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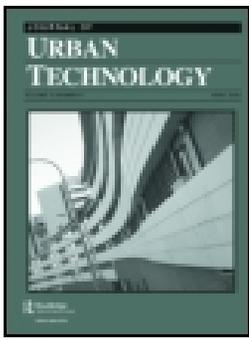
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Changjie Zhan, Martin de Jong, and Hans de Bruijn

ABSTRACT

In the past few decades, urban infrastructures in China have seen an enormous upgrade, and due to large-scale urbanization many more investments are due in the coming years. In order to supplement public funding, Public Private Partnerships (PPP) and municipal bonds have recently grown popular in China. The introduction of this new policy does not occur in a void but should be understood as the path-dependent consequence of a historical evolution of funding arrangements for urban development. How have Chinese governments traditionally arranged financing for these extensive investments and how has the emphasis in funding sources shifted over time? We argue that the evolution of urban development financing has gone through three phases (planned economy, reform and pilot, and socialist market economy), each with different emphasis in financial sources. Our analysis demonstrates how weaknesses in earlier phases present challenges that new solutions in later phases are aimed to address.

KEYWORDS

Path dependence; institution; urban development; finance; China

Introduction

Since the foundation of the People's Republic of China (PRC), the country has more than 60 years of experience in financing urban construction, evolving all the way from a simple financial model characterized as unified fiscal allocation in the era of the planned economy into the various financing models in the socialist market economy. These changes are closely linked to the governmental policies and legislation in each stage. Previous studies (Ba and Yang, 2014; Cao and Zhao, 2011) divided up the financing system for urban construction into three stages in accordance with the changes in China's fiscal system, namely the planned economy stage (1949–1977), the reform and pilot stage (1978–1993) and the market economy stage (1994 to present). Accordingly, the path dependence in urban development financing through time can also be divided into three stages, say, the first stage is constituted by the first 19 years after the foundation of PRC which is known as the planned economy (1949–1977); the second stage is the early stage of implementing the reform and opening-up policy (1978–1993); and the third stage is called the socialist market economy (1994 to present).

Theoretically speaking, the path urban finance and investment have followed in China has not been purely rational target-driven or tool-innovation-based. It is in fact a

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combination of selecting targets and tools and reacting to specific historical situations. After the foundation of PRC, China imitated the Soviet Union by building a centralized socialist political and economic system (Chung, 2003). It centralized the state power in terms of politics and accordingly implemented the command economy. This political and economic system established the dominant role of Chinese governments in urban development (Lv, 2003). With the further development of China's economy, the government-led model no longer meets the requirements. To bridge the gap between finance and urban infrastructure needs, the Chinese governments began to transform their functions (e.g., weakening their own role in urban development finance) and emphasized developing the market economy (e.g., introducing more parties to finance urban development). The public-private interface became increasingly important and the influence of public or private players on urban development became either stronger or weaker depending on their control of various resources. Change in the roles of governments and market players mould the evolution in urban development finance in China. In other words, we can best look at this evolution as a *path dependent process*, defined as "how the set of decisions one faces for any circumstance is limited by the decisions one has made in the past, even though past circumstances may no longer be relevant" (Praeger, 2007).

In this paper, we adopted mainly qualitative research methods to demonstrate this path dependence in urban development financing in China. We also gathered relevant quantitative data to help understand the changes in funding vehicles. Data related to fixed asset investment, fiscal revenues and expenditures, and land concession revenues were collected from the web sites of the National Bureau of Statistics and the China Land and Resources Almanac, while data related to PPP were gathered from the web site of the Ministry of Finance. Various policies, notices, and local practices were obtained from scattered sources including academic publications, government websites, public media, and other web-based reports (e.g., the World Bank Technical Assistance Report). With the help of these data, we reviewed the three stages of financial arrangements for urban construction and particularly focused on the third stage, which offered new insights in the emergence of bonds and PPP. Currently, bonds and PPP are two financial vehicles academics and practitioners hail particularly in China. The new rise of PPP since 2014 has not been fully explored, which encouraged us to dwell more on this new trend. Furthermore, we combined path dependence with the evolution of the financial arrangements for urban construction, enriching the existing literature on the topic.

The rest of this paper is organized as follows. It first reviews the existing academic literature on institutional path dependence then dives into the evolution of financing vehicles for urban construction on the basis of the aforementioned developmental phases and further analyses the usefulness and robustness of these financing vehicles at each stage. In the next section we focus on the advent of the new budget law and the national promotion of PPP and describe the latest trends. The last section presents conclusions.

Institutional Path Dependence

North (1990) holds the view that the technical path dependence proposed by Arthur (1988) which explains the dominance of VHS video recorders over Betamax and QWERTY's keyboards over those manufactured by Dvorak, can also be applied to the

evolution of institutions. Institutional change is constrained by four kinds of increasing revenue: (1) the set-up costs for a new institution; (2) the learning effect related to the existing institutional framework, the web externalities and institutional matrix; (3) the coordination effect in complementary activities resulting from contracts with other organizations and political groups; and (4) the adaptive expectations. North argues that path dependence shows how institutional frameworks shape processes of mutation and selection and constrain future developmental options because of artificial lock-ins into particular existing institutional pathways. David (1994) notices the difference between technology and institution, but he believes that the three causes of path dependence (correlation of technology, economies of scale, and irreversibility of investment) can be used to explain both. According to him, path dependence leads institutions to evolve gradually and due to constraints they do not normally provide effective solutions to the problem of resource allocation. Stark (1992) points out that institutional change is essentially evolutionary. He argues it should be seen as recombination and rearrangement of elements due to the emergence of new methods that are selectively absorbed.

As for the Chinese context, Lv (2003) analyses path dependence of institutional change in China in detail. He distinguishes three types. The first type of path dependence is influenced by the traditional culture. The second type is the path dependence influenced by the socialist system after the foundation of the PRC. The third type is the path dependence influenced by the gradual reform of China's economy. Wu (1995) holds the view that reform is one of the most significant institutional changes in contemporary China and the path dependence in this process is self-evident. He further states that the selection of institutions at the beginning reinforces the inertia of current institutions because it is more convenient to go along with the original institution than explore a new institution. Moreover, vested interest groups would put pressure on new institutions. They try to consolidate current institutions and impede reform even if new institutions are more efficient. Mu, De Jong, and Koppenjan (2011) use path dependence theory to study the rise and fall of PPP in China. They argue that the adoption of PPP in China is a path dependent process rather than a mechanism to achieve the optimal economic effects advocated by various multinational organizations.

Many researchers studied the evolution of China's economy from the perspective of path dependence. But few if any used path dependence to explain the evolution of urban development finance in China. This is our goal here. We apply path dependence to the evolution of urban development finance to grasp the possibilities and limitations of newly adopted financial arrangements currently in vogue.

Financial Arrangements for Urban Construction in Three Stages

The Stage of the Planned Economy (1949–1977)

In the period 1949 to 1977, China implemented its urban development policies with unified central allocation, which meant that money for local economic activities was determined by budgetary choices made by the central government. Consequently, fiscal appropriations were the only funding source for urban construction, and it was impossible to invest any other type of capital in the field of urban construction. At this stage, the central government played a planning role in the process of urban construction. Local

governments were not the responsible parties for urban construction but rather the executors of the central government's economic plans. Public utilities were considered government investments and classified as urban fixed assets, listed under the item "capital construction projects." The money for the construction of public utilities was disbursed as national fiscal expenditure and local governments carried out the construction as per the original plans made by the central government (Liu, 2011). Therefore, investments in infrastructure not only depended on the country's and city's fiscal status, but also on their investment policies and plans.

At this stage, central government appropriations were the only source meeting the demand for China's urban infrastructure construction. Expenditure at this stage was very limited. During the period of the first five-year (1953–1957) and the second five-year plans (1958–1962), under the guidance of the thought of "manufacturing first, life second," the central government gave priority to developing basic manufacturing facilities over urban infrastructures. The ratio of investment in urban infrastructure to total investment in fixed assets dropped from 2.13 percent in the first five-year plan to 1.96 percent in the second five-year plan (Ba and Yang, 2014). Moreover, during the Cultural Revolution (1966–1976), the development of urban infrastructure completely stagnated. However, afterward, China's economy began to recover and most educated youth (*zhi qing*) headed back to cities followed by a growing share of the rural population, which placed more strain on urban infrastructure again.

In this period, the whole society was operating under the relationship of superiors (the governments) and subordinates (citizens), which influenced the evolution of the urban development system. Against the backdrop of an almost pure command economy, the finance and investment of urban infrastructure was subordinate to and serving the state's heavy industry. The governments were responsible for all the arrangements in urban development. The main characteristics of this stage were *administrative enforcement, plan-based arrangement, and market exclusion*. Investment choices were a natural outcome of the conflicts between the good vision of quickly recovering the domestic economy and the reality of a weak economic foundation, which proved to have positive meaning in that period. However, with the change of China's socioeconomic status, following this road any further would not have allowed urban development finance to make any adjustments because appropriations from the central government were too limited to meet the high need for urban construction.

The Reform and Pilot Stage (1978–1993)

The period 1978 to 1993 is known as the reform exploration and pilot stage. Before the implementation of the reform and opening-up policy in 1978, China experienced two waves of decentralization. One was the Great Leap Forward started in the late 1950s, and the other was the Cultural Revolution that occurred in the late 1960s. By the end of the Cultural Revolution, many financial resources had been decentralized and were under the control of local governments (Xu, 2011). After 1978, the central government began to improve roads, bridges, and public utilities, which required enormous investments. Appropriations from the state treasury could no longer meet the growing needs for urban infrastructures. Therefore, both the central government and local governments explored options to diversify funding sources for urban construction. At this stage,

investments in urban development had undergone profound changes: the central government was not the only funding party anymore, but local governments, state-owned enterprises, collective enterprises, urban and rural residents, and foreign investors also became significant investors. Accordingly, a new funding pattern with multiple investment channels (e.g., fiscal revenue, self-raised money, domestic bank loans, project finance, build-own-transfer [BOT], and foreign capital) was established, which enhanced the marketization of funds for urban construction and mobilized a greater variety of parties.

In terms of fiscal revenue, the central government introduced new taxes and raised tax rates to increase local government's fiscal revenues and implemented special purpose taxes (e.g., an urban maintenance and construction tax)¹ to ensure the funding sufficiency for special projects. Meanwhile, some cities began to raise money for the construction of bridges, roads, and energy through charging fees (e.g., tolls and capacity-bulking costs) from infrastructure users. Some cities even tried to charge higher fees from public utilities and service users, such as raising bus fares, water rates, electricity rates, etc. However, the scope of these sources and their impact on urban infrastructure investment were still limited. Table 1 lists the impact of various national and local policies and practices on the funding sources for urban construction.

Table 1. National and local policies and practices

Year	Policies/Practices	Effects
1979	Investment in infrastructure changed from fiscal appropriation to debt finance.	Treasuries have been readopted as a financial vehicle for raising money, broadening the funding sources for infrastructure construction.
1980	Central government began implementing the fiscal system reform: "dividing revenues and expenditures between the central government and local governments, implementing responsibility contracts at various government levels" (<i>hua fen shou zhi, fen ji bao gan</i>).*	It decreased the central government's revenues and weakened its macro-control ability, but also enabled local governments to arrange their financial affairs more freely than before.
1982	Shenzhen first started to collect land use fees.	Land use fees were used for urban infrastructure construction.
1983	Financial decentralization (<i>jin rong fen quan</i>)	It provided a favorable marketing context for exploring multiple ways to finance.
1985	Central government began to collect taxes instead of profits, cancelled business taxes and surcharges, maintenance fees and 5% tax on industrial and commercial profits and collected urban maintenance and construction tax.	Urban maintenance and construction tax provided earmarked funds for urban construction.
1987	Shenzhen took the lead in carrying out land use right concession policies.	Transferring land use rights in profitable ways became one of the most important financial sources for urban infrastructure development.
1988	The "multi-type responsibility system" (<i>duo zhong bao gan zhi du</i>) was introduced.	It led to a widening gap between regions in terms of fiscal revenues, influencing the balance in economic development among regions.

* Beginning in 1980, the Ministry of Finance adopted a new mechanism, known as "dividing revenues and expenditures between the central government and local governments, implementing responsibility contracts at various government levels." This mechanism clearly defines the scope for revenue and expenditure between the central government and local governments. It ratifies the base quota of local governments' responsibilities on the basis of each local government's fiscal revenues and expenditures in 1979. Cities whose revenues exceeded their expenditures needed to turn over a certain percentage of revenues to the central government. Contrarily, for cities whose revenues were below their expenditure, the central government left a certain percentage of the business taxes to local governments as an adjustment in their revenues. The central government supplied quota subsidies to those cities that were still unable to cover their expenditures when they retained all their business tax. The revenue-sharing ratio or subsidy quota was kept unchanged for five years after it was approved. Local governments could spend more if their revenues were high and spend less if their revenues were low. The central government would not offer subsidies to local governments within five years; they themselves had to keep a balance between their revenues and expenditures.

In addition, in this period, cities made use of foreign and domestic private capital for urban construction for the very first time. In 1984, Guangdong province explored 'BOT' (Build-Operate-Transfer) by cooperating with Hongkong Hopewell Holdings Limited Company and other private Chinese companies. In 1986, Shanghai carried out a "nine four special project" program (*jiu si zhuan xiang*), which became known as "self-borrow, self-repay" (*zi jie zi huan*), with Shanghai municipality itself becoming responsible for loans and their repayment. With the aid of this program, Shanghai municipality directly raised \$3.2 billion from other countries, of which 40 percent was used for urban infrastructure construction. In 1995, the Guangxi Laibin Power Plant (B) was the first BOT pilot project that was approved at the national level. Since then, the Ministry of Foreign Economic Relations and Trade² took measures to standardize the utilization of BOT.

Since the 1980s, the construction of urban infrastructure in China has attracted attention from local governments and other parties, leading to an increase of the investment in fixed assets year by year. In 1993, the total investment in fixed assets was 1307.23 billion CNY, 13.6 times as much as the investment in 1981 (See Table 2). According to a document compiled by the National Bureau of Statistics, there are five sources for investment in fixed assets: state budget, domestic loans, foreign investment, self-raising funds and other sources.³ From the table, it can be learned that the ratio of the state budget to total investments in fixed assets decreased from 28.1 percent in 1981 to 3.7 percent in 1993. Conversely, the ratio of self-raising funds and other sources grew steadily from 55.4 percent in 1981 to 65.5 percent in 1993. The growth of self-raising funds and other sources was mainly invested in profitable industries. Yet the investment in quasi-operational and non-operational projects⁴ came still mainly from government sources. In addition, domestic loans were one of the main funding sources for investments in fixed assets, which increased from 12.7 percent in 1981 to 23.5 percent in 1993. In 1993, fiscal decentralization also reached its peak (Xu, 2011), the proportion of local fiscal revenue to national revenue was 78 percent (National Bureau of Statistics, 2016).

The change in China's financial system and practices mentioned above broadened the funding horizon for urban development. Although this was typical of the marketization in

Table 2. Investment amount and financial sources of fixed assets from 1978 to 1993 (CNY billions)

Year	State Budget (appropriation)		Domestic Loans		Foreign Investment		Self-raising Funds and Others		Total
	Amount	Ratio (%)	Amount	Ratio (%)	Amount	Ratio (%)	Amount	Ratio (%)	
1981	26.98	28.07	12.20	12.69	3.64	3.78	53.29	55.45	96.10
1982	27.93	22.70	17.61	14.31	6.05	4.92	71.45	58.07	123.04
1983	33.97	23.75	17.55	12.27	6.66	4.65	84.83	59.32	143.01
1984	42.10	22.97	25.85	14.10	7.07	3.86	108.27	59.07	183.29
1985	40.78	16.03	51.03	20.06	9.15	3.60	153.36	60.30	254.32
1986	45.56	14.60	65.85	21.10	13.73	4.40	186.92	59.90	312.06
1987	49.66	13.10	87.20	23.00	18.20	4.80	224.11	59.11	379.17
1988	43.20	9.28	97.78	21.01	27.53	5.92	296.87	63.79	465.38
1989	36.61	8.30	76.30	17.30	29.11	6.60	299.03	67.80	441.04
1990	39.30	8.70	88.55	19.60	28.46	6.30	295.44	65.40	451.75
1991	38.04	6.80	131.47	23.50	31.89	5.70	358.04	64.00	559.45
1992	34.75	4.30	221.40	27.40	46.87	5.80	505.00	62.50	808.01
1993	48.37	3.70	307.20	23.50	95.43	7.30	856.24	65.50	1307.23

Source: National Bureau of Statistics of China 1981–1993

Note: No recorded data exist for the period 1978–1980

the funding sources for urban construction, economic development in this period was still quite strongly plan-based (Laperrouza, 2008). The growth of the central government's fiscal revenue under the mechanism characterized with "responsibility contracts at various government levels" (*fen ji bao gan*) dramatically decreased since its revenues depended on tax transfers from local governments. This weakened the central government's ability to control macroeconomic developments, widening the gap between the rich and the poor provinces and cities. To redress the imbalance, the central government began to implement the so-called tax sharing system reform, which opened a new financial era for urban development in China.

The Stage of the Socialist Market Economy (1994 to Present)

The period from 1994 to the present is referred to as the era of the socialist market economy. In this period, the central government put more emphasis on research to improve investment and financing structures for infrastructure projects, which accelerated reforms in the system. Since 1996, the central government has issued a series of regulations to standardize investment practices in urban infrastructure construction. In December 2001, the State Planning Commission issued the "Opinions of the State Planning Commission on Promoting and Guiding Private Investment," which called on local governments to create an environment for fair competition for private investors and to promote the development of private investments in general. It also encouraged and supported the participation of private capital in the construction of infrastructures and public welfare projects in the form of sole proprietorship, cooperation, joint ventures, equity participation, and franchising. For example, mega cities like Beijing, Shanghai, and Shenzhen explored new financial arrangements for infrastructure construction by employing the "government guidance, social participation, and marketing operation"⁵ mode. Since then, diversification of financing channels for infrastructure construction has been firmly established.

As shown in Table 3, the total investments in fixed assets have skyrocketed since 1994. The proportion of domestic loans and foreign investments to the total investments were decreasing, while the ratio of self-raising funds and others to the total investments were increasing the most from 64.68 percent in 1994 to 83.77 percent in 2015. This was partly because some Chinese companies active in urban infrastructure development (often public utilities) went public and became listed on stock exchanges (including the Shanghai and Shenzhen stock exchanges) in this period. At the beginning, listed companies were mainly in the taxi business, e.g., Shanghai Pudong Dazhong Taxi Co. Ltd.,⁶ Shanghai Dazhong Taxi Co. Ltd.,⁷ etc. Later on, other public utility companies in the fields of energy, water supply, heat supply, power supply, and public transportation were also listed on stock exchanges. In this period, asset-backed security⁸ also became a funding source for urban construction.

However, the most significant financial changes include the (1) tax sharing system reform; (2) land concessions; and (3) the formation of urban development and investment corporations (UDICs).

The Tax Sharing System Reform

The tax sharing system is a fiscal management system that separates central and local revenue sources in accordance with certain tax categories (Ba and Yang, 2014). The tax

Table 3. Investment amount and financial sources of fixed assets since 1994 (CNY Billions)

Year	State Budget (appropriation)		Domestic Loans		Foreign Investment		Self-raising Funds and Others		Total
	Amount	Ratio	Amount	Ratio	Amount	Ratio	Amount	Ratio	
1994	52.96	2.97	399.76	22.42	176.90	9.92	1153.10	64.68	1782.72
1995	62.11	3.03	419.87	20.46	229.59	11.19	1340.92	65.33	2052.49
1996	62.59	2.68	457.37	19.58	274.66	11.76	1541.24	65.98	2335.86
1997	69.67	2.76	478.26	18.93	268.39	10.63	1709.65	67.68	2525.97
1998	119.74	4.17	554.29	19.30	261.70	9.11	1935.98	67.42	2871.71
1999	185.21	6.22	572.59	19.24	200.68	6.74	2016.97	67.79	2975.46
2000	210.95	6.37	672.73	20.32	169.63	5.12	2257.74	68.19	3311.04
2001	254.64	6.70	723.98	19.06	173.07	4.56	2647.01	69.68	3798.70
2002	316.10	7.02	885.91	19.67	208.50	4.63	3094.19	68.69	4504.69
2003	268.78	4.59	1204.44	20.55	259.94	4.43	4128.47	70.43	5861.62
2004	325.49	4.37	1378.80	18.49	328.57	4.41	5423.63	72.74	7456.49
2005	415.43	4.39	1631.90	17.25	397.88	4.21	7013.88	74.15	9459.09
2006	467.20	3.93	1959.05	16.47	433.43	3.64	9036.02	75.96	11895.70
2007	585.71	3.88	2304.42	15.28	513.27	3.40	11676.97	77.43	15080.36
2008	795.48	4.35	2644.37	14.46	531.19	2.90	14320.49	78.29	18291.53
2009	1268.57	5.07	3930.28	15.71	462.37	1.85	19361.74	77.38	25022.97
2010	1301.28	4.55	4402.08	15.40	470.36	1.65	22404.20	78.40	28577.92
2011	1484.33	4.29	4634.45	13.39	506.20	1.46	27973.44	80.85	34598.42
2012	1895.87	4.63	5159.35	12.59	446.88	1.09	33465.47	81.69	40967.57
2013	2230.53	4.54	5944.20	12.09	431.94	0.88	40554.58	82.49	49161.25
2014	2674.54	4.92	6522.10	12.00	405.29	0.75	44746.12	82.33	54348.06
2015	3092.43	5.29	6105.40	10.45	285.45	0.49	48936.60	83.77	58419.88

Source: National Bureau of Statistics of China 1994–2015

sharing system reform was introduced as a top-down tax reform promoted by the central government in order to deal effectively with the allocation of financial rights and responsibilities between the central government and local governments. Under the tax sharing system, the tax was divided into central taxes, local taxes, and taxes shared by the central and local governments. This reform, on the one hand, increased the central government's fiscal revenues and improved its macro control capacity and the transfer payment system. On the other hand, the local government's tax revenues decreased while the responsibilities they had to shoulder were not reduced, which widened the gap between the local government's fiscal revenues and their expenditures (Ba and Yang, 2014; Bird, 2005).

Figure 1 lists the effects brought about by the 1994 tax sharing system reform on central and local fiscal revenues. Before the reform, say, during the period between 1989 and 1993, the proportion of local fiscal revenues to national fiscal revenues took up around 70 percent in 1989 and it even reached 78 percent in 1993. After the reform, with the transfer of the tax collection rights from local governments to the central government, the central government's fiscal revenues increased year by year while the local government's fiscal revenues began to decrease, which was especially notable in 1994. Local fiscal revenues declined from 78 percent in 1993 to 44 percent in 1994, while the central fiscal revenues jumped from 22 percent in 1993 to 56 percent in 1994. This change made local governments run short of fiscal resources to spend on local affairs, especially urban construction projects.

Table 4 shows the change in the difference between local fiscal revenues and expenditures before and after the tax sharing system reform. Before the reform, the gap between local revenues and expenditures was not significant, varying from minus 10 billion to plus

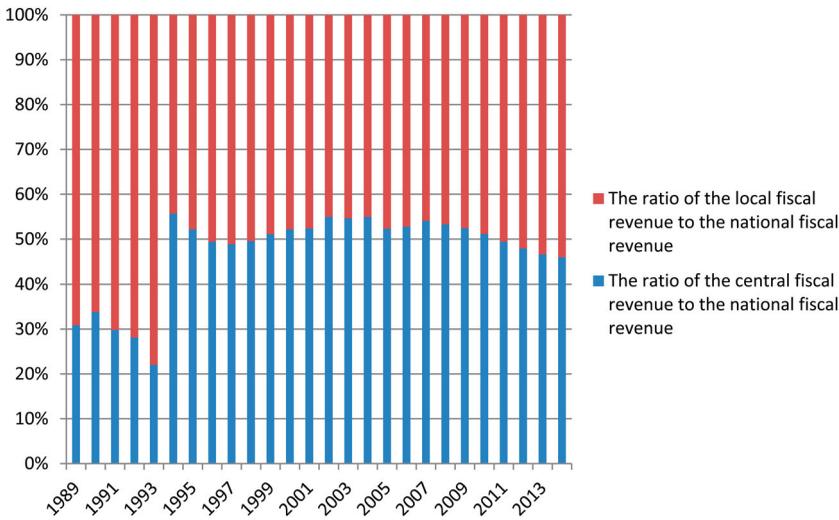


Figure 1. Changes in the ratio of central fiscal revenues to local fiscal revenues before and after 1994. Source: National Bureau of Statistics of China 1989–2014

10 billion CNY. After the reform, the gap began to increase year by year; the deficit amounts increased from 172.66 billion CNY in 1994 to 5.32 trillion CNY in 2014. Rapid urbanization made this widening gap painfully visible (Ba and Yang, 2014; Wu,

Table 4. Evolution of local fiscal revenues and expenditures before and after 1994 (CNY Billions)

Year	Local fiscal revenues	Local fiscal expenses	Differences
1989	184.24	193.50	-9.26
1990	194.47	207.91	-13.44
1991	221.12	229.58	-8.46
1992	250.39	257.18	-6.79
1993	339.14	333.02	6.12
1994	231.16	403.82	-172.66
1995	298.56	482.83	-184.28
1996	374.69	578.63	-203.94
1997	442.42	670.11	-227.68
1998	498.40	767.26	-268.86
1999	559.49	903.53	-344.05
2000	640.61	1036.67	-396.06
2001	780.33	1313.46	-533.13
2002	851.50	1528.15	-676.65
2003	985.00	1722.99	-737.99
2004	1189.34	2059.28	-869.94
2005	1510.08	2515.43	-1005.36
2006	1830.36	3043.13	-1212.78
2007	2357.26	3833.93	-1476.67
2008	2864.98	4924.85	-2059.87
2009	3260.26	6104.41	-2844.16
2010	4061.30	7388.44	-3327.14
2011	5254.71	9273.37	-4018.66
2012	6107.83	10718.83	-4611.01
2013	6901.12	11974.03	-5072.92
2014	7585.96	12921.55	-5335.59
2015	8300.20	15033.56	-6733.36

Source: National Bureau of Statistics of China 1989–2015

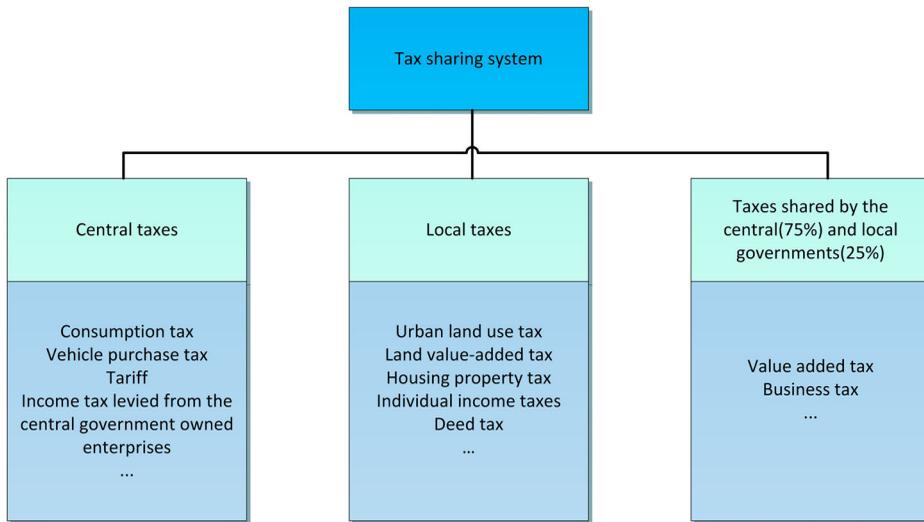


Figure 2. The tax sharing system

1995). These contradictory tendencies led local governments to face a huge challenge in meeting their financial needs. Therefore, local governments turned their eyes to local taxes since they are the key sources of local revenues (See Figure 2). Yet many local taxes are related to land, which mobilized local government's enthusiasm to implement land concessions.

Land Concessions

Local governments directly or indirectly control the vast majority of urban infrastructure projects. However, under the conditions of the current tax sharing system and the absence of inheritance tax and gift tax, the traditional fiscal distribution system taking the budget revenues as the local governments' core funding source no longer meets local governments' financial needs for urban construction. In response to this new scarcity, local governments have begun to raise money through land concessions. In addition, after the implementation of the tax sharing system, many local taxes exclusive to local governments are related to land concessions (e.g., land value-added tax), which provides stimuli for local governments to promote land finance.

In the early 1990s, with the further reform of the urban land use system, the real estate industry became increasingly prosperous. In this context, cities urgently needed urban infrastructures to match the development of their real estate. Due to their financial limitations, many local governments allowed real estate developers to construct auxiliary facilities. The return for the developer's investment in auxiliary facilities was obtaining the concession to use land, an arrangement known as "land finance."

In this century, especially since 2003, with the establishment of the "bidding-auction-listing"⁹ transfer system for profit-oriented land and the heating up of the urban housing and land market in most cities (Su and Zhao, 2007), land, as the local government's greatest resource, became more and more valuable and brought enormous land dividends for local governments. On the one hand, as the direct reflection of these land dividends, local

governments' revenues from land concessions kept growing with the rise in land prices and reached new records year on year. In fact, they evolved into the most significant component of off-budget revenues for local governments. In 2001, local fiscal revenues were at 780.33 billion CNY, of which 129.7 billion CNY were from land concessions. The proportion of land concession revenues to the local government's fiscal revenues was 16.62 percent in 2001 and reached 40.55 percent in 2015 (See Figure 3). Although overall, the proportion of land concession revenues increased in this period, it went through peaks and troughs. The trough in 2008 resulted from the financial crisis. In 2010, land concession revenues reached their peak, being influenced by a significant increase in the scale of land supply, the ratio of "bidding-auction-listing land," and the land prices around the country. Since 2013, the land concession revenues increased slowly and even started to decrease. Slower economic growth was the main reason. Furthermore, real estate developers were more cautious when purchasing land because of possible oversupply. The government began to adopt regulatory policies to curb this oversupply. On the other hand, as an indirect reflection of land dividends, local governments increased their debt financing ability with the increase of land prices (Anderson, 2009; Cao, Feng, and Tao, 2008). The combination of "land concession revenue" and "land mortgage loan" became an important financing model for local governments to raise money for urban construction. Meanwhile, the investment in infrastructure stimulated the growth of local economies and improved the quality of urban life, which further promoted the rise in land prices. It created conditions for local governments to raise more money from banks (Pu and Wang, 2014). The positive feedback loops between land finance and infrastructure investment are the core of the finance and investment model for urban construction in recent years. However, this model has various drawbacks. Land concessions generate higher revenues for local governments and help them solve the financial deficiency problem, so local officials tend to sell land for political reasons. This behavior actually "overdrafts" future land revenues because the land concession fees of the following 70 years are "one offs" collected

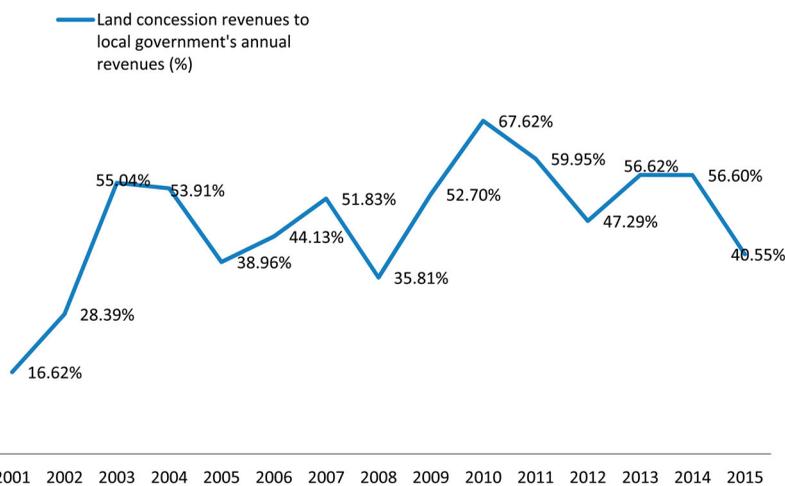


Figure 3. Land concession revenues to local government's total annual revenues (%) between 2001 and 2015. Source: National Bureau of Statistics of China and China Land & Resources Almanac (2001–2015)

by incumbent officials and spent during their tenure, which improves current official's political performance but impairs their successors' benefits. Meanwhile, local governments expropriate land from farmers at a low price but sell them at a high price, which not only harms farmers' interests but also pushes up housing prices and hence creates more social conflict. This new system is unlikely to change in the short term. Due to the various stakes at play, Wu (1995) sketches how the presence of specific institutions at the beginning reinforces inertia. This is because it is more convenient for local governments to go along with the original path than to explore a new path. Therefore, officials do not have strong incentives to change the land finance mechanism since the institutional change costs are high and the results are uncertain (e.g., if the change fails, the result would affect the official's performance and thus influence their promotion possibilities).

Urban Development and Investment Corporations (UDICs)

According to the Budget Law of the People's Republic of China issued in 1994, local governments are not allowed to issue local government bonds, except as otherwise stipulated by law or the State Council. The legal restriction and poor financial status of local governments have led to a lack of investments in urban construction. Therefore, to bypass these legal constraints, UDICs have been founded to help local governments borrow money from the market and quickly develop public facilities (TheWorldBank, 2010). Local governments usually use public resources (e.g., land use rights) or pack the best quality assets of state-owned companies as initial capital to set up UDICs. Some provide services such as water and gas supply as well as road and bridge construction to generate cash flows; some do not have revenues (e.g., helping build streets); and some are even just "empty-shell" corporations helping local governments borrow money from banks (Liu and Salzberg, 2012). Therefore, different levels of UDICs (e.g., municipality- and county-level) are set up with different purposes. These companies are founded under the Company Law of the P.R.C., but the law does not define the relationship between UDICs and local governments (The World Bank, 2010), which raises serious concerns about the potential risks caused by the extensive use of UDICs to borrow extra-budgetary loans for infrastructure (National Audit Office of PRC, 2013). With the land use right as well as financial subsidies, UDICs were easily able to obtain loans from banks since it is commonly believed that government-backed loans are creditworthy (Ba and Yang, 2014). The appearance of UDICs made the article "not to allow local governments to be indebted" a mere scrap of paper. Instead, it is now common to see the existence of many highly (indirectly) indebted local governments. This has also given rise to distorted views of liability among many local officials; they are not concerned about these loans since these will often have to be repaid by their successors well after they themselves have been promoted elsewhere. The mismatch between local officials' debt liability and their personal interests encourages local governments blindly to borrow money. For local officials, the more money they borrow, the more likely they are to be promoted because they have more money to help them speed up urban construction and boost local GDP (Wu, Feng, and Li, 2015). This mechanism can at least partly explain why local officials have strong incentives to borrow even if this is forbidden by the budget law.

In addition, after the 2008 financial crisis, the central government introduced policies to support local governments to enlarge the number of financing channels and encourage

them to provide matching resources to support a 4 trillion CNY investment plan. This led to a rapid increase in the number of UDICs and their debt amounts. There were more than 10,000 UDICs in total throughout the nation by the end of 2010, 25 percent more than the number at the end of 2008 (People's Bank of China, 2011). The increase in UDICs helped local governments raise money for urban construction but also created new problems. For example, the debt balance UDICs were responsible for increased to 4.08 trillion CNY by the end of June 2013 (National Audit Office of PRC, 2013), which was equal to one-twelfth of China's GDP (51.9 trillion CNY) in 2012. A part of the debts was not completely covered by collaterals (National Audit Office of PRC, 2013). Since the money borrowed through UDICs is mentioned on local governments' off-balance-sheet, it is obviously difficult to spot due to the near-complete absence of the information on loans (Feng, 2013; Wong, 2013; Xu, 2015). No supervisory agency was assigned to monitor UDICs' financial status and activities (Feng, 2013; Wong, 2013), increasing the repayment risks. Furthermore, local governments heavily rely on land concession revenues or new loans to repay their debts (National Audit Office of PRC, 2013). This is not sustainable because land resources are limited and the growing financial burden causes snowball effect on interests. Therefore, controlling the debt and reducing the chance of occurring a debt crisis are crucially important issues for the central government, paving the way for the introduction of municipal bonds and PPP.

Overall, the investment and financing model for urban construction in China has gradually shifted from an early stage characterized as completely controlled by the central government to a market-based financing model that makes use of both fiscal funds and private capital. Yet governments are still playing a dominant role in infrastructure investment. Accordingly, a fully diversified investment model which involves various capital sources has not yet been established.

Local governments have changed their role from command to guidance and hence the market has grown increasingly important. Urban development finance in this stage is characterized as a combination of *a government guided and market-driven operation*, which had both positive and negative influence on urban development. On the one hand, it spurs the development of urban infrastructure. On the other hand, it has activated a lock-in effect where private sector enthusiasm to invest in infrastructure cannot be fully mobilized. It also generated many side effects, such as high indebtedness and unsustainable land finance.

New Trends in Financing Urban Construction

PPP is an arrangement to incorporate the private sector into developing infrastructure or delivering public services for the public sector (Delmon, 2011). With the new "Budget Law" enacted in 2014 and the nation-wide promotion of PPP by the central government, a new trend in financing urban development has emerged.

It is stipulated in Article 28 of the Budget Law of the People's Republic of China 2014 that:

Local governments at various levels shall prepare their budget in accordance with their revenues and the balance of revenues and expenditures shall not have deficits. Local governments are not allowed to issue local government bonds, except as otherwise stipulated by law or the State Council.

This clause constrained local governments from getting loans from banks. In the second half of 2011, the State Council chose four financially strong authorities (Shanghai, Zhejiang province, Guangdong province, and Shenzhen) as pilots to start issuing bonds by themselves, which was viewed as the starting point for issuing local government bonds. In 2014, the new budget law was issued. Article 35 of the new budget law, for which article 28 of the old budget law was taken as a point of departure, stated: “The local governments at various levels shall prepare their budget in accordance with their revenues and the principle of balance of revenues and expenditures and shall not have deficits, except as otherwise stipulated by law.” This new article replaced the phrase “local governments are not allowed to issue bonds”: local governments could from then on raise money by issuing bonds without breaking the law. The new budget law provides a new solution for Chinese governments in arranging money for urban construction since issuing bonds under the legal framework makes the risks local governments face transparent to the central government and thus keeps debts at controllable levels (Bellier and Zhou, 2003; Krumm and Wong, 2002; Tang, Shen, and Cheng, 2010).

In addition, PPP has begun to attract the Chinese central government’s attention again. PPP is not a new financing vehicle in China, but it offers new hope for Chinese governments when it comes to handling debt crises (Thieriot and Dominguez, 2015). Looking at PPP’s timeline in China, it has gone through a rise-fall-rise evolution since 1993. From 1993 to 2007 PPP was on the rise, mainly due to growing demand for transport services and limited infrastructure capacity along with a global trend to apply privatization and liberalization philosophies to infrastructures; however, PPP in China began to fall from 2007 onwards, because many private contractors appeared unable to deliver a final product at reasonable conditions (De Jong, Mu, Stead, Ma, and Xi, 2010; Mu et al., 2011). PPP has begun to see a new rise since 2014. Many notices/guides/opinions were first issued at the national level to advocate and regulate the implementation of PPP across the country (See Table 5). Later, Fujian province, Anhui province, Jiangxi province, Henan province, Shandong province, Jiangsu province, Hebei province, Hunan province, Sichuan province, and Zhejiang province in succession issued provincial PPP documents based on the national documents issued by the Ministry of Finance (MoF) and the National Development and Reform Commission (NDRC). To echo the central government’s policies, PPP projects were launched. Figure 4 shows the PPP projects each province launched in March, June, and September 2016, in an upward trend. At the end of September 2016, 10,471 projects were registered at the Ministry of Finance (MOF, 2016c). PPP offers more opportunities for private capital to get access to urban construction, which diversifies local governments’ funding sources and reduces their financial burden. Second, PPP is conducive to the integration of social resources and the revitalization of the stock of social capital, which further increases economic growth dynamics and the transformation and upgrading of local economies. PPP could also promote the reform of the fiscal and taxation system, making local governments pay more attention to long-term financial planning. Yet there are problems local governments should pay attention to. It should be noted that private finance should be repaid at some future point. There are three repayment forms, including user-based, government-based, and government-and-user-based repayments. Figure 5 is the numbers of PPP classified based on the repayment forms launched in March, June, and September 2016. PPP arranged through user-based repayment indicates that the initial investments should be repaid by users, expanding

Table 5. PPP documents issued by MOF and NDRC

Issue date	Notices/Guides/Opinions	Issued by	Highlights
23 Sept. 2014	Notice of related issues regarding the promotion and application of Public Private Partnership	MOF	MOF advocates carrying out PPP nationally and requires parties to actively promote PPP pilot projects and form an institutional framework as soon as possible. It is a framing and agenda-setting document.
29 Nov. 2014	Notice of operation guidance (trial) for Public Private Partnership	MOF	This notice drafts specific guidelines for PPP operation from five angles: project identification, project preparation, project procurement, project implementation, and project transfer.
30 Nov. 2014	Notice of related issues regarding the implementation of pilot Public Private Partnership projects	MOF	The notice issues the first batch of PPP demonstration projects, including 30 projects in 15 provinces and cities covering the field of urban rail transportation, sewage treatment, water and heating supply, environmental governance, and so on.
2 Dec. 2014	Opinions on Carrying out Public Private Partnership	NDRC	NDRC advocates carrying out PPP nationally and requires parties to actively promote PPP pilot projects and clearly state project scope, operations, working mechanisms, and policy guarantees. It is a framing and agenda-setting document.
2 Dec. 2014	General Contract Guidelines for Public Private Partnership Projects (2014)	NDRC	This is a contract manual for PPP projects, including contract subject, contract relationship, project preliminary work, revenue and return, force majeure and law modification, contract termination, default management, dispute settlement and other terms.
30 Dec. 2014	Notice regarding standardized management of Public Private Partnership contracts	MOF	This document provides guidelines and clues for standardization of PPP contracts.
31 Dec. 2014	Notice on government procurement measures on Public Private Partnership contracts	MOF	This document aims to generalize PPP models and standardize government procurement practices, stipulating the government's procurement process, dispute settlement, supervision, and inspection.
13 Feb. 2015	Notice regarding the introduction of Public Private Partnerships into the field of municipal public utilities	MOF	This is a framing document, mainly stipulating the goal, principles, requirements, implementation and guarantees for the introduction of PPP projects in the fields of urban water supply, sewage treatment, garbage treatment, public transportation infrastructure, public parking lots, utility tunnels, and other municipal public utilities.
10 Mar. 2015	Notice of related work regarding the promotion of development finance to support Public Private Partnerships	NDRC	This document provides opinions and guidelines for promoting developmental financial support for PPP projects.
7 Apr. 2015	Notice regarding guidelines for the proofing of financial capacity in Public Private Partnership projects.	MOF	This is a framing document, aiming to promote the implementation of PPP projects, to ensure contract enforcement, and to prevent and control fiscal risks. It clarifies and standardizes the process for proofing financial capacity of PPP projects.

the funding sources for local governments. Government-based repayment does not provide extra money for local governments in that they have to repay the money at some future point. However, this form alleviates local government's financial burden in the short run and enables them to repay on an annual basis. Government-and-user-based repayment is a combination of user-based and government-based repayment, requiring local governments to pay back when the money collected from users is

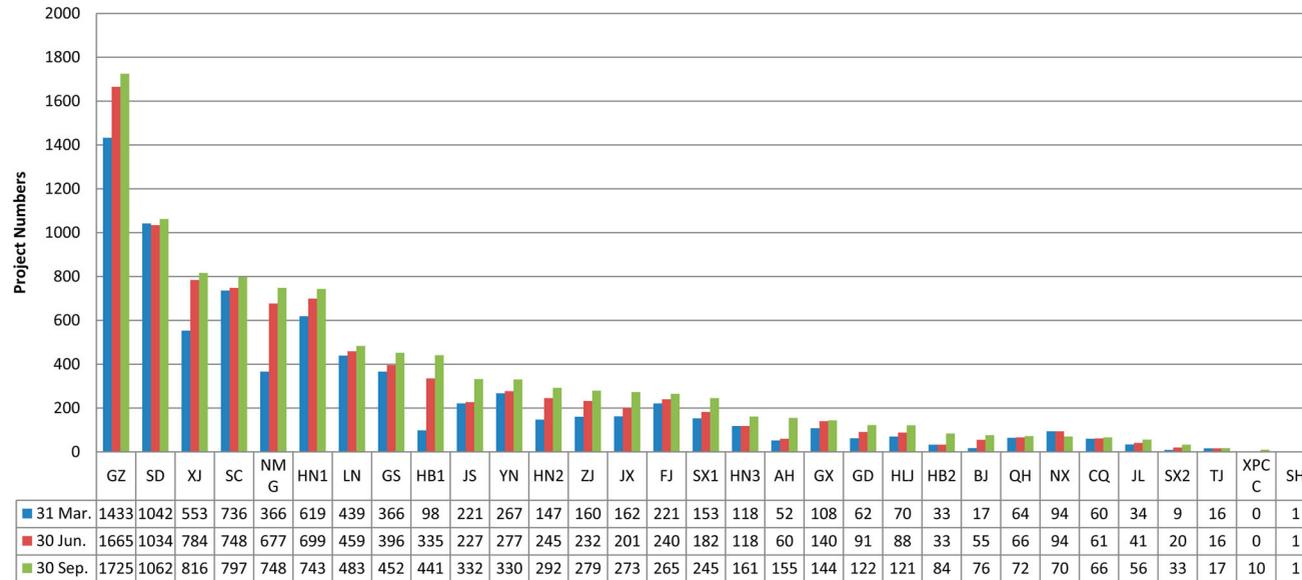


Figure 4. Number of PPP Projects Each Province Launched in March, June, and September 2016 (MOF, 2016a, 2016b, 2016c)

Note: GZ-Guizhou, SD-Shandong, XJ-Xinjiang, SC-Sichuan, NMG-Neimenggu, HN1-Henan, LN-Liaoning, GS-Gansu, HB1-Hebei, JS-Jiangsu, YN-Yunnan, HN2-Hunan, ZJ-Zhejiang, JX-Jiangxi, FJ-Fujian, SX1-Shanxi (陕西), HN3-Hainan, AH-Anhui, GX-Guangxi, GD-Guangdong, HLJ-Heilongjiang, HB2-Hubei, BJ-Beijing, QH-Qinghai, NX-Ningxia, CQ-Chongqing, JL-Jilin, SX2-Shanxi(山西), TJ-Tianjin, XPCC-The Xinjiang Production and Construction Corps, SH-Shanghai

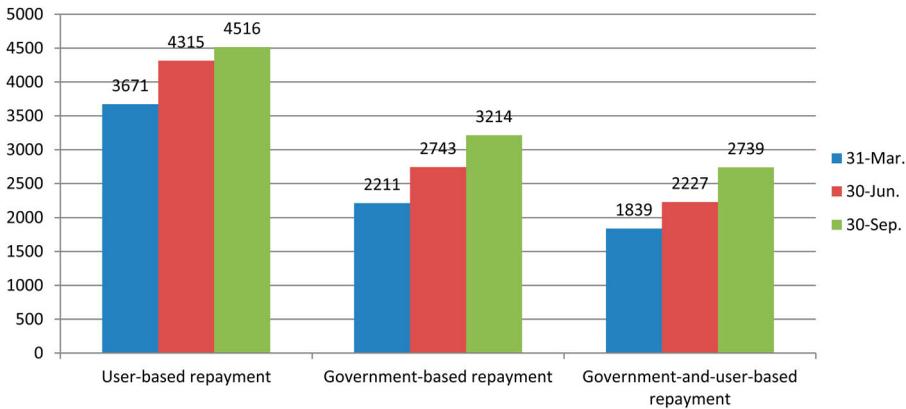


Figure 5. The number of each PPP type launched in March, June, and September 2016 (MOF, 2016b, 2016c)

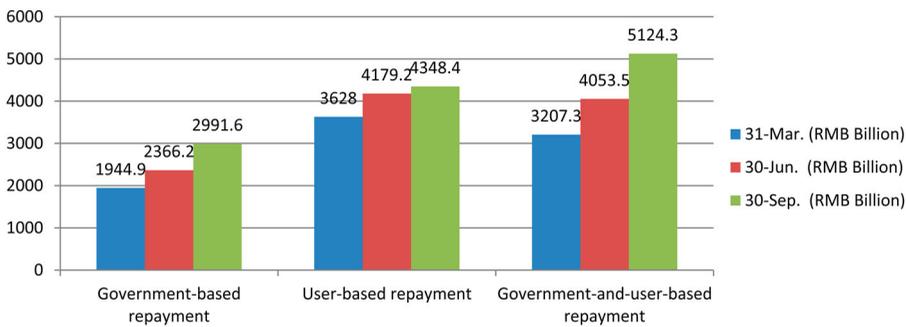


Figure 6. Investment amounts of each PPP type in March, June, and September 2016 (MOF, 2016b, 2016c)

insufficient to meet the amount mentioned in the agreement. Government-and-user-based and user-based repayment forms together account for 76 percent of the total amount of registered PPP projects (See Figure 6), indicating PPP certainly helps the Chinese governments expand their funding sources. However, one common problem with PPP in China is that the government promotes the use of private capital to boost the modernization of infrastructures, but fails to create conditions for improving market conditions (Beh, 2010).

Conclusions and Implications

We have described the evolution of the financial arrangements in China for urban construction over time as a path-dependent process. Every new stage could be understood from increasingly poignant funding problems in a previous stage, institutional reforms in the fiscal system to deal with them, and historical institutional lock-ins that led to workable but suboptimal and only temporarily effective solutions. At each transition from stage to stage, a rebalancing act between Chinese governments and market players was performed. The selection of new paths for urban development finance and investment was

a dynamic process, which reallocated and restructured factors of production (e.g., human resources, land, and capital) with the system growing increasingly complex and hard to control. Old financial gaps were filled and new ones emerged. Path-dependent evolution steers urban finance in new directions each time, but these directions are influenced by historically inherited institutions that operate the system reform and thus take the shape of a new lock-in rather than an optimal solution (Xu, 2011).

At the end of the 1970s, the urban population increased dramatically due to the liberation of the rural labor force, which put forward new needs and wishes for urban infrastructure. All these factors challenged the central government and local governments in terms of their financial arrangements. Gradually, Chinese governments began to explore new financial vehicles for urban development. They levied new taxes, raised tax rates, made use of foreign capital, and implemented responsibility contracts at various levels of government levels to broaden fiscal revenues. Although the responsibility contracts at various levels of government brought a variety of merits, they also created many headaches, including a slow-down in the constitution of an integrated market and a weakening of the central government's ability to control macroeconomic developments.

The above drawbacks along with the development of China's economy drove Chinese governments to adopt the tax sharing system, which dramatically reduced local governments' revenues and hence funds for urban construction. Land concessions and UDICs were adopted to cope with financial deficiencies in this period. These two financial vehicles gave an enormous boost to the development of China's urban infrastructure. Yet they can now also be viewed as unsustainable vehicles. First, land prices are more likely to fluctuate cyclically, which challenges the funding capacity of local governments. System risks will increase significantly if local authorities depend heavily on land revenues as a guarantee for bank loans. In addition, in the future less and less land will be available for exploitation due to growing scarcity of land resources, an additional challenge to the robustness of the land finance formula. Second, borrowing money through UDICs has made local governments' debts opaque to the central government, which only adds to the unwieldiness of these debts. The central government cannot avoid having to find an answer to the very substantial indebtedness that local governments face. Moreover, repayment terms of bank loans are always shorter than those for bonds, as a consequence of which financial risks will increase if repayments are due in the same period. Cities would thus face a shortage of local fiscal revenue. Issuing local bonds can reduce local governments' installment amounts by dividing the total debts into longer repayment periods. However, local bonds are still in their infancy in China; many additional guidelines and regulations are still to be issued to support the new budget law in regulating the application of municipal bonds.

Limitations in the use of land concessions and UDICs will drive PPP to reach a new zenith in helping Chinese governments solve their indebtedness while continuing infrastructure expansion. Since 2014, MOF and NDRC have issued a host of guidelines to standardize local governments' procurement practices through PPP, thus creating a favourable policy environment for their application by local governments. By introducing private parties to urban construction, local governments can relieve their financial burden, at least in the short term. In addition, supporting measures (e.g., tax incentives) were taken to facilitate the implementation of PPP. Institutional change has the characteristics of a new lock-in constrained by pre-existing arrangements. The interests of the PPP

stakeholders may be harmed due to the existence of an imperfect market, while isolated information feedback and high transaction costs cast a dark shadow over PPP being the answer to funding difficulties. Path-dependent evolution will steer the finance of urban infrastructure development in new directions once actors perceive the drawbacks of existing institutional arrangements as unsustainable and in need of further reform. Analyzing the evolution of financial arrangements for urban infrastructures as a path-dependent institutional process can help analysts and decision-makers spot and anticipate strengths and weaknesses in newly emerging arrangements and make realistic assessments of their viability and desirability.

Notes

1. In 1985, the state council issued “Interim Regulations for Urban Maintenance and Construction Tax of the People’s Republic of China” to strengthen urban maintenance and construction and to expand and stabilize financial sources for urban maintenance and construction.
2. It was incorporated into the Ministry of Commerce of the People’s Republic of China in 2003.
3. Self-raising funds refer to as fixed assets companies receive funds which raised by enterprises and public institutions for fixed assets investment in the reporting period, including enterprises and public institutions’ self-owned funds and funds raised from other companies but excluding various fiscal funds, foreign capitals and money borrowed from various financial institution. “Others” refers to funds received in the reporting period through means other than the aforementioned funds that are used for fixed assets investment. This would include funds raised from the public, individual funds, donation funds, and funds transferred from other companies.
4. A quasi-operational project refers to a project has both profitable and non-profitable characteristics. As for the profitable part, it can be operated by a private company, while the non-profitable part, it can only be operated by the government. A non-operational project is a project can only be operated by government due to its non-profitable characteristics.
5. Government guidance refers to governments being responsible for planning and decision-making at the macro-level. Social participation requires various social parties to invest in infrastructure construction. Marketing operation aims at optimizing resource allocation on the basis of considering the balance between supply and demand and the elasticity of demand.
6. Now it is known as Shanghai Dazhong Public Utilities (Group) Co. Ltd.
7. Now it is known as Dazhong Transportation (Group) Co. Ltd.
8. According to the Securities Exchange Act of 1934, the term “asset-backed security” (A) means “a fixed-income or other security collateralized by any type of self-liquidating financial asset (including a loan, a lease, a mortgage, or a secured or unsecured receivable) that allows the holder of the security to receive payments that depend primarily on cash flow from the asset, including (i) a collateralized mortgage obligation; (ii) a collateralized debt obligation; (iii) a collateralized bond obligation; (iv) a collateralized debt obligation of asset-backed securities; (v) a collateralized debt obligation of collateralized debt obligations; and (vi) a security that the Commission, by rule, determines to be an asset-backed security for purposes of this section; and (B) does not include a security issued by a finance subsidiary held by the parent company or a company controlled by the parent company, if none of the securities issued by the finance subsidiary are held by an entity that is not controlled by the parent company.”
9. The bidding-auction-listing transfer system refers to the four methods of transferring land use rights in China, i.e., bidding, auction, listing, and agreement transfer. The provision on transferring state-owned land use rights through bidding-auction-listing issued by the Ministry of Land and Resources stipulated that profit-oriented land should be transferred to the public through bidding, auction, listing, or agreement transfer.

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Bibliography

- J. Anderson, "Financing Urban Development in China," *The Chinese Economy* 42: 2 (2009) 48–62.
- W. Arthur, "Self-Reinforcing Mechanisms in Economics," paper presented at The Economy as an Evolving Complex System Conference (Santa Fe, New Mexico, September 1987).
- S. Ba and X. Yang, *The New Urbanization Financing and Financial Reform* (Beijing: China Workers Press, 2014).
- L. Beh, "Public-Private Partnerships in China: A Responsive Participation," *Journal of US-China Public Administration* 7: 8 (2010) 30–35.
- M. Bellier and Y. Zhou, *Private Participation in Infrastructure in China: Issues and Recommendations for the Road, Water and Power Sectors* (Washington DC: The World Bank, 2003).
- R. Bird, "Getting It Right: Financing Urban Development in China," *Asia-Pacific Tax Bulletin* 11: 2 (2005) 107–117.
- C. Cao and Z. Zhao, *Funding China's Urban Infrastructure: Revenue Structure and Financing Approaches* (Washington: Center for Transportation Studies, 2011). <<http://www.cts.umn.edu/Publications/ResearchReports/reportdetail.html?id=2026>> Accessed June 2, 2015
- G. Cao, C. Feng, and R. Tao, "Local 'Land Finance' in China's Urban Expansion: Challenges and Solutions," *China & World Economy* 16: 2 (2008) 19–30.
- H. Chung, "Economic Reform and Path Dependence in China: A Comparatives Study of Reform and Development in Nanjing and Suzhou," *Asian Perspective* 27: 2 (2003) 205–239.
- P. David, "Why are Institutions the 'Carriers of History'? Path-Dependence and the Evolution of Conventions, Organizations and Institutions," *Structural Change and Economic Dynamics* 5: 2 (1994) 205–220.
- M. De Jong, R. Mu, D. Stead, Y. Ma, and B. Xi, "Introducing Public-Private Partnerships for Metropolitan Subways in China: What is the Evidence?," *Journal of Transport Geography* 18: 2 (2010) 301–313.
- J. Delmon, *Public-Private Partnership Projects in Infrastructure: An Essential Guide for Policy Makers* (Cambridge: Cambridge University Press, 2011).
- X. Feng, "Local Government Debt and Municipal Bonds in China: Problems and a Framework of Rules," *The Copenhagen Journal of Asian Studies* 31: 2 (2013) 23–53.
- K. Krumm and C. Wong, "Analyzing Government Fiscal Risk Exposure in China," in H. Brixi and A. Schick, ed., *Government at Risks: Contingent Liabilities and Fiscal Risk* (Washington DC: The World Bank, 2002) 235–249.
- M. Laperrouza, "Reforming China's Infrastructure Sectors," *Network Industries Quarterly* 10: 2 (2008) 15–17.
- X. Liu, *Discusses Eco-City Rail Transit Financing Mode Strategy* (Shandong: Shandong University, 2011).
- Z. Liu and A. Salzberg, "Developing Low-Carbon Cities in China: Local Governance, Municipal Finance, and Land-Use Planning-The Key Underlying Drivers," in A. Baeumlner, E. Ijjasz-Vasquez, and S. Mehndiratta, eds, *Sustainable Low-Carbon City Development in China* (Washington DC: The World Bank, 2012) 97–127.

- A. Lv, "Study on Path Dependence of Chinese Institution Change," *Journal of Shandong University* 1 (2003) 124–127.
- MOF, "Quarterly Report on the Project Database of the Comprehensive Information Platform of the National PPP (No. 2)" (2016a) <http://jrs.mof.gov.cn/ppp/dcyjppp/201607/t20160728_2369751.html> Accessed January 3, 2017.
- MOF, "Quarterly Report on the Project Database of the Comprehensive Information Platform of the National PPP (No. 3)" (2016b) <http://jrs.mof.gov.cn/ppp/dcyjppp/201607/t20160728_2369807.html> Accessed January 3, 2017.
- MOF, "Quarterly Report on the Project Database of the Comprehensive Information Platform of the National PPP (No. 4)" (2016c) <http://jrs.mof.gov.cn/ppp/dcyjppp/201611/t20161103_2450051.html> Accessed January 3, 2017.
- R. Mu, M. De Jong, and J. Koppenjan, "The Rise and Fall of Public-Private Partnerships in China: A Path-Dependent Approach," *Journal of Transport Geography* 19: 4 (2011) 794–806.
- National Audit Office of PRC, "The Audit Result of National Government Debts" (2013) <<http://www.audit.gov.cn/n1992130/n1992150/n1992500/3432077.html>> Accessed June 1, 2016.
- National Bureau of Statistics, "National Data" (2016) <<http://data.stats.gov.cn/easyquery.htm?cn=C01>> Accessed December 30, 2016.
- D. North, *Institutions, Institutional Change and Economic Performance* (Cambridge: Cambridge University Press, 1990).
- People's Bank of China, "2010 China's Regional Financial Operation Report" (2011) <<http://finance.people.com.cn/mediafile/201106/02/P201106020831473005328386.pdf>> Accessed June 7, 2016.
- D. Praeger, "Our Love of Sewers: A Lesson in Path-Dependence" (2007) <<http://www.dailykos.com/story/2007/6/15/346883/>> Accessed January 18, 2017.
- D. Pu and S. Wang, "Officials' Promotion Incentive, Economic Responsibility Auditing and Local Government Liabilities," *Accounting Research* 6: 1 (2014) 88–95.
- D. Stark, "Path Dependence and Privatisation Strategies in East Central Europe," *East Europe Politics and Societies* 1 (1992) 17–54.
- M. Su and Q. Zhao, "China: Fiscal Framework and Urban Infrastructure Finance," in G. Peterson and P. Clarke Annez, eds, *Financing Cities: Fiscal Responsibility and Urban Infrastructure in Brazil, China, India, Poland and South Africa*. (New Dehli: Sage, 2007) 74–107.
- L. Tang, Q. Shen, and E. Cheng, "A Review of Studies on Public-Private Partnership Projects in the Construction Industry," *International Journal of Project Management* 28 (2010) 683–694.
- The World Bank, "The Urban Development Investment Corporations (UDICs) in Chongqing, China" (2010) <<https://openknowledge.worldbank.org/bitstream/handle/10986/2888/561750ESW0WhitIC10Chongqing1UDIC1en.pdf?sequence=1&isAllowed=y>> Accessed January 3, 2017.
- H. Thieriot and C. Dominguez, "Public-Private Partnerships in China" (2015) <<https://www.iisd.org/sites/default/files/publications/public-private-partnerships-china.pdf>> Accessed January 2, 2017.
- C. Wong, "Paying for Urbanization in China: Challenges of Municipal Finance in the 21st Century," in R. Bahl, J. Linn, and D. Wetzel, eds, *Financing Metropolitan Governments in Developing Countries* (Hollis, NH: Puritan Press, 2013) 273–308.
- G. Wu, Q. Feng, and P. Li, "Does Local Governments' Budget Deficit Push up Housing Prices in China?," *China Economic Review* 35 (2015) 183–196.
- J. Wu, "Path Dependence and China's Reform," *Reform* 3 (1995) 57–58.
- C. Xu, "The Fundamental Institutions of China's Reforms and Development," *Journal of Economic Literature* 49: 4 (2011) 1076–1151.
- X. Xu, "An Introduction to Chinese Local Government Debt" (2015) <<http://gcfp.mit.edu/wp-content/uploads/2013/08/Policy-Report-of-Chinese-Local-Government-Debt-final.pdf>> Accessed January 5, 2017.