkably similar in their concentration on the retention and attraction of leading economic sectors (Harvey 1989; Leitner 1990; Leitner and Sheppard 1998).

Like their international counterparts, the Chinese cities try to mobilize internal as well as external financial resources and increase investments in urban infrastructure sectors, culture, tourism, and recreation projects so as to enhance the cities’ image and create “good business climate” to lure domestic and foreign capital. As these practices gradually disseminate across the country, more cities began to emulate the policies that were proved to be effective in model cities. During this process, new contents were added to the “capitalizing on cities” strategy, and thanks to the great theorizing efforts from the policy research communities and policy making professionals, this strategy has evolved into a well-defined policy paradigm.

In 2004, an inland province, Sichuan, launched a legislative effort in writing the ideas of capitalizing on cities into provincial law. Although the bill was unable to gain support at the provincial people’s congress, the text of this document does provide us an
opportunity to see how local legislators understand and define the new paradigm. The major contents of this bill are as follows:

Section 1 (Goal): (This act is) to strengthen the management and business operation of urban public assets, to promote the capitalization of urban resources, to realize the proper use of resources, and to improve the utility of urban assets.

Section 3 (Definition): Capitalizing on cities refers to the process that governments at county level and above use market mechanisms to construct urban infrastructure, develop urban utility industries, allow different market entities to operate urban public assets. Local states should supervise the business operation of urban public assets, promote the efficient and sustainable use of urban resources, promote urban construction and development, and improve the quality of management.

Section 7 (Leadership): Counties and cities at both county and prefecture levels are responsible for coordination of the activities that facilitate the capitalization of urban assets.

Section 13 (Means): Local governments at county and city levels should explore the new function of cities, improve the quality of urban environment and the cultural taste, improve cities’ value; and optimize the utilization of urban land and space, improve regional environment conditions, promote the formation of differential land rent, improve the value of urban land assets.

Section 17 (Means Cont.): Local governments can use Build-Operate-Transfer (BOT) or Transfer-Operate-Transfer (TOT) contracts to promote the construction of new urban district and infrastructures. Governments can use the revenue from differential land rent to subsidize firms/individuals to encourage them to invest in urban infrastructures, construct and operate urban utility industries.

Section 19 (Means Cont.): Local government should adopt concessionary management system for the following utility sectors: urban roads, bridges, tunnels, sewerage, waste management, heat supply, power, water, and gas distribution, and public transportation.

Section 20 (Means Cont.): Local government can transfer the managerial rights to market entities through means such as public bidding and auction. These means apply to

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the management of urban public facilities, city parks, public sanitation, and so forth.

Practices in Dalian and Sichuan embodied similar policy ideas that are essential for the new policy paradigm. First, local states seek to capitalize their assets by identifying publicly sponsored land and real estate development as the main vehicle for both increasing revenues and promoting local economic growth. Second, local states not only directly invest heavily in infrastructure, but also actively liberalize the infrastructure sector (e.g. subways, water supply, and waste management) to private investors (Henisz, Zelner, and Guillen 2005). Third, local states compete to lower down the entry barriers for foreign direct investment, and try their best to cultivate good business climate to attract investors. Fourth, market criteria are used to evaluate the goals and efficiency of government practices, and there is a new emphasis upon improving municipal finance through revenue enhancement in addition to conservative budgetary practices (Harvey 1989; Leitner 1990).

These policies embody the principles in the Washington Consensus, which advocate for privatizing state controlled enterprises and assets, abolishing regulations that impede market entry or restrict competition, prioritizing public spending toward provisions of key pro-growth services like infrastructure investments, and facilitating the inflow of foreign direct investment (Williamson 1990; Williamson 1993). So the policies that aim to capitalizing on the cities are in fact a clear manifestation of neoliberal doctrines at the sub-national level.
1.3 Land and Infrastructures: Two Pillars of the New Paradigm

Policy paradigm is a set of overarching ideas for policy makers that specify how the problems facing them are to be perceived, which goals might be attained through policy, and what sorts of techniques can be used to reach those goals. The ideas about each of these matters often interlock and form a relatively coherent entity (Hall 1992:91). As a new paradigm, the central idea of capitalizing on cities is to capitalize a city’s tangible and intangible assets, and utilize market institutions to manage them so as to achieve economic gains. Since this policy paradigm encompasses many interconnected policies and institutions, instead of studying all its components, this research will focus primarily on two key policies of this paradigm, namely policies on urban land banking and liberalization of infrastructure sectors.

(1) Land Banking Policies: Land banking refers to the practice by which a local government purchases land from previous users then converts it to productive use or holds the land until it is profitable to sell it to others (Alexander 2008). The land banking system functions as an institution through which local states can capitalize on land resources, which is one of the major state assets in their hands. While the system improves the urban land use efficiency, local states also acquire huge land revenue from land transactions and government sponsored real-estate projects. The profits from land banking activities give local states considerable fiscal power to improve their cities’
images and make the business environment more appealing to investors.

(2) **Liberalization of Infrastructure Sectors**: Infrastructure liberalization refers to the process that private capital are allowed or encouraged to own or participate into the management, maintenance, and construction of urban infrastructure projects. The private capital here refers to both foreign and domestic private funds. In the past 20 years, the wide spread liberalization of the formally state controlled infrastructure sectors has redefined the role of the state in the economy (Izaguirre 2005). State monopolies in major infrastructure sectors have been abolished or restricted, and private capital has participated in a wide range of projects through schemes such as concession, green-field projects, and divestiture. During China’s rapid urbanization and industrialization process, the private sector has played a crucial role in mobilizing financial resources for key urban services such as urban roads, public transportation systems, municipal solid waste management, and water and sanitation. And the temporal distribution of different liberalization schemes reflects the state’s intricate balance between market liberalization and effective state control over the economy.

These two policies serve the same ultimate purpose of promoting local economic growth. The commodification of urban construction land provides local states with a new revenue source, and leads to the boom of the real estate sector; the deregulation of

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6 Liberalization refers to the relaxation of government regulations, usually in the social and economic policy fields. It is often used interchangeably with deregulation, which facilitate the private participation in once government restricted sectors and challenge a government monopoly and even displace it altogether (Savas 2005).
the infrastructure industries and the participation of private capital have greatly improved urban infrastructure conditions. With increased fiscal power and improved infrastructure, local states have made great strides in enhancing the local business environment in order to get ahead in the global economy (DRC 2005; Gao 2009; Harvey 2005a; The World Bank 2004; Zheng 2004).

1.4 Institutional Context of the Paradigm Change

From an institutional perspective, the change of policy paradigm in a given city can be viewed basically as a social learning process. This social learning process is highly path dependent, promoted by agents inside the old system, and influenced by new information and institutional pressure. Specifically, one of the principal factors affecting policy at time 1 is policy at time 0. It means that the most important influence in this learning is previous policy itself. Policy responds less directly to social and economic conditions than it does to the consequences of past policy. Moreover, the key agents pushing forward the learning process are the experts in a given field of policy, either working for the state or advising it from privileged positions at the interface between the bureaucracy and the intellectual enclaves of society. In the Chinese context, these agents can be policy research experts and officials or experts who specialize in this specific field of policy. In addition, although the state policies are influenced by societal pressure, the state itself maintains certain degree of autonomy and its policy making
process is similar to a learning process that is characterized by deliberate attempts to adjust the goals or techniques of policies in response to past experience and new information (Hall 1993).

However, when it comes to the analysis of the isomorphic changes in local development strategies, we have to take into consideration of the national level institutional settings which powerfully affect local decision making process. The social learning model, therefore, should be fleshed out. We must notice that the autonomy of the local state is more bounded by its institutional environment. It is true that local governments sometimes have the autonomy to engineer local development plan, but at the aggregate level, which development paradigm win out is in fact conditioned by the national policy settings. In addition, various policy ideas might coexist simultaneously. The mere existence of an idea does not ensure that it will be accepted by most local leaders. The problem is to explain why certain ideas, rather than others, can be taking as an acceptable and enforceable paradigm by local states. We have to fully consider the interaction between macro institutional settings and the dissemination of the idea. Because some changes in the national institutions could make some avenue of policy become increasingly blocked if not entirely cut off (Hall 1992; Weir 1992).

The emergence of neoliberal urban policies in cities around the world is closely associated with the global and national political and economic restructuring process which consists of leading economic sectors shifts, communication technology innovation, accelerated mobility of finance capital, and transformation in the form of
political governance (Harvey 1989; Leitner and Sheppard 1998). However, more immediate reasons could be found in changes of intergovernmental fiscal relations and local economic bases. As advanced capitalist economies moved out from the Fordism era, their national economic policies were gradually leaning toward neo-liberalism, emphasizing economic efficiency of the free market and competitiveness. National governments in both North America and Western Europe began to reduce fiscal subsidies to lower level. Local states were required to be responsible for making their places more attractive to investors in order to promote urban economic growth. Under this situation, cities could no longer rely on the national government as a source of finance and they had to compete with each other for market share as firms do.

Accompanied with intergovernmental relation changes is the transition of urban economy. In North America and Western Europe, traditional labor intensive manufacturing industries began to decline or stagnate since 1970s. As a consequence, cities, especially those former industrial centers, need to seek new sources of revenue through a proactive mobilization of local economic development projects and inward investment strategies (Brenner 2004; Harvey 1989; Leitner 1990).

The political and economic transformations that Chinese cities have experienced in the past three decades are no less dramatic. Since early 1980s, decentralized economic management system began to growing out of highly centralized planning system (Naughton 1995; Naughton 2007). Fiscal contract system together with decentralized reforms in commerce, SOEs management, production material allocation, loans and
foreign currency control system was implemented national wide. The purpose of these reforms was to make local governments more active in promoting local economic growth (Riskin 1987; Zhao and Zhang 1999). These decentralization reforms on the one hand gave local governments material incentives as well as certain economic autonomy, but on the other hand hardened the budget constraints faced by lower level governments. Therefore, local governments had to explore local resources and invent various strategies to increase local fiscal revenue, not only for local residents’ welfare but also for the officials’ own interests. Local governments’ roles thus transformed from central government’s expenditure agents to self-interested entities resembling industrial firms in many ways (Walder 1995; Zhao and Zhang 1999).

When decentralized reforms effectively boosted local economy, it also caused strong localism and the drain of central revenue (Wong 1992). This eventually forced the central government take recentralization measures to strengthen its political and economic control. Of the recentralization measures, tax sharing system (TSS) reform in 1994 is the most important one (OECD 2005; Wong 2000). The primary purpose of the TSS is to improve the central government’s share in total fiscal revenue. In order to do so, the system designed new tax assignments rules and created new tax administrations. On the revenue side, 75 percent value added tax (VAT) and all consumption tax are assigned as central revenue, which accounted for 40 percent of total state revenue in 1995 (Chung 1995). Enterprise income tax (EIT) was shared between central and local based on who owned the enterprises. Business tax (BT) was assigned as local tax, so as to
encourage local governments pay more attention to trade and commerce. On the tax administration system, TSS separated unified tax administration into State Administration of Taxation, and Local Tax Bureaus (LTB). Tax legislative power was centrally controlled, and tax rates and bases were laid down by central governments. Eventually, the system reduced the variation in tax burdens that existed across firms, and created a competitive environment driven by market forces. This uniformed tax structure, treated all enterprises and guaranteed that an enterprise will receive the same tax treatment no matter where it chooses to locate (Bahl 1999).

However, when TSS significantly shift the revenue balance to the central’s side, the highly decentralized expenditure responsibility assignment was almost untouched. In other words, the reform ignored the basic principle of “finance follows function”, which claims to give local government comparable revenue to fulfill their expenditure responsibilities. The TSS continued to emphasize the self-reliance nature of local public finance. Compared with their counterparts in other developing countries, China’s local authorities shouldered heavier expenditure responsibilities: financing public utilities, transportation, general urban services, and providing costly social services like education, health care and so on. The fiscal gap between revenue and expenditure forced local governments to find alternative revenue sources to fulfill their assigned tasks (Bahl 1999; Wong 2000; Zhao and Zhang 1999).

In addition to the fundamental changes in intergovernmental fiscal relations, profound institutional changes also took place in other fields. Since the mid-1990s, the
state sector has undergone dramatic reforms which greatly changed the urban economic landscape. In 1994, the People’s Congress passed the Company Law, which aims to create a universal and fair legal framework for competition among firms with different ownerships. The law required SOEs to adopt modern corporate governance structures which were believed more suitable to market economy. Many state or collective owned enterprises shift to private or hybrid ownership forms though selling shares.

Furthermore, in 1997, the 15th Party Congress decided to “grasping the large, and letting the small go”, which granted local governments with greater autonomy to restructure, privatize, lease, sell or shut down their small money-losing firms. In this process, privatization became a popular choice in restructuring collective firms, and eventually private ownership become the dominate ownership forms of small enterprises. In 2003, 59 percent GDP generated from private sector, and half industrial output was produced by private enterprises in 2004 (Naughton 2007; OECD 2005). It shows that local SOEs have been eroding by increased market competition and tends to shrink. Private, foreign and other hybrid ownership enterprises began to take the lead of China’s economic growth.

For many local states, tax revenue from foreign, joint stock, and private

7 Privatization is the act of reducing the role of government or increasing the role of the private institutions in satisfying people’s needs. It calls for relying more on the private sector and less on government or other public entities. In many developing countries, post-socialist countries which have many state owned enterprises, privatization is the transfer of enterprise of ownership-in whole or in part-from the state to private hands. While there is general agreement that the sale of government enterprises represents privatization, some also argue that the sale of other governments’ assets, such as land and buildings, should also be regard as examples of privatization (Savas 2005). In this study, I follow this convention and define divestments of land and state controlled infrastructure facilities are viewed as privatization.
enterprises have surpassed that from SOEs, and become the main tax revenue sources for urban governments (Deng 2005). Change in the composition of tax bases also affected the relations between urban governments and the enterprises in their jurisdiction. The direct fiscal linkage has transformed from affiliation based to location based, meaning that local fiscal health now related more closely to the performance of the enterprises located in their jurisdiction, rather than to those affiliated to them as in the 1980s.

Changes in intergovernmental fiscal relations, urban economic structure, and the relations between state and enterprises proclaimed the death of traditional economic development strategies characterized by SOEs led growth. However, the demise of traditional pro-growth strategy does not signify the end of state intervention; on the contrary, it symbolizes the birth of a new development paradigm in which the state maintained its control over the local economic development trajectory through building new institutional structure and innovatively exploring the value of the assets in their hands.

These institutions provide routines for the process of decision making and specify incentives structures for different political actors. They alone did not produce policy paradigm change. They interact with interests and ideas in a variety of ways. In some instances, institutions can filter new ideas, and facilitate the dissemination of particular ones. The rise of new policy paradigms and the wane of old ones are
outcomes of a complex process driven by the problems generated by new economic developments, the pressure of competing interests, and by the viability of old and new economic ideas. However, the institutional setting in which the policy paradigm change happened contribute significantly to the precise trajectory that subsequent policy was to follow. Institutions in this analysis are mediating variables, which is constructed purposively but often lead to unintended consequences. These institutions are not substitutes for interests and ideas, but they have powerful effect on which interests and ideas will prevail (Hall 1992). As we can see, for any particular institution associated with the urban development paradigm choice, the institution alone did not causes or even intended to cause the eventual shift of the policy paradigm. However, the collective influence of these institutions have structured the flow of ideas, and structures the interests of different political actors and therefore had a significant impact on the final outcome.

In this dissertation, I paid more attention on the exploration of mechanisms that underlie the diffusion of the neoliberal policy paradigm. This study has both theoretical and policy implications.

It contributes to the development of diffusion theories in three ways: (1) the study will test the explanations derived from three diffusion models in a comparative context, and explore whether the weight of each model may change according to the different social and political context. (2) In addition to testing the validities of different
explanatory variables independently, this study examines the interactive impacts of different factors on the diffusion processes and explores how these interactive relations mitigate or potentiate the effects of certain factors. (3) By examining the diffusion of multiple policies, this study introduces variation to the diffusion subjects, which enables us to explore how the effects of various factors and their interactions change according to the particular characteristics of innovations (Sabatier 2007; Strang and Soule 1998).

In terms of policy implications this study emphasizes the role of the governments, both at the central and local levels, in building neoliberal market institutions. It pays particular attention to the role of central state’s interventions, and explores how local states’ characteristics limited the power of such interventions. In addition, the study also explores the effects of horizontal intergovernmental relations, such as competition and emulation, on the diffusion processes, and examines how the ongoing decentralization reform influences the national-wide expansion of neoliberal policies. The answers to these questions will enrich our understanding on how local policy makings are influenced by complex intergovernmental relations, and how do local states balance between local economic interests and political loyalty to higher levels when they formulate local development agendas.
2. Theories and Hypotheses

Diffusion can be defined as the process in which an innovation is communicated through certain channels over time among the members of a social system (Rogers 1995). The word innovation here refers to any ideas, practices, or objects that are perceived as relatively new or innovative by an individual or other unit of adoption. Among these different types of innovations, new or innovative public policies are frequently studied. Empirical studies show that the processes of new policy adoptions often exhibit high degrees of temporal and spatial clustering (Simmons, Dobbin, and Garrett 2006).

Previous studies often employ three theoretical models to explain the underlying mechanisms that lead to the observed distributional patterns of innovators: the internal determinants model (Berry and Berry 2007; Walker 1969), the regional diffusion model (Mooney 2001; Strang and Tuma 1993; Tolnay, Deane, and Beck 1996), and the institutional model (DiMaggio and Powell 1983; Dobbin, Simmons, and Garrett 2007; Strang and Meyer 1993). Even though these models have been developed independently and scholars from different traditions often attribute the causes of diffusion to different factors, however, in reality, the process by which organizations adapt to change is likely to be a function of multiple interacting forces, including organizational, environmental, and geographical factors. And a particular policy change is likely to be fueled by a different mix of factors at different stages of the process.
2.1 Internal Determinants Model

The internal determinants model presumes that the factors causing an organization, usually countries or states, to adopt a new program or policy are political, economic, and social characteristics of the organization (Berry and Berry 2007). The explanations thus formulated contend that state policymakers respond to internal characteristics of their state environments when crafting policies (Daley and Garand 2005). This is because the characteristics of an organization may substantially influence the perception of an innovation’s costs and benefits, and affect the timing and the probability that an organization will innovate. It is argued that the organization’s probability for innovation is negatively related to the strength of obstacles to innovation and positively related to the motivation to innovate and the availability of resources for overcoming the obstacles (Mohr 1969).

This study will examine the effects of three types of internal determinants: (1) Factors that affect the motivation to innovate. (2) Factors that reflect the resource availability of potential innovators. (3) The existence of functionally equivalent pre-founding institutions.

2.1.1 Motivation to Innovate

An important determinant of the motivation to innovate is the perceived severity of a practical problem. Problem severity can influence the motivation of officials to
adopt a policy by clarifying the need for the policy, or by stimulating the demand for the policy by societal groups. When political leaders perceive that a social or political problem has become serious enough to endanger the effectiveness of their management or local interests, they tend to adopt the policy initiatives (Berry and Berry 1990; Daley and Garand 2005).

The federalist governance structure of the Chinese political system makes such indigenous reform possible. Such a decentralized structure enables government from provincial to prefecture and county levels set specific local rules for their jurisdiction that were not hierarchically prescribed. These rules defined crucial procedures for privatizations, such as the level of private shares or asset prices. Such autonomy can be summarized as “adapting (macro) policies to local conditions” (Krug and Hendrischke 2008). This governance structure makes the prompt adjustment to new ideas or new policies possible for local states.

Since the late 1990s, urban land management and urban infrastructure improvements have become major problems for many Chinese cities, especially for those experiencing fast urbanization and industrialization processes. The policy of land banking is designed to reallocate the idle land left by the restructured state owned enterprises to improve the urban land use efficiency and gain revenue from the differential land rent (Yang, Gao, Tao, and Li 2005; Zhu 2005). In addition, the privatization of local urban infrastructure and utility firms provides a new way to attract
and utilize external resources to improve the condition of infrastructures and quality of utility services.

Economically advanced cities are more willingly to adopt such a system because rapid industrialization and urbanization require large-scale land conversions, and the economic growth and rising living standards also led to higher demands of new infrastructures and utility service capacity. Therefore it can be expected that local leaders who face the challenges from rapid urbanization and industrialization processes are more likely to adopt these new urban policies.

**HYPOTHESIS 1:** Cities with higher per capita GDP, industrialization rates, or urbanization rates tend to have higher adoption rates.

### 2.1.2 Resource Availability

Previous literature on policy diffusion also emphasizes the importance of the financial resources and political resources to innovate (Berry and Berry 2007). Regarding the financial resources, the availability of financial resources is a prerequisite for many policy innovations since new policy programs often require additional fiscal expenditures. Therefore, the fiscal health of a local state is often positively related to its propensity to adopt an innovative policy (Hwang and Gray 1991; Jin, Qian, and Weingast 2005; Wejnert 2002). Studies show that under the fiscal contract system, the
provincial governments that enjoy higher revenue retention rates are more likely to have faster development of non-state enterprises and greater reform in state-owned enterprises (Jin, Qian, and Weingast 2005).

China’s current tax sharing system (TSS) was established in 1994. This system centralizes fiscal revenue and maintains the decentralized expenditure structures (Wong 2000). In many places, local revenue alone is insufficient for fulfilling local states’ expenditure responsibilities (Bahl 1999; Wong 2000; Zhao and Zhang 1999). Various intergovernmental transfer payments, general purpose or earmarked transfers, are designed to fill such fiscal gaps. Local governments can use general-purpose transfers at their discretion. In contrast, the central government uses earmarked transfers to finance projects such as the Rural Fee Reform that and to increase salaries for public servants and to improve the conditions of the compulsory education. These transfers constitute a significant proportion of local expenditures and are particularly important to inland governments that lack solid tax bases. Under such a system, higher-level government usually has greater influence on the sharing rule with its subordinates in terms of tax revenue and transfers (Wong 2000). Therefore, greater reliance on fiscal transfers from higher level governments indicates a scarcity of enough fiscal resources and a low fiscal power discretion that can be used to launch new programs.

With regard to the neoliberal urban policies, the founding of a land banking system requires establishing new government agencies, and large fiscal input to
purchase and prepare land for productive use. Similarly, the marketization\(^1\) of the infrastructures sometimes requires local states to have a substantial fiscal power to subsidize private sector investors. In order to attract private entities to invest in local infrastructure sector, local states often provide fiscal support to the investors to reduce the financial risks of a project or to make it financially viable. They need to provide credible assurances to investors that sensible binding obligations will be honored (Dailami and Klein 1998). Local states can provide cash subsidy to a project or agrees to fulfill the obligations of a purchaser (typically a SOE) with respect to the private entity in the case of non-performance by the purchaser (e.g., power purchase agreement, water purchase agreement). In other circumstances, local states need to provide debt guarantee, according to which the local state will guarantee repayment to creditors in the case of a default by a private entity. When a project’s revenue is in the form of user fee payment by the end use customers (e.g., toll road, subway), local state often set a minimum revenue level for the private operator. In addition, some projects may require local states to reimburse the private entity for losses on debt services due to the fluctuations in the value of the local currency (Ehrhardt and Irwin 2004; Farquharson, Mastle, Yescombe, and Encinas 2011). Therefore, in order to implement a private participated project, local states need to have substantial fiscal power which enables

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\(^1\) When a state-owned enterprises or government agency are forced to operate in a market environment, raise funds in capital market, and sell its services to willing buyers as if they are market-oriented firms, then this process is called marketization. The aim of marketization is to achieve economic efficiency through exposure to market discipline. The marketization of state sector can be achieved through reduction of subsidies from the state, deregulation, organizational restructuring or privatization (Savas 2005).
them to buffer the risks of the private sector investors. I thus hypothesize that:

**HYPOTHESIS 2:** The fiscal health of a local state is positively related to the adoption rates of neoliberal urban policies.

In addition to the fiscal resources, the political status is also a crucial factor for institutional changes. This is because a high political status is often associated with a high governance capacity, which is a prerequisite for policy innovations (Berry and Berry 2007; Daley and Garand 2005). Many studies confirm that the status of focal organization is crucial to the diffusion process (Cohen 1972; Knoke 1982; Strang and Soule 1998). Organizations with higher status usually adopt a change first and then may require lower status organizations to follow (Guthrie 1999; Palmer, Jennings, and Zhou 1993; Wejnert 2002).

Taken the infrastructure privatization issue for example, a city’s political autonomy is important for the successful implementation of private participated projects. It is found that the failure of private participated projects is often closely associated with the limited authority of local states. Local states may be subjective to various pressures or direct intervention from higher level of governments, and thus may be less predictable and less capable of making credible commitments than national governments (Gomez-Ibanez 2003; Kessides 2004). In addition, the costs of regulatory opportunism are less for cities with lower status than for cities with higher status.
because the repercussions of arbitrary behavior especially with foreign investors are less costly to local governments than to a national government. Private investors are likely to view contracts with lower status cities as particularly risky for this reason (Annez 2007:327).

In China’s hierarchical administrative system, local states are divided into nine political statuses: municipalities, independent planning cities (jihua danlieshi, 计划单列市), deputy provincial cities, provincial capitals, prefecture cities, prefectures, county-level cities, counties, and urban districts under prefecture. Higher political status means greater socioeconomic management power (Chan 1997; Wong, Heady, Woo, and Asian Development Bank. 1995). For example, in terms of economic management power, independent planning cities are treated as equivalents of provincial governments; they report directly to the central government, can approve projects with larger investments, and remit revenue directly to the Ministry of Finance. The central government even gives them special quotas, birth quota for example, with regard to certain socioeconomic affairs (Chan 1997; Solinger 1993; Wong, Heady, Woo, and Asian Development Bank. 1995).

In the Chinese context, having a higher administrative status not only means the city has greater social-economic management power but also indicates that the city’s leadership is more likely to enjoy higher political ranks and therefore have more autonomy in formulating local socioeconomic policies (Chan 1997; Wong, Heady, and
So, it is expected that:

**HYPOTHESIS 3:** Cities with higher political status are more likely to have higher adoption rates than lower status cities do.

### 2.2 Regional Diffusion Model

Regional diffusion model posits that geographical proximity is one of the key factors that affect the diffusion process (Berry and Berry 2007; Tolnay, Deane, and Beck 1996; Wejnert 2002). Walker (1969) argues that states emulate policies adopted by their neighboring states as a way of “satisficing” and to simplify the decision making process. The underlying theories of this diffusion model are social learning and competition. Some argue that the state policymakers share the human cognitive bias of accepting the familiar things and being reassured by those things close to them. State policymakers closely monitor the policies of other states’ in order to search for solutions to their practical problems. Among the many states, those geographically proximate states are more likely to be used as sources of innovation information because proximity can affect the frequency of communication and the nature of interactions between actors, and then facilitates imitative behaviors (Rogers 1995).

In addition to the social learning explanation, scholars also argue that geographical proximity fuels diffusion process because it encourages competition between neighboring states over scarce resources. Berry and Berry (1990) find that a
state may adopt a lottery to avoid having its citizens cross the borders to buy tickets in a neighboring state’s lottery. Peterson and Rom (1989) show that a state sets its public assistance at the same level as its neighbors to avoid attracting poor immigrants from them.

Intensive regional economic competition among Chinese cities emerges as the decentralization reform proceeds. China’s decentralized economic management system gives local states considerable autonomy in engineering local development strategies (Blanchard and Shleifer 2001; Jin, Qian, and Weingast 2005; Weingast 1995; Zheng 2007). This decentralized structure then leads to intense inter-city competition over capital, resources, and labor. For example local states design investment incentives that aim to attract investors from neighboring provinces or prefectures.

However, the regional competition is not limit to the acquisition of investments and labor; some further argue that the regional competition is also evident at the institutional level. Cities are induced to create hospitable investment environments through providing better infrastructures, utilities, greater security for factor owners, and fair access to resources and markets, so as to attract investors or resources from other regions (Harvey 2005a; Montinola, Qian, and Weingast 1995b). It is reported that local states frequently organize study trips to other regions and learn new measures and policies from the more advanced places. Since capital and labor will move to the jurisdiction where the rate of return is highest, the local states will be forced to imitate
“good practices” in order to maintain their competitiveness (Krug and Hendrischke 2008). Just as Tiebout (1956) argued that competition rewards local states that are friendly to markets as factors of production move to their regions, while punishes heavily interventionist local states as they lose valuable factors of production. So I expect that such horizontal competition or imitation may be an important force that drives the diffusion of innovative institutions across different locations. I thus hypothesize that:

**HYPOTHESIS 4:** The increasing exposure to the neoliberal policies will positively affect a focal city’s adoption rate.

### 2.3 Institutional Diffusion Model

In addition to the internal determinants and regional diffusion models, neoinstitutional theorists provide an alternative theory that explains the policy diffusion. The theory posits that the efficiency considerations may be sufficient but not necessary conditions for the adoption of a new practice. A new department and operating procedure may be adopted to meet the needs other than efficiency improvements, such as to prove the legitimacy of the organization, to cope with environment uncertainties by modeling others, to conform to the will of other organizations on which the adopters depend, or to respond to the persuasive cultural accounts (DiMaggio and Powell 1983; 1991; Dobbin, Simmons, and Garrett 2007; Knoke 1982; Meyer and Rowan 1991; Strang and Meyer 1993).
2.3.1 Coercion

It is long held that the coercive pressure from the state or key organizations can lead to the adoption of a new practice (DiMaggio and Powell 1983; Dobbin, Simmons, and Garrett 2007; Meyer and Rowan 1977). This mechanism focuses on the regulative effects of formal rules and enforcement mechanisms sanctioned by the state (North 1990; Peng 2003; Scott 1995). As an important base of legitimacy, the coercive pressure can either originate from the established legal framework, or from the resource dependence relations between the focal organization and the organization that controls its resources (Blau 1964; DiMaggio and Powell 1983; Emerson 1962; Mizruchi and Fein 1999; Pfeffer and Salancik 1978).

With regard to the diffusion of neoliberal policies among prefectures, I will mainly focus on the influences from the coercive pressure from the provincial governments. This choice is based on two considerations. First, it is true that the local institutional reform can be influenced by national politics when the central government use national legislation and define national standard for certain sectors or issues. However, such interferences are neither frequent nor direct. The central government usually guides the local institutional development by setting up various “models”. In terms of land banking systems, the ministry propagates the experiences of Hangzhou, Qingdao, and Dalian, and encourages other local states to emulate their policies. The role of this macro level interference is to provide an overarching institutional
architecture which sanctions local institutional differentiation and allows institutional competition (Krug and Hendrischke 2008). Since such influences are unanimous to all localities, it probably can shed light on longitudinal variation of institutional developments, but cannot convincingly explain the regional differentiation in terms of institutional development.

Related to the first point, a second consideration is that, for Chinese local states, the main source of coercive pressure comes more directly from the provincial governments. Since 1978, the decentralization reform has allowed provinces to play a much more active role in economic and social management than the ministries at the central level (Huang 1996; Li and Zhou 2005; Qian and Xu 1993). Reforms have granted the provincial governments with the great discretion in allocating economic resources and approving investment and construction plans. Correspondingly, they are also held accountable for the consequences of their decisions. Provincial governments are just like the middle-level managers in the Chinese bureaucratic system who are responsible for the social and economic development of their jurisdiction, and the political promotion of the provincial leaders are also significantly affected by local economic performance during their tenure (Li and Zhou 2005; Whiting 2001). That said, an adequate understanding of local policymaking process has to take into account the influence of higher levels, especially the influence of the provincial governments. I thus postulate that:
HYPOTHESIS 5: The increasing coercive pressure from national or provincial
governments has positive influence on the adoption rates of neoliberal urban policies.

Moreover, many theorists argue that the effectiveness of the coercive power is
conditioned by the inter-organizational resource dependence relations (DiMaggio and
Powell 1983; Mizruchi and Fein 1999; Oliver 1991; Peng 2003; Zucker 1987). When
organizations are mandated to adopt a new practice, the resource dependence relations
with the actors who exert pressure are important factors in shaping the organizational
responses (DiMaggio and Powell 1983; Oliver 1991; Pfeffer and Salancik 1978; Salancik
1979).

This research explores how intergovernmental resource dependence relations
condition the effectiveness of the coercive orders from the higher-level governments.
Specifically, two basic forms of intergovernmental resource dependence relationships
will be studied, namely fiscal dependency and political dependency (Jin, Qian, and
Weingast 2005; Li and Zhou 2005).

In terms of fiscal dependency, political scientists find that federal states often
combine coercive order and financial incentives when promoting new programs. Those
states that receive more financial support from the federal government are more likely to
adopt the new policy (Daley and Garand 2005). As mentioned above, the current
Chinese financial system allows higher level government to centralize a larger
proportion of fiscal resources in their hands and give them the control over the
distribution of fiscal transfers. Under such a system, higher-level government usually
has a greater say regarding the sharing rule with its subordinates in terms of tax revenue
and transfers. For those who depend heavily on transfers from above, the incentives for
compliance and disincentives for resistance are obvious (Wong 2000). We can therefore
expect that when higher-level governments give no adoption requirements, fiscally
weak cities will postpone the adoption because larger transfer or fiscal dependency
usually indicates poor economic conditions. However, when adoption is encouraged by
the higher levels, then cities that depend heavily on transfers are more likely to respond
earlier and adopt the system. So it is expected that:

**HYPOTHESIS 6 (Interactive Effect):** *When adoption is advocated by higher-level
governments, cities with higher transfer dependency ratio tend to have higher adoption rates.*

Political dependency relations among governments originate from China’s
hierarchical administrative system in which cities are divided into different political
status. Having a higher political status not only means having greater social-economic
management power, but also indicates that the city’s leadership is more likely to enjoy
higher political ranks and therefore have more autonomy in formulating local social
economic policies (Meyer 2008; Wong, Heady, and Woo 1995). When the prospect and
the effectiveness of a new system are still uncertain, higher-status cities can decide to
adopt the system without suffering too many political constraints. However, when they feel that the higher-level governments are advocating a reform plan that does not fit their situation, they are more likely to bargain with provincial governments to postpone or even suspend the reform in their jurisdiction. Given their high political and economic status, their opinions carry more weight with their superiors than the opinions of lower-status cities. So it is expected that:

**HYPOTHESIS 7 (Interactive Effect):** Adoption requirements from higher-level governments are less effective on cities with higher political status than on cities with lower status.

### 2.3.2 Competitive Mimicry

The competitive mimicry explanation is similar to the regional diffusion model in that they both argue the behavior of other cities can influence the focal city’s policy making. However, unlike the regional diffusion model, the institutional mimicry model emphasizes the influence from a given social group (either role equivalent or structural equivalent peer groups) rather than simple geographic clustering. The effects of these two mechanisms are addictive rather than substitutive. Aside from this distinction, the underlying mechanisms assumed in both explanations are quite similar.

Organizational institutionalists argue that when organizations are situated in an
uncertain environment, they tend to imitate the practices of similar organizations that they perceive as successful (DiMaggio and Powell 1983; Haunschild and Miner 1997). This effect can occur because imitation strategies can help focal organizations to reduce innovation risks and lower the search costs (DiMaggio and Powell 1983), it can also occur through an unconscious form of influence, in which practices that are frequently adopted become increasingly “taken for granted” and adopted without thinking. When the outcomes of a practice is uncertain, then the trait-based imitation processes becomes salient (Haunschild and Miner 1997).

To study the trait-based imitation process, some researchers use the characteristics of individual firms and indicators of the general economic environment as indexes of similarity (Fligstein 1985; Guler, Guillen, and Macpherson 2002; Haveman 1993; Mizruchi and Stearns 1988); other researchers argue that structural equivalence of members in a network modulates the adoption of innovations because it affects the homogeneity of adopters’ behavior (Aldrich 1979; Burt 1987; Davis 1991; Galaskiewicz and Burt 1991; Guler, Guillen, and Macpherson 2002; Han 1994). Structural equivalence emerges if ego and alter occupy the same position in the social structure and have the same relation with other actors in the same system. It is predicted that ego will quickly adopt any innovations that seem to make alters more successful (Abbott and DeViney 1992; Burt 1987; Davis 1991; Galaskiewicz and Burt 1991; Guler, Guillen, and Macpherson 2002; Han 1994).
China’s administrative system is rich in structural equivalence relations. This system is analogous to a nested hierarchical structure in which multiple same-level units are affiliated with a common higher-level unit. The ties between lower- and higher-level units can be economic planning, fiscal, or political in nature, and the units at the lower levels share similar status and structural positions (Guthrie 2005; Walder 1992; 1995). Units are thus structurally equivalent if they are at the same level and affiliated to the same superior unit.

This de facto federalist structure gives local governments considerable autonomy in engineering local development strategies and also leads to intense interurban competition (Dougherty & McGuckin, 2008; Krug & Hendrischke, 2008). Interurban competition can be both political and economic. Politically speaking, same-level units are subject to similar evaluation standards, which higher-level officials use to evaluate the performance of lower-level leaders. Under this system local leaders at the same level compete for rewards such as tenure, remuneration, and advancement opportunities (Whiting 2001). Economically speaking, cities are induced to create a hospitable investment environment by providing better infrastructure, utility, greater security for factory owners, and fair access to resources and markets (Harvey 2005b; Montinola, Qian, and Weingast 1995a). Local states are forced to imitate “good practices” to maintain their competitiveness (Dougherty & McGuckin, 2008; Krug & Hendrischke, 2008).
Competitive relations among structurally equivalent cities influence the diffusion process significantly. Some cities may quickly imitate new practices that others have adopted because they fear the new practices will benefit their competitors, even when the real effects are still uncertain (Krug & Hendrischke, 2008). So, it is expected that:

**HYPOTHESIS 8:** The adoption of the neoliberal urban policies by peer cities will positively affect the focal city’s adoption rate.

### 2.3.3 Normative Mechanism

In addition to the coercive and mimetic processes, the neoinstitutionalists argue that policy diffusion can also be driven by normative forces stemming primarily from professionalization. They conceptualize professionalization as the collective struggle of members of an occupation to define the conditions and proper methods of their work (DiMaggio and Powell 1983; Zucker 1987). Expert theorization is an example of such processes (Strang and Meyer 1993; Wejnert 2002). Dobbin and colleagues (2007) argue that expert theorization happens when epistemic communities of policy experts theorize a new policy solution for a particular policy issue. New policy norms that advocated by experts are often build on the experiences of early adopters, which later lead to innovations even when there is no particular examples in a given group.

Previous studies have focused on the theorization efforts of well-organized
professional associations in the form of complex organizations. Recent studies have shown that in the absence of a well-defined professional organization, loosely defined professional or social movement communities may also accomplish the theorization task (Haveman, Rao, and Paruchuri 2007). The theorization of the neoliberal urban policies in China is mainly accomplished by loosely connected epistemic communities that consist of policy analysts and local officials. The policy analysts promote the diffusion of new ideas through (1) introducing new policy ideas to a group of policymakers, and articulating the institutional conditions, under which a new policy could take effect, and (2) comparing and summarizing the experimental policy measures in different locations and specifying the advantages and limitations of the new policies.

In addition to the policy analysts, some local officials also play an important role in the theorization process. These local officials have usually accumulated abundant knowledge on how to establish and operate the new system in a given locality. These work experiences and expert knowledge eventually promote the professionalization of the policy making and policy implementation. The advantages and working mechanisms of the neoliberal urban policies are gradually theorized and spread within the policy making communities, and eventually the neoliberal policies become normative solutions. Therefore, it can be hypothesized that:

**HYPOTHESIS 9**: The intensity of normative pressure will positively affect the adoption rates of the neoliberal urban policies.
These nine hypotheses will be applied to both policy diffusion processes (land banking and infrastructure liberalization). It is expected that certain hypotheses work better for one policy change but not for the other; however, at this stage, it is still difficult to predict how they will vary. Therefore, I will allow analyses to dictate the relative merits of each hypothesis for each policy change. To do so, a separate equation will be constructed for each policy change to test the relative significance of each corresponding coefficient, and to determine their relative merits for each diffusion process.
3. Data and Variables

3.1 Data

The aforementioned theoretical hypotheses were tested by using a compiled panel dataset. The dataset incorporates information about all Chinese mainland cities with a rank higher or equal to the prefecture level (the only exception is Lhasa in Tibet due to data availability problems). Cities at the prefecture level and above are the natural choice for this study because the land banking agencies and urban infrastructure liberalization are typically established or carried out at these levels. By the end of 2008, there are 333 prefecture level (and above) cities in China (NBS 2009). The earliest data go back to 1992 when Deng Xiaoping made his southern tour and the Party held its 14th congress. These two events mark the beginning of the second phase transition of the Chinese economy, during which the establishment of a market oriented market system was set as the goal of the reform (Naughton 2007).

Data on city-level social economic information is drawn from the China City Statistical Yearbook (1992-2009) published by China Statistics Press. This data is merged with data on the adoption of the land banking system and infrastructure liberalization by different cities. The primary data on adoption time of the land banking systems were drawn from several secondary sources and were collected during 2007 and 2008. The primary data sources were business and public-units registration records and official land banking documents from the Chinese local law information database. To
supplement and cross-validate the adoption information, I also drew data from other sources such as the China economic news dataset provided by China Info Bank Corporation, local newspapers, and government Web sites.

Data on the infrastructure liberalization are drawn from the Private Participation in Infrastructure Database managed by the PPI project team at the World Bank.¹ The team annually collects basic information on private participated infrastructure projects implemented in mainland China. The team acquired the project information from public sources such as (1) Factiva, (2) specialized publications such as Project Finance International, Project Finance, reports of rating agencies, Global Power reports, Power in Asia, Privatization barometer, (3) sponsor websites or public agencies granting the contracts, and (4) multilateral agencies websites including press release and annual reports. The researchers supplement the public information by requesting further information from public companies, developers and sponsors, government agencies, and regulatory agencies. Project information collected includes the year of financial closure, sponsor, share of private capital, sector, project location, project type, project status, and so forth. Infrastructure projects are included in the database if they meet several criteria.

First, the project must provide one or more of the following services through the

¹ For an expended description of methodology used by the PPI team project, see ppi.worldbank.org/.../methodology_expanded_May_2007.pdf
operation or ownership of required physical assets. (1) Energy (natural gas transmission and distribution, electricity generation, transmission, and distribution), (2) transportation (airports, railways, seaports, and roads), and (3) water (portable water treatment and distribution, and sewage collection and treatment). I excluded the telecommunication projects because this sector is still tightly controlled by the state and run by oligopolistic firms. Local states do not have the jurisdiction to reform its ownership structure.

Second, the project is considered as private participated if a private company or investor bears a share of the project’s operating risk. The private sponsor is at least partially responsible for operating costs and risks of failures. They can either have the rights to operate alone or in association with a public entity or owning an equity share in the project.

Third, to be included in the database the project must have a significant share of its business that serves the public directly or indirectly. The term significant share refers to at least 20 percent of the total sales or installed capacity.

Fourth, the project must have achieved financial closure, in other words, when there is legal binding commitment of private sponsors to mobilize funding or provide services.

Finally, the project must meet two size thresholds: (1) total investment
commitments should be at least for one million U.S. dollars, unless it is a divestiture, lease contract, or management contract. (2) Private ownership should constitute at least a minimum level (25 percent for greenfield projects, and management and lease contracts; at least five percent for the divestiture projects).

Since this study focuses on the city-level diffusion process, in the subsequent analysis I exclude projects that are implemented at the provincial level. For large-scale projects which affect multiple cities (e.g., national highways), I use more detailed project information which divided the entire project into multiple segments according to the boundary of the cities that a segment falls into. A total of 824 PPI projects were included in the final dataset.

To explore the effect of the coercive and normative pressure from the provincial governments, this research relies on the China Law Information Database for provincial legislative documents and administrative orders. I searched the relevant documents by using several keywords and their combinations (See Table 1 below) and eventually identified 147 land banking related documents and 188 PPI related documents.

To explore the influence of the expert theorization on the diffusion processes. I drew data from the China National Knowledge Infrastructure (CNKI) database. I search articles on land banking using the keyword of “land banking”, and articles on infrastructure liberalization using “BOT, infrastructure liberalization, private
participation”. Eventually, I identified 529 land banking related articles, and 1829 articles on infrastructure liberalization.

Table 1: Keywords Used in Policy Documents Search

<table>
<thead>
<tr>
<th>Field</th>
<th>Keywords</th>
<th>Keywords in Chinese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Banking</td>
<td>Land Banking</td>
<td>土地储备</td>
</tr>
<tr>
<td></td>
<td>Establish Land Banking System</td>
<td>建立土地储备制度</td>
</tr>
<tr>
<td></td>
<td>Land Auction, Listing, and Bidding</td>
<td>土地招拍挂</td>
</tr>
<tr>
<td></td>
<td>Land Banking Regulations</td>
<td>土地储备办法</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Infrastructure Construction</td>
<td>基础设施建设</td>
</tr>
<tr>
<td>Liberalization</td>
<td>Foreign Investment</td>
<td>外商投资</td>
</tr>
<tr>
<td></td>
<td>Encourage Domestic Private Investment</td>
<td>鼓励民间资本</td>
</tr>
<tr>
<td></td>
<td>Urban Utility Market</td>
<td>市政公用事业</td>
</tr>
<tr>
<td></td>
<td>Build-Operation-Transfer (BOT)</td>
<td>建设—管理—移交</td>
</tr>
<tr>
<td></td>
<td>Restructure or Merge the SOEs</td>
<td>重组兼并国企</td>
</tr>
<tr>
<td></td>
<td>Franchise</td>
<td>特许经营</td>
</tr>
</tbody>
</table>

3.2 Dependent Variables

For each diffusion process, data on the time of adopting a certain neoliberal policy is used to construct the dependent variables.

*Adoption of Land Banking Institution:* A complete local land banking institution includes a functional land banking agency and a binding local land banking regulation\. In some cities these two institutional elements emerge together, while in many other

\[2\] I follow North’s (1990:3) definition of institution as a set of rules, formal or informal, that actors generally follow, whether for normative, cognitive, or material reasons, and organizations as durable entities with formally recognized members, whose rules also contribute to the institutions of the political economy. From time to time, I use land banking systems and land banking institutions interchangeably.
cities land banking agencies are founded prior to the passage of land banking regulations, or are even working without a binding regulation. Since the de facto influences of land banking institutions on local land transactions are realized through land banking agencies, in this study I determine the founding of the land banking institution by using the time when local land banking agencies are established. As the adoption of the new policies at the lower-levels, such as counties or districts, takes more time, the adoption at the prefecture level is relatively swift. The first land banking system is established in 1996, and by 2008, all prefecture level governments have commissioned their land banking institutions.

**Implementation of PPI Projects:** Data on the implementation of PPI projects are drawn from the Private Participation in Infrastructure Database managed by the PPI project team of the World Bank. In this study, the time of implementing the first PPI project, regardless the type and investment sectors, is used as the dependent variable to study the general diffusion process of PPI policy. I then divided the PPI projects into four different types and four different sectors. The time of the first implementation of the corresponding types or sector is used to construct the dependent variables for the study of the related diffusion process. I identify the year in which certain PPI types or sectors are adopted as that in which the corresponding PPI project reaches the financial closure.

PPI projects are usually divided into four basic types according to the degree of
private involvement in the projects.

**Management and Lease Contracts:** In this type of arrangement, the private entity takes over the management of a state-owned enterprise for a fixed period, while ownership and investment decisions remain with the state. Any capital expenditures are typically financed by the government. Among the four major PPI types, this type of arrangement is least popular in China.

**Concession:** In this arrangement, a private entity is responsible not only for the operation and maintenance of assets but also for financing and managing investment. The ownership of the facility usually belongs to the government; however, the rights to all the assets, including those created by the operator, typically revert to the government when the arrangement ends. During the contract period, usually 25 or 30 years, the private party receives the utility’s final profit and is legally responsible for providing the service.

**Greenfield Projects:** A greenfield project is often built and operated by a private entity or a public-private joint venture for a period specified in the project contract. The facility will be returned to the public sector at the end of the contract period. The most popular type of greenfield projects are the Build-Operation-Transfer (BOT) projects. A typical BOT project is built and then owned and operated by the private sponsor at its own risk. At the end of the contract period, the ownership of the facility is transferred to
the government. The government usually provides revenue guarantees through long-term take-or-pay contracts for bulk supply facilities or minimum traffic revenue guarantees. This type of arrangement is the most popular type among Chinese cities.

**Divestiture**: This is the most liberal model in which a private entity buys an equity stake in a state-owned enterprise through an asset sale, public offering, or mass privatization. The divestiture is similar to the concession project in that both give the private party full responsibility for operations, maintenance, and investment. They differ in that the divestiture contract the legal ownership of a facility is also transferred to the private party.

**Intensity of Privatization**: In chapter seven, I explore the determinants of the degree of privatization in the infrastructure sector. To measure the intensity of privatization, I followed previous example and assigned privatization indices for different contractual arrangements (Hammami, Ruhashyankiko, and Yehoue 2006). A higher index indicates a higher level private sector involvement in the projects (see Table 17). I define the intensity of privatization as the highest private participation index a city has achieved by a given year.

The original PPI database has differentiated four primary infrastructure sectors: energy, telecommunication, transportation, and water and sewerage. Since the telecommunication sector in China is still controlled by a few oligarchical companies
which are centrally managed, I excluded this sector from this study. Moreover, I divided the energy sector into two subsectors and list them together with the other two primary sectors. In the work dataset, four sectors are specified:

*Electricity Sector*, which includes electricity generation, transmission, and distribution.

*Natural Gas Sector*, which refers to the transmission and distribution of the natural gas in urban areas.

*Transportation Sector*, which includes airports, railways, seaports, and roads.

*Water Sector*, which includes potable water treatment and distribution, and sewage collection and treatment.

### 3.3 Independent Variables

To test the internal determinants model, this study includes three variables measuring the condition of local economic development and two variables measuring local fiscal health and the political status of the city.

*GDP per capita* refers to the annual per capita gross domestic product that is produced in a given prefecture. It is calculated by dividing the total local GDP in a given year by the year-end local population.
Industrialization Rate refers to the ratio of the local secondary industry GDP to the total local GDP.

Urbanization Rate is used to measure the level of urbanization in a given city. It refers to the proportion residents who hold urban resident permits in a given city. It is calculated annually for each city. During the past decade, Chinese cities have experienced rapid urbanization process. The urbanization rate increased from 36 percent in 2000 to 51.27 percent in 2011.

Transfer Dependency Ratio measures the extent to which a prefecture depends on its superiors for fiscal resources. The Chinese budgetary law does not allow subprovincial governments to borrow or permit the emergence of fiscal deficits, so local fiscal gaps are usually filled by fiscal transfers from higher levels. This variable is calculated by using the equation below, where $TDR_{ij}$ refers to the transfer dependency ratio of city $i$ in year $j$; $EXP_{ij}$ and $REV_{ij}$ refer to the budgetary expenditure and budgetary revenue of city $i$ in year $j$.

$$TDR_{ij} = \frac{(EXP_{ij} - REV_{ij})}{EXP_{ij}}$$

However, before 1994, the intergovernmental fiscal relations were governed by various fiscal contracts that specified the remittance and retention rate of fiscal revenue. The fiscal contract system gave local states more fiscal power, most local states recorded
a fiscal surplus during these years. Therefore the value of transfer dependency ratio is negative for these years.

**Political Status** measures the rank of a city in the administrative hierarchy system. The Chinese cities have different statuses in the administrative status. As the administrative status lowers political autonomy decreases, as does the political status of the leadership. This variable is treated as an ordinal variable, from the highest to the lowest, the entire spectrum is as follows: Municipality (directly under the central government control), independent planning cities, deputy provincial level cities, provincial capitals, prefecture cities, and prefectures.

It is important to notice that the administrative division of cities in China has been adjusted frequently since 1997. Local states demand higher administrative approval rights and larger jurisdictions from the central state to meet the needs of rapid urbanization and industrialization process. By 2008, there are four municipalities at the provincial level, among which Chongqing was leveled up in 1997. Five cities (Dalian in Liaoning, Qingdao in Shandong, Ningbo in Zhejiang, Xiamen in Fujian, and Shenzhen in Guangdong) are listed as independent planning cities. They are listed separately in the Nations development plans and fiscal account, and have greater administrative power in terms of industrial planning, transportation, allocation of raw materials and financial capital. Immediately after this level is the deputy provincial city; these ten cities have greater administrative power than other provincial capital cities. The major changes
happened at the prefecture level. During the period 1996 - 2008, the number of prefecture cities increased from 218 to 333, and the number of prefectures reduced accordingly. Regarding these changes, I coded the political status year by year.

**Preexisting Institution:** The existence of similar institutions might delay the adoption of a new practice. This is especially salient for land banking diffusions because some cities have already established a functional land market prior to the introduction of the land-banking concept. To evaluate the influence of the preexisting institutions on the adoption process, I constructed a dichotomous variable that indicate whether a city have established a de facto land market before the adoption of land banking system.

**Innovation Exposure.** To test the spatial diffusion hypothesis, the model used must take into account the following considerations: First, the model must consider the potential impact of policy adoptions in all cities on the adoption decisions in every other city. Second, it is highly likely that the potential impact of a policy innovation in one city on the adoption decisions of another city is weaker if the distance between these two cities is greater. Third, similarities in social, economic characteristics among cities may cause spurious inferences of spatial effects. Therefore, when estimating the spatial effect, the heterogeneity among cities must be controlled (Keister 2002; Tolnay, Deane, and Beck 1996). To satisfy these conditions, I construct the Innovation Exposure measure to account for these complexities.
The innovation exposure is constructed by solving two equations. The first equation is used to determine the effect of policy adoptions by each city on all other cities. The equation takes the form:

\[ O_i = \beta_0 + \sum \beta_k X_{ki} + \varepsilon_i \]  (2)

where

- \( O_i \) = the odds of adopting the new policy by city i,
- \( \beta_0 \) = the regression constant,
- \( X_{ki} \) = a set of k variables that describe the social and economic features of city i,
- \( \beta_k \) = the effect parameters that describe the effect of social and economic variables on the odds of adopting new policies,
- \( \varepsilon_i \) = the disturbance term for equation (2)

Using equation (2), I obtain a set of predicted values \( O'_i \) for each city that describe the expected odds of adopting a certain policy, given the city’s social and economic characteristics. For each pair of cities, the predicted value is then divided by the geographic distance between the two cities. The innovation exposure for each city \( i \) to the adoption decisions of all other cities is then calculated by the following equation:

\[ IE_i = \sum (O'_i / D_{ij}) \]  (3)

where
\[ IE_i = \text{the innovation exposure for city } i, \]

\[ O_j = \text{the predicted odds of adopting a certain policy for city } j, \]

\[ D_{ij} = \text{the geographic distance between city } i \text{ and } j, \text{ using the latitude and longitude for each city and takes the curve of the earth into consideration when calculating the distance between the two points.} \]

The variable \( IE_i \) is then used as a predictor in addition to the original set of social, economic characteristics used in equation (2) in the final model (Cox or Multivariate Probit model).

**Provincial Pressure** measures how forcefully a province promoted certain policies among affiliated cities. To construct this variable, I first collected all related official documents in a given policy area or field (e.g., land banking or infrastructure) and then identify key policy elements associated with certain policies. For land banking policies, four key elements are used which represent the key component of a complete and mature land banking institution. I then calculated how many of these components are highlighted in the documents of a given year. Finally, the cumulative number of key components that has been highlighted by the provincial official documents is used as the level of provincial pressure on land banking institutions. Using similar procedure, I constructed another variable that measures the provincial pressures on the PPI projects.

Although these two variables are constructed in the same way, their substantive
interpretations are different. In terms of the land banking institutions, the provincial pressure is more coercive in nature: the provinces usually issue documents to instruct the cities explicitly to adopt some or all those four policy elements. However, for the PPI projects, the pressure from the province is less coercive but more normative. Since the PPI projects involve both private parties and the local states, and the provincial government cannot control the flow of foreign or domestic private capital nor can it require certain infrastructure projects must have certain share of private capital or in certain form. What the province can do is to complete the policy framework and give local states clear guidance on related investment issues. Therefore, the effects of the provincial documents on the PPI issues are in fact outlining the proper or normative solutions for utilizing private capital in infrastructure sectors. The actual utilization of the private capital in the infrastructure sector is then largely determined by the local states’ will and the availability of private capital.

**Peer Pressure:** to explore the effect of the mimetic pressure on the adoption decisions of a given city, I constructed the peer pressure which is operationalized as the cumulative number of adoptions within a trait-based social group (Haunschild and Miner 1997). It is calculated as the year-end cumulative number of adopters divided by the total number of units in the same peer group (Fligstein 1985). Cities at the prefecture level and above in the same province are treated as a peer group. This is because they affiliate to the same provincial government and occupy similar administrative position
in China’s state system, even though their political status might differ. This variable is calculated on a yearly basis using the following equation:

\[ PP_{ij} = \sum_{t=1992}^{j} \frac{n_{it}}{N_i} \]  

(4)

where

- \( PP_{ij} \) = the peer pressure in peer group \( i \) in year \( j \);
- \( n_{it} \) = the number of adopters in peer group \( i \) in year \( t \);
- \( N_i \) = the total number of cities in peer group \( i \).

**Normative Pressure:** Normative pressure is conceptualized as the experts’ efforts in theorizing a new practice (Strang and Meyer 1993). This concept is operationalized as the number of expert articles on land banking and infrastructure liberalization practices that appear in various professional journals. The data is drawn from China National Knowledge Infrastructure (CNKI) database which covers all major journals published during the study period. I used the keyword “land banking” to search for articles on land banking practice. I use “BOT, marketization of infrastructure, private participation in infrastructure” to search for articles that on infrastructure liberalization. These articles are limited in the Political, Law, Social Science, Economics and Management fields. This results two variables whose values vary annually and represent the normative pressures for each diffusion processes I study.
**Marketability:** In the analysis of infrastructure liberalization, I use the marketability of a given infrastructure sector to account for the sectoral differences among different industries. This continuous variable measures the feasibility of using private companies to deliver services in a given sector. The level of marketability is determined by the production technology that leads to natural monopoly, potential of competition, the public nature of consumption, constraints on cost recovery, distributional concerns, and so forth (World Bank 1994). Table 14 shows the differences between sectors and segments. The marketability index are the average of the scores (range from 1 to 3) on five characteristics.

### 3.4 Control Variables

In addition to these independent variables, I also included several control variables to account for possible influences of certain local features.

**Population Density** is calculated as the average number of residents per square kilometer in a given city. It reflects the scarcity of construction land in a city.

**Fixed Asset Investment (FAI)** is used as a measure of capital spending in a given city in a given year. It refers to any investment within the measurement period (in this case, one year), in physical assets such as machinery, real estate infrastructure, and vehicles. It is used to indicate the volume of investment that is made in a region. The FAI is not part of local GDP, but it is a main source for deriving fixed capital formation,
which is defined as the net increase in fixed assets during a period of time and is the single-largest component of GDP. Therefore the FAI is often used as a harbinger of the welfare of the Chinese economy.

**Fixed Asset Investment in Real Estate Sector:** In the land banking analysis, I use the fixed asset investment in real estate sector to measure the overall intensity of the investments in the real-estate sector, and to explore whether current investment will lead to future institutional change.

**Wage:** It refers to the average wage income received by a typical worker in a given city. It reflects the urban residents’ living standard and their purchase power.

In the analysis of the diffusion of PPI projects, I also included the following indicators:

**Population size** refers to the number of year end population in a given city. For a prefecture city, this includes people living in both counties affiliated to the prefecture and the urban districts that are directly managed by the prefecture government.

**Passenger transportation** refers to the total number of people that has been transported by various transportation means (trains, aircrafts, passenger cars, ships) in a given year. This indicator is often used by the economic planning agencies to decide the future scale of public transportation construction investment and total project capacity.
In this project, I use this indicator as a measure of local demand for public transportation facilities.

*Cargo transportation* is similar to the passenger transportation measure, which refers to the total tonnage of cargo that has been transported by various transportation means (trains, aircrafts, cargo ships, or freight trucks) in a given year. This indicator is often used by the planning authorities to calculate future needs of cargo transportation facilities and service capacities. In this project, this indicator serves two purposes, first, I use this indicator as a measure of local demand for transportation facilities; second, since in many cases, the local states have the tendency to exaggerate the size of local GDP, some officials are reportedly using alternative measures to evaluate the actual local economic condition. And the cargo transportation is one of such measures.
4. The Diffusion of Land Banking System

A key structural change during China’s profound transformation from a centrally planned to a market-oriented economy has been the market’s increasing role in allocating resources, including raw materials, consumer commodities, and, more importantly, land resources (Dowall 1993; The World Bank 2004). Land management issues are important because they closely and crucially relate to China’s ongoing transformation. Urban land development planning shapes the landscape and sustainability of rapidly growing cities (Zhang 2000). Fiscal revenue from land transactions and development projects plays a crucial role in local governments’ finances and significantly affects intergovernmental relations (Xie, Parsa, and Redding 2002). Moreover, the health and stability of the financial and banking sector are intimately linked to land-based transactions and financing arrangements (Development Research Center and World Bank 2005).

In this chapter, I focus on an important change in China’s land management system in recent years, namely the rapid diffusion of local land banking systems since the late 1990s. Land banking, which is a key policy element in the paradigm of capitalizing on cities, refers to the process in which local governments purchase land from previous users, convert it to productive use, or hold it until it is profitable to sell (Alexander 2008). By taking local governments as the basic unit of analysis, I explore the institutional constraints that local governments face when they make reform decisions
and analyze how various institutional forces have shaped the trajectory of the reform. I test the hypotheses derived from three diffusion models and examine how these forces interact and are moderated by other factors, such as complex intergovernmental resource dependence relations.

4.1 The Development of Land Banking System

The marketization of China’s land-use rights began in the late 1980s, when the Amendments to the Constitution in 1988 separated land-use rights from land ownership and allowed the former to be transferred commercially (Chan 1997; Xie, Parsa, and Redding 2002). Two years later the State Council approved the State Owned Land-Use Rights Transaction and Transfer Regulation, which confirmed the commodity nature of land-use rights, established the new land management regime, and gave governments at or above the county level the power to manage land transaction and transfer applications.

However, in the early 1990s land-use rights transactions were still dominated by a dual track system in which administrative allocations and paid conveyances were two basic ways to acquire land-use rights (He and Zhang 2000; Ho and Lin 2003). During the 1990s, 70 percent of the state-owned land was administratively allocated. Of the conveyances, 89 percent was by negotiations and only 11 percent (or 3 percent of total land in the market) was through auctions and tenders (Ho and Lin 2003). The duality of the land market caused two negative consequences. On the one hand, black land
markets emerged in which de facto landowners (usually bankrupt SOEs) sold their allocated land during the SOE restructuring process. On the other hand, local officials gained opportunities to further personal interests by abusing management power. As many studies have documented, this dual-track land management system was a major cause of loss of state owned assets and became a hotbed of corruption (Chan 1997; Development Research Center and World Bank 2005; Ho and Lin 2003; Yeh and Wu 1996).

This chaotic situation triggered concern in the central government. The State Council mandates that local governments should take effective measures to strengthen land management. In fact, several developed cities have already perceived the need to find new institutions in order to mobilize land revenue to finance local projects. Cities such as Dalian, Shanghai, Hangzhou, and Qingdao began to experiment with the land banking system that had already been widely adopted in places like the United States and Hong Kong (Alexander 2008; Chan 1997).

In the United States land banking is regarded as a policy tool that addresses the management problem of vacant and abandoned properties. Land banking programs become depository institutions for surplus land. These programs also contribute to the stabilization of the real estate market when supply suddenly exceeds demand by temporarily reducing the supply and returning it to the market only when private demand returns (Alexander 2008). In Hong Kong the land banking system has been established as a method for generating fiscal revenue and encouraging efficient land use.
Hong Kong’s land banking system is similar to that in China because in both systems land ownership belongs to the governments; only land use rights are sold for a given period. Moreover, land use rights are sold to land users through public auction and tender. These transactions bring the Hong Kong government a sizable amount of nontax revenue. In 1994 land sales generated 2.4 billion U.S. dollars for the government, which accounted for 11 percent of its total revenue. These funds were then used to finance various infrastructure programs or other public projects (Chan 1997:111).

Since the Land Management Law designates the prefecture cities, count-level cities, and counties as the major levels that administer land requisitions and land conversions, land banking agencies are usually established at these levels. These agencies represent local governments in purchasing, preparing, and selling urban construction land. Moreover, they can also increase their land reserves by converting rural farmland into urban construction land according to the local land-use plan. With regard to the acquired land, the agencies usually transform it into mature land by connecting electricity, water, gas, and communication lines, and building necessary transportation infrastructures. The land plots are then sold by the agencies through market means, such as tender, auction, or public listing. Those who offer the highest bids receive the land.

Chinese land banking agencies usually affiliate with local land management authorities (See Figure 1). In most places the land banking agencies are registered as public
service units. While in a few cases (e.g., Shanghai and Chongqing) the agencies take the form of state-owned enterprises, these enterprise like agencies still represent the local state in exercising land banking authority and receive fiscal funds from the local governments, and are therefore not de facto business entities that are independent from the local states.

Figure 1: The Position of a Land Banking Center in a Local Land Bureau

Note: Data from Xi’an Land and Resources Bureau website (www.xaland.gov.cn). To simplify the chart, not all administrative departments are listed.
The allocation of land revenue is highly decentralized. According to the statistics compiled by the Ministry of Finance (MOF), prefecture-level and county-level governments are the main recipients of revenue; over 70 percent of revenue flows to these two levels. On the expenditure side, these two levels manage 90 percent of the total expenditures. These funds are mainly used for urban land development and infrastructure projects (around 80 percent), and only a small share (less than 20 percent) is used for land reclamation projects that aim to compensate for farmland loss (MOF 2005). It is therefore clear that the revenue from land sales has become an important fiscal source for urban infrastructure development.

The central government views this new system as a better institution for land management. In 1999 the MOLR issued internal reference materials promoting the land banking experiences of Hangzhou and Qingdao. Two years later the State Council issued a circular encouraging local governments to establish the system if they deemed it appropriate (State Council 2001). In addition to these documents from the central government, provincial governments, which have closer relations with their subordinated cities and counties, also issued circulars to lower-level governments or passed provincial land banking regulations. These efforts facilitated the dissemination of land banking, and in addition imposed reform pressure on lower-level governments. As a result, local land banking agencies were quickly established by many Chinese cities. From 1997 to 2003 the number of local land banking agencies grew from 0 to 1,600
(Yang, Gao, Tao, and Li 2005); in other words, more than half of the cities and counties adopted this new institution in less than a decade (See Figure 2). In 2007 the MOLR, the MOF, and the People’s Bank of China jointly issued the *Regulation on Land Banking Systems*, indicating that the institutionalization of land banking systems has reached a higher level.

**Figure 2: The Adoption of Land Banking Agencies**

Compared to the old administrative allocation system, this new land management system enables local governments to regain control over a large share of land conveyance profits that was formerly possessed by illegal land traders and corrupt officials. Moreover, this system also enables local governments to enjoy the benefits of land value appreciation driven by China’s rapid industrialization and urbanization process. According to the Ministry of Land and Resources (MOLR), the revenue
generated from land sales increased from 35 billion yuan in 2000 to 1.5 trillion yuan in 2009, which accounts for 4.4 percent of the nation’s GDP (MOLR 2001; 2009). In addition, land banking agencies are often closely related to other quasi-public firms, such as urban infrastructure investment companies and urban transportation investment companies. The land banking agencies are often instructed by local governments to serve as guarantors for these investment firms in applying for bank loans.

![Revenue from Land Sales](image)

**Figure 3: Revenue from Land Sales**

Note: Data from “Communiqué on Land and Resources of China 2009”, Ministry of Land and Resources of China, Beijing.

Although land banking systems bring local states enormous fiscal power, they also caused some negative impact. First, the pursuit of short-term fiscal gains endangers the effects of long-term national policies. As income from land transactions become a major revenue source for local public finance, local states are encouraged to expand the
scale of local land development and convert rural farmland to urban construction land. This massive conversion greatly undermines the nation’s efforts in cultivatable land protection (Cartier 2001). Second, incomplete institutional design negatively affects the welfare of previous land users. Land banking agencies represent local states in purchasing land. Purchase prices are usually set by administrative regulations rather than markets. As a result, the compensation paid to the previous land users (especially farmers) is often significantly lower than the land’s market value; and this has caused considerable economic loss on the landholders’ side (The World Bank 2004).

Third, increasing land prices promote the overall increase of urban housing prices. Under the current land management regulations, most urban housing projects are required to acquire land through commercial means, such as bidding and public auction. This suggests that those who offer the highest bid get the land. On the one hand, this mechanism greatly improves the land’s market value, but on the other hand it also significantly increases the costs of commercial housing. Thus the high cost of housing has become a huge financial burden for most urban residents (Lu 2008). Finally, while control of urban land enables the local state to acquire considerable bank loans, it also increases the financial risks for both the local states and banks (DRC 2005). The MOLR data shows that by the end of 2009 a total of 2.58 trillion yuan land mortgage loans had been issued in just eighty-four major Chinese cities (MOLR 2009). This number would be substantially higher had all 2,864 county-level and above units been included.
Proposing plans to remedy these emerging issues is beyond the scope of this dissertation; however, it is worth nothing that the state has actively pursued new policies to overcome these problems. For example, the MOLR is working on amending the Land Management Law, which will prevent local land banking agencies from building their stock of land by converting farmland into urban construction land (Sina Finance, 2010). Moreover, new legislation has been proposed to clarify and secure the rights of landholders, and ensure fair treatment and adequate compensation for land acquisition (The World Bank 2004). In addition, major cities have undertaken local property tax reforms to gain a sustainable alternative revenue source and reduce their overreliance on the revenue from one-time land sales (Xinhua Net, 2011). However, we have yet to observe the effects of these remedies.

4.2 Hypotheses

In the theory section, I have developed nine hypotheses that explain the diffusion process of the neoliberal urban policies. To avoid repetition, in this section, I will list these nine hypotheses together with an extra hypothesis that specifies the relationship between pre-founding experience and subsequent innovation decisions.

Effects of internal determinants:

**Hypothesis 4.1:** A city’s per capita GDP, industrialization rate, and urbanization rate will be associated positively with its adoption rate of the land banking system (i.e., the
probability that a city will adopt the system in a given year).

**Hypothesis 4.2:** A city’s fiscal strength as measured by transfer dependency ratio will be associated negatively with its adoption rate of the land banking system.

**Hypothesis 4.3:** A city’s political status will be associated positively with its adoption rate of the land banking system.

**Effects of innovation exposure:**

**Hypothesis 4.4:** The strength of innovation exposure of a city to the land banking system will be associated positively with its adoption rate.

**Effects of coercive power**

**Hypothesis 4.5:** The increasing adoption pressure from the provincial government will increase the adoption rate of the subordinate cities.

**Hypothesis 4.6:** A city’s transfer dependency ratio will moderate the effect of provincial pressure, in other words, the effect of provincial pressure will be greater on cities with higher transfer dependency ratio than it is on cities with lower transfer dependency ratio.

**Hypothesis 4.7:** A city’s political status will moderate the effect of provincial pressure, in other words, the effect of provincial pressure will be weaker on cities with higher political status, but higher for cities with lower political status.
Effects of peer pressure

**Hypothesis 4.8:** *The adoption of land banking system by peer cities will positively affect the focal city’s adoption rate.*

Effects of normative pressure

**Hypothesis 4.9:** *The intensity of normative pressure from policy professionals will be positively associated with a city’s adoption rate.*

Effects of pre-founding experience

Both organizational institutional research and organizational learning literature suggest that the pre-founding experience of an organization influences the organization’s decisions for change (Keister 2002; Levinthal and March 1981; O’Neil, Pouder, and Bucholtz 1998; Simons and Roberts 2008). It is shown that when organizations have a successful experience with certain practices then a new change in the same area are less likely to be adopted because organizations may have invest many resources in the old practice. Such inertia either prevent or delay the adoption of new ideas or policies (O’Neil, Pouder, and Bucholtz 1998).

This effect is especially salient for land banking diffusions because a few coastal cities are allowed to establish their land market in late 1980s and early 1990s; some of these cities and their neighbors have already established a functional land market prior
to the introduction of the land-banking concept. For these cities, the land banking system is just another different institutional form but have essentially the same function. Therefore, they may reluctant to commission a new agency or convert their old system to the new form. I thus expect that

**HYPOTHESIS 4.10:** The existence of old but functionally equivalent agencies will negatively affect the adoption rates.

### 4.3 Method

**Cox Proportional Hazard Models**

Event history analysis will be the primary method of analysis used in this study. This approach is widely used to study of diffusion of various practices in a social system. The unit of analysis is city-year. The dependent variables of interest are the hazard rates, defined as the probability that officials in a city will adopt the policy innovations in a specific year, given that they have not already done so. Hazard rates are probabilities and cannot be directly observed. Event history models therefore use a dichotomous dependent variable to indicate whether local policymakers adopted the innovation in a given year (1 if yes, and 0 if no). Once the policy innovation is enacted in a city, there are no more city year observations for that particular city because it is no
longer in the risk set for policy adoption.

In particular, Cox’s proportional-hazard model is chosen for this analysis. This is because the model allows researchers to estimate the effects of parameters without specifying the baseline hazard function. The general form of this model is

\[ h_i(t) = h_0(t) \exp(\beta_1 x_{i1} + \beta_2 x_{i2} + \cdots + \beta_k x_{ik}) \]  

(5)

where \( h_i(t) \) is the hazard function of observation \( i \), \( h_0(t) \) is the unspecified baseline hazard function, and \( \beta \)s are the regression coefficients of independent variables. The coefficient is interpreted as the multiplicative effects on the hazard, which means a unit increase of covariate \( x_j \) will cause \( \exp(\beta_j) \) change of the hazard holding other covariates constant (Fox 2002).

The Cox regression model can also accommodate time-varying covariates such as urbanization, industrialization ratios, and local per capita GDP. In doing so, observations with time-varying covariates are transformed into multiple observations, in other words, the model treats each time period for an individual case as a separate observation (Fox 2002).

After fitting each model, I performed a proportional-hazards assumption test on the basis of Schoenfeld residuals. The tests showed that the assumption held for all models. Moreover, parameters were calculated from partial maximum likelihood
estimation, and the Huber-White method was applied to obtain standard errors. Compared with other methods, the Huber-White method yields more robust and consistent standard errors even when heteroskedasticity potentially affects the estimations.

**Random-Effects Probit Models**

The estimation of the effect of normative pressure involves more complication. Since this covariate only varies overtime but is equal to all clusters in a given year, the Cox model does not yield estimates for effects as such. Therefore, I use random-intercept probit model to explore the influence of normative pressure.

When expressed in the form of a latent-response model, the dependent variable $y_{ik}^*$ can be viewed as an unobserved or latent continuous response, representing the propensity to adopt a new policy. More formally, the model for response on time point $k$ (where $k=1, 2, 3..., n$) for city $i$ ($i=1, 2, ..., N$ cities in the sample) is:

$$y_{ik}^* = \alpha_i + \beta_0 + \beta_1 t_{ik} + \beta_2 x_{2i} + \beta_3 x_{3ik} + \epsilon_{ik}, \quad (6)$$

where

- $t_{ik}$ = the time that corresponds to the $k$th measurement for city $i$;
- $\beta_0$ = the overall population intercept or response propensity at baseline $t=0$;
- $\beta_1$ = the overall population trend coefficient describing rate of change in response.
propensity over time;

\[ \alpha_i = \text{the random effect for subject } i; \]

\[ \beta_2 = \text{the fixed effect of the subject level covariate } x_{2i}; \]

\[ \beta_3 = \text{the fixed effect of the time-specific covariate } x_{3ik}; \]

\[ \epsilon_{ik} = \text{an independent residual distributed } N(0, \sigma^2). \]

4.4 Results

The event history models presented in Table 2 provide the results on the tests of nine hypotheses. Models one to three test the effects of the internal determinants. Model 1 tests the hypothesis 4.1, which postulates that a city’s per capita GDP, industrialization rate, and urbanization rate would be positively associated with the adoption rate. The coefficients of per capita GDP and urbanization ratio are negative, and only per capita GDP is marginally significant at 0.1 level. The estimated coefficients show that industrialization rate is significantly and positively associated with the adoption rate of land banking system. Moreover, the industrialization has a curvilinear effect on the adoption rate indicating that the land banking system seems to be more attractive to cities that undergo rapid industrialization process than to more urbanized and economically advanced cities. The adoption decision is more likely to be driven by local industrialization process, which consumes much land to build factories or other auxiliary facilities.

In addition, the effects of industrialization rate vary with time. The time varying
effects in models 6, 8, and 9 shows a negative and significant time varying effects for industrialization rate. This suggests that as the diffusion proceeds, the effect of industrialization declines. It has more influence in early diffusion process, and the size of effect diminishes during the middle and late diffusion process.

Model 2 tests the effect of transfer dependency ratio. It is postulated that when cities have low revenue generating capacity and are highly dependent on higher level governments for fiscal resources, they are less likely to adopt a new institutional innovation. The estimated coefficient shows a significant and negative effect between transfer dependency ratio and the adoption rate.

The third internal determinant is political resources. I argue that a city’s political status in the administrative hierarchy can be a proxy of the policy autonomy that a city has. And a high status city will have more freedom or political resource in engineering local development plans. Model 3 tests this hypothesis (Hypothesis 4.3), and yields a positive and significant coefficient for political status. This lends support to the third hypothesis. These three model results partially support the internal determinants model. It suggests that industrialization, fiscal, and political resources can significantly affect a city’s adoption rate of the land banking system.

The regional diffusion model is tested in model 4. Hypothesis 4.4 postulates that the adoption decisions of other cities will positively affect the focal city’s adoption decisions. The estimated coefficient of the innovation exposure shows that this effect is positive and statistically significant. This suggests that the intensity of the exposure to a
new idea or an innovative policy can promote other cities’ innovation decisions.

Models 5 to 7 are constructed to test the institutional diffusion mechanisms. I first test the independent effect of provincial pressure. As hypothesis 4.5 postulated, the coercive forces from the upper level government may promote the diffusion process, therefore, if the province exert more political pressure in the form of specific administrative order, then the subordinated cities will tend to adopt the new system early. The estimated coefficient is positive and significant, which lends support to hypothesis 4.5. In addition to this argument, I also postulate that the effectiveness of the provincial order will be moderated by the resource dependence relations between the province and the cities.

To test the moderate effects, I included a city’s fiscal resource indicator as measured by transfer dependency ratio, political resources as measured by a city’s political status, provincial pressure, and the two interaction terms. The estimated coefficients for the interaction terms show that the moderate effect of fiscal dependence is positive but not statistically significant, and the moderate effect of political status is negative and significant as it is postulated. These results support hypothesis 4.7 but does not support hypothesis 4.6.

A second institutional factor is competitive mimicry. I postulated that the adoption of land banking system by structural equivalent cities will positively affect the adoption rate of the focal city. The model result supports this idea; the estimated coefficient is positive and significant. This suggests that by imitating the strategies of
other cities, especially cities that are structurally equivalent, focal city can reduce innovation risks and search costs. This process can be either blind imitation of the decisions of other cities or an active or targeted imitation that aim to learn successful experiences from others.

In model 8, I tested hypothesis 4.10, which postulates that the existence of functionally similar prefounding institutions will defer the adoption of the new system. I included the dummy variable prefounding institution in the model. This effect is more salient for the vanguards of the reform, i.e., cities in Guangdong province and other coastal areas. These cities have already invested many resources in building their own land market, and the market system seems to work well and become mature in these cities. Therefore when a new institution has not yet show its superior performance or when the provincial government has not mandated the institutional change, the local states will be less likely to spend their resources on a new but suspicious innovation. The significant and negative coefficient lends supports to this hypothesis.

Regarding the control variables, the models show that population density and adoption rate is positively and significantly associated. Suggesting that in the more populated area, the local states are more likely to perceive improving land use efficiency is an important issue. They therefore may adopt the innovative institutions early. Moreover, the models show that the fixed asset investment in the real estate sector has a positive and significant impact on the adoption rate. In order to overcome the problem
of reverse causation, I lagged the fixed investment by one year, using the previous
investment amount to predict the policy decisions in the subsequent year. The
significant and positive coefficients suggest that the growth of local real estate sector will
increase the local state’s adoption rate of land banking system. Through instituting the
new system, local states can sell the land use rights at the highest market price through
means such as auction, listing, tender. In addition, urban resident’s annual wage is
negatively associated with the adoption rate. This is consistent with the effects of local
per capita GDP and urbanization rate. The negative coefficients may suggest that the
adoption of the land banking in many places is disconnected with the urbanization
speed and the living conditions of local residents. The process is more likely to be driven
by local industrialization process and the vertical and horizontal intergovernmental
coercions or competition.

Table 3 shows the results of the post-estimation analysis. The proportional
hazard assumption test shows that the models generally satisfy the proportionality
assumption. When the tests on individual covariates were rejected, I included the
covariates as time varying covariates and let it interact with log time, which is a standard
remedy for the non-proportionality problem. In addition, I also use link test to check the
model specification and the robustness of the estimates. To account for possible
heteroskedasticity problem, I use Huber-White standard error estimators which are
robust when heteroskedasticity problems are present.
In addition to the cox proportional hazard models, I use random-effects probit model to explore the effect of normative pressures on the local adoption decisions. This is because the normative pressure only varies overtime and has no variation across cities; the cox model cannot generate estimations for such variables; therefore, the choice of alternative modeling method is needed. The probit model shows that the normative pressure measured by the number of published expert professional articles on land banking practices in a given year is significant and positive. This lends support to Hypothesis 4.9 and suggests that as the theorization of land banking system advances, its functions and advantages are gradually been known by other cities (See Table 5). When the land banking system is increasingly portrayed as a more plausible and effective way to manage local land market, it becomes a normative solution and affects the local states’ adoption decisions. Moreover, this alternative modeling strategy also functions as a robustness check of the land diffusion model. As it reveals, most effects that has been discovered in cox model still hold.

4.5 Discussion and Conclusions

Understanding the mechanisms for institutional change in China is a core agenda for students of institutional theory and market transition theory. Although researchers have achieved fruitful results in the study of business institution changes (Bjorkman 2003; Firth 1996; Guthrie 1999; Keister 2002), our understanding of the transformation of public policies in transitional societies remain limited. Borrowing insights from the
internal determinants, regional diffusion, and institutional diffusion theories, this study contributes new knowledge to this area by exploring the mechanisms behind the diffusion of the land banking system.

I argue that the effects of different internal determinants are associated with the characteristics of the practice itself. I find that the local social and economic indicators employed in this analysis, i.e., per capita GDP, urbanization rate, industrialization rate, urban residents annual wage, as well as fixed investments in the real estate sectors, have very different effects on a city’s probability of adopting the new land banking system. My original hypotheses postulate a simple and more direct relationship between these explanatory variables and the dependent variable. Higher per capita GDP, larger industrial sectors, and booming urban populations lead to strong demand for urban construction land and more efficient land management systems. These conditions pave the way for the adoption of a market-based land management institution.

However, the statistical results suggest a more complex relationship pattern. In some industrialized cities, the system is established to solve the land management of the deindustrialization process. The vacant and idle land left by the restructured SOEs need to be recycled and reallocated to the more efficient users so as to maximize the land value. But in many other places, the rapid industrialization and the accompanied high demand for construction land is the main driven force for the new land management system. As a result, the models show that cities with high industrialization rates are
more likely to adopt this system. Moreover, the land banking system is less likely to be driven by the urbanization process or by the rising living standards of the urban residents. These indicators only weakly associated with the adoption rate. On the other hand, this study also finds that the power of internal causes is limited in promoting a large-scale public organizational transformation, and its influence diminishes over time. Local socioeconomic forces seem to be more effective in the early diffusion period, but diminish later. This suggests that rational calculations and an indigenous impetus for innovations can explain only a part – usually the early phase – of the entire diffusion process. The forces that promote further expansion of land banking practices must be discovered from other sources.

This study also contributes new insights to institutional theory and policy diffusion literature. First, the results enrich our understanding of how the coercion mechanism works in transforming the state bureaucratic system. Although the study underscores the importance of state coercion in promoting the policy diffusion process in the state bureaucratic system, it refutes the simple coercion-compliance model and reveals that the effectiveness of coercion is conditioned by resource dependence relations among different government levels. It argues that the complicated intergovernmental fiscal and political relations are crucial for predicting local responses to coercive orders from higher levels. Local governments will strategically choose compliance or resistance, depending on their degree of dependence on higher-level
governments. High dependence brings greater possibilities of compliance; whereas low resource dependence, especially in the form of higher political status, makes a high-status city more likely to defer the implementation of provincial policies.

Second, in this chapter I suggest that interjurisdictional competition is important in promoting the reform of public organizations. China’s de facto federalist political system provides incentives and a platform for local states to race each other in innovation adoption. In highly competitive environments, local states are very sensitive to their peers’ behaviors (Montinola, Qian, and Weingast 1995a; Walder 1998; Zheng 2007). They not only compete for production materials, capital, human resources, and favorable policies, but also try to emulate their competitors’ strategies and practices. An important consequence of this interurban competition is that cities are encouraged to imitate their peers’ seemingly successful strategies, even when the local effects of these new practices are still unforeseeable.

Third, this study calls attention to the rising influence of professional policy communities on public organization innovations. By investigating the influences of the loosely organized policy research community, this study sheds light on how policy professionals affect policy diffusion processes through collective theorization efforts or loosely organized social movements. Although the organizations of policy making and policy research professionals are still very loose, we cannot underestimate the effects of their collective efforts. These professionals have collectively constructed the proper
policy measures for a new problem and determined the conditions under which the new policy measures should be adopted. During the transition period it is highly uncertain whether a new practice will work, so policy makers often follow the rule of “crossing the river by feeling the stones” and acquiring new knowledge from the reform practices. This trial and error problem-solving method becomes an important way of professionalization for policy makers. Using the number of policy discussions that appear in provincial dailies as a proxy, this study shows that the theorization efforts of policy professionals are significant in promoting the diffusion of land banking systems among Chinese cities.

Fourth, this study also suggests that regional variation in institutional structures can affect the diffusion of a new practice. As we can see in the land banking case, economically more advanced cities in the Zhujiang delta region has already developed a fully functional land transaction system, which is functionally equivalent to the new land banking system. Therefore cities in these region do not have the incentive to spend extra resources replace the old system, especially when the new system has not been proven to be exceptional efficient than the old ones, or when the national level agencies have not yet decided to issue mandatory administrative laws to institute the land banking system as a national standard.
## Table 2: Cox Models Predicting Land Banking Diffusion

<table>
<thead>
<tr>
<th>Variable</th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
<th>M4</th>
<th>M5</th>
<th>M6</th>
<th>M7</th>
<th>M8</th>
<th>M9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Capita GDP</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td>Industrialization</td>
<td>0.02 *</td>
<td>0.09 **</td>
<td>0.08 **</td>
<td>0.08 **</td>
<td>0.08 *</td>
<td>0.09 **</td>
<td>0.10 ***</td>
<td>0.07 *</td>
<td>0.01</td>
</tr>
<tr>
<td>Industrialization (square)</td>
<td>-0.01 *</td>
<td>-0.01 *</td>
<td>-0.01</td>
<td>-0.01 *</td>
<td>-0.01 *</td>
<td>-0.01 †</td>
<td>-0.01 **</td>
<td>-0.01</td>
<td></td>
</tr>
<tr>
<td>Urbanization</td>
<td>-0.01</td>
<td>-0.01 †</td>
<td>-0.01 †</td>
<td>-0.01</td>
<td>-0.01 *</td>
<td>-0.01</td>
<td>-0.01 *</td>
<td>-0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Transfer Dep. Ratio</td>
<td>-1.22 ***</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Political Status</td>
<td>0.55 *</td>
<td>0.26</td>
<td>0.26</td>
<td>0.26</td>
<td>0.26</td>
<td>0.26</td>
<td>0.26</td>
<td>0.26</td>
<td>0.26</td>
</tr>
<tr>
<td>Innovation Exposure</td>
<td>2.36 ***</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Provincal Pressure</td>
<td>0.14 **</td>
<td>0.15 **</td>
<td>0.15 **</td>
<td>0.15 **</td>
<td>0.15 **</td>
<td>0.15 **</td>
<td>0.15 **</td>
<td>0.15 **</td>
<td>0.15 **</td>
</tr>
<tr>
<td>Prov. Press * TDR</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>Prov. Press * Political Status</td>
<td>-3.56 ***</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Peer Pressure</td>
<td>0.01 ***</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Preexisting Institution</td>
<td>-0.99 ***</td>
<td>-0.54 **</td>
<td>-0.54 **</td>
<td>-0.54 **</td>
<td>-0.54 **</td>
<td>-0.54 **</td>
<td>-0.54 **</td>
<td>-0.54 **</td>
<td>-0.54 **</td>
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<tr>
<td>Control Variables</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population Density (log)</td>
<td>0.12 *</td>
<td>0.04</td>
<td>0.55 *</td>
<td>0.03</td>
<td>0.13 *</td>
<td>0.05</td>
<td>0.07</td>
<td>0.21 ***</td>
<td>-0.01</td>
</tr>
<tr>
<td>FAI in Real Estate</td>
<td>0.05</td>
<td>0.06</td>
<td>0.27</td>
<td>0.06</td>
<td>0.05</td>
<td>0.06</td>
<td>0.05</td>
<td>0.05</td>
<td>0.07</td>
</tr>
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<td>-------------------</td>
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<td>------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>Wage</td>
<td>-0.04</td>
<td>-0.07</td>
<td>*</td>
<td>-0.04</td>
<td>-0.02</td>
<td>-0.03</td>
<td>-0.06</td>
<td>*</td>
<td>-0.03</td>
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**Time-varying Covariates**

<table>
<thead>
<tr>
<th></th>
<th>PH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prov. Press * Political Status</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Link Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hat sq.</td>
<td>-0.06</td>
</tr>
<tr>
<td>Std. Error</td>
<td>0.39</td>
</tr>
</tbody>
</table>

**Table 3: Post-estimation Analyses for Models Predicting Land Banking Diffusion**

<table>
<thead>
<tr>
<th>PH Test</th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
<th>M4</th>
<th>M5</th>
<th>M6</th>
<th>M7</th>
<th>M8</th>
<th>M9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi2</td>
<td>12.73</td>
<td>†</td>
<td>10.25</td>
<td>11.31</td>
<td>11.81</td>
<td>12.06</td>
<td>20.93</td>
<td>†</td>
<td>11.72</td>
</tr>
<tr>
<td>Degree of Freedom</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>12</td>
<td>8</td>
<td>8</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Link Test</th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
<th>M4</th>
<th>M5</th>
<th>M6</th>
<th>M7</th>
<th>M8</th>
<th>M9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hat sq.</td>
<td>-0.06</td>
<td>-0.04</td>
<td>-0.07</td>
<td>-0.02</td>
<td>-0.07</td>
<td>-0.02</td>
<td>-0.07</td>
<td>*</td>
<td>-0.06</td>
</tr>
<tr>
<td>Std. Error</td>
<td>0.39</td>
<td>0.04</td>
<td>0.05</td>
<td>0.04</td>
<td>0.04</td>
<td>0.01</td>
<td>0.04</td>
<td>0.03</td>
<td>0.01</td>
</tr>
</tbody>
</table>

NOTE. † p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001. (two-tailed tests); Italicized numbers are Huber-White standard errors.
Table 4: Comparison of Land Banking Systems in Four Major Cities.

<table>
<thead>
<tr>
<th>Purpose of the System</th>
<th>Dalian (1)</th>
<th>Qingdao (2)</th>
<th>Hangzhou (3)</th>
<th>Shanghai (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>To strengthen government’s macro control over land market; improve the land allocation efficiency; maintain and improve the value of state owned land; promote urban construction and development.</td>
<td>To strengthen government control over the primary land market; improve the city land resource distribution efficiency; strictly control newly increased construction land; cultivate open, fair, unbiased land market; better implement the GLUP and city construction plan.</td>
<td>To liquidize remnant land assets; affectivity distribute land resources; rationally use land.</td>
<td>To strengthen government’s macro control over land market; effectively implementing city planning; deepening the land use system reform.</td>
</tr>
<tr>
<td>Effective Scale</td>
<td>Four city districts (Zhongshan, Xigang, Shahekou, Ganjingzi) directly subject to this regulation. Other places could establish their own systems based on granial guidance of this regulation.</td>
<td>Four city districts directly subject to this regulation. Jimo, Jiaozhou, Jiaonan, Laixi, Pingdu can establish their own system according to the guideline of this regulation.</td>
<td>City districts in Hangzhou Municipality Jurisdiction.</td>
<td>All regions in Shanghai Municipal Government jurisdiction.</td>
</tr>
<tr>
<td>Leading Authority and Management Agency</td>
<td>Dalian Real Estate Development and Management Leading Group. Establish Dalian Land Banking Center to carry out the land banking plan.</td>
<td>Qingdao Municipality Land Use System Reform Leading Group. Establish Qingdao Land Banking Agency to manage the routine work.</td>
<td>Hangzhou Municipality Land Banking Management Commission. Hangzhou Land Banking Center is responsible for routine work.</td>
<td>Shanghai Municipality Land Management Leading Group coordinates important issues in land banking process. Housing and Land Resource Bureau is responsible for making land banking plan. Land banking Center is responsible for land purchase and banking work.</td>
</tr>
<tr>
<td>Land Type banked</td>
<td>Funds Sources for Land Banking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State owned land taken back by government according to law; State owned idle land whose usage have not been determined; Land originally occupied by relocated enterprises and PSUs; old urban area which was planned to be renovated; Collective land which was converted to state owned construction land; government purchased land, other state owned construction land that need to be banked.</td>
<td>Funds appropriated by municipality government; low interest bank loans acquired with the help of municipality fiscal department; revenue gained from temporarily use of the banked land before supplied to land users; interest of deposited funds and other lawful revenue.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State owned land taken back by the government including original user have bankrupted or moved out, old urban district renovation area, land idled more than two years, land user violate the land using purpose, unlawful construction land, long-term disposed land, unutilized land in 4 city district; state owned land that can be purchased back; convertible land appeared in enterprise reform, city planning process; converted collective owned land.</td>
<td>Municipality government provide 200 thousand Yuan as registered fund and another 20 million Yuan as establishing funds; loans provided by other relevant financial agencies for land purchase; banked land can be used as mortgage to the bank;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Untitled land in city districted; land converted for municipality government; land taken back according to law; state owned idle land; land originally occupied by relocated enterprises and PSUs; Land originally conveyed to users, but users have no ability to develop and cannot be transferred to another user; other state owned land that can be banked.</td>
<td>The capital funds of the banking center will be appropriated by municipality fiscal department; the benefit generate from the banking activity can be used as capital funds; land purchase funds can be acquired from bank loans through mortgage banked land to the banks.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land transformed from tidal flat; state owned farmland that planning to be used for commercial purpose; rural collective farmland converted for non-farm use; state owned idle land; other state owned land that can be banked.</td>
<td>Land development fee and management fee should be given to land banking agencies after land conveyance. The net profit should go to land banking special funds.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue Remittance</td>
<td>Land conveyance fee should be remitted to government.</td>
<td>After deducting the banking cost, all land conveyance revenue should be remitted to the municipality fiscal department.</td>
<td>Land conveyance fee should be remitted to municipal fiscal department after the land conveyance. Based on Hangzhou Land Value Guideline, 55 percent of raw revenue should be remitted to municipal government.</td>
<td>Land conveyance fee should be remitted to land management bureau.</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Supply Process</td>
<td>Banked land should be supplied through PAL; commercial purpose construction land must come from banked land; municipal government can approve land which could be supplied through allocation measure, but the user should pay the land banking cost.</td>
<td>Commercial use land should be supplied through PAL measures, and under certain circumstance (approved by municipality government), land can be supplied through negotiation.</td>
<td>Banked land can be supplied through both PAL and negotiation.</td>
<td>Land should be supplied through PAL measures according to relevant regulations.</td>
</tr>
</tbody>
</table>

Source:
Table 5: Random-Effects Probit Model on Land Banking Diffusion

<table>
<thead>
<tr>
<th>Fixed Part</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variables</strong></td>
<td><strong>β</strong></td>
<td><strong>SE</strong></td>
</tr>
<tr>
<td>Per Capita GDP</td>
<td>-0.04</td>
<td>0.03</td>
</tr>
<tr>
<td>Industrialization</td>
<td>-0.02</td>
<td>0.03</td>
</tr>
<tr>
<td>Industrialization (square)</td>
<td>-0.01</td>
<td>0.00 *</td>
</tr>
<tr>
<td>Urbanization</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Transfer Dependency Ratio</td>
<td>-1.64</td>
<td>1.61</td>
</tr>
<tr>
<td>Political Status</td>
<td>0.51</td>
<td>1.57</td>
</tr>
<tr>
<td>Provincial Pressure</td>
<td>0.52</td>
<td>0.23 *</td>
</tr>
<tr>
<td>Prov. Press * TDR</td>
<td>-0.18</td>
<td>0.85</td>
</tr>
<tr>
<td>Prov. Press * Political Status</td>
<td>-0.56</td>
<td>0.62</td>
</tr>
<tr>
<td>Innovation Exposure</td>
<td>0.16</td>
<td>0.04 ***</td>
</tr>
<tr>
<td>Peer Pressure</td>
<td>0.08</td>
<td>0.02 ***</td>
</tr>
<tr>
<td>Preexisting Institution</td>
<td>-6.11</td>
<td>1.65 ***</td>
</tr>
<tr>
<td>Normative Pressure</td>
<td>1.89</td>
<td>0.58 **</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population Density (log)</td>
<td>-0.16</td>
<td>1.22</td>
</tr>
<tr>
<td>Wage</td>
<td>0.49</td>
<td>0.16 **</td>
</tr>
<tr>
<td>FAI in Real Estate</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Constant</td>
<td>-16.75</td>
<td>3.28 ***</td>
</tr>
<tr>
<td><strong>Random Part</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\psi$</td>
<td>57.41</td>
<td></td>
</tr>
<tr>
<td>$\rho$</td>
<td>0.97</td>
<td></td>
</tr>
<tr>
<td>Log Likelihood</td>
<td>-443</td>
<td></td>
</tr>
<tr>
<td><strong>LR test</strong></td>
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<td></td>
</tr>
<tr>
<td>Chibar2(01)</td>
<td>186</td>
<td></td>
</tr>
<tr>
<td>Prob.&gt;chibar2</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Wald Chisq (DF=17)</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>AIC</td>
<td>979</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>4674</td>
<td></td>
</tr>
</tbody>
</table>

NOTE. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. (two-tailed tests)
5. The Diffusion of Infrastructure Liberalization

The growth of an economy relies heavily on the provision of high quality infrastructure services. The quantity and quality of infrastructures have close relationship with the diversification of production, the expansion of trade, reduction of poverty, and the improvement of environmental conditions. Cross-national studies show that a one percent increase in the stock of infrastructure is associated with one percent growth in gross domestic product (World Bank 1994). The term infrastructure here refers to the economic infrastructure which is “...a homogeneous group in the sense that it underpins the functioning of other economic activities, and is hence directly relevant to the competitiveness of firms and to economic development. It consists of a group of industries, including electricity, gas, telecommunications, water and sewage, airports, roads, railways and seaports (UNCTAD 2008:88).”

In many developing countries and transitional economies, governments at the national and local levels own, operate, and finance almost all infrastructures. This is either due to the natural monopoly nature of many infrastructures or due to the public interests vested in the control and management of various strategic infrastructure projects. However, the state monopoly of infrastructure provision has been criticized for its poor performance, which is characterized by insufficient maintenance, misallocation of investment, unresponsiveness to users, and technical inefficiencies. Regarding these problems, scholars and international organizations begin to advocate the neoliberal
model which limits the role of the state in providing infrastructures and allows the private sector to play a larger role in the provision of infrastructure services. Such new models range from privatization of key infrastructure sectors to various form of public-private partnerships\(^1\), in which the private party and the state jointly shoulder the risks and profits associated with the infrastructure provision. In some circumstances, the term “public-private partnership” is a better phrase because it minimizes the risks of invoking ideological opposition toward “privatization”, and therefore is more acceptable to many post-socialist countries (Grimsey and Lewis 2004; Savas 2005).

China has experienced rapid urbanization and industrialization process during the past three decades, which has led to a high demand for more infrastructure capacities and better service quality. How well the states at various levels accommodate this increasing needs will significantly affect the wellbeing of the growing urban population as well as the prospect of urban economic development (Wu 2010). Although the speed of capital investment growth for urban infrastructures in China has surpassed other countries in the world, it has not been able to keep pace with the rate of industrialization and urbanization. The overreliance on government budgetary investment and the profound intergovernmental fiscal relationship change have posed

\(^1\) The term “public-private partnership” encompasses many forms of privatization. It is defined as a set of contractual arrangements in which a government and a private entity, for-profit or nonprofit, jointly perform or undertake an activity that is traditionally performed by public entities (Grimsey and Lewis 2004). It often involves at least one government unit and a few private firms. These entities jointly create or build large, capital intensive public infrastructures, such as seaport, airport, highway, water and sewage system, or power plant (Savas 2005).
great challenges to the government dominated investment regime (Su and Zhao 2007). The fiscal decentralization reform initiated in the early 1980s added to the fiscal pressure to find alternative financial resources for urban infrastructure. The decentralization has delegated many social service functions to the local states. The subsequent reforms cause the mismatch of revenue and expenditure allocations, leaving a vertical imbalance to be managed by transfers (Annez 2007; Peterson 2005). Cities experiencing rapid economic growth and urbanization are facing expanding infrastructure needs. And local states are forced to find alternative methods to provide new infrastructures or improve the service quality of the existing ones.

During the economic transition, China also gradually transforms its institution governing the infrastructure provision. Starting from the special economic zones then to the coastal provinces, local authorities are allowed to seek capital from the foreign investors or international development agencies for the quick development of various infrastructures such as ports, highways, power plant. As the nation’ economy becomes more diversified, the role of foreign and domestic private investments becomes increasingly important. The state gives up its tight regulation in many economic sectors and allows different players to enter the new markets. One of the key practices of this kind is the growing private participation in infrastructure industries (Henisz, Zelner, and Guillen 2005). The private capital here refers to both foreign investments and domestic private capital. These private funds concentrate mainly in sectors such as
energy, telecom, transport, and water and sewerage.

The purpose of this chapter is to explore the diffusion mechanism of the private participated infrastructure projects, another major policy element in the capitalizing on cities paradigm. I will first investigate the mechanisms that promoted the diffusion of such practices. And in the next chapter, I will further partition the infrastructure industry according to sector characteristics and types of contractual arrangements, then explore the differences between these different diffusion processes.

5.1 The Liberalization of Infrastructure Sectors

5.1.1 The Change of Urban Infrastructure Financing Structure

Reforms in the public finance system have profound impacts on the evolution of the infrastructure investment regime. The observed diversification of the infrastructure financing structure and the increasing marketization of the urban utility and infrastructure industries are closely related to the reforms in the state fiscal management system. In many developing countries, the fiscal pressure is more intense and the prospect of shifting investment responsibility to private infrastructure providers plays a more significant role in the increase acceptance of private sector involvement in infrastructure (Annez 2007).

Prior to the economic reform, China adopted a Soviet type, centrally managed fiscal system, in which all revenues were remitted to central government, and then
various transfers from the upper level were given to provinces and cities according to the central’s fiscal plan. The main revenue sources in this period were levies and surcharges from SOEs at various levels. There were no special taxes, or user charges, or funds collected for urban construction purposes. In such a system, municipal governments virtually retained no extra fiscal resources that could be used to construct or maintain urban infrastructures. As a result there was no steady flow of investments to the urban infrastructure sectors in many years (Chan 1997; Wu 1999).

In early 1980s, fiscal contract system together with other decentralized economic management regulations were implemented national wide. Urban governments in this era, acted as both urban public goods providers and the actual owners of municipal SOEs. Under this system, urban governments’ revenue, heavily relied on profits and taxes remitted by local SOEs, which were also the main sources of urban infrastructure investment. In addition, local states often delegated much of the infrastructure and other social service responsibilities to the SOEs. When the economic transition greatly accelerated the pace of industrialization and urbanization, urban governments, though tried, still could not supply infrastructure and social services to their growing economy and population (Chan 1997; Wong, Heady, and Woo 1995; Wong 1992). Like in many developing countries, shortfalls in urban infrastructure could be easily found in transportation, water supply, electricity supply and communications (Bahl 1999; OECD 2005).
When fiscal contract systems effectively boosted local economic growth, it also generated strong localism and led to huge regional disparity in terms of economic development and public service quality (Wong 1992). In 1994, the fiscal contract system was replaced by the Tax Sharing System (TSS), which fundamentally changed the intergovernmental fiscal relations. The immediate goal of this new system is to increase two ratios. The first ratio is the proportion of fiscal revenue in the total national GDP. It intended to increase the state’s revenue collection capacity. And the second ratio is the central government’s share in the total fiscal revenue. The reform designed new taxes and tax sharing schemes, in which the major, easy collected taxes were designated as either central taxes or central-local sharing taxes. For local states, they maintained the bulk of corporate income taxes and some other minor taxes. Among these local taxes, an urban land use tax, a real estate tax, and an urban maintenance and construction tax were collected for local infrastructure constructions and maintenance (see Table 11).

However, when TSS significantly changed the revenue sharing scheme, the expenditure division between central and local states has been largely unchanged. Compared with other developing countries, Chinese local states have heavier expenditure responsibilities, they are expected to finance public utilities, transportations, maintain urban infrastructures, and provide other costly social services such as education, health care and so forth (Bahl 1999). This gave rise to a huge fiscal gap that need to be filled by various general or earmarked fiscal transfers. The allocation of these
transfers is controlled by the central government or provincial governments one way or the other. Therefore local states are forced to find alternative revenue sources or financial arrangements to construct new infrastructures in order to meet the needs of rapid urbanization and industrialization (Wong 2000).

Currently, urban infrastructure development relies on four primary sources. The first is budgetary allocation from central and local governments, which consists of about 15 percent of the entire investment (Wu 2010). As mentioned above local states have been placed in a fiscal squeeze due to a downward shift of expenditure and an upward shift of revenue. This diminishes the share of local budgets available to finance infrastructure construction and leads to a steady decline in the proportion of urban infrastructure investment that is financed from the budgetary sources (Su and Zhao 2007). Figure 1 shows that the proportion of total urban infrastructure investment from budgetary sources declined from 50 percent in 1991 to 29 percent in 2001. And this decline continued thereafter and reached to 27 percent in 2005 (Su and Zhao 2007; Wu 2010).

Extra budgetary sources such as fees and user charges are the second channel of urban infrastructure financing. These funds used to be an important financial source for local states. However, the fiscal reforms in the mid-1990s have imposed more restrictions in terms of collecting and managing these funds. The central state even passed new accounting regulations to put some of the major fees into the newly established fund budget category and put it under their supervision. The proportion of this source in the
total infrastructure financing declined sharply since early 1990s (as shown in Figure 5).

Figure 4: Share of Urban Infrastructure Investment Financed from the Budget

Source: Su & Zhao 2007

The financing gap left by the declining government fiscal input has been filled primarily by various bank loans. Starting from the mid-1990s the share of investment financed by loans increased dramatically (as shown in Figure 6). The national policy has identified the urban infrastructure sectors as a top priority for bank lending. By 2001, more than 60 percent of Chinese cities have infrastructure loans from banks and the total outstanding loan for urban infrastructures amount to 74.2 billion yuan (Su and Zhao 2007). The proportion of total urban infrastructure investment from this source increased from 5 percent in 1990 to more than 30 percent in 2005 (Wu 2010).

In addition to these financial sources, foreign capital and private capital (including foreign direct investment, domestic private funds, and international bonds) has begun to play an important role in urban infrastructure finance. Foreign companies
responded enthusiastically when China opens the door for foreign investment in urban infrastructure sectors. As a result, joint ventures were formed to build and operate roads, bridges, and urban utilities. Various types of public-private partnerships were adopted to attract more nonstate investments into the infrastructure sector while allowing foreign and domestic private investors benefiting from the urban infrastructure industry.

Figure 5: Share of Urban Infrastructure Investment Financed by Fees and Charges
Source: Su & Zhao 2007

Figure 6: Share of Urban Infrastructure Investment Financed by Loans
Source: Su & Zhao 2007
5.1.2 The Institutional Reforms

The reforms in the intergovernmental fiscal arrangements fundamentally changed the urban infrastructure financing structure. Local states are forced to seek alternative financial resources to construct and maintain urban infrastructures to meet the needs of rapid urbanization and industrialization. To facilitate the use of nonstate financial resources such as foreign investments and domestic private investments, both central and local states have made significant institutional changes to lower the entry barriers to the urban infrastructure sectors.

During the process of China’s integration into the global economic system, governments at various levels made great efforts to attract external investments. Central government has been working for a long time to adjust national policy framework to meet the international standard. The country has substantially relaxed its restriction on the market access. The encouraged investment sectors listed on the national FDI guidance catalogue have expanded significantly. Those encouraged programs will enjoy a set of preferential policy treatments, including tax breaks, financial support, a larger autonomy in using and maintaining foreign currency, and land use fee exemption (Lardy 2002).

Institutional reforms have also been carried out at both national and local levels. The central government has deregulated the project approval process, and gives provincial and municipal governments greater authority for project approval. At the
local level, governments compete with each other searching for both foreign and domestic investors to set up new enterprises or take over the bankrupted SOEs so as to improve their GDP and fiscal revenue (Gallagher 2005). When China entered WTO in late 2001, local governments were more actively involved into the investment attraction campaign. The coastal cities, with the help of their superior geographic and economic strength, are particular attractive to foreign investors.

Foreign and domestic private investors began to be allowed to conduct business in previously restricted sectors such as infrastructure, professional service, and finance in the form of both joint ventures and wholly foreign-owned enterprises. Since 1990s, in order to adjust the uneven geographic distribution of FDI, the nation also made region-specific investment attraction policies to invite foreign investors to do business in the less developed inland provinces. A major focus of these policies is on the construction of basic infrastructure facilities. Foreign investors are encouraged to invest in infrastructure projects in agriculture, water conservancy, ecology, transport, energy, and resource development.2

According to the neoliberal discourse, the main goal of infrastructure liberalization is to improve the effectiveness of service provision and efficiency of resource utilization. In addition, the influx of private capital in this sector can also alleviate the insufficiency of public investments. For local states, the process of

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liberalization not only reduces their fiscal burden in providing public services but also gives them chances to realize the market value of the public assets in their hand. The economic return thus generated can be further used in various projects that aim to improve the city image or local investment climate (Farquharson, Mastle, Yescombe, and Encinas 2011; The World Bank 1994). Therefore, beside the marketization of state owned construction land, the liberalization of infrastructure sectors become another important way to capitalize on cities.

Various liberalization measures have been widely adopted or even institutionalized by central and local states. The major measures include:

First, urban infrastructure and urban utility sectors are now open to non-state investors, except the urban utility distribution or transmission networks. Roads, bridges, water supply and sewerage treatment, and natural gas supply services can be managed by foreign or domestic private operators. Risks and benefits can be shared between public and private investors through various types of financial arrangements.

Second, the urban transportation, water supply, natural gas supply, heat supply, and sewerage treatment services are unbundled from other public service functions performed by the local governments. New firms will be founded to carry out these social functions and provide services. Urban construction funds will be managed by local

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states and be used to invest in urban infrastructure construction projects.

Third, local states can use various concession arrangements to attract various non-state investments to rehabilitate or construct new capacities. Foreign or domestic investors are allowed to fully or partially own, lease, or invest in various urban infrastructure or utility service sectors.

In 2010, the state opened the sectors once monopolized by the state firms and allowed nonstate capital to invest in these sectors. Private investors are encouraged to invest in the construction and operation of port, civil airport, civic aviation facilities, railroads, ferries, subways, and light rails. Local states will use government subsidies and user charges to subsidize private investors who invest in irrigation networks and water resource conservation projects. Moreover, private investors are also welcomed in energy sectors, they are allowed to participate in the construction of wind power, solar power plants, and even take shares in the nuclear power plants. 4

The intensive use of fiscal subsidies to attract investors can be better understood by comparing the investments attraction policies in Shaoxing and Xianyang (The former is a prefecture in the coastal province Zhejiang, and the latter is an inland prefecture city in Shannxi province). As I have argued, since 1994 TSS reform, tax exemption power was centralized to the hands of State Administration of Taxation. Local states have no

means to change the tax policies or reduce the tax rate for private investors. However, they still find ways to give investors tax breaks by refunding investors with part of the local tax revenue. Shaoxing and Xianyang policies show that the corporate income tax breaks or equivalent fiscal subsidies are the major form of tax breaks. These tax breaks vary in terms of the sectors in which the investments are made, the amount of total investment, contract period, and whether it is a high-tech project. Besides corporate income tax breaks, part of the lump sum fiscal contributions generated by the investments are used as fiscal subsidies. All these tax breaks and fiscal subsidies limited the potential financial contributions brought by new investments. In addition to the use of budgetary revenue to subsidize the investors, local states are also willing to sacrifice part of the extra budgetary revenue to lure investors. In Xianyang, local governments promised to exempt various municipal fees, which consist the bulk of local extra-budgetary revenue.

From 1990 to 2008, the total private investments in infrastructure sectors amount to 107 billion USD, which is 12.6 percent of the total utilized FDI in China since 1978. Table 6 presents the distribution of private funds among different subsectors. It shows that transport and energy sectors have received the bulk of private funds in infrastructure industries.

The liberalization of these sectors starts with the participation of foreign investors, and as more foreign investments enter this sector, the managerial expertise
and technology gradually diffuse. This facilitates the growth of domestic private infrastructure industries and capital markets. The entry of these actors in the infrastructure sectors have expedited investments in infrastructure and alleviated the shortage of public investment in local infrastructures.

### Table 6: Total Projects and Investments by Sectors, 1990-2008

<table>
<thead>
<tr>
<th>Sector</th>
<th>Sub-sector</th>
<th>Number of Projects</th>
<th>Total Investment (in USD million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>Electricity</td>
<td>174</td>
<td>33,062</td>
</tr>
<tr>
<td></td>
<td>Natural Gas</td>
<td>182</td>
<td>4,277</td>
</tr>
<tr>
<td>Telecom</td>
<td>Telecom</td>
<td>4</td>
<td>14,518</td>
</tr>
<tr>
<td>Transport</td>
<td>Airports</td>
<td>17</td>
<td>2,766</td>
</tr>
<tr>
<td></td>
<td>Railroads</td>
<td>8</td>
<td>6,084</td>
</tr>
<tr>
<td></td>
<td>Roads</td>
<td>133</td>
<td>25,397</td>
</tr>
<tr>
<td></td>
<td>Seaports</td>
<td>62</td>
<td>13,202</td>
</tr>
<tr>
<td>Water and Sewerage</td>
<td>Treatment Plant</td>
<td>273</td>
<td>5,543</td>
</tr>
<tr>
<td></td>
<td>Utility</td>
<td>31</td>
<td>2,884</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>884</strong></td>
<td><strong>107,732</strong></td>
</tr>
</tbody>
</table>


### 5.2 Hypotheses

In order to explore whether the effects of policy diffusion mechanisms vary across different practices, in this chapter I will continue to test hypotheses that have been developed in the theory section. Unlike the land banking case, in the infrastructure privatization study, I did not propose the effect of pre-founding experience because such policies are largely unidentifiable in most cities. To avoid repetition, I will follow the example of the land banking chapter and succinctly state the nine hypotheses that will
be tested.

Effects of internal determinants:

**Hypothesis 5.1:** A city’s per capita GDP, industrialization rate, and urbanization rate will be associated positively with its adoption rate of the infrastructure privatization policy (i.e., the probability that a city will adopt the system in a given year).

**Hypothesis 5.2:** A city’s fiscal strength as measured by transfer dependency ratio will be associated negatively with its adoption rate of the infrastructure privatization policy.

**Hypothesis 5.3:** A city’s political status will be associated positively with its adoption rate of the infrastructure privatization policy.

Effects of innovation exposure:

**Hypothesis 5.4:** The strength of innovation exposure of a city to the practices of infrastructure privatization will be associated positively with its adoption rate.

Effects of coercive power

**Hypothesis 5.5:** The increasing adoption pressure from the provincial government will increase the adoption rate of the subordinate cities.

**Hypothesis 5.6:** A city’s transfer dependency ratio will moderate the effect of provincial
pressure, in other words, the effect of provincial pressure will be greater on cities with higher transfer dependency ratio than it is on cities with lower transfer dependency ratio.

**Hypothesis 5.7:** A city’s political status will moderate the effect of provincial pressure, in other words, the effect of provincial pressure will be weaker on cities with higher political status, but higher for cities with lower political status.

**Effects of peer pressure**

**Hypothesis 5.8:** The adoption of infrastructure liberalization policy by peer cities will positively affect the focal city’s adoption rate.

**Effects of normative pressure**

**Hypothesis 5.9:** The intensity of normative pressure from policy professionals will be positively associated with a city’s adoption rate.

**5.3 Method**

*Cox Proportional Hazard Models*

Event history analysis will be the primary method of analysis used in this study. This approach is widely used to study of diffusion of various practices in a social system. The unit of analysis is city-year. The dependent variables of interest are the hazard rates, defined as the probability that officials in a city will adopt the policy
innovations in a specific year, given that they have not already done so. Hazard rates are probabilities and cannot be directly observed. Event history models therefore use a dichotomous dependent variable to indicate whether local policymakers adopted the innovation in a given year (1 if yes, and 0 if no). Once the policy innovation is enacted in a city, there are no more city year observations for that particular city because it is no longer in the risk set for policy adoption.

In particular, Cox’s proportional-hazard model is chosen for this analysis. This is because the model allows researchers to estimate the effects of parameters without specifying the baseline hazard function. The general form of this model is

\[ h_i(t) = h_0(t) \exp(\beta_1 x_{i1} + \beta_2 x_{i2} + \cdots + \beta_k x_{ik}) \]  

(5)

where \( h(t) \) is the hazard function of observation \( i \), \( h_0(t) \) is the unspecified baseline hazard function, and \( \beta \)s are the regression coefficients of independent variables. The coefficient is interpreted as the multiplicative effects on the hazard, which means a unit increase of covariate \( x_j \) will cause \( \exp(\beta_j) \) change of the hazard holding other covariates constant (Fox 2002).

The Cox regression model can also accommodate time-varying covariates such as urbanization, industrialization rates, and local per capita GDP. In doing so, observations with time-varying covariates are transformed into multiple observations, in other words, the model treats each time period for an individual case as a separate observation (Fox
Random-Effects Probit Models

The estimation of the effect of normative pressure involves more complication. Since this covariate only varies overtime but is equal to all clusters in a given year, the Cox model does not yield estimates for effects as such. Therefore, I use random-intercept probit model to explore the influence of normative pressure.

When expressed in the form of a latent-response model, the dependent variable \( y_{ik}^* \) can be viewed as an unobserved or latent continuous response, representing the propensity to adopt a new policy. More formally, the model for response on time point \( k \) (where \( k=1, 2 \ldots, n \)) for city \( i \) \( (i=1, 2 \ldots, N \) cities in the sample) is:

\[
y_{ik}^* = \alpha_i + \beta_0 + \beta_1 t_{ik} + \beta_2 x_{2i} + \beta_3 x_{3ik} + \epsilon_{ik}, \quad (6)
\]

where

- \( t_{ik} \) = the time that corresponds to the \( k \)th measurement for city \( i \);
- \( \beta_0 \) = the overall population intercept or response propensity at baseline \( t=0 \);
- \( \beta_1 \) = the overall population trend coefficient describing rate of change in response propensity over time;
- \( \alpha_i \) = the random effect for subject \( i \);
- \( \beta_2 \) = the fixed effect of the subject level covariate \( x_{2i} \);
\[ \beta_3 = \text{the fixed effect of the time-specific covariate} \ x_{3i}; \]
\[ \epsilon_{ik} = \text{an independent residual distributed} \ N(0, \sigma^2). \]

5.4 Results

The event history models presented in Table 8 provide the results on the tests of eight hypotheses. Models one to three test the effects of internal determinants. Model 1 tests the hypothesis 5.1, which postulates that a city’s per capita GDP, industrialization rate, and urbanization rate would be positively associated with the rates of adopting the infrastructure privatization policies. The estimated coefficients show that per capita GDP is positive and significantly associated with the adoption rate. The industrialization rate has a curvilinear relationship with the adoption rate; cities have a lower to middle level industrialization levels are more likely to have high adoption rates than cities with high industrialization rate. Moreover, the model shows no significant relations between urbanization and adoption rate.

In terms of the control variables, the model shows that the growth of fixed asset investment will promote the liberalization of the infrastructure sector. A larger-scale fixed asset investment often indicates higher projection of future infrastructure needs. Therefore, as the projected future demand for infrastructure increases, the local states are more likely to be willing to open these sectors to private or foreign investors. Moreover, a high passenger transportation volume not only indicates a high demand for various transportation facilities, but also indicates the existence of a larger floating
population in a city, this will generate greater demand for higher utility service capacity.

After fitting the cox model, I performed a test to see whether proportional hazard assumption still hold for the model (as shown in Table 9). The global test rejects the proportionally assumption and variable-specific tests show that the effect of per capita GDP and passenger transportation may not be constant over time. When the tests on individual covariates were rejected, I included the covariates as time varying covariates and let it interact with log time, which is a standard remedy for the non-proportionality problem. In addition, I also use link test to check the model specification and the robustness of the estimates. To account for possible heteroskedasticity problem, I use Huber-White standard error estimators which are robust when heteroskedasticity problems are present. The newly estimated model show that the effects of these two variable change significantly over time. Per capita GDP and passenger transportation are more influential in the early stage of the diffusion, and their effects become weaker in the late diffusion phase.

Model 2 tests the effect of transfer dependency ratio. I postulate that when cities have low revenue generating capacity and are highly dependent on higher level governments for fiscal resources, then they are less likely to adopt the infrastructure privatization policy. The estimated coefficient shows a significant and negative effect between transfer dependency ratio and the adoption rate.
The third internal determinant is political resources. I argue that a city’s political status in the administrative hierarchy can be a proxy of the policy autonomy that the city has. Cities that have higher status will have more autonomy or political resources in engineering local development plans. Model 3 tests this hypothesis (Hypothesis 5.3). The estimated coefficient is negative and significant, suggesting that the increase of political dependency will reduce a city’s adoption rate. This lends support to the third hypothesis. These three models results partially support the internal determinants model. It suggests that local per capita GDP, industrialization, fiscal, and political resources can significantly affect a city’s adoption rate of the infrastructure privatization policy.

The regional diffusion model is tested in model 4. Hypothesis 5.4 postulates that a positive relationship between a city’s exposure to the infrastructure privatization practices and its adoption rate. The estimated coefficient of the innovation exposure shows that this effect is positive and statistically significant. This suggests that the intensity of the exposure to a new idea or an innovative policy can promote other cities’ innovation decisions.

The institutional diffusion hypotheses are tested in models 5 to 7. I first test the independent effect of provincial pressure. As hypothesis 5.5 postulated, pressures from the provincial government may promote the diffusion process, therefore, if the provincial government exert more political pressure in the form of administrative order, then the subordinated cities tend to adopt the new policy early. The estimated coefficient
is positive but not statistically significant. In addition to hypothesis 5.5, I also postulate that the effectiveness of the provincial pressure will be moderate by the resource dependence relations between provinces and cities.

To test the moderation effects, I included a city’s fiscal resource indicator as measured by transfer dependency ratio, political resources as measured by a city’s political status, provincial pressure, and the two interaction terms between the main effects. The estimated coefficients for the interaction terms show that, for one thing, fiscal dependency significantly moderates the effect of provincial pressure, that is, the effect of provincial pressure is stronger for cities that depend heavily for provinces for fiscal resources. For another, the political status also significantly moderates the effect of provincial pressure but the direction is negative, that is, the effect of provincial pressure is stronger for cities with lower status. These results are consistent with hypotheses 5.6 and 5.7.

The competitive mimicry is a second institutional factor. I postulated that the adoption of infrastructure privatization by structurally equivalent cities will positively affect the adoption rate of a focal city. The model result supports this idea. The estimated coefficient is positive and significant. This suggests that by imitating the strategies of other cities, especially cities that are structurally equivalent, focal cities can reduce innovation risks and search costs. This process can be either blind imitation of the decisions of other cities or an active or targeted imitation that aims to learn
successful experiences from others.

In addition to the cox proportional hazard models, I also use random-effects probit model to explore the effect of normative pressures on the adoption of infrastructure privatization policies. The reason for using this method is two-fold. For one thing, normative pressure measures the aggregate level of professional publications on the infrastructure privatization policies. Therefore, this variable only varies overtime but has no variation across cities. The cox model cannot generate estimations for such variables, so the use of alternative modeling strategy is needed. For another, although the interpretation of the statistical findings of random-effect probit models differs from the cox model results, they both explore the effects of the covariates on the adoption decisions. So the new models can be used a robustness check of the substantive findings.

The probit model shows that the normative pressure measured by the number of published professional articles on infrastructure privatization policies and practices in a given year has positive and significant impact on the propensity of adopting the corresponding policies. This lends support to Hypothesis 5.9 and suggests that as the theorization of infrastructure liberalization advances, its advantage and legitimacy are gradually known by other cities (See Table 10). When the liberalization of infrastructure and urban utility sector is increasingly portrayed as a more plausible and effective way to mobilize financial resources to construct new facilities and to overcome management problems, it becomes a normative solution and affects the local states’ innovation
decisions. The estimated results in Table 10 also show that other major effects discovered in cox models still hold in the new model.

5.5 Discussion and Conclusions

The quantity and quality of infrastructures have significant impacts on both local economic development and the welfare of urban residents. As China moves toward a more industrialized and urbanized economy, the demand for better infrastructures and utility services also grows dramatically. Since the old state-dominated infrastructure investment system cannot satisfy the huge capital needs in these sectors, local states are forced to find new financial resources for expanding service capacities or improving service quality. During this process, the state at both central and local levels made institutional reforms and allowed foreign and private investors to enter these once highly restricted areas to own or operate facilities. The liberalization of the infrastructure and urban utility sectors thus has become a popular policy choice for many local states. Together with the marketization of urban land assets, local states build new institutions to facilitate the capitalization of these state assets. However, there is huge variation among cities in adopting such neoliberal policies. In this chapter I borrow insights from existing diffusion theories to explore the diffusion mechanisms that underlie this process.

This study shows that whether a city will liberalize its urban infrastructure and utility sector is significantly influenced by the local demand for better infrastructures. I
find that cities with stronger economy, higher industrialization rate, larger scale investment in fixed assets, and a bigger and floating population are more likely to require greater infrastructure service capacities. This high demand will positively affect a city’s propensity of adopting the privatization policy. Moreover, I also find that the effects of some local socioeconomic characteristics are not linear. The effect of industrialization rate shows a curvilinear relationship with the adoption rate, indicating that the marginal effects of industrialization rate are declining. Infrastructure and utility service demand drives by industrialization process to a certain degree, and further increase is more likely to be associated with the increase of living standard and the development of the service industries. In addition, this study suggests that the effects of local demand decline over time. The local economic characteristics are strongly associated with the adoption propensities in the early diffusion period. The late diffusion process is driven less forcefully by the indigenous demand, but by various institutional forces and competition pressure.

A local state’s fiscal and political capacity is also crucial to the implementation of private participated projects. Governments can attract private entities to invest in infrastructure sectors though two ways. First, they can offer financial support to investors, either in the form of subsidies or guarantees, in order to reduce the economic risks that may cause by poor performance of the project or macroeconomic changes. Second, local states can address the policy problems that underlie investors’ concerns by ensuring policy stability, making policy making process transparent, or establishing a
sound regulatory framework (Dailami and Klein 1998). Therefore, local states’ fiscal and political capacities are important for successful implementation of private participated projects.

This study also shows that the intergovernmental relations have significantly shaped the trajectory of policy diffusion in China. Along the vertical dimension, the central and provincial governments exert strong influence on local policy making through the specification of macro policy guidelines or direct administrative order. However, the effectiveness of such pressure is not homogenous across cities, it is conditioned by resource dependence relations among different levels of governments. This dependence can take two basic forms, i.e., intergovernmental fiscal dependence and political dependence. Local states can strategically chose compliance or resistance, depending on the degree to which the adoption of an innovation will rely on the resources from their superiors.

A second dimension is the horizontal intergovernmental relations. In this study, I further specify this kind of relationships into two categories: competition or emulation among geographically proximate cities, and competition or emulation among structurally equivalent cities. The geographic proximity facilitates the social learning process and promotes interjurisdictional competition for capital, labor, as well as other production factors. In highly competitive environments, local states are keen to their neighbors’ policy innovations, and try to institute similar policies that may increase their competitor’s competitiveness. In addition to this form of competition, local states are
also competing with peer cities that subordinate to the same higher level government. The leaders of these cities compete with each other for better local economic performance, which is closely related to their future promotion prospective. When a city liberalized its infrastructure sectors, other cities may also need to show their determination of reform by adopting similar if not more radical liberalization policies. On the one hand, this interjurisdictional competition may trigger the “bidding war”, which decreases the average return brought by the new policies; On the other hand, this mechanism is also an effective way to eliminate the entry barriers for private and foreign capital and therefore promotes the establishment of a more market-friendly local institutional environment.

In addition, this study suggests that the professional policy communities have promoted the diffusion of infrastructure liberalization policies. For local states, the adoptions of such innovation are limited by both the lack of technical knowhow and by the ambiguity in the legitimacy of the privatization measures. The policy making and policy research professionals helped policy makers to overcome these limitations by systemically introducing the international experiences on various financing arrangements, and by legitimizing the private participation in the infrastructure sectors. The results of this study suggest that the theorization efforts of the policy research professionals are significant in promoting the marketization of the urban infrastructure and utility sectors.
<table>
<thead>
<tr>
<th>Sector</th>
<th>Subsidy type</th>
<th>Treatment</th>
<th>Sector</th>
<th>Subsidy Type</th>
<th>Treatment</th>
</tr>
</thead>
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<tr>
<td>Heavy industry, Manufacturing, Energy, Transportation, Urban Infrastructure and Utility (with a 10 years contract)</td>
<td>Corporate Income Tax</td>
<td>1) 100% exemption in year 1 and 2. 2) 50% exemption from year 3 to 5. 3) From year 3 to 5, the local share of corporate income tax will be fully refunded. 4) From year 6 to 10, half of the local share of corporate income tax will be refunded.</td>
<td>New project, purchased or invested manufacturing enterprises</td>
<td>Corporate Income Tax</td>
<td>1) First three years, half of the local share of corporate income tax will be refunded. 2) High-tech projects with 100 million RMB investments: the local share of corporate income tax will be fully refunded.</td>
</tr>
<tr>
<td>Science, Education, Logistics and Other Tertiary Industry.</td>
<td>Corporate Income Tax</td>
<td>1) From year 1 to 3, the local share of corporate income tax will be fully refunded. 2) During year 4 and 5, half of the local share of corporate income tax will be refunded.</td>
<td>Tertiary industry investment (with a minimum of 30 million RMB investment)</td>
<td>Corporate Income Tax</td>
<td>In the first year, the local share of corporate income tax will be fully refunded. In the 2nd and 3rd years, half of the local share of corporate income tax will be refunded.</td>
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<tr>
<td>Agriculture, and Agricultural Product Processing</td>
<td>Agricultural Tax, Special Agricultural Product Tax</td>
<td>1) First five years, 100% tax revenue will be refunded. 2) From year 6 to 10, half of this tax revenue will be refunded.</td>
<td>Farming, Husbandry, Fruit production.</td>
<td>Fiscal Subsidy</td>
<td>For the first three years, 30% of the firms’ fiscal contribution will be refunded.</td>
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<td>Corporate Income Tax</td>
<td>1) 100% exemption in year 1 and 2. 2) From year 3 to 5, the local</td>
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<tr>
<td>All Sectors</td>
<td>1) Firms that export 5 to 10 million USD worth products: 30,000 RMB bonus. 2) For those above 10 million USD: 100,000 RMB bonus.</td>
<td>For projects located in five northern counties, 50% fiscal contribution to the prefecture will be refunded during the first five years.</td>
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<tr>
<td>Exhibition Subsidy</td>
<td>Export-oriented firms who joined the foreign exhibition tour organized by the city government will be subsidized: 40% total cost in US, Canada, and EU; 50% in Africa, West Asia, East Europe, and Latin America; others 30%.</td>
<td>Discounted Fees</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>All Sectors</td>
<td>Source: Xianyang Municipal Party Committee, Municipal Government Regulations on Promoting the Investment Attraction Work. Jan. 30th 2003. Shaoxing Municipal Government Suggestions on Encouraging FDI and Expanding the Export. Oct. 23rd 2002.</td>
<td>1) Water resource, pollution, over-standard pollution, water treatment, and urban utility fees and surcharges will be exempted for three years. 2) Fees collected by national or provincial governments will be levied at the lowest rates. 3) From year 3 to 6, municipal fees will be levied at the lowest rates.</td>
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Table 8: Cox Models Predicting the Infrastructure Privatization

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<td>-0.01 **</td>
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<td>-0.01 ***</td>
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<td>-0.01 †</td>
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<td>0.05 **</td>
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<td>Cargo Transportation</td>
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<td>*** 0.01</td>
<td>&quot; 0.01</td>
<td>** 0.01</td>
<td>&quot; 0.01</td>
<td>*** 0.01</td>
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</tr>
<tr>
<td>Per Capita GDP</td>
<td>-0.01 *** -0.01 *** -0.01 *** -0.01 *** -0.01 *** -0.01 *** -0.01 *** -0.01 ***</td>
<td></td>
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<td>Passenger Transport</td>
<td>-0.01 ** -0.01 *** -0.01 *** -0.01 *** -0.01 *** -0.01 *** -0.01 *** -0.01 **</td>
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<td>AIC</td>
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<td>89</td>
<td>151</td>
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<td>12</td>
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<td>3,142</td>
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</tbody>
</table>

NOTE. † p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001. (two-tailed tests); italicized numbers are Huber-White standard errors.
Table 9: Post-estimation Analysis for Models Predicting Infrastructure Privatization

<table>
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<tr>
<th></th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
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<td>Hat sq.</td>
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<td>-0.09</td>
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<td>0.02</td>
<td>0.10</td>
<td>0.02</td>
<td>0.03</td>
<td>0.08</td>
<td>0.02</td>
<td>0.08</td>
</tr>
</tbody>
</table>

NOTE. † p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001. (two-tailed tests)
Table 10: Random-Effects Probit Model Predicting Infrastructure Privatization

<table>
<thead>
<tr>
<th>Fixed Part</th>
<th>( \beta )</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per Capita GDP</td>
<td>0.11</td>
<td>0.05</td>
</tr>
<tr>
<td>Industrialization</td>
<td>0.05</td>
<td>0.03</td>
</tr>
<tr>
<td>Industrialization (square)</td>
<td>-0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Urbanization</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Transfer Dependency Ratio (TDR)</td>
<td>-2.02</td>
<td>1.13</td>
</tr>
<tr>
<td>Political Status</td>
<td>3.39</td>
<td>1.67</td>
</tr>
<tr>
<td>Provincial Pressure</td>
<td>-0.06</td>
<td>0.14</td>
</tr>
<tr>
<td>Prov. Press * TDR</td>
<td>-0.34</td>
<td>0.47</td>
</tr>
<tr>
<td>Prov. Press * Political Status</td>
<td>0.06</td>
<td>0.42</td>
</tr>
<tr>
<td>Innovation Exposure</td>
<td>0.15</td>
<td>0.06</td>
</tr>
<tr>
<td>Peer Pressure</td>
<td>0.06</td>
<td>0.01</td>
</tr>
<tr>
<td>Normative Pressure</td>
<td>0.36</td>
<td>0.20</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Asset Investment</td>
<td>0.64</td>
<td>0.19</td>
</tr>
<tr>
<td>Wage</td>
<td>-0.12</td>
<td>0.08</td>
</tr>
<tr>
<td>Population</td>
<td>0.14</td>
<td>0.15</td>
</tr>
<tr>
<td>Passenger Transportation</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Cargo Transportation</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Time</td>
<td>0.61</td>
<td>0.13</td>
</tr>
<tr>
<td>Constant</td>
<td>-14.73</td>
<td>1.79</td>
</tr>
</tbody>
</table>

| Random Part | | |
| \( \psi \) | 79.152 | |
| \( \rho \) | 0.98 | |
| Log Likelihood | -709 | |

| LR test | | |
| Chibar2(01) | 2300 | |
| Prob.>Chibar2 | 0.00 | |
| Wald Chisq (DF=18) | 629 | |
| AIC | 1457 | |
| N | 4632 | |

NOTE. † \( p < 0.1 \), * \( p < 0.05 \), ** \( p < 0.01 \), *** \( p < 0.001 \). (two-tailed tests)
Table 11: Revenue Assignments between the Central and Local Governments

<table>
<thead>
<tr>
<th>I. Taxes exclusively assigned to the Central Government</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Excise taxes</td>
<td></td>
</tr>
<tr>
<td>2. Taxes collected from the Ministry of Railroads and from the headquarters of banks and insurance companies</td>
<td></td>
</tr>
<tr>
<td>3. Income taxes, sales taxes and royalties from offshore oil activities of foreign companies and joint ventures</td>
<td></td>
</tr>
<tr>
<td>4. Energy and transportation fund contribution</td>
<td></td>
</tr>
<tr>
<td>5. Seventy percent of the three sales taxes collected from enterprises owned by the Ministry of Industry, the Ministry of</td>
<td></td>
</tr>
<tr>
<td>Power, SINOPEC (petrochemicals), and the China nonferrous metals companies.</td>
<td></td>
</tr>
<tr>
<td>6. All customs duty, VAT and excise taxes on imports</td>
<td></td>
</tr>
<tr>
<td>7. Enterprise income tax collected from banks and other financial institutions.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. Taxes shared between the central and local governments</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Value-added tax (75 percent central, 25 percent provincial)</td>
<td></td>
</tr>
<tr>
<td>9. Natural resource taxes (coal, gas, oil, and other minerals if the enterprises are fully Chinese owned.)</td>
<td></td>
</tr>
<tr>
<td>10. Construction tax on the cost of construction of buildings that are outside the plan and financed from retained earnings</td>
<td></td>
</tr>
<tr>
<td>11. Salt tax</td>
<td></td>
</tr>
<tr>
<td>12. Industrial and commercial tax, and income tax levied on foreign and joint venture enterprises.</td>
<td></td>
</tr>
<tr>
<td>13. Security and exchange tax (50 percent central, 50 percent provincial) – added in late 1990s</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>III. Taxes exclusively assigned to local governments</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>16. Business (gross receipts) tax falling on sectors not covered by VAT (transportation and communications, construction,</td>
<td></td>
</tr>
<tr>
<td>finance and insurance, post and telecommunications, culture and sports, entertainment, hotels and restaurants, and other)</td>
<td></td>
</tr>
<tr>
<td>17. Rural market (stall rental) trading tax</td>
<td></td>
</tr>
<tr>
<td>18. The urban maintenance and construction tax (a surcharge on the tax liability of enterprises for business tax,</td>
<td></td>
</tr>
<tr>
<td>consumption tax, and VAT)</td>
<td></td>
</tr>
<tr>
<td>19. The urban land use tax</td>
<td></td>
</tr>
<tr>
<td>20. Vehicle and vessel utilization tax</td>
<td></td>
</tr>
<tr>
<td>21. Thirty percent of the product and VAT revenues collected from enterprises owned by the Ministry of Industry, Minis</td>
<td></td>
</tr>
<tr>
<td>try of Power, SINOPEC, and the China nonferrous metals companies</td>
<td></td>
</tr>
<tr>
<td>22. Value-added tax on land</td>
<td></td>
</tr>
<tr>
<td>23. Education surtax</td>
<td></td>
</tr>
<tr>
<td>24. Entertainment and slaughter taxes</td>
<td></td>
</tr>
<tr>
<td>25. Property tax</td>
<td></td>
</tr>
<tr>
<td>26. Surtax on collective enterprises</td>
<td></td>
</tr>
<tr>
<td>27. Resources tax</td>
<td></td>
</tr>
<tr>
<td>28. Fixed asset investment tax (discontinued in 1999)</td>
<td></td>
</tr>
<tr>
<td>29. Fines for delinquent taxes.</td>
<td></td>
</tr>
</tbody>
</table>

127
6. Variation among Arrangements and Sectors

6.1 Variation among Contractual Arrangements

Private investments in infrastructure sectors can take many different forms and participate in different sectors. When choosing which sector to liberalize and through what means, local states have to consider their own capacities and sectoral specific characteristics. In terms of investment arrangements, a PPI project can take the form of management and lease contract, concessions, greenfield projects, or divestiture. These arrangements differ in the demand for administrative and regulatory resources, as well as in their degree of dependence on private sector participation.

The choice between concessions and divestitures depends largely on whether it is more desirable to regulate private sector involvement through contractual arrangements or through a regulatory agency. In most developing countries and transitional economies, the institutional environment is uncertain and constantly evolving, therefore the local states find it relatively easier to regulate the private partners through contracts, because the contract terms can be detailed in advance and the ownership does not change (Bellier and Zhou 2003; World Bank 1994).

Table 12 shows the major models along a continuum of private sector involvement, from the least (Management and Lease Contract) to the most (Divestiture). For a given city, the choice of arrangement types reflects its social and political considerations, investment needs, and more importantly its openness to private
participation. For example, in many countries the constitution prohibits private ownership of public goods. Officials in these countries sometimes have to choose concessions or BOT method to avoid the legal barriers (Bellier and Zhou 2003).

For the private investors, choosing from different arrangements is also driven by their perception of investment risks or profitability associated with a certain project. They can choose to provide expertise or technology and bears no management or investment risks, to be more actively involved by being responsible for certain operation or management risks, or to be fully involved through privatizing the entire project and taking various risks.

Among these four types of arrangements, the most conservative type is management and lease contract (MLC). Under such contracts, governments still maintain their ownership and investment stake. For management contracts, the government pays a private operator for a fee. The private operator takes on the operational risk. For leasing contracts, the government leases the assets to a private operator for a fee. The private operator takes on the operational risk. This model is usually adopted when governments need the private management experience and technology, but are reluctant to relinquish ownership due to their desire to maintain control or unwillingness to implement needed reforms.

The next higher level of private participation model is concession. In this model, a private entity manages a public service for a given period during which it assumes significant investment risks and some commercial risks. The private entity is responsible
for delivering services to users according to terms and conditions specified in the concession contract. The public entity still owns the assets. This model is popular in water and transportation sectors.

Greenfield contracts give private investors partial ownership rights for a given period, and allow private investors to play a larger role in management and operation of the projects. Under such contracts, a private entity or a public-private joint venture builds and operates a new facility for the period specified in the project contract, at the end of the contract, the private entity will transfer the ownership of the facility to the government. For these contracts, a government usually provides minimum revenue guarantee. Most greenfield projects in China take the build-operate-transfer (BOT) scheme.

The highest level of private participation is divestitures. In this model, a private entity buys an equity stake in a state-owned enterprise through an asset sale, public offering, or mass privatization. In this model, the participants can involve both foreign and domestic funding. This model is most frequently used during the state sector reform in late 1990s, when central government adopted the “grasp big and let the small go” strategy. Local states at various levels followed this guideline and sold their money-losing state enterprises to various nonstate investors.

Among these four types of arrangements, the most common private participation models in China are concession and greenfield projects. The major advantage of these two models is that they are neither too conservative nor too radical. They give private
entrepreneurs considerable incentives, while allow state to maintain its control over the ownership of state assets. Figure 7 gives the annual number of projects by PPI forms. It shows that during the late 1990s, the three major models: concession, greenfield project, and divestitures are competing models. Although the former two models have slightly more applications, their overwhelming advantage over divestiture has not been established until China entered the World Trade Organization in 2001. After 2001, the former two types of projects increase dramatically. This trend suggests that, after a long period of experiment and comparison, the state has eventually found the ideal arrangement types that can balance market power and authoritarian control over the strategic economic sectors.

![Figure 7: Cumulative Number of Projects by PPI Types](http://ppi.worldbank.org)

Table 12: Types of PPI Arrangements

<table>
<thead>
<tr>
<th>Ownership of assets</th>
<th>Management contract</th>
<th>Lease</th>
<th>Concession</th>
<th>Greenfield</th>
<th>Divestiture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>Public</td>
<td>Public</td>
<td>Public</td>
<td>Public/Private</td>
<td>Private</td>
</tr>
<tr>
<td>Capital investments</td>
<td>Public</td>
<td>Shared</td>
<td>Private</td>
<td>Private</td>
<td>Private</td>
</tr>
<tr>
<td>Operational efficiency</td>
<td>Limited</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>New services</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Typical duration</td>
<td>1-5 Years</td>
<td>8-15 Years</td>
<td>25-30 Years</td>
<td>20-30 Years</td>
<td>Indefinite unless limited by license</td>
</tr>
</tbody>
</table>

Source: (Bellier and Zhou 2003: 2)

Table 13: Number of Projects and Investment Amount by Types and Sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Management and lease contract</th>
<th>Concession</th>
<th>Greenfield project</th>
<th>Divestiture</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>0</td>
<td>5</td>
<td>100</td>
<td>43</td>
<td>148</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>0</td>
<td>39</td>
<td>34</td>
<td>5</td>
<td>78</td>
</tr>
<tr>
<td>Transportation</td>
<td>1</td>
<td>69</td>
<td>113</td>
<td>37</td>
<td>220</td>
</tr>
<tr>
<td>Water and sewerage</td>
<td>8</td>
<td>97</td>
<td>190</td>
<td>9</td>
<td>304</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9</strong></td>
<td><strong>210</strong></td>
<td><strong>437</strong></td>
<td><strong>94</strong></td>
<td><strong>750</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sector</th>
<th>Amount of investments (Year 1990-2008, in USD million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>0 335 21,401 4,882 26618</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>0 768 3,327 174 4269</td>
</tr>
<tr>
<td>Transportation</td>
<td>1 8,530 28,392 10,526 47,449</td>
</tr>
<tr>
<td>Water and sewerage</td>
<td>543 4,067 3,319 498 8,427</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>544 13,770 56,439 16,080 86,763</strong></td>
</tr>
</tbody>
</table>

6.2 Variation among Sectors

In addition to the choice of proper types of arrangements, choosing the proper starting point, in other words a proper sector to start with, is also important for liberalization decisions. Different infrastructure sectors vary in terms of their “marketability”, which is determined by the production technology that leads to natural monopoly, potential of competition, the public nature of consumption, constraints on cost recovery, distributional concerns, and so forth (World Bank 1994).

Table 14 shows the differences between sectors and segments. The marketability index is the average of the scores (range from 1 to 3) on five characteristics. In each sector, different segments usually have different scores. Private investments are firstly allowed to participate into segments that are easily to be unbundled from other segments or industries, and the state is most cautious in granting private investments in participating into sectors of monopolistic nature. For the state, the liberalization decisions are also constrained by strategic importance of a certain infrastructure sector to the public interests.

The electricity industry has three segments, electricity generation, transmission and distribution. Among these three, electricity generation is easier to be separated (unbundled) from other segments. Multiple companies can be allowed to provide electricity on a competitive basis. However, the transmission and distribution involves more monopolistic nature, so the liberalization of these segments has low priority in the
state’s neoliberal agenda (World Bank 1994). Moreover, electricity generation is
availability-based project in which private investors typically build a power generation
plant and contract to sell the electricity generated to a public owned power utility or
power distribution company. The public authority usually assumes part of the demand
risk by making a minimum payment for a service (Annez 2007; World Bank 1994).

Since the end users are not directly paying for the services, the actual end user
market size or purchase power will not significantly affect the privatization of the power
plant. In addition, these projects will be built in places where the equipment, raw
material, or a system is available, so the implementation of the project is less tightly
connected to the social economic characteristics of the facility site.

Urban transportation and water and sewage services can be provided by
commercial companies. Local states can delegate the service to a private company via a
management, lease, or concession contract. Public monitoring is necessary to ensure
access of low income users and to protect public health and environmental quality
(World Bank 1994). These types of services are user-fee projects, in which the private
party recoups its investment, operating, and financing costs and its profit by charging
the public a user fee. The demand risk may be allocated in various ways; for example,
the public authority may guarantee to purchase a minimum level of usage or making
payments to the private sector under certain conditions (Annez 2007; Grimsey and
Lewis 2004). Since a large share of the project costs will be covered by user fees, local
market size and residents’ purchase power are crucial to the successful implementation of these projects.

These sector-specific or arrangement-specific characteristics may have strong influences on the feasibility utilize private investments or expertise. In this chapter, I will explore the mechanisms that drives the liberalization process in particular sectors or taken specific arrangement types. It is expected that the liberalization decisions can be affected by differences in local states’ capacities, by sector-specific characteristics, and by the evolving national policy framework.

6.3 Method

The liberalization decisions in certain sectors or in certain arrangements are likely to be affected by decisions in related sectors or arrangements. Therefore, when estimating the adoption rate in a given sector or a given arrangement, one has to find ways to account for the influences of by the adoptions in related sectors or arrangements.

In this section, I use multivariate probit model to estimate the effects of the covariates on multiple possible policy alternatives and assess the correlations among the error terms of different equations. In these models, the number of equations equals to the number of sectors or arrangement types. The dependent variable is binary, which takes a value of one if a city introduced a PPI project through a certain arrangement or in a certain field by the end of a given year, and zero otherwise. More formally, to
compare across sectors or types of arrangements I estimate

\[ y_{i1}^* = \beta_{i1}' X_{i1} + \epsilon_{i1}, \quad \text{where} \quad y_{i1} = \begin{cases} 1 & \text{if } y_{i1}^* > 0 \\ 0 & \text{otherwise} \end{cases} \quad (7) \]

\[ y_{i2}^* = \beta_{i2}' X_{i2} + \epsilon_{i2}, \quad \text{where} \quad y_{i2} = \begin{cases} 1 & \text{if } y_{i2}^* > 0 \\ 0 & \text{otherwise} \end{cases} \quad (8) \]

\[ y_{i3}^* = \beta_{i3}' X_{i3} + \epsilon_{i3}, \quad \text{where} \quad y_{i3} = \begin{cases} 1 & \text{if } y_{i3}^* > 0 \\ 0 & \text{otherwise} \end{cases} \quad (9) \]

\[ y_{i4}^* = \beta_{i4}' X_{i4} + \epsilon_{i4}, \quad \text{where} \quad y_{i4} = \begin{cases} 1 & \text{if } y_{i4}^* > 0 \\ 0 & \text{otherwise} \end{cases} \quad (10) \]

where \( X_{i_m}, m=1, 2, 3, 4 \) is a matrix of covariates identical among cities, and \( \beta_m \) is a vector of parameters. Besides:

\[ E[\epsilon_{i1}] = E[\epsilon_{i2}] = E[\epsilon_{i3}] = E[\epsilon_{i4}] = 0 \]

\[ Var[\epsilon_{i1}] = Var[\epsilon_{i2}] = Var[\epsilon_{i3}] = Var[\epsilon_{i4}] = 1 \]

\[ \text{Cov}[\epsilon_{ij}, \epsilon_{ik}] = \text{Cov}[\epsilon_{ik}, \epsilon_{ij}] = \rho_{jk} = \rho_{kj}, \quad j, k \in [1,4] \]

The model has a structure similar to that of a seemingly unrelated regression (SUR) model, except that the dependent variables are binary outcomes. The model is estimated using a simulated maximum likelihood estimator (in particular the Geweke-Hajivassiliou-Keane (GHK) simulator is used) which is asymptotically consistent and equivalent to the true maximum likelihood estimator as the ratio of the square root of the sample size to the number of draws tend to zero (Cappellari and Jenkins 2003). I cluster the standard errors by city in order to address the lack of independence of multiple observations for a given city at multiple time points by using the Huber-White (Heteroscedasticity-consistent) estimator.
For each of the four sectors (or arrangements) the probability of adopting liberalization decisions is unconditional on the probability that each of the other three sectors (or arrangements) does or does not adopt the policy, except for the presence of unpredictable factors of correlation.

6.4 Results

6.4.1 PPI Type-Specific Models

Table 15 presents the estimations from the PPI type-specific multivariate probit models. The likelihood ratio statistics testing the hypothesis that the four equations are independent is rejected, suggesting that some of these equations are significantly correlated. In particular, the correlation coefficients suggest that the random disturbance in the divestiture arrangements equation is positively and significantly associated with that in the concession arrangements. This suggests that these two equations are possibly influenced in the same direction by unmeasured effects. Therefore, it lends support to the use of multivariate probit models.

The model results provide partial support for the internal determinant model. The coefficients for per capita GDP are positive and significant for concession and greenfield arrangements, but not for management and lease, and divestiture arrangements. Moreover, the industrialization and urbanization rates also show no significant influence on the adoption of certain PPI arrangements. This suggests that the choices of financial arrangement types are less driven by local economic context.
The models show significant impacts of local government capacities on the choice of PPI arrangement types. The coefficients of the political status show that higher status cities are more likely to adopt concession, greenfield, and divestiture arrangements. In addition, the TDR is positively associated with the adoption of management and lease, and negatively associated with greenfield and divestiture arrangements. A potential explanation of such patterns is that the higher degree of private involvement depends heavily on the institutional stability and local states’ political autonomy. The degree of private involvement in infrastructure industries increases as the local states’ political capacity and fiscal capacity increases. A higher status city can give investor greater assurance and maintain policy stability. Local states’ accountability and administrative transparency will then reduce the political risks that private investors may encounter. Similarly, high fiscal capacity makes local states more financially credible. For private investors, local states’ financial creditworthiness means lower investment risks. Moreover, for banks, if a fiscally creditworthy city provides guarantee for certain private participated projects, then the banks are more willing to issue loans to such projects.

Regarding the influence of the provincial governments, the model results suggest that, unlike the land banking case, the local states’ choices of contractual arrangements are less likely to be affected by the policy changes at the provincial level. I argue this is probably due to the differences in the nature of provincial pressure. In the land banking case, the pressure from provincial government is coercive in nature and takes the form
of administrative order. This direct coercion has forcefully affected local states’ reform decisions. However, in the infrastructure liberalization case, the provincial governments exert indirect influence though changing the macro institutional environments and encouraging local states to open local infrastructure markets to private investments. Since making a contract depends on both local states’ and private investors’ will, the provincial governments’ influence alone can hardly change the private investors’ evaluation of a project’s risks and benefits.

The model also shows that the regulatory and normative environments tend to favor certain types of arrangements but not others. In terms of the regulatory framework, both the central and provincial governments are increasingly advocating local states to encourage private investors to participate actively in many fields while maintaining the certain control over the strategically important sectors or assets. As a result, the management and lease arrangement are less popular because private investors only play a limited role in the project and do not bring in external investments. Therefore, over time, the normative environment favors the more liberal types of arrangements. This assertion is supported by the estimated coefficients of the normative pressure.

In terms of the effects of intercity competition, the models suggest that the competitions among peer cities are more effective in promoting the adoption of a given form of contractual arrangements than the competitions among adjacent cities. As in
other diffusion processes, the regional diffusion model is partially supported by the model estimates. The exposure to the adoption of given PPI types is positively and significantly associated with the adoption of greenfield projects. Moreover, peer cities’ innovation behaviors are shown to be influential on a focal city’s adoption decisions. This effect is significant for all four types of arrangements.

In addition to the control variables that have been mentioned in the previous section. In this model I also controlled the marketability of a project in order to account for the sectoral differences in the potential of marketization. The coefficient estimates show that more marketable projects are more likely to attract private investments regardless arrangement types.

6.4.2 Sector Specific Results

Estimation results from the sector specific models are presented in Table 16. The multivariate probit models allow researchers to estimate four separate equations, controlling for the presence of unobserved factors which many cause some correlation among them. The likelihood ratio statistics testing the hypothesis that the four equations are independent is rejected, suggesting that some of these equations are significantly correlated. Specifically, the correlation coefficients suggest that the random disturbance in the transportation equation is positively and significantly associated with that in the electricity sector. And the disturbance terms of the water & sewage and natural gas sectors are also positively and significantly correlated. This suggests that these two pairs
of equations are influenced in the same direction by unmeasured effects. Therefore, it lends support to the use of multivariate probit models.

Local social and economic conditions seem to be more important for reforms in transportation and water and sewage sectors. In particular, the models show that the local residents’ living standard as measured by per capita GDP is positively associated with the privatization of transportation and water and sewage sectors. And the population size is positively associated with the dependent variable in the water and sewage sector model. This is probably because these user-fee financed projects are more feasible in cities with larger markets where the demand for better infrastructures and utility services are high and where the local residents’ purchasing power are greater.

Moreover, the industrialization rate shows a negative and curvilinear relationship with the dependent variables. This suggests that the marginal promotional effects of the infrastructure needs originated from the industrialization process are declining. In addition, urbanization rate shows no significant effect on the privatization decisions. All these evidence suggests that the effects of local social and economic characteristics are heterogeneous across different sectors.

The models also show that a city’s political and fiscal capacities are also important determinants for liberalization decisions. The coefficient estimates for cities’ political status are positive across four models, but only significant for transportation sectors. This lends partial support to the claim that as the city have more policy making
freedom, it is more likely to adopt new policies. In terms of local states’ fiscal capacity, the models show no significant effects.

I hypothesized that when the provincial level infrastructure liberalization policies become mature and complete, local states are more likely to follow the provincial policy guidelines and allow private investments to take over or build infrastructure facilities. However, the models show that the provincial pressure is only significant in the natural gas sector but not in other sectors. As I argued this is probably due to the fact that provincial governments only have indirect influence on the local states’ privatization decisions.

This non-coercive provincial pressure does not impose mandatory adoption pressures on local states. Therefore, the local states’ resource dependence relations are less likely to moderate the effects of this type of provincial pressure. As the model for water and sewage sector shows that the interaction effect between transfer dependency ratio and provincial pressure is negative, suggesting that the provincial pressure does not have heterogeneous effects between fiscally weak and strong cities. Cities that are low in fiscal power are still less likely to implement private participated projects even when the provincial governments advocate for these measures. Similarly, the interaction terms between provincial pressure and a city’s political status is positive and significant, suggesting that cities with higher political status are more likely to privatize their transportation sectors as compared to low political status cities regardless the
magnitude of provincial pressure.

The regional diffusion model is partially supported by the model estimates. The coefficient of innovation exposure is significant for transportation sector and is positive for natural gas and water and sewage sector. Compared with the innovation exposure, adoptions by structurally equivalent cities have greater impact on the adoption decisions of a focal city. This indicates that the effects of innovation exposure are more heterogeneous across sectors than the effects of the peer pressure.

Normative pressure hypothesis is also supported by the model estimates. The normative pressure is positively and significantly associated with the adoption likelihood in electricity, transportation and water sectors.

### 6.5 Discussion and Conclusions

I argue that the underlying mechanisms of local states’ privatization decisions are likely to vary by infrastructure sectors and by different types of contractual arrangements. In this chapter, I explore the question of how the effects of different mechanisms vary across different sectors or contractual arrangements by comparing the effects of the determinants in four different private participation arrangements (management and lease, concession, greenfield, and divestiture) and then in four different infrastructure sectors (electricity, gas, transportation, water and sewage).

Regarding the effects of local social and economic characteristics, I find that the
marketability of a project can significantly increase the likelihood of private participation in all infrastructure sectors. However, the effects of local social and economic characteristics are more heterogeneous across sectors. Sectors that are more closely linked to local residents’ daily life such as transportation and water and sewage are more likely to be affected by local market size and local residents’ purchasing power. Whereas in sectors such as electricity generation and natural gas transmission, the location of the facility may be geographically distant from the locations of the end users, therefore they are less likely to be affected by the characteristics of the cities where they locate.

In terms of local resource availability, I find that local states’ fiscal and political capacities have diverse impacts on the implementation of different types of contractual arrangements. Private investors are always keen to the stability and transparency of local legal and regulatory framework and the local states’ ability to ensure the effectiveness of long-term contracts. To successfully implement a project, local states have to pass special laws or regulations to allow the public sector to contract with private bodies for the delivery of services. They also need to have certain technical capacity and autonomy. In addition, local states can provide fiscal subsidies or financial guarantees to private investors to reduce the project’s financial risks.

Generally speaking, cities with greater fiscal power and higher political autonomy are more capable in providing policy as well as financial assurance to private
investors. As a result the private investor may be more likely to commit more resources and take greater responsibilities or risks. The results from the contract type specific models show that local states’ political status can significantly improve the likelihood of forming greenfield and divestiture contracts between private and public entities. And transfer dependency ratio increases the likelihood of adopting the management and lease contracts in which private parties does not make substantial investment commitment.

In addition, I find that the effects of institutional forces also exhibit a certain degree of variation. For one thing, the normative pressure from the policy professional communities tends to favor the adoption of certain types of contractual arrangements. The evolution of professional ideas on liberalization measures gradually favors the more liberalized contractual arrangements which allow private investors to play a greater role in infrastructure and urban utility service provision. As a result, the adoption of more liberal forms of arrangements such as concession, greenfield, and divestiture are positively associated with this normative force, while the normative force is negatively associated with the adoption of management and lease arrangements.

For another, the effects of peer pressure seem to be universal across different sectors and types of arrangements, while the innovation exposure is significant in certain types of arrangements and sectors. These two mechanisms are related in that they both model the effects of intercity competition, they differ in that the peer pressure originates
from the competitions among structurally equivalent cities that are affiliated to the same provincial government, while the innovation exposure focuses more on the competitions among geographically adjacent cities. The model results suggest that the former type of competition is more effective in facilitating the adoption of market-oriented practices.
Table 14: Feasibility of Private Sector Delivery by Infrastructure Segments

<table>
<thead>
<tr>
<th>Primary</th>
<th>Segment</th>
<th>Potential for competition</th>
<th>Characteristics of good or service</th>
<th>Potential for cost recovery from user charges</th>
<th>Public service obligations</th>
<th>Environmental externalities</th>
<th>Marketability index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>Power generation</td>
<td>High</td>
<td>Private</td>
<td>High</td>
<td>Few</td>
<td>High</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>Power transmission</td>
<td>Low</td>
<td>Club</td>
<td>High</td>
<td>Few</td>
<td>Low</td>
<td>2.4</td>
</tr>
<tr>
<td>Gas</td>
<td>Gas distribution</td>
<td>Medium</td>
<td>Private</td>
<td>High</td>
<td>Many</td>
<td>Low</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>Gas production, transmission</td>
<td>High</td>
<td>Private</td>
<td>High</td>
<td>Few</td>
<td>Low</td>
<td>3.0</td>
</tr>
<tr>
<td>Transport</td>
<td>Urban rail</td>
<td>High</td>
<td>Private</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>Primary and secondary roads</td>
<td>Medium</td>
<td>Club</td>
<td>Medium</td>
<td>Few</td>
<td>High</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Urban roads</td>
<td>Low</td>
<td>Common</td>
<td>Medium</td>
<td>Few</td>
<td>High</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>Port and airport facilities</td>
<td>Low</td>
<td>Club</td>
<td>High</td>
<td>Few</td>
<td>High</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Port and airport services</td>
<td>High</td>
<td>Private</td>
<td>High</td>
<td>Few</td>
<td>High</td>
<td>2.6</td>
</tr>
<tr>
<td>Water</td>
<td>Urban piped network</td>
<td>Medium</td>
<td>Private</td>
<td>High</td>
<td>Many</td>
<td>High</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>Non-piped systems</td>
<td>High</td>
<td>Private</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
<td>2.4</td>
</tr>
<tr>
<td></td>
<td>Piped sewerage and treatment</td>
<td>Low</td>
<td>Club</td>
<td>Medium</td>
<td>Few</td>
<td>High</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>Condominial sewerage</td>
<td>Medium</td>
<td>Club</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>On site disposal</td>
<td>High</td>
<td>Private</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
<td>2.4</td>
</tr>
</tbody>
</table>

### Table 15: Multivariate Probit Models on Different Types of PPI Arrangement

<table>
<thead>
<tr>
<th></th>
<th>Mgmt. &amp; Lease</th>
<th>Concession</th>
<th>Greenfield</th>
<th>Divestiture</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>SE</td>
<td>$\beta$</td>
<td>SE</td>
</tr>
<tr>
<td>Per Capita GDP (log)</td>
<td>0.712</td>
<td>0.452</td>
<td>0.620</td>
<td>0.239 **</td>
</tr>
<tr>
<td>Industrialization</td>
<td>0.014</td>
<td>0.009</td>
<td>0.001</td>
<td>0.007</td>
</tr>
<tr>
<td>Urbanization</td>
<td>0.002</td>
<td>0.010</td>
<td>0.009</td>
<td>0.006</td>
</tr>
<tr>
<td>Transfer Dependency Ratio (TDR)</td>
<td>3.440</td>
<td>0.914 ***</td>
<td>-0.600</td>
<td>0.487</td>
</tr>
<tr>
<td>Political Status</td>
<td>0.626</td>
<td>0.445</td>
<td>0.590</td>
<td>0.307</td>
</tr>
<tr>
<td>Innovation Exposure</td>
<td>0.023</td>
<td>0.026</td>
<td>0.014</td>
<td>0.014</td>
</tr>
<tr>
<td>Provincial Pressure</td>
<td>-0.170</td>
<td>0.174</td>
<td>0.067</td>
<td>0.061</td>
</tr>
<tr>
<td>Prov. Press $\times$ TDR</td>
<td>-0.669</td>
<td>0.297 *</td>
<td>0.318</td>
<td>0.197</td>
</tr>
<tr>
<td>Prov. Press $\times$ Political Status</td>
<td>0.290</td>
<td>0.234</td>
<td>0.389</td>
<td>0.102 ***</td>
</tr>
<tr>
<td>Peer Pressure</td>
<td>0.014</td>
<td>0.007 *</td>
<td>0.012</td>
<td>0.004 **</td>
</tr>
<tr>
<td>Normative Pressure</td>
<td>-0.158</td>
<td>0.073 *</td>
<td>0.248</td>
<td>0.083 **</td>
</tr>
<tr>
<td>Marketability</td>
<td>0.401</td>
<td>0.160 *</td>
<td>0.728</td>
<td>0.084 ***</td>
</tr>
</tbody>
</table>

**Control Variables**

<table>
<thead>
<tr>
<th>Control Variable</th>
<th>$\beta$</th>
<th>SE</th>
<th>$\beta$</th>
<th>SE</th>
<th>$\beta$</th>
<th>SE</th>
<th>$\beta$</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Asset Investment</td>
<td>0.001</td>
<td>0.025</td>
<td>0.027</td>
<td>0.032</td>
<td>0.080</td>
<td>0.041 *</td>
<td>0.018</td>
<td>0.032</td>
</tr>
<tr>
<td>Population</td>
<td>0.055</td>
<td>0.035</td>
<td>0.104</td>
<td>0.035 **</td>
<td>-0.044</td>
<td>0.031</td>
<td>0.073</td>
<td>0.041 *</td>
</tr>
<tr>
<td>Passenger Transportation</td>
<td>0.004</td>
<td>0.001 ***</td>
<td>-0.002</td>
<td>0.001 †</td>
<td>0.003</td>
<td>0.002 *</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>Cargo Transportation</td>
<td>-0.004</td>
<td>0.003</td>
<td>0.000</td>
<td>0.002</td>
<td>-0.001</td>
<td>0.002</td>
<td>-0.002</td>
<td>0.002</td>
</tr>
<tr>
<td>Time</td>
<td>-0.075</td>
<td>0.060</td>
<td>-0.021</td>
<td>0.039</td>
<td>0.010</td>
<td>0.036</td>
<td>0.019</td>
<td>0.041</td>
</tr>
<tr>
<td>Constant</td>
<td>-6.126</td>
<td>0.792 ***</td>
<td>-5.809</td>
<td>0.720 ***</td>
<td>-4.967</td>
<td>0.599 ***</td>
<td>-6.386</td>
<td>0.909 ***</td>
</tr>
</tbody>
</table>

**Estimated Correlation**

<table>
<thead>
<tr>
<th></th>
<th>Concession</th>
<th>Greenfield</th>
<th>Divestiture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concession</td>
<td>-0.039</td>
<td>0.066</td>
<td></td>
</tr>
<tr>
<td>Greenfield</td>
<td>0.039</td>
<td>0.053</td>
<td>0.102</td>
</tr>
<tr>
<td>Divestiture</td>
<td>-0.052</td>
<td>0.072</td>
<td>0.178</td>
</tr>
<tr>
<td>Wald Chi$^2$(68)</td>
<td>2320</td>
<td>AIC 7506</td>
<td></td>
</tr>
<tr>
<td>Log Likelihood</td>
<td>-3802</td>
<td>N 4590</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE.** † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. (two-tailed tests); Huber-White robust standard errors are reported.
Table 16: Multivariate Probit Model on Different PPI Sectors

<table>
<thead>
<tr>
<th></th>
<th>Electricity</th>
<th>Natural Gas</th>
<th>Transportation</th>
<th>Water &amp; Sewage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Capita GDP (log)</td>
<td>0.305</td>
<td>0.030</td>
<td>0.800</td>
<td>0.809</td>
</tr>
<tr>
<td>Industrialization</td>
<td>-0.001</td>
<td>-0.015</td>
<td>-0.020</td>
<td>-0.011</td>
</tr>
<tr>
<td>Industrialization (square)</td>
<td>-0.001</td>
<td>-0.001</td>
<td>-0.001</td>
<td>-0.001</td>
</tr>
<tr>
<td>Urbanization</td>
<td>-0.001</td>
<td>-0.002</td>
<td>0.002</td>
<td>0.005</td>
</tr>
<tr>
<td>Transfer Dependency Ratio (TDR)</td>
<td>-0.526</td>
<td>-0.730</td>
<td>0.155</td>
<td>0.433</td>
</tr>
<tr>
<td>Political Status</td>
<td>0.237</td>
<td>0.277</td>
<td>1.135</td>
<td>0.064</td>
</tr>
<tr>
<td>Innovation Exposure</td>
<td>-0.009</td>
<td>0.022</td>
<td>0.041</td>
<td>0.016</td>
</tr>
<tr>
<td>Provincial Pressure</td>
<td>0.063</td>
<td>0.269</td>
<td>-0.022</td>
<td>-0.008</td>
</tr>
<tr>
<td>Prov. Press × TDR</td>
<td>0.018</td>
<td>0.022</td>
<td>0.034</td>
<td>-0.461</td>
</tr>
<tr>
<td>Prov. Press × Political Status</td>
<td>-0.017</td>
<td>-0.206</td>
<td>0.303</td>
<td>0.033</td>
</tr>
<tr>
<td>Peer Pressure</td>
<td>0.010</td>
<td>0.019</td>
<td>0.014</td>
<td>0.007</td>
</tr>
<tr>
<td>Normative Pressure</td>
<td>0.255</td>
<td>-0.064</td>
<td>0.125</td>
<td>0.103</td>
</tr>
</tbody>
</table>

Control Variables

|                              | Electricity | Natural Gas | Transportation | Water & Sewage |
| Fixed Asset Investment       | 0.024       | 0.073       | -0.026         | 0.052          |
| Population                   | 0.036       | 0.001       | 0.046          | 0.123          |
| Passenger Transportation     | 0.001       | 0.001       | 0.002          | -0.002         |
| Cargo Transportation         | 0.002       | -0.001      | 0.002          | -0.002         |
| Time                         | -0.033      | 0.009       | -0.170         | 0.051          |

Estimated Correlation

|                              | Electricity | Natural Gas | Transportation | Water & Sewage |
| Natural Gas                  | 0.064       | 0.227       | 0.008          | 0.008          |
| Transportation               | 0.227       | 0.030       | 0.144          | 0.040          |
| Water & Sewage               | 0.008       | 0.083       | 0.074          | 4632           |

Wald Chi²(68)                  | 1992        | 10587       | 5215           | -5215          |

NOTE. † p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001. (two-tailed tests); Huber-White robust standard errors are reported.
7. Variation in the Degree of Liberalization

Many local states may find it a great challenge to meet the growing demand for new and better infrastructure services. Due to the lack of financial input from the public sources, local states increasingly turned to the private sector to provide infrastructure services through different contractual arrangements in a variety of sectors such as energy, transportation, and urban utility. For the local states, the private participation increases efficiency in service delivery and quality of operation and management. It also facilitates the transfer of technology and management knowhow from private parties to the public sector, and enables the local states to use private resources to meet the growing needs of investment in infrastructure sectors.

Although private participation is highly attractive for local states, successful implementation of public-private partnership also depends on many important economic, social, political, and administrative conditions. For the private investors, the efficiency of projects can be achieved when the appropriate legal and institutional reform is already in place. The accountability and autonomy of the local states, the transparency of administrative process, and the predictability of the local states’ decisions are all important factors to consider when they make investment decisions or choose the proper entry model (World Bank 1994).

For the local states, they firstly need to decide whether the public-private partnership is viable option for delivering certain services. Many features of the urban infrastructure sectors make them sensitive to political and social pressures. The
infrastructure services are essential to life and livelihood. Pressure from consumers to keep prices low makes it politically difficult for governments to maintain prices that cover costs (Dailami and Klein 1998). When existing subsidies are deep, shifting to cost recovery is not a simple matter. Since urban infrastructure involves political sensitive sectors providing basic services, the risks to the government in offering the private sector a role in operation, supply, or even ownership, are significant (Annez 2007).

Even when private participation turned out to be a viable alternative to provide or improve services, local state still has to make important decisions about how its resources are deployed or the economic costs and political risks of giving up certain rights. In some circumstances, local states face medium or long term fiscal costs or contingent liabilities (such as a guarantee of minimum level of revenue) that may be incurred by unsuccessfully implemented projects. It is likely that the risks and costs of delivering services with certain forms of arrangements may significantly outweigh the perceived social and economic benefits (Farquharson, Mastle, Yescombe, and Encinas 2011). Therefore, the choice of proper contractual arrangements is important for both private and public entities.

In this chapter, I explore the factors that affect the degree of private participation in each city. Specifically, I measure the extent of private involvement in two ways, i.e., the number of private participated project in a city, and the most liberal private participation arrangement that has been adopted in each city.
7.1 The Degree of Private Participation

There is a great variation among the models of private participation. They differ significantly regarding the ownership of capital assets, responsibility of investments, operation and maintenance responsibilities, assumption of risks, and duration of contracts (see Table 17). Four major private participation models can be identified in terms of the extent of private involvement. Ranging from low to high degree of involvement, these models are: management and lease contracts, concessions, greenfield, and divestiture.

The management and lease contract is least complex model and can be implemented in a short time. The private investors do not have ownership or investment stake and is only responsible for managing existing facilities. In some countries, this model is politically and socially more acceptable for water projects and strategic projects like ports and airports. The limitation of this model is that it gives little incentive to private investors, and the public sector assumes almost all risks. Therefore it is more appropriate for the operation of existing infrastructure facilities.

The concession and greenfield models allow local states to transfer more construction or management responsibilities to private sector. Private investors are more likely to increase their input into the projects, and assume a significant share of risks. These models have higher efficiency potential in various phases of projects. However, due to the complexity of the contractual design and implantation, the use of such models requires sufficient prior private participation experience and a developed infrastructure
market. In some circumstances, the public officials fail to specify properly the full dimensions of a service to be purchased from contractors; this inevitably leads to misunderstandings and disputes. And when the public agencies fail to monitor the performance of a private provider, they will leave an opportunity for the private investors to cut corners and lower service quality (Savas 2005).

In addition, financial support from local state is important to make the projects commercially viable. Local states are often required to provide loan guarantees, revenue guarantees, or have enough fiscal power to purchase the services. This may therefore bring local governments explicit or implicit financial risks. The choice between concession and greenfield arrangements is largely contingent on a country’s political and constitutional conditions (Bellier and Zhou 2003).

The highest private commitment can be achieved through divestiture contract. It allows the public sector to transfer the ownership of existing facilities and responsibilities for future expansion. Private investors can acquire partial or full ownership through stock market or a purchase of public assets. When services can be provide competitively, the private ownership may help to improve service delivery efficiency. But when it comes to a system-wide privatization, an effective regulatory system is needed to maintain a competitive environment after privatizing or delegation, and prevent the incumbent provider gradually acquires and exploits monopoly status. Replacing a public monopoly for a private one is not a prescription for better government (Bellier and Zhou 2003; World Bank 1994).
Figure 8: Annual Number of Projects by PPI Types


### 7.2 Hypotheses

Private participation allows local states to provide otherwise unaffordable projects. It helps local states to fill the gap between what local states can afford and what the local economy and residents actually need. Therefore, when the local demand for new services is high local states are more likely to construct more facilities using external resources and allow a greater degree of private involvement which will give private investors more incentives to increase their input (Hammami, Ruhashyankiko, and Yehoue 2006). It thus can be expected that

**Hypothesis 7.1:** A city’s per capita GDP, industrialization rate, and urbanization rate
will be associated positively with the numbers of private participated projects and the extent of private participation.

However, the implementation of private participated projects also depends on the support from local states, which will help to reduce the risks of the private investors (Dailami and Klein 1998). In some circumstances, local states are required to provide a lump sum of cash subsidy to private entities, promise to purchase the services at a stipulated price level, guarantee the minimum revenue level for projects whose revenue depend on end-users payment, agree to repay the loans borrowed by private parties in case of the default by the private entity, or reimburse the private parties’ loss when the currency exchange rate fluctuates (Savas 2005; World Bank 1994). All these forms of financial support pose great challenge to local fiscal capacity. Therefore, fiscally weak cities may have greater difficulties to attract private investments as compared with fiscally better off cities.

**Hypothesis 7.2:** A city’s fiscal strength as measured by transfer dependency ratio will be associated negatively with the number of private participated projects and the extent of private participation.

Although fiscal support or financial guarantees can provide some assurance to investors, a city can do better to attract investors though policy reforms. The institutional environment is crucial to the successful implementation of private participated projects (Dailami and Klein 1998). Local states need to prepare the ground for private sector
participation by developing an appropriate legal, regulatory, institutional, and contractual framework. Private sector investors are always keen to the legal and regulatory framework and the local states’ ability to ensure the effectiveness of long-term contracts. To successfully implement the project, special laws or regulations may be required to allow the public sector to contract with private bodies for the delivery of services. Private investors will always assess local institutional features such as the technical capacity and the autonomy of regulators, the predictability of government decisions, and the transparency of the administrative processes (Farquharson, Mastle, Yescombe, and Encinas 2011).

In the Chinese political system, Cities with higher political status may have higher political autonomy to make institutional or legal changes to adapt the social or economic development needs. Compared with lower status cities, cities that are high in the political ranking tend to have a higher level of government accountability, administrative transparency, and institutional certainty; the private investors may therefore get more institutional security in these cities, and are more likely to commit greater resources in local infrastructure sectors for an extended period.

**Hypothesis 7.3:** A city’s political status will be associated positively with the number of private participated projects and the extent of private participation.

Besides the effects of internal determinants, I also propose that the degree of private participation can be affected by institutional forces. As been discussed before,
Chinese cities compete with each other for floating capital and other production factors. In order to make their cities more attractive, local states tend to give more favorable conditions to private investors through more liberal contractual arrangements. The effects of this competition do not limited to cities that are geographically proximate; it is even more effective among cities that are affiliated to the same provincial government. This is because the results of competition among peers not only affect local economic performance but also affect the political promotion prospective of local leaders. Therefore, I expect that

**Hypothesis 7.4:** The strength of innovation exposure of a city to the practices of infrastructure privatization will be associated positively with the number of private participated projects and the extent of private participation.

**Hypothesis 7.8:** The adoption of infrastructure liberalization policy by peer cities will be associated positively with the number of private participated projects and the extent of private participation.

Local states’ liberalization decisions can also be affected by the political pressure from their superiors. The institutional reforms and the legislation efforts made by provincial governments will change the macro institutional environment for their subordinate cities. When provincial governments adopt market-friendly policies that allow or encourage local states to utilize external financial resources, they actually promote the diffusion of private participation arrangements. However, the effects of
such pressure are conditioned by the resources that are available to a given city.

**Hypothesis 7.5:** The increasing adoption pressure from the provincial government will increase the number of private participated projects and the extent of private participation.

**Hypothesis 7.6:** A city’s transfer dependency ratio will moderate the effect of provincial pressure, in other words, the effect of provincial pressure will be greater on cities with higher transfer dependency ratio than it is on cities with lower transfer dependency ratio.

**Hypothesis 7.7:** A city’s political status will moderate the effect of provincial pressure, in other words, the effect of provincial pressure will be weaker on cities with higher political status, but higher for cities with lower political status.

Finally, the normative pressure from policy making and policy research communities can promote private participation in two basic ways. First, they contribute new management knowledge about the stipulation of more complex contractual arrangements, which then facilitates the formation of public-private partnership. Second, some of the professional knowledge provides legitimacy for allowing private investors to own or operate public facilities. Therefore, I propose that

**Hypothesis 7.9:** The intensity of normative pressure from policy professionals will be positively associated with the number of private participated projects and the extent of private participation.
7.3 Method

In this chapter, I explore the determinants of the degree of private participation, which is measured in two different ways. First, I use the annual and cumulative numbers of private participated projects in a city to measure the extensity of infrastructure liberalization. Second, I distinguish different types of contractual arrangements and assign an index to each type so as to measure the extent of (or intensity of) liberalization that a city has reached.

The choice of statistical methods is determined by the characteristics of the dependent variables. For the study of the extensity of liberalization, the dependent variable is the number of private participated projects, which is a discrete count variable. The basic method for this kind of data is Poisson or Negative Binomial regression models. However, the Poisson or Negative Binomial regression methods are not efficient when the dependent variables show over-dispersion. In this study, over-dispersion does occur because a large number of zeros. The excess zeros come from two sources, first, when a city does not have any private participated projects in a given year, the dependent variable is zero; second, a zero may also indicate the absence of any demand for infrastructure projects even if there is no other inherent reason for not having a private participated projects according to the determinants.

To overcome this problem, I used Zero-inflated Negative Binomial models to estimate the effects of covariates. This two-part model has a binary model part, which is usually a logit model to model which of the two processes the zero outcomes are
associated with, and a count model, which is a negative binomial model that models the count process. The expected count is expressed as a combination of the two processes.

For observation $i$, process 1 is chosen with probability $\varphi_i$ and process 2 with probability $1 - \varphi_i$. Process 1 generates only zero counts, whereas process 2, $g(y_i|x_i)$, generates counts from a negative binomial model. In general

$$y_i \sim \begin{cases} 0 & \text{with probability } \varphi_i \\ g(y_i|x_i) & \text{with probability } 1 - \varphi_i \end{cases}$$

The probability of $\{Y_i = y_i|x_i\}$ is

$$P(Y_i = y_i|x_i, z_i) = \begin{cases} \varphi(y'z_i) + (1 - \varphi(y'z_i))g(0|x_i) & \text{if } y_i = 0 \\ (1 - \varphi(y'z_i))g(y_i|x_i) & \text{if } y_i > 0 \end{cases}$$

When the probability $\varphi_i$ depends on the characteristics of observation $i$, $\varphi_i$ is written as a function of $z_i'y$, where $z_i'$ is the vector of zero-inflated covariates and $y$ is the vector of zero-inflated coefficients to be estimated.

In order to model the extent of private participation in a city, I used the liberalization index of different contractual arrangements as the dependent variable. This variable has an ordinal nature, in other words, a higher value of the index indicates a higher degree of private sector resource commitment in the projects. Since standard ordinary least square regression may cause the loss of efficiency when modeling the ordinal outcomes, I use ordered logit regression models to estimate the effects of the covariates. However, the use of ordered logit model also suffers a few limitations. First,
there is some subjectivity in the assessment of private participation across the broad
types of contractual arrangements, and the index is likely to vary on a case-by-case basis
in practice. Second, the liberalization index has a common problem in the construction
of indices, that is, the ladders on the scale are not equally spaced. Therefore, to facilitate
the interpretation of the model results, I reported both OLS regression and ordered logit
regression results.

7.4 Results

7.4.1 Extensity of Private Participation

Table 18 presents the regression results on the number of private participated
projects. The first column displays the model for cumulative number of projects by a
year, and the second column shows the model for the number of projects in a given year.
The last row of the table shows the results of Vuong tests. This test compares the zero-
inflated negative binomial model with an ordinary negative binomial model. The
significant z-tests indicate that the zero-inflated models are preferred.

The results show that local infrastructure demand and market size are important
determinants of the number of projects. The local demand for urban infrastructures as
measured by the size of urban population, the volume of cargo transportation, as well as
urbanization rates are positively associated with the project number. Per capita GDP and
industrialization have curvilinear relationships with the dependent variables, showing
that compared with the economically more advanced cities, the demand for new
capacities is higher in cities that are in the middle level of development.

As far as the local state capacity is concerned, the results show that the local fiscal power as measured by the transfer dependency ratio is negatively associated with the number of projects, and a city’s political status is positively associated with the dependent variable. This supports the idea that the implementation of private participated project requires financial support or guarantees from the local state and a stable institutional environment.

In terms of the institutional forces, the model results show that the regional competitive pressure as measured by innovation exposure and competition from peer cities in the same province are both significant determinants of the number of projects. This indicates that intercity competition is effective in promoting the marketization of infrastructure sectors. Moreover, when the provincial government made progressive changes toward the more market-oriented infrastructure management system and encouraged local states to bring in new resources and management expertise, then the local states are more likely to increase their liberalization efforts. In addition, professional advice from policy making communities also helps local state to be familiar with the new contractual arrangements and promotes the opening up of local infrastructure sectors.

7.4.2 Intensity of Private Participation

A second way to explore the degree of liberalization is to study the extent of
private participation. I define the extent of private participation as the highest private participation index a city has achieved by a given year. A higher index indicates a higher level private sector involvement in the projects. As discussed earlier, I used both order logit and ordinary least square models to estimate the effects of the covariates. Table 19 shows that the estimated effects are fairly robust across different specifications.

The model results suggest that cities with higher per capita GDP and higher industrialization level tend to adopt the more liberal contractual arrangements. Different from the models for extensity of private participation, in the intensity model, per capita GDP and industrialization rates show positive curvilinear effects, suggesting that these effects are even stronger for the economically more advanced cities.

Similar to the extensity model, the extent of private participation is also strongly affected by the local state’s fiscal and political capacity. The coefficients of transfer dependency ratio are negative, suggesting that fiscally less powerful cities are less capable to convince private investors to make greater commitment. Moreover, the coefficients of the political status are positive and significant, indicating that cities with more political resources are more likely to attract private investors and adopt more liberal contractual arrangements. This is probably associated with the higher local institutional stability and the higher accountability of the local states.

With regard to the institutional forces, the models show that coercive forces from the provincial governments and innovation exposure are not effective in promoting cities to adopt higher level contractual arrangements. The intensity of liberalization is
more likely to be driven by the competitive pressures from the peer cities in the same province. In addition, the advice of policy research professionals also positively affects the intensity of private participation.

In addition, it is worthwhile to notice that the intensity of private participation does not increase monotonically as time passes. The model results show significant and negative curvilinear effects of time. This suggests that not all cities will follow the same liberalization trajectory nor will they reach to the most liberal status eventually.

7.5 Discussion and Conclusions

Providing better infrastructures to urban residents is an important task faced by many local states. Private participation in urban infrastructure and utility sectors provide local states alternative financial resources in managing or constructing new facilities. Although private sector investments and expertise are highly attractive for local states, successful implementation of public-private partnership also depends on the fair allocation of rights between partners as well as a corresponding allocation of risks.

Too many government rights will scare away potential private investors, but too few are likely to result in customers or taxpayers having to bail out unscrupulous private investors. Similarly, if local states assume too many risks then the taxpayers will be more likely to shoulder heavy financial pressure; if government shift too much risks to private investors then the latter may not choose to participate in the venture (Hammami, Ruhashyankiko, and Yehoue 2006). Therefore the choice of proper
contractual arrangements is important for both private and public entities.

The study of the degree of liberalization is an attempt to explore the factors that have determined the current balance between private and public sector forces. I specify the degree of liberalization into two aspects: the extensity of private participation looks at the numbers of private participated projects in a given city, and the intensity of private participation focuses on the highest or most liberal contractual arrangements a city have implemented. I argue that the degree of liberalization is affect jointly by a city’s indigenous demand for better infrastructures, by the advice from higher level governments or professional groups, and by the competitive pressure from other cities.

The empirical evidence presented in this chapter identifies the factors that affect the degree of liberalization in the infrastructure sector. In particular, the results indicate that the market conditions and local demand strongly affect the degree of private participation. However, the effects of some local economic characteristics vary between two dimensions. On the one hand, cities that are in the middle stage of development needs more infrastructures, they tend to have more private participated infrastructure projects as compared with the more developed cities. On the other hand, the more developed cities are more likely to adopt the more liberal contractual arrangements, and private investors are more likely to make greater commitment into the projects.

The results further suggest that local states’ fiscal and political capacity affect the degree of liberalization. The success of public-private partnership depends much on the fiscal support or guarantees from the public sector and on the institutional stability and
accountability of local states.

In addition to the internal economic and political determinants, the analyses indicate that the degree of private participation is also strongly affected by the institutional forces. When provincial governments adopt market-friendly policies and when the policy research community advocates for liberalization reforms, local states are more likely to be encouraged by these positive measures and push forward the marketization of infrastructure sectors at the local levels. Moreover, competition among cities, especially cities that are subordinated to the same province, is a strong factor that promotes the progress of marketization.

However, it is important to note that the intensity of private participation does not increase monotonically with time. As has been discussed, the degree of private participation reflects a balance between the public and private power. It is highly likely that when the power of one party increases the balance may shift accordingly. During the past ten years, the economic power of the state sector increased substantially, and their influence in infrastructure also expanded greatly. As the public sector is willing to take more rights and investment risks, the degree of private participation may stagnant or even decrease. The negative curvilinear effects of time in the intensity models may provide empirical support to this idea.
<table>
<thead>
<tr>
<th>Index</th>
<th>Types of PPIs</th>
<th>Acronym</th>
<th>Mode of Entry</th>
<th>Operation and Maintenance</th>
<th>Investment</th>
<th>Ownership</th>
<th>Assumption of Risk</th>
<th>Duration (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Management Contract</td>
<td>Contract</td>
<td>Private</td>
<td>Public</td>
<td>Public</td>
<td>Public</td>
<td>Public</td>
<td>3-5</td>
</tr>
<tr>
<td>2</td>
<td>Leasing</td>
<td>Contract</td>
<td>Private</td>
<td>Public</td>
<td>Public</td>
<td>Semi-private</td>
<td></td>
<td>8-15</td>
</tr>
<tr>
<td>3</td>
<td>Rehabilitate, Operate and Transfer</td>
<td>ROT</td>
<td>Concession</td>
<td>Private</td>
<td>Private</td>
<td>Public</td>
<td>Semi-private</td>
<td>20-30</td>
</tr>
<tr>
<td>4</td>
<td>Rehabilitate, Lease/Rent and Transfer</td>
<td>RLRT</td>
<td>Concession</td>
<td>Private</td>
<td>Private</td>
<td>Public</td>
<td>More-private</td>
<td>20-30</td>
</tr>
<tr>
<td>5</td>
<td>Merchant</td>
<td>Greenfield</td>
<td>Private</td>
<td>Private</td>
<td>Public</td>
<td>More-private</td>
<td></td>
<td>20-30</td>
</tr>
<tr>
<td>6</td>
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<td>BROT</td>
<td>Concession</td>
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<td>Private</td>
<td>Public</td>
<td>Private</td>
<td>20-30</td>
</tr>
<tr>
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<td>Greenfield</td>
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<td>Semi-private</td>
<td>Private</td>
<td>20-30</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Build, Own, Operate and Transfer</td>
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<td>Greenfield</td>
<td>Private</td>
<td>Semi-private</td>
<td>Private</td>
<td>30+</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Build, Lease and Own</td>
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<td>Greenfield</td>
<td>Private</td>
<td>Private</td>
<td>Private</td>
<td>30+</td>
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</tr>
<tr>
<td>10</td>
<td>Build, Own and Operate</td>
<td>BOO</td>
<td>Greenfield</td>
<td>Private</td>
<td>Private</td>
<td>Private</td>
<td>30+</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Partial Privatization</td>
<td>Divestiture</td>
<td>Private</td>
<td>Private</td>
<td>Private</td>
<td>Private</td>
<td>30+</td>
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<tr>
<td>12</td>
<td>Full Privatization</td>
<td>Divestiture</td>
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<td>Private</td>
<td>Private</td>
<td>Indefinite</td>
<td></td>
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Source: World Bank’s PPI Database, (Hammami, Ruhashyankiko, and Yehoue 2006)
### Table 18: Determinants of Extensity of Private Participation

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Cumulative Projects</th>
<th>Projects in a Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>SE</td>
</tr>
<tr>
<td>Per Capita GDP</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Per Capita GDP (square)</td>
<td>-0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Industrialization</td>
<td>-0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Industrialization (square)</td>
<td>-0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Urbanization</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Transfer Dependency Ratio (TDR)</td>
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<td>0.19</td>
</tr>
<tr>
<td>Political Status</td>
<td>1.12</td>
<td>0.11</td>
</tr>
<tr>
<td>Provincial Pressure</td>
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<td>0.03</td>
</tr>
<tr>
<td>Prov. Press $\times$ TDR</td>
<td>0.18</td>
<td>0.10</td>
</tr>
<tr>
<td>Prov. Press $\times$ Political Status</td>
<td>-0.04</td>
<td>0.05</td>
</tr>
<tr>
<td>Innovation Exposure</td>
<td>0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>Peer Pressure</td>
<td>0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>Normative Pressure</td>
<td>0.37</td>
<td>0.05</td>
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#### Control Variables

<table>
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<tr>
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<th>$\beta$</th>
<th>SE</th>
<th>$\beta$</th>
<th>SE</th>
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<tr>
<td>Fixed Asset Investment</td>
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<td>0.01</td>
<td>0.01</td>
<td>0.02</td>
</tr>
<tr>
<td>Population</td>
<td>0.07</td>
<td>0.01</td>
<td>***</td>
<td>0.06</td>
</tr>
<tr>
<td>Passenger Transportation</td>
<td>-0.01</td>
<td>0.00</td>
<td>*</td>
<td>-0.00</td>
</tr>
<tr>
<td>Cargo Transportation</td>
<td>0.01</td>
<td>0.00</td>
<td>***</td>
<td>0.00</td>
</tr>
<tr>
<td>Time</td>
<td>-0.04</td>
<td>0.01</td>
<td>**</td>
<td>-0.09</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.31</td>
<td>0.29</td>
<td>***</td>
<td>-5.76</td>
</tr>
</tbody>
</table>

<p>| | | | | |</p>
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<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>LR Chi2(18)</td>
<td>2747</td>
<td>541</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Observations</td>
<td>4632</td>
<td>4632</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vuong Test: ZINB vs. NBREG</td>
<td>Z=2.52</td>
<td>Z=1.79</td>
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<td></td>
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NOTE. † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. (two-tailed tests), robust standard errors reported.
Table 19: Determinants of Intensity of Private Participation

<table>
<thead>
<tr>
<th>DV: Index of Private Participation</th>
<th>OLS Regression</th>
<th>Ordinal Logistic Regression</th>
</tr>
</thead>
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<tr>
<td>Arrangement</td>
<td>β</td>
<td>SE</td>
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<td><strong>Independent Variables</strong></td>
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<tr>
<td>Per Capita GDP</td>
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<tr>
<td>Per Capita GDP (square)</td>
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<td>0.00</td>
</tr>
<tr>
<td>Industrialization</td>
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<td>0.01</td>
</tr>
<tr>
<td>Industrialization (square)</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Urbanization</td>
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<td>0.01</td>
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<tr>
<td>Transfer Dependency Ratio (TDR)</td>
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<td>Political Status</td>
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<td>Prov. Press × TDR</td>
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<td>0.21</td>
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<td>Prov. Press × Political Status</td>
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<td>0.15</td>
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<td>Innovation Exposure</td>
<td>0.04</td>
<td>0.03</td>
</tr>
<tr>
<td>Peer Pressure</td>
<td>0.05</td>
<td>0.01</td>
</tr>
<tr>
<td>Normative Pressure</td>
<td>0.11</td>
<td>0.06</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Asset Investment</td>
<td>0.02</td>
<td>0.05</td>
</tr>
<tr>
<td>Population</td>
<td>0.09</td>
<td>0.06</td>
</tr>
<tr>
<td>Passenger Transportation</td>
<td>0.00</td>
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<tr>
<td>Cargo Transportation</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Time</td>
<td>-0.04</td>
<td>0.07</td>
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<tr>
<td>Time (square)</td>
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<td>Constant</td>
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<td>R-Square</td>
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<tr>
<td>Number of Observation</td>
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</tr>
</tbody>
</table>

NOTE. † p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001. (two-tailed tests), robust standard errors reported.
8. Conclusions

China’s economic transition has been regarded as a significant event in the worldwide diffusion of neoliberalism policies. Unlike its Western counterparts, China follows a distinct trajectory of neoliberalism expansion: economic liberalization does not coincide with political democratization, and a vibrant neoliberal economy coexists with a powerful authoritarian state (Gao 2009; Harvey 2005a; Lin 2011). This coexistence leads to an important question: how does this coexistence influence the nature and pace of the transition? In other words, how does the authoritarian political system coexists or even promotes the marketization or privatization reform? Will the states push the reform toward a full-fledged neoliberal economy or stop at a certain limit and maintain a balance between the state control and private participation?

By investigating the diffusion mechanisms of the neoliberal urban policies, this study shows that the governments at various levels and the intergovernmental relationships have greatly facilitated the establishment of market principles and institutions for key state assets. In addition to the local internal economic and social demand, China’s de facto federalist political system provides strong political and economic incentives for local states to pursue local economic growth. Competitive pressure from adjacent or peer cities, political pressure from provincial governments, and advice from policy research communities all significantly promoted the diffusion of these neoliberal urban policies.
One of the main tasks of this project is to explore how the effects of various factors change across innovations with different characteristics. In doing so, I introduced variation to the diffusion subjects by including two different but interrelated policies in this project. This research design takes a broad theoretical scope and breaks the barriers between different theoretical camps by jointly testing explanations derived from internal determinants, regional diffusion, and institutional models (Campbell and Pedersen 2001). This design also differs from the common diffusion study paradigm, which focuses on a single population and a single practice (Strang and Soule 1998). By studying diffusion of multiple practices side by side, the proposed research directly contrasts different diffusion practices and studies the mechanisms involved. It allows the exploration of interactions of multiple practices and explains how these interactions influence the diffusion processes of other practices. Furthermore, it may provide an opportunity to identify what diffusion mechanism works more effectively for what practices under what circumstances. Understanding these issues is exactly what is needed in future diffusion studies (Dobbin, Simmons, and Garrett 2007).

The first comparison is between the diffusions of land banking and infrastructure privatization policies (See Table 20). In chapter four and five, I tested similar sets of hypotheses derived from three theoretical perspectives in both diffusion models. The results show that, on the one hand, the three main mechanisms (internal determinants, regional diffusion, and institutional) work for both diffusion processes suggesting that the explanations proposed in this study are robust across different practices. On the
other hand, the analyses also revealed some interesting differences between these two processes.

Regarding the internal determinants model, both chapters show that, first, the adoption rates of both policies are significantly associated with local resource availability. The establishment of land market and the implementation of private participated projects require the local states to change their current bureaucratic structure and institutional environments, and to have the fiscal capacity to acquire land or provide fiscal and financial support for private investors. Both studies show that cities with rich fiscal resources and higher political autonomy have greater propensity to adopt these two typical neoliberal urban policies.

Second, the effects of local social and economic indicators differ significantly between two diffusion processes. This is plausible because these two policies addresses quite different problems that may be encountered by cities with different characteristics. The land banking system aims to improve land use efficiency. It is more welcomed by places that have high population densities, booming real estate sectors, and expanding industrial sectors. While the implementation of private participated infrastructure sectors is not only associated with the industrialization process, but also affected by the local infrastructure or utility market size and the purchase power of the local residents.

In addition, this comparison shows that the effects of internal determinants (i.e., local demand for new policies and local resource availabilities) are more effective in the early diffusion phase, its effects will then decline in the middle and late diffusion phases
during which the adoption decisions are increasingly legitimized and taken for granted. With increasing competition, coercion, and theorization pressure, local states are more likely to adopt new policies as a way of satisficing.

This study also advances our understanding of the dynamics of institutional changes in the transitional period. Scholars have argued that large-scale institutional changes in formal rules tend to follow smaller scale ex post innovations at the local level and take a bottom-up trajectory (Nee 2005). This study depicts a more complex picture showing that large-scale institutional changes within the state political system are the result of both local choices and external influences. Although local states play a crucial role in promoting institutional transformation, the central and provincial governments still exert considerable influence on the pace and direction of institutional reform. Policy research communities also facilitate the marketization by providing technical assistance and normative suggestions.

In both studies, governments at different levels and the interactions among them are important factors that have promoted the marketization of land and infrastructure sectors. Both studies indicate that interjurisdictional competition is an important factor that promotes both policy diffusion processes. In both cases, the innovations in neighboring cities facilitate the flow of policy knowledge form the early adopters to the late adopters. Moreover, the competitive pressure from nearby cities also forces a focal city to emulate the popular policies as a way of ‘satisficing” or to simplify the decision making process. This intensive regional economic competition originates from China’s
de facto federalist structure. In terms of its impact, this competition, on the one hand, promotes the diffusion of innovative policies and helps to facilitate the marketization process; on the other hand, this regional competition may also lead to overlapping projects and bidding wars, which will lower down the return rates of the new practices.

I argue that the vertical intergovernmental relations especially the pressure from the provincial governments can significantly affect local policy innovation decisions. However, the effects of provincial pressure show a larger variation between two processes. I attribute this variation to the differences in the nature of provincial pressure. In the land banking case, the pressure from provincial governments is coercive in nature and takes the form of administrative orders, which directly require local state to make specific institutional changes to fit the overall reform agenda. While in the infrastructure liberalization case, the provincial governments exert influence through institutional reforms which allow local state to open local infrastructure and utility sectors to private investors. Although provincial governments can influence local states’ decision making, the actual privatization also depends largely on the will of private investors. Therefore, the provincial government can only encourage rather than force local state to promote the liberalization of urban infrastructure sectors.

Chapter 6 presents the second comparison, which is about the heterogeneous effects of covariates on the adoption of privatization reform in different sectors and through different arrangements. The results show that the effects of local social and economic characteristics vary substantially across sectors. For sectors that depend more
on user-fees to recover project costs (e.g., urban transportation, water and sewage), the size of local utility market and local residents’ purchasing power turned out to be significant factors that affect the feasibility of private participated projects. Whereas for projects that locate distant from the locations of the end users, the local social and economic characteristics may have less impact on the implementation decisions.

In terms of the variation among different contractual arrangements, I find that the choice of contractual arrangements is significantly affected by local states’ fiscal capacity and political autonomy. Generally speaking, cities with greater fiscal power and higher political autonomy are more capable in providing policy and fiscal assurance to private investors. As a result, the contractual agreements between the private and public entities are likely to be more liberal, in other words, allowing private parties to take more risks and responsibilities in the construction and operation of a project.

Moreover, the results show that the effects of institutional forces also vary to a certain degree across different contractual types. In particular, the normative pressure from the policy professional communities tends to encourage the use of certain types of contractual arrangements but discourage others. The use of concession, greenfield, and divestiture are positively associated with the normative force, while the use of lower level privatizations measures, such as management and lease contracts are negatively associated with the normative pressure.

The final chapter explores the variation in the degree of privatization. I argue that the choice of proper contractual arrangements is affected jointly by local
institutional stability and transparency, and by the private investors’ evaluation of the potential risks and profits of a given project. I measured the degree of privatization in terms of both its extensity (number of projects), and intensity (the most liberal contractual arrangements that a city has adopted), and then compared the effects of the covariates in two different models.

The comparison between these two dimensions shows that both extensity and intensity of privatization are affected significantly by a city’s indigenous demand for better infrastructures, by the advice from higher level governments or professional groups, and by the competitive pressure from other cities. Specifically, the results indicate that the market conditions and local states’ fiscal as well as political capacities strongly affected the degree of private participation. However, the effects of local economic characteristics vary between these two dimensions. On the one hand, cities that are in the middle stage of development are in greater need of new infrastructures, they tend to implement more new projects as compared with the more developed cities. On the other hand, compared with the less developed cities, the infrastructure markets in the more developed cities are larger and the local residents’ purchase power is also greater. These conditions make the more developed cities more attractive to private sector. The private investors are more willing to make greater commitment and adopt the types of contractual arrangements that allow private entities to take greater risks and responsibilities.

Regarding the institutional forces, this study shows that compared with their
effects on the extensity of privatization, the institutional forces have less impacts on the intensity of privatization. When provincial governments adopt market-friendly policies and reduced the barriers for private investors to enter local infrastructure sectors, the extensity of privatization in its affiliated cities tend to increase, meaning that more projects will be implemented regardless the forms of contractual arrangements. However, the policy changes at the provincial level have no significant impact on the intensity of privatization in its affiliated cities. This is probably due to the large within-province variation in local institutional environments. Private investors need to evaluate the risks of projects, the accountability and political autonomy of local states, and policy stability in a given city on a case by case basis. In this process, local states’ characteristics may have greater impacts than the provincial governments’ institutional reform efforts. Moreover, the comparison also indicates that although competitions between peers significantly improve the degree of privatization in both dimensions, the regional competition only affect the extensity not intensity of privatization.

This study also speaks to the question of whether the states will support the privatization reform to its full extent, or will it stop at some point, at which the state maintains a balanced relations with the private sectors. Previous studies have discovered a privatization-nationalization cycle in many different settings (Gomez-Ibanez and Meyer 1993). In this cycle, private investments are introduced to improve the efficiency of the public sector. Private firms’ power and market share then expand and take over the inefficient facilities in neighboring cities. The private firms may consolidate and
possess significant monopolistic power over a greater service area, which than trigger
the pressure for monopoly regulation. Regulation aims to reduce the prices and
profitability, which discourages maintenance and new private investments. The
subsequent decline of service quality will encourage the state to nationalize the firm and
subsidize it. The provision of subsidy again causes inefficiency, which paves way for the
next round of privatization (Dailami and Klein 1998).

The results of this study lend some support to this argument. First, the overall
extensity of privatization is decreasing in recent years. As Figure 8 shows, the number of
private participated projects is declining since early 2000s. Second, the intensity of
private participation does not increase monotonically. The model results show a
curvilinear relationship between the intensity of privatization and time suggesting that
as compared to the early phase of privatization reform, local states are less likely to
choose the most liberal contractual arrangements and are more likely to adopt the more
conservative forms which give private investors certain autonomy and responsibility
while keep the eventual ownership of the projects.

However, in addition to the reasoning of the privatization-nationalization cycle
model, the Chinese case also shows that the fluctuation in the degree of privatization
may also reflect the changing balance between the state power and private power. When
the power of the state sector increases, it may expand its control over more economic
sectors and squeeze out the private investments. As in many other cases, the adoption of
the public-private partnership model is largely due to the lack of available financial
resources of the local states for maintaining or improving local infrastructure services. The quick increase of private participation in late 1990s is partially driven by the capital needs of the local states. However, during the past ten years, the fiscal power of both central and local states improved significantly. Together with the fast growing economic power of the state firms, the state sector expands their control in many fields especially the infrastructure sectors. As the public sector has the incentive and financial power to take back its turf, the degree of private participation may therefore stagnant or even decrease.
Table 20: A Comparison between Two Diffusion Processes

<table>
<thead>
<tr>
<th>Theoretical Models</th>
<th>Hypotheses</th>
<th>Land Banking</th>
<th>Infrastructure Privatization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Determinants</td>
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<td></td>
</tr>
<tr>
<td>Per Capita GDP</td>
<td>n/s</td>
<td></td>
<td>Yes (+)</td>
</tr>
<tr>
<td>Industrialization</td>
<td>Yes, curvilinear (-)</td>
<td></td>
<td>Yes, curvilinear (-)</td>
</tr>
<tr>
<td>Urbanization</td>
<td>n/s</td>
<td></td>
<td>n/s</td>
</tr>
<tr>
<td>Transfer Dependency Ratio</td>
<td>Yes (-)</td>
<td></td>
<td>Yes (-)</td>
</tr>
<tr>
<td>Political Status</td>
<td>Yes (+)</td>
<td></td>
<td>Yes (+)</td>
</tr>
<tr>
<td>Regional Diffusion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovation Exposure</td>
<td>Yes (+)</td>
<td></td>
<td>Yes (+)</td>
</tr>
<tr>
<td>Institutional Forces</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provincial Pressure</td>
<td>Yes (+)</td>
<td></td>
<td>n/s</td>
</tr>
<tr>
<td>Prov. Press. × TDR</td>
<td>n/s</td>
<td></td>
<td>Yes (+)</td>
</tr>
<tr>
<td>Prov. Press. × Political Status</td>
<td>Yes (-)</td>
<td></td>
<td>Yes (-)</td>
</tr>
<tr>
<td>Peer Pressure</td>
<td>Yes (+)</td>
<td></td>
<td>Yes (+)</td>
</tr>
<tr>
<td>Normative Pressure</td>
<td>Yes (+)</td>
<td></td>
<td>Yes (+)</td>
</tr>
<tr>
<td>Preexisting Institution</td>
<td>Yes (-)</td>
<td></td>
<td>n/a</td>
</tr>
<tr>
<td>Other Effects</td>
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<td></td>
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<tr>
<td>Fixed Asset Investment</td>
<td>n/a</td>
<td></td>
<td>Yes (+)</td>
</tr>
<tr>
<td>FAI in Real Estate</td>
<td>Yes (+)</td>
<td></td>
<td>n/a</td>
</tr>
<tr>
<td>Wage</td>
<td>n/s</td>
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<td>n/s</td>
</tr>
<tr>
<td>Population</td>
<td>n/s</td>
<td></td>
<td>n/a</td>
</tr>
<tr>
<td>Population Density</td>
<td>Yes (+)</td>
<td></td>
<td>n/a</td>
</tr>
<tr>
<td>Passenger Transportation</td>
<td>n/a</td>
<td></td>
<td>Yes (+)</td>
</tr>
<tr>
<td>Cargo Transportation</td>
<td>n/a</td>
<td></td>
<td>n/a</td>
</tr>
</tbody>
</table>

Note: “Yes”-coefficient is statistically significant; “n/s”-coefficient is not statistically significant; “n/a”-variable is not included in the model; “(+)”-positive coefficient; “(-)”-negative coefficient; “curvilinear”-curvilinear relationship is significant.
References


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184


Reshaping of an Empire. Hong Kong.


Biography

Yanlong Zhang was born April 23, 1980 in Shannxi, China. He received BA and MA in Sociology from Peking University. He received another Master Degree in International Studies from Jackson School of International Studies at the University of Washington. He was admitted to Duke University in 2007 and received his Ph.D. in Sociology in May 2012. He published the article “Institutional Sources of Reform: The Diffusion of Land Banking System in China” in Management and Organization Review. He coauthored the article “Organization and Management in China” with Lisa Keister, which was published in the Academy of Management Annuals. With Nan Lin and colleagues he published the book chapter “Recruiting and Deploying Social Capital in Organizations: Theory and Evidences” in the Research in the Sociology of Work. During his career, Yanlong Zhang has received Fei Xiaotong Fellowship from Fei Xiaotong Foundation and Development Research Fellowship from China Development Research Foundation. He also received Katherine Goodman Dissertation Fellowship from Duke Graduate School in his fifth year at Duke.