

Financing Transit Oriented Development by Value Capture: Negotiating Better Public Infrastructure

Working Paper WP19EK1

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June 2019

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Abstract

A recent World Bank report warns of the increasing problems of car-dependent urbanization (Suzuki et al. 2015), particularly in rapidly growing cities in developing countries. The integration of transport and urban development at public transport nodes and networks, or 'Transit-Oriented urban Development' (TOD), is a popular strategy that potentially contributes to sustainable urban development. Many Chinese cities have adopted TOD policies as well, but the governance and finance of this strategy is not without problems. Many cities lack an effective integrated policy approach to transport, spatial planning and land management; development gain from real estate development in the vicinity of public transport nodes cannot be used to co-finance public transport investments. While the present land management system in China offers a unique and effective way to capture development gain via land concession fees, the limitations to this system increasingly become clear as well, opening up a debate on the use of alternative value capture instruments. In many countries around the world, financing of TOD strategies is often based on some sort of negotiated developer obligations (NDOs) as a value capture mechanism. In this research project, we analyze the potential use of NDOs and alternative value capture mechanisms that may support TOD policies, in a number of case studies in Chinese cities. The results of the case studies are then used as input for simulation games in which we have tested the effectiveness and impact on negotiation processes of alternative value capture mechanisms, including NDOs and urban land readjustment. The outcomes of our study suggest that, despite successful integrated financial approaches to TOD implementation in some cities, several institutional barriers still prevent the efficient use of value capture mechanisms all over China. Moreover, the cases discussed have in common that they must use, to a certain degree, informal (but not illegal) strategies to bypass current planning and land market regulations, to be able to implement innovative value capture mechanisms. Our study concludes that additional value capture tools can support future sustainable urban redevelopment processes, including TOD, in China, but that the future efficient use of these tools would benefit from a more transparent planning and land management context supporting such tools. As a possible way forward, the study comes with two suggestions. One suggestion would be to copy elements of TOD models from Hong Kong or Japan to mainland China (as some cities basically did already), based on an inclusive TOD concession to metro corporations. The other suggestion would be to develop a legal framework that allows experimental planning strategies in a transparent and controlled context.

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Acknowledgments

The authors want to express their gratitude to Peking University – Lincoln Institute Center for Urban Development and Land Policy, in particular to director Dr. Zhi Liu, and to the Peking University, Shenzhen Campus – School of Urban Planning and Design, in particular to Prof. Jiawen Yang, for their valuable comments and suggestions, and both institutes' organizational support for the research project. Furthermore, we want to thank interviewees that participated in our research and the participants in focus group meetings and gaming sessions for their meaningful contributions.

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Financing Transit Oriented Development by Value Capture: Negotiating Better Public Infrastructure

1. Introduction: Research Objective, Questions, and Strategy

1.1 Theoretical Framework and Hypotheses

Financing of Transit Oriented Development (TOD) strategies is often partially based on some sort of land-based value capture mechanism. This research project builds on the belief that it would be useful to more commonly include such mechanisms in Chinese cities' land management toolboxes as well and aims to contribute to the understanding of the current use of these mechanisms in financing TOD strategies in Chinese cities. The study pays attention to cases in Chinese cities of the successful implementation of TOD policies that have been co-financed by various types of value capture mechanisms, but also investigates current institutional barriers that prevent other cities from copying these strategies. In addition, the study analyzes various potential ways forward to make better use of these types of mechanisms in China—both in terms of efficiency and sustainability—by applying a research strategy that combines extensive literature review, expert interviews, case studies, focus group discussions, and game experiments.

Financing TOD Strategies

A recent World Bank report warns of the increasing problems of car-dependent urbanization (Suzuki et al. 2015, 2): “[...] the problems of car-dependent urban development—congestion, air pollution, greenhouse gas emissions, lengthy commutes, and social inequality in accessibility—have been increasing in rapidly growing cities in developing countries.” China is projected to have 900 million cars, or more than the number in the world today (Fulton and Cazzola 2008). Chinese cities have recognized these problems and have already substantially invested in public transport solutions (metrorail, light rail, bus rapid transit, heavy rail transit) to reduce car dependency. Transit oriented urban development, aiming to optimize the use of improved accessibility of public transport nodes, has proved to be a successful strategy adding to a more sustainable and resilient urban development (e.g. Cervero 2013). However, issues of governance and finance complexity often hinder effective and efficient Transit Oriented Development in rapidly growing Chinese cities. Moreover, the need for urban transformation in relation to TOD will continue, and this will add new policy challenges. To finance TOD strategies, land-based value capture strategies may be introduced in addition to other tax-based finance mechanisms.

Negotiated Developer Obligations and Alternative Value Capture Mechanisms

When the value of a plot of land and/or the building on it increases, this is usually due to one or more of the following variables: 1) the owner makes efforts and invests in the qualities and accessibility of his plot of land and/or building; 2) others, public and/or private parties, make efforts and invest in the qualities of the location (accessibility, status, proximity to economic activities, views, etc) in which the plot and building are located; or 3) public bodies allow more

profitable use and building possibilities through land-use regulation decisions of any kind (rezoning, additional development rights, relaxation of existing land-use regulations, property subdivision decisions leading to new use and/or building possibilities, etc) (Muñoz-Gielen and Van der Krabben 2019). In many jurisdictions around the world, these insights have led (or still lead) to debates about the question who is the legitimate ‘owner’ of this increase in land value?

Muñoz-Gielen and Van der Krabben (2019) argue that when land and building are public or communal property there is not much discussion: the value increase goes to the community, i.e. to those who contribute to it. When land is in private hands, it is this very dependency on the efforts, investments and regulations of other parties than the owner himself that has long stimulated fundamental discussions about whether (part of) the value increase legitimately belongs to the owner. This legitimacy usually builds on two different rationales: direct and indirect ones (Alterman 2012: 763–66, 775–79). While direct instruments seek to capture all or some of the land value increase under the explicit or implicit rationale that this value increase belongs to the community and not to the landowner, indirect instruments are more pragmatic and seek to capture economic value increase under different motivating rationales. Developer obligations belong to this second category of indirect instruments. In this project we particularly aim to add to the understanding of the use of these indirect instruments in Chinese cities.

Muñoz-Gielen and Van der Krabben (2019) further argue that there are two sorts of developer obligations: non-negotiable (N-NDO) and negotiable (NDO): ‘Non-negotiable obligations have a statutory status, which means they are prescribed in national/regional legislation, or in legally binding local policy and can thus be prescribed without negotiation, at least in theory. (...) Negotiable developer obligations (NDO) usually are only vaguely regulated in legislation’. Information on the efficiency of using negotiable developer contributions is rather scarce’.

Collaborative Planning, Complex Decision-Making, and Negotiable Developer Obligations

In many countries traditional top-down planning has been more and more ‘replaced’ in the past decades by more collaborative planning approaches. Those collaborative strategies come in all kinds of forms, but have in common that responsibilities for the implementation of urban planning move from the public sector to private actors. Their effectiveness depends to a large extent on the willingness of private and public stakeholders to collaborate under certain institutional and market conditions. Collaboration usually comes with bargaining. In earlier studies we have found that, next to institutional and legal conditions, cultural aspects—for instance: to what extent are private stakeholders prepared to contribute to public infrastructure costs? or: under which conditions are private developers willing to enter a public private partnership?—can play an important role in the potential success of collaborative strategies (Samsura et al. 2010). Negotiated developer contributions can thus be seen as part of a trend, emphasizing both the relevance of bargaining for effective planning processes and the necessity to organize these bargaining processes in an efficient way. For a better understanding of these bargaining processes and of the impact of introducing *incentives* on decision-making, we make use of the insights of experimental economics, by designing experimental, dedicated game simulations.

1.2 Research Objective and Specific Research Questions

The main objective of this research project is to analyze and add to the understanding of financing TOD strategies in Chinese cities, based on land-based value capture mechanisms. More specifically, we will focus on the use and effectiveness of a specific type and under-researched value capture mechanism: negotiated developer obligations. Additionally, we will design and make use of experimental game simulations to test several incentives—in terms of alternative value capture mechanisms—on the outcome of negotiating processes with regard to developer obligations.

The following research questions will be addressed:

- To what extent have land-based value capture mechanisms been used to finance TOD strategies in Chinese cities?
- How have *negotiated developer obligations*, as a specific type of value capture, been applied for financing TOD strategies in China?
- Which institutional barriers remain in China to the wider use of land-based value capture mechanisms to support TOD policies?
- Is it feasible to improve financing of TOD strategies by introducing alternative land-based value capture mechanisms?

Focus of this Study

This study questions “financing TOD strategies” through Land Value Capture in Chinese cities. The focus of this study, however, is on the use of LVC mechanisms in China, with TOD strategies as a case study to understand how these LVC mechanisms are applied in practice. In other words, while we are aware that the concepts of TOD and transit are rather broad and can be interpreted in different ways (in China and elsewhere), we take them only as a context variable in this study and do not further study them in more detail.

1.3 Research Strategy: Methodology and Data Collection

The research strategy applied in this project consists of four steps:

- *Review of international literature* on land-based value capture mechanisms, including negotiated developer obligations, with respect to financing TOD strategies; review of literature on the use of land-based value capture mechanisms in China.

The literature review provides an overview of value capture mechanisms in general and negotiated developer contributions in particular as used in Chinese cities. This will help to identify critical issues regarding negotiated developer contributions with respect to financing TOD strategies (January–March 2017).

- *Case studies and expert interviews*

A number of case studies in Chinese cities has been selected that have successfully made use of land-based value capture to financing TOD strategies. Moreover, interviews took place with experts in China. The results of the case studies and the expert interviews have been used both as input to the ‘value capture experts workshop’ and to the ‘game simulation workshop’ (April–July 2017).

- *Value capture experts workshop*

A workshop has been organized that invited Chinese experts on value capture and TOD financing strategies to discuss 1) the outcomes of the case studies; 2) the use of negotiated developer obligations and other value capture mechanisms in Chinese cities; and 3) opportunities for the introduction of international value capture mechanisms in Chinese cities (July 2017).

- *Game design, focus group meeting and game simulation workshops*

As the final step in our research strategy, we have developed a game simulation that can be used as a decision-support tool with respect to the use of negotiated developer obligations. The game simulation has been used to test the impact of alternative value capture mechanisms on the outcomes of negotiation processes between public and private stakeholders with respect to (the size of) developer obligations. (September 2017–October 2018)

1.4 Outline of the Report

The structure of the report is as follows: Chapter Two provides an overview of the international literature on land-based value capture mechanisms, while Chapter Three analyzes the relevant literature on the use of land-based value capture in China. Case studies of the use of land-based value capture for TOD are then discussed in Chapter Four. Chapter Five builds on focus group meeting annex game experiments to investigate the potential of alternative value capture mechanisms. In Chapter Six we analyze in more detail both cases of the successful use of land-based value capture mechanisms for TOD in China as well as the institutional barriers that prevent other cities to copy these strategies.¹

¹ Chapters 5 and 6 of this report have been submitted as separate papers to two academic journals.

2. Value Capture International: Literature Review

2.1 Introduction

Value capture refers to the process by which all, or a portion of, increments in land value attributed to “community-level interventions”—often taking the form of improved infrastructure—rather than landowner actions, are recouped by the public sector and used for public purposes. These “unearned increments” may be captured indirectly through their conversion into public revenues as taxes, fees, exactions or other fiscal means, or directly through on-site improvements to benefit the broader community (Alterman 2012). In principle, there is a connection between spatial planning and land value because any improvements to neighborhoods, local infrastructure and services are reflected in appreciating value to any of the land affected by these changes. Additionally, since central cities have the greatest number of factors likely to affect neighborhood-scale characteristics, the number of potentially influencing factors is the highest, and the magnitude of investment is highest on a per-square-foot basis. Thus, securing even a small share of the increase in central city property values is a significant asset that goes to raise the value to the individual landowner (private or corporate) and to the local government in helping to pay for reinvestment in local infrastructure.

2.2 Value Capture Mechanisms

International organizations (and among them international donors) have encouraged Land Value Capture (LVC) as a funding source to support local improvements in urban infrastructure and services (Walters 2012). The question whether land essentially must be considered a private or public good concerns one of the fundamental debates in planning literature (Alterman 2012). Debates about land value capturing by the government, through a variety of mechanisms and instruments, relate to this fundamental debate about land as a public versus private good. Advocates of a strong protection of private ownership over land reject any form of creaming off the value of that land. While proponents of the public good character of land argue in favour of a tax on what has been called the unearned increment in land values: the value increase of land and property as a result of government policies (land use change) and/or public investments instead of investment by the owner himself (Alterman 2009).

Internationally, a variety of ways exists to implement value capture and also a variety of ways to divide them into different groups. There is a considerable international literature on value capturing (Bowers 1992; Church 1990; Gihring 2001; Van der Krabben and Needham 2008; Munoz-Gielen 2010). Alexander’s grouping (Alexander 2012) distinguishes three ways of implementing value capture:

- Compulsory capture, using mandated taxes or charges;
- Voluntary capture, involving the private sector in realizing the added value;
- Land endowment, realizing the added value by selling property rights.

Table 2.1 presents an overview of value capturing tools belonging to these three groups. For local, regional, or national governments to make use of these tools, some institutional design must legitimate it, varying from planning law and tax regulation to more informally agreed upon

negotiations between the public authority and private developer involved (sometimes these negotiations take place under the shadow of the law). For that reason, a value capture tool successfully used in one country cannot just be ‘copied’ into another jurisdiction without the proper institutional design.

Probably, compulsory capture is most efficient in creaming off land or property value for funding public investments. However, there are some reasons to consider alternative mechanisms. First, the static character of such compulsory mechanisms and its inability to deal with unexpected changes in value to be captured (the statutory position of such devices may block quick adjustments to a changing reality). And second, the fact that a precise tool may prevent ‘smart’ solutions to be developed in negotiations between the public authority and the private developer that would benefit both sides.

There are some countries with a long tradition in (compulsory) land value capture, like the United Kingdom, Germany, the Nordic countries, and the Netherlands. Their mechanisms and legislation stem from continuous adjustments and improvements of earlier systems of value capture responding to changing planning ambitions, new attitudes to PPP, or a changing political context. For developing and transitional countries, lacking such a tradition and related practiced knowledge, it can be very challenging to introduce adequate value capture mechanisms, particularly in rapidly growing Chinese cities where the local authorities must deal with huge complex investment projects, both with regard to transit and with regard to real estate. Implementing a ‘financially healthy’ balanced TOD investment strategy can be considered a crucial element of a sustainable urban development strategy.

Land endowment applies to value capture on state-owned land and can be based on a public land development model (Van der Krabben and Jacobs 2013). As we will further discuss in Chapter 3 of this report, for Chinese cities it is considered at present the most used (and effective) value capture strategy, but also potentially vulnerable as a source of income in the (near) future. By assigning development rights to state-owned land, plus value will be created enabling the local authorities to sell (or lease) development land against higher market value. The income from selling the land can then be used to cover the costs of public works. A public-private partnership (PPP) forms the primary mechanism for voluntary capture, usually formalized in a case-specific tailor-made institutional arrangement (Alexander 2012).

Table 2.1: Value Capture Mechanisms

Basic approach	Institutional design form <i>(Existing agent)</i> (New agent)	Value capture mechanism
Compulsory capture		
General	Property tax	Variable rate on land to capture value increment attributable to public investments
	Local government	
	Betterment fees	Proportion of land value increment
	Local government	
Bounded	Impact fees	Implicitly related to land value increment
	Local government	
	Special district (e.g. mass-transit, metro-parks)	Tax on beneficiaries related to value increment and/or levy on local governments
	Benefit assessment district (BAD) (e.g. for transit-oriented development area)	Tax on beneficiaries related to value increment
	Business improvement district (BID) (e.g. for downtown/neighborhood center)	Tax on beneficiaries related to value increment
	Tax increment financing (TIF)	Earmark value increment-related increment of property tax in proclaimed area to fund public investments
	Local government	
Voluntary capture	Public-private partnership (PPP)	Land endowment — see below.
		Public contribution: compulsory capture mechanisms (above), regulatory incentives: zoning
Land endowment	PPP – State-owned land and/or development rights	Share of profit from land development and/or realization of conferred development rights

Source: Alexander (2012), 168

2.3 Value Capture: Current Debates

The international value capture literature continues to discuss various aspects of value capture, most notably: (1) the rationale behind value capturing (Alterman 2012; Rodriguez-Bachiller et al. 1992); (2) the effectiveness of tools and mechanisms for value capturing (Huxley 2009; Van der Krabben and Needham 2008; Smolka 2013a; Smolka and Amborski 2000; Tira, Van der Krabben, and Zanon 2011; Walters 2012); (3) how much value can be captured (Cervero 1994; Smith and Gihring 2006); and (4) the institutionalization of value capture in planning regulation and land law (Alexander 2012). Alterman (2012) distinguishes three important sets of policies that influence value capture: (1) macro-economic policy, (2) direct regulation, and (3) indirect instruments. Macro policy includes substitution of private property by long-term public leaseholds, land banking, and land readjustment. It also comprises nationalization or privatization of all land under long-term use rights and transferability, something many former socialist countries have done. Land readjustment is an advanced strategy that can be deployed as a macro instrument (Van der Krabben and Needham 2008). Direct regulation covers taxes on land or increment taxes upon transfer title and raise an annual property tax or capital gains tax on property. And indirect instruments for value capture are exactions, developer obligations, cost recovery, or infrastructure-based betterment capture and development-rights based betterment.

Indirect value capture through exaction fees or developer obligations is perhaps the most effective form of value capture, flexible enough to adapt to differing institutional contexts and regulatory environments. Value capture instruments that charge for building rights—also referred to as *exactions* or *developer obligations*—have provided partial or full funding for major urban redevelopment projects in many cities (Smolka 2013b). Charges for being allowed additional building rights are based on the separation of building rights from land ownership rights, which allows the public to recover the land value increment resulting from development rights over and above an established baseline. Negotiated developer obligations—which are by definition levied only at the moment of the land-use decision—are fees aimed to force the developer to pay for a suitable share of the infrastructure that assists the public development under discussion (Evans-Cowley 2008). For example, in-kind contributions of facilities built by the developer and given to the city are exactions. Other examples can be found where the state requires the land subdivider to allocate a certain percentage of the area for affordable housing (Darosa 2007), referred to as *inclusionary housing* in some localities (Calavita and Mallach 2009).

3. Land-Based Value Capture in China: Literature Review

3.1 Introduction

Adopting land value to finance public development is not new in China, and the most popular method is land leasing. In addition, land-related revenue is the main source of local fiscal income, and could account for as much as 60% of total fiscal revenue in some cities (Ding 2007). As such, it plays a significant role in financing public infrastructure development. However, income from land is also increasingly considered a (potentially) vulnerable revenue source for Chinese cities: it leads to oversupply of land, it increases inequality in income between cities, and it is based on a questionable compensation mechanism for the original users of the land (Liu and Jiang 2005; Tian

and Ma 2009). Moreover, the system primarily seems to facilitate urban *greenfield* expansion, while it is doubtful whether the increasing demand for urban regeneration—often in a context of complex, fragmented property rights—can be financed in a similar way. Therefore, in order to increase alternative financial revenue, local governments attempt to find alternative value capture mechanisms.

3.2 Land Value Capture Instruments

Land finance is a significant type of fiscal revenue strategy for local governments to raise revenue through land leasing and land tax in China. Land transfer fees have increased noticeably from 129.59 billion yuan in 2001 to over 3,560 billion yuan in 2016². In addition, most land revenues are used to financing the development of urban public infrastructure (Lin 2007). Fan et al. (2016) report that 2.59 trillion yuan land transfer fees has been spent on public infrastructure during the period 2008–2012. Therefore, it can be inferred that land revenues have played a crucial role in the process of China’s urban development. However, Zheng et al. (2014) have argued that the land finance model causes inefficient land use and social problems, and jeopardizes China's sustainable development.

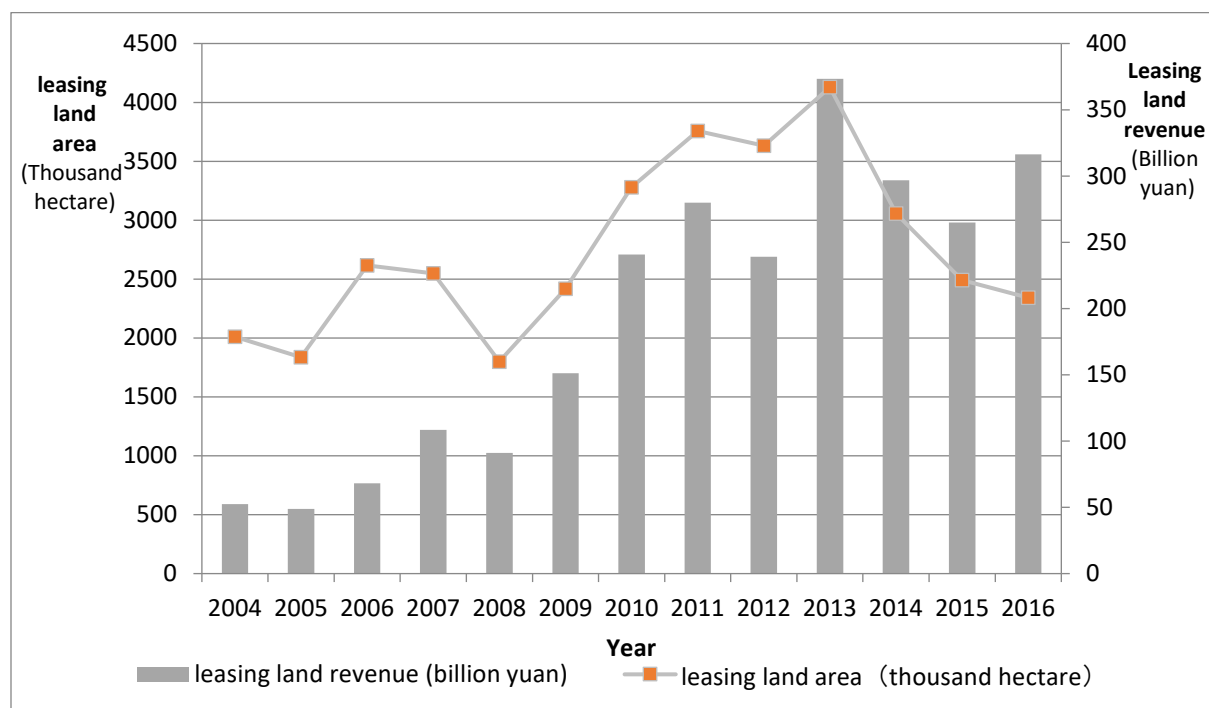
Land Leasing

Land leasing is the common way for local governments to capture land value in China. Local governments have economic and political incentives resulting from fiscal decentralization and governance centralization in China to convert rural land to urban uses (He, Zhou and Huang 2016, Lichtenberg and Ding 2009). The revenue generated as extra-budgetary revenue is used to pay for local public infrastructure development, but there is usually no direct link between the lease required for a given plot of land and the infrastructure provided for that plot (Ingram and Hong 2012). Since the introduction of a land use right system in the late 1980s in China, public land leasing activities have grown considerably. As local governments monopolize land supply on the primary land market, they have the power to control local land markets. Local authorities lease land parcels for commercial use through tender, actions or listing; developers receiving the land pay the land transfer fee in a lump sum which accounts for the major proportion of land revenue for local governments in China.

However, there are issues relevant to land leasing, including social tension, low efficiency and unsustainability of local finance revenue. First, land acquisition has resulted in social tension and inequity due to the ‘unfair’ compensation mechanisms underlying it (Ding 2007). In addition, Tao et al. (2010) explored local incentives of leasing land for relatively low prices to attract investments by manufacturing industry, and found it is related to China’s current land use institutions and intergovernmental arrangements. As a consequence, industrial land is often used inefficiently. Furthermore, the one-time revenue from land leasing is not a sustainable resource for public finance on the longer term.

² China Land and Resources Bulletin 2016.

Fig. 3.1: The Amount of Land Leasing Fee and Land Area 2004–2016 in China³



Land Tax

In China three types of land-related taxes imposed on urban land are in use: (1) land value-added tax, (2) land use tax, and (3) real estate tax. Land value-added tax is collected at the stage of land acquisition and transaction; the urban land use tax and real estate tax are collected from the owners.

Land value-added tax imposes tax on the increment of land value from land or property transfer. The amount of tax is assessed on the basis of land increment and implements four super progressive rates.⁴ Urban land use tax imposes tax on the use of urban land. The amount of tax is assessed on the basis of the land area occupied by the taxpayer.⁵ Urban real estate tax resumes the tax on the holding and leasing of urban buildings. It mainly applies to properties leased to foreign enterprises.⁶

Present taxes on urban land and property generate, however, limited revenue for local governments. Several authors have claimed that the limited revenue from land-related tax is caused by unreasonable rates and assessing approaches, which leads to problems of social inequity (He and Zhu 2004; Liu 1997; Zou 2009). Furthermore, Man (2012) reveals a number of

³ China Land and Resources Bulletin 2004–2016.

⁴ Provisional Regulations on Land Value-Added Tax, 1994

⁵ Provisional Regulations on Urban Land Use Tax, 2011

⁶ Provisional Regulations on Real Estate Tax, 1986

crucial problems of the current land tax system, including: instability, too much focus on the transaction, limited options to tax owners, and improper appraisal methods.

Several authors have suggested the introduction of a solid property tax system as a more sustainable system to provide revenue for Chinese cities (He 2012; Song and Feng 2010;). There are two main reasons. First, levying tax on real property will increase opportunity costs of holding property vacant and may reduce speculative behavior (Man 2012). What is more, property tax can offer a stable revenue source for local authorities and an effective method to prompt social equity. However, property tax reform will not only require technical change, but also demand institutional and legal preparation in order to make it acceptable to the general public. According to a survey that investigated public opinion on property tax (Zheng et al 2012), residents are concerned about the introduction of property tax and the lack of transparency of the collection and allocation process. However, Zheng et al. point out that if the property tax can serve as efficient and sustainable public revenue to improve living standards (for example financing public infrastructure), then support from the public may increase.

Table 3.1: Land-Relevant Taxes in China

Tax	Regulation	Tax base	Tax rate	Collection stage
Urban land use tax	<i>Provisional Regulations on Urban Land Use Tax, 2011</i>	<i>Taxable land size</i>	<i>0.6 RMB/m² to 30 RMB/m²</i>	<i>Ownership stage</i>
Urban real estate tax	<i>Provisional regulations on real estate tax, 1986</i>	<i>Value of real estate for business use</i>	<i>1.2% of original value or 12% of rental income</i>	<i>Ownership stage</i>
	<i>Provisional regulations on levying property tax in Chongqing, 2011</i>	<i>Transaction value of high grade housing units or second and more housing units</i>	<i>0.5–1.2% of high grade housing units value 0.5% of second or more housing units</i>	<i>Ownership stage</i>
	<i>Provisional regulations on levying property tax in Shanghai, 2011</i>	<i>Transaction value of second and more housing units</i>	<i>0.6% of property value</i>	<i>Ownership stage</i>
Land value-added tax	<i>Provisional Regulations on Land Value - added Tax, 1994</i>	<i>Land appreciation value</i>	<i>Progressive tax rate (30%–60% on land value increment)</i>	<i>Transaction stage</i>

Public-Private Partnership in Urban Development

Public and private partnership was officially embraced by the Chinese government in 2001 when the Chinese National Planning Committee issued the policy note entitled ‘Suggestions to

Promote and Guide Private Investment.’ Since then, a series of policies have been released in order to promote the involvement of private capital in financing public infrastructure development. It has become increasingly popular that local authorities cooperate with private investors to promote urban development in China. Consequently, private investors increasingly play a role in supporting urban infrastructure development in many Chinese cities. Cheng et al. (2016) have found that China's PPP projects have undergone four stages influenced by macro investment environment and PPP regulations. From the perspective of the private sector, the reliability of local governments is crucial to the success of PPP projects. In addition, De Jong et al. (2010) have found that informal personnel networks considerably influence public and private cooperation, while at the same time, the incomplete institutional framework for using PPP in China has driven the private players away from serious commitment. Transparency issues also prevent efficient public-private partnership in China.

3.3 Policies Relevant to Land Value Capture

The policies influencing the practice of land value capture mechanism in China include policies with regard to land rights, land use planning, urban governance, and urban infrastructure finance.

Land Rights and Land Market

A dual land right system exists in China. The dual land right system refers to a situation in which there is both an urban system and a rural system in terms of land ownership, land market, and management. Urban land is owned by the state, while rural land in rural and suburban areas is owned by village collectives⁷, except for that stipulated by laws as being owned by the state. On the land market, urban land use rights can be transferred, while the state is the only provider of urban land use rights in the first level of the land market. Land for commercial use must be transferred through bidding, auction, or listing. Land conversion from agricultural use to urban use requires the transfer of land ownership from collective to the state. Land requisition by local government is the only legal channel for implementing land conversion from agricultural to urban land.

The land right system influences the governments’ attitudes to land value capture instruments. First, the local government’s monopoly on the primary land market puts these local governments in a strong position towards private developers. Thanks to the local authorities’ powers to acquire rural land against low value, local governments often give priority to greenfield development rather than redevelopment of built areas, which has led to low efficiency of urban land use in many Chinese cities.

⁷ Land management law of China, 2004, Article 8

Table 3.2: Land Rights and Land Market Regulations in China

Type		Regulations
Land right	Land ownership	<i>Land ownership - Land in urban area is owned by the state. Land in rural and suburban areas, except for that stipulated by laws as being owned by the state, is owned by village collectives. (land management law of China, 2004, Article 8)</i>
	Land use right	<i>Land use right- State-owned and village collectives-owned land could be used by state units or individuals according to law (land management law of China, 2004, Article 9).</i>
Land market	Urban land transfer	<i>Land for industrial use, commerce, tourism, amusement and commercial housing, as well as two or more land intended use in the same parcel, shall be transferred through bidding, auction or listing ("The guideline on the transfer of state-owned construction land use rights by tender, auction, listing " 2007, Article 4).</i> <i>The sales, the transfer, and the lease of collective land for non-agricultural use are forbidden (land management law of China, 2004, Article 63).</i>
	Land expropriation	<i>Land requisition- The state, in order to meet the needs of the public interest, may lawfully acquire land owned by village collectives and make proper compensation (land management law of China, 2004, Article 2.4)</i>

Urban Governance System

There are five levels of the public administrative system, including central, provincial, prefectural, county and town. The effective application of a value capture mechanism would involve coordination among multiple levels of government and multiple public agencies, while their interests and responsibility are not totally consistent. Hence, the relationship between central government and local government, and the relationship among multi-agencies may have great impact on the effectiveness of land-based value capture mechanisms. Additionally, local leaders have strong decision-making power with respect to local development, while local leadership is evaluated by the upper level of governments according to a series of economic indicators under the current administrative system (Cao et al 2008). Consequently, political concerns may influence the outcome of negotiations with regard to land value capture significantly. The attitude of local authorities plays a significant role in the negotiation process, since they are capable of providing incentives to the private developers.

Infrastructure Financing

Municipal authorities have become the key providers of urban infrastructure after economic reform. Since the fiscal reform in 1994, a new tax sharing system and further reforms have

fundamentally altered the central-local fiscal relations (Wong 2000), which has considerably reduced the revenue share of local governments (Lin and Yi 2011). Under fiscal decentralization, there are four general sources of funding for urban infrastructure development including budgetary allocation from central and local governments, local tax revenues, the collection of fees and user charges, and borrowing from domestic and foreign sources (Wu 2010). The extra-budgetary revenues help to narrow the gap between the demand of public infrastructure and the funding resources. Therefore, the local governments have strong incentives to raise extra-budgetary revenue (Lin 2007). Nevertheless, the sustainability and stability of extra-budgetary income are not assured in the long term (Wang et al 2011). Especially land, as a scarce resource in China, can be quickly exhausted and will soon become a binding constraint on economic development (Cao et al 2008).

In order to broaden the financial sources of infrastructure development, privatization of urban infrastructure financing has started since a series of policy documents were released in 2001. The central and local governments have taken measures to attract private investment in financing infrastructure. However, there are institutional and administrative barriers to the involvement of private investment in infrastructure financing.

The Planning System: Land Use Planning and Urban Planning

Land use planning is the overall arrangement and layout of land in a certain region, which is the basis of national land use management. There are five levels of land planning in accordance with the administrative system; the lower planning system should obey the land quota and zoning regulated by upper land planning system, mainly including the amount of construction land and farming land. The land use planning system restricts the type and amount of land use within the area, influencing the local development.

Urban planning arranges the distribution of land use inside the city through strict zoning regulations. The urban planning departments serve as a public agency and follow the instruction of government. Consequently, planning outcomes do not always meet the need of local residents.

Urban planning should coordinate with land use planning. Nonetheless, there are conflicts and lack of coordination between the two planning systems, since they are determined by different public departments. To solve these problems, there are attempts to combine these two departments into one in Shenzhen and Shanghai. What is more, the authorities are promoting pilots of merging both systems into one integrated planning system.

3.4 The Practices of Land Value Capture in Urban (Re)development

Urban (re)development often includes a great number of stakeholders, including local governments, private investors, and local residents. The development process is influenced by social, economic and political factors, and the governance methods have changed from a top-down approach towards a market-oriented model (Li 2015). However, Shin (2009) argues that local governments' strategies to raise revenue by leasing out land still have a large impact on

urban redevelopment operations. Besides, there is concern about social issues and the effects of gentrification (He and Wu 2007⁸).

Faced with these issues, local authorities have taken different measures to improve cooperation with developers and local residents. The partnership between local governments and private developers normally takes the form of land leasing. The local governments, especially the municipal governments, have strong decision-making power in the process of urban redevelopment with monopolized land and political resources. Compared with the prominent domain of local authorities in the partnership, the private developers as principal investors have only modest influence on decision-making processes illustrated for instance by redevelopment practices in Taipingqiao (Yang and Chang C 2007), Yunong Village (Hin and Xin 2011), and Xinzhongjie redevelopment projects (Shin 2009). Nonetheless, this unbalanced power between governments and developers is gradually changing with the improved functioning of market mechanisms and political reform in China. Local authorities seem to now provide more attractive conditions to promote collaboration with private sectors. In order to improve the financial feasibility of the projects and to increase the willingness of developers to invest, local governments permit for instance additional development rights to private developers, sometimes ignoring central government regulations with respect to bidding or auctioning of these rights.

Besides, local authorities have attempted to cooperate with local residents to reduce the use of compulsory property acquisition and in order to alleviate social conflict. In the Pujiang urban renewal project, for instance, land readjustment has been used as a mechanism to support a cooperative approach. Li and Li (2007) demonstrate that the success of this project is closely related to local characteristics and strong administrative support from local municipal government. What is more, in the project of Liede Village in Guangzhou, the local government acted as coordinator only and allowed the village community to cooperate directly with developer. These cases demonstrate the transition of the authorities' attitude and position in urban development, and the importance of public and private cooperation.

In conclusion, the governments' role seems to gradually change from controller to collaborator. Nevertheless, still many problems occur which obstruct the cooperation between public and private sectors. First, the complex urban governance system prevents efficient and transparent negotiation processes between public and private stakeholders. In addition, institutional arrangements for local governments to follow in these negotiations with private stakeholders are still lacking, including, for instance, some flexibility with respect to land use and zoning regulation. This results in considerably distinctive outcomes of different projects driven by local characteristics, such as political concerns and economic objectives.

3.5 Conclusions

Land value capture mechanisms play significant roles in China's urban development. Local governments now apply various land-based value capture instruments, such as land leasing and joint ventures, to finance public infrastructure and urban renewal projects and to support social

⁸ He, S., and Wu, F. (2007). Socio-spatial Impacts of Property-Led Redevelopment on China's Urban Neighbourhoods. *Cities*, 24(3), 194–208.

and economic development with the improvement of the urban environment and the living standards of local residents.

Although local authorities have benefited considerably from land-based value capture mechanisms, there are still some problems to be solved, such as unclear institutional guidance, local governments' domination in the partnership, lack of transparency, and the unsupportive urban planning system.

First, there is no clear institutional guidance on the application of land value capture mechanisms, specifically developer obligations, which delineates the terms for negotiating and to what extent these terms could be negotiated between public and private developers. Hence, different projects conducted by local governments generate different outcomes especially with regard to developer contributions. In addition, the lack of guidance and supervision brings about issues of uncertainty and rent-seeking behavior, while it reduces the willingness of private developers to participate in negotiation and cooperation. Second, political concerns often play a role. Local government sometimes are willing to offer additional (development) rights to private developers such as a higher floor area ratio in order to fulfill political objectives, even though there are strict zoning and land use regulations preventing that. This can be explained by the hierarchical governance system, with the higher levels of government having significant influence on the decision-making process, while local government leaders have great powers influencing the process of negotiation.

Third, another problem relevant to the use of value capture mechanisms in Chinese cities is poor transparency. Little published information is available in terms of negotiation processes, involving what was been negotiated, how they came to agreement, and how the problems were solved. The difficulty of getting access to this kind of information obscures the public supervision and trust with regard to development projects, which may lead to public opposition and social problems.

Finally, the most eminent issue seems to be the unbalanced power in the negotiation process between public and private stakeholders. Usually, local authorities take the lead in the partnership because they have political power, such as approval authority of land quota and the control of first level urban land market. Therefore, they are capable of providing incentives to the private developers. Private developers have relatively less power to negotiate with public sectors, even though they might be attracted by the chance of making a profit. Consequently, the government may change the agreement or policy for political concerns that may make the negotiation procedure time-consuming and ineffective.

4. The Practices of Value Capture Mechanism in Financing Transit Oriented Development in China

4.1 Introduction

In many countries, discussions about the legitimacy and practicality of public land value capture come along with a general trend of decreasing direct public responsibility in the financing of public goods. The public sector is not anymore expected and/or able to be the only one responsible for financing them. In the last decades, public bodies therefore increasingly pursue the private financing of urban infrastructure (road infrastructure, parks, social facilities, affordable and social housing, climate adaptation and mitigation, etc). A well-known example is the inclusionary housing regulation used in many places around the U.S. (and in other countries). This can be related to public sector expenditure constraints, and to a shift towards privatization and managerial strategies and economic liberalization. Also, the rise of environmentalism, which has concentrated public attention on the impacts of urban development, their limitation and mitigation, fiscal decentralization towards local public bodies, the influence of multilateral agencies promoting public value capture, and other variables like e.g. prosperous real estate markets (or the opposite: real estate markets in crisis), have contributed to this fundamental shift (Bailey 1990, 428, 431; Burge 2010, 183, 5–6; Callies and Grant 1991; Crook 2016; 73; Fox-Rogers and Murphy 2015, 41–43; Healey et al. 1996, 144; Kirwan 1989; Loughlin 1981, 95; Monk and Crook 2016; 233–234, 237, 252–253, 256; O’Neill 2010; Peddle and Lewis 1996, 131–132; Smolka 2013, 10–12). This topic has kept the attention of the professional and scholarly communities the last decades, and special attention has been given to the financing of transit systems (e.g. Smith and Gihring 2006; World Bank 2015).

4.2 TOD Strategies in China

To alleviate car dependence and environmental problems, Chinese cities have vastly invested in constructing and improving public transport systems and have paid attention to the concept of transit-oriented development. Transit-oriented development characterized by high density, diversity and compact development has proved to be a feasible strategy to promote sustainable urban development by integrating land development and transit investment (Suzuki et al. 2013). Given the limited public finance and rapid urbanization trend in China, the need to finance the expensive transit infrastructure has become a particular challenge to governments (Yang et al. 2007). There is multiple evidence that urban transport has positive impact on property value close to transit corridors in China. Therefore, land-based value capture mechanisms can be an approach to co-finance public transport development (Doherty 2004; McIntosh 2014; Medda 2012).

As a way to promote urban sustainability, the concept of TOD has become more and more popular in China. Mu (2012) states that cities should meet certain conditions to make TOD work, such as pedestrian-friendly urban design, good governance, and high-quality transit service. Doulet et al. (2016) argue that the implementation of TOD has been hindered by the planning system in China, despite the opportunity to implement TOD principles, as a response to rapid urbanization and supported by relatively low levels of car use and high levels of public transportation use. Zheng (2015) analyzed the challenges to apply TOD concepts in China,

including the misunderstanding of TOD as a concept itself and barriers from current planning regulations, administrative regulations, and financing mechanisms. To promote the effective implementation of TOD, several studies (Chen 2010; Jiang et al 2011; Su et al 2014; Yang et al 2016) have suggested improving the coordination between land use and transportation policies.

A number of empirical studies have started to identify possible solutions to the funding issue relevant to TOD faced by the authorities, based on the potential to capture land value increment resulting from public transport construction. According to empirical studies in Chinese cities such as Beijing, Guangzhou, Nanjing—and in line with similar international evidence—the development of mass transit plays a positive role in the increases in the surrounding property values (Deng and Nelson 2013; Gu and Zheng 2010; Li et al 2014; Sun and Li 2016; Xu et al 2016; Zhang and Wang 2013; Zhang et al. 2014). Li et al. (2014) show that the impact of transit on property values varies by segment: the effect of Nanjing metro lines on commercial land is higher than the effect on residential and industrial land. Besides, the impact on property values in peripheral areas is lower than the impact in the city center. Furthermore, the values and influence of the nodes are unevenly distributed across the transit network, which suggests adopting different strategies for different types of station areas (Salat and Ollivier 2017). So far, the betterment derived from public transport investment has not been effectively captured by local governments. Tian (2006) claims that the inability of the governments to address the betterment and worsenment issues will not only lead to constrained fiscal revenue for public services, but also to uncertainty in (local) land markets.

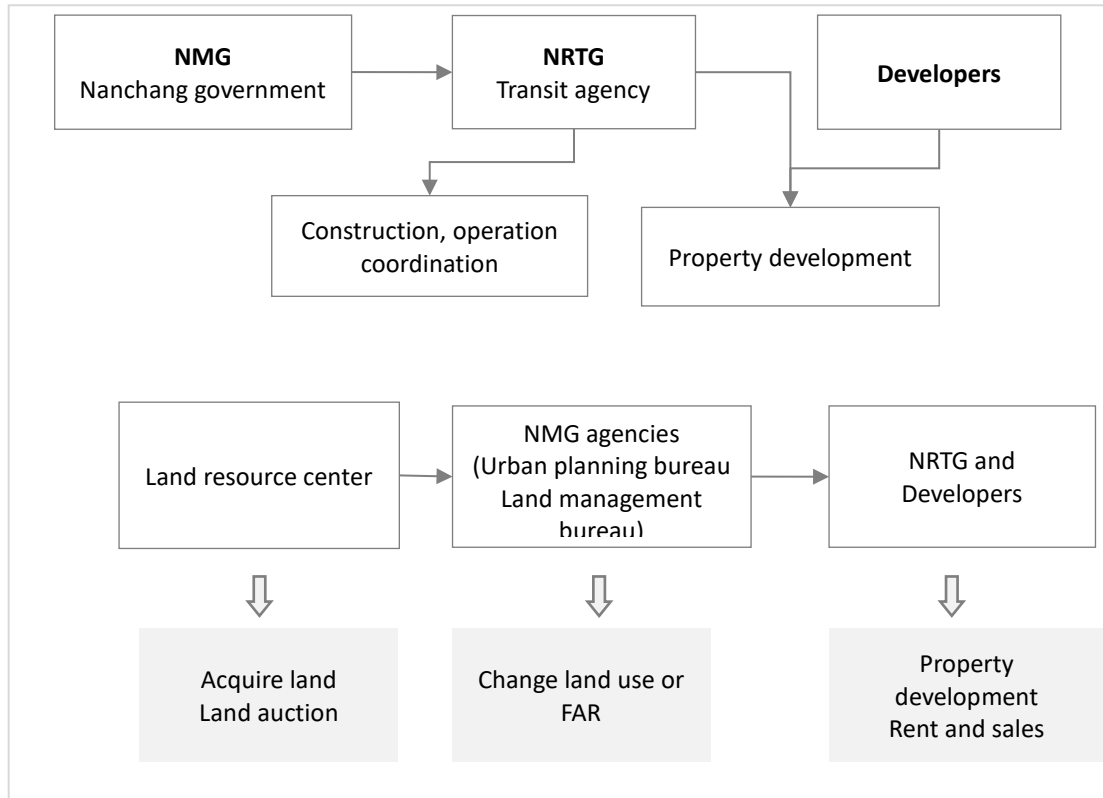
Below we discuss a number of recent cases of land value capture to finance urban transport development in Chinese cities, as described in the available literature.

4.3 Literature Review: Case Studies

Nanchang Railway Investment (Hong and Suzuki 2015)

Nanchang Municipal Government (NMG) established the Nanchang Railway Transit Group Co. Ltd. (NRTG), wholly city owned, to build and operate the metro system. The Land Resource Center will take responsibility of land acquisition for NRTG. NRTG plans to fully use land value increments to partly fund metro railway investment via three procedures. First, the Land Resource Center will acquire land for NRTG from landowners, with compensation, exercising eminent domain (compulsory purchase). NRTG will pay for all acquisition costs. Second, NMG will increase the floor area ratio (FAR) limit at the acquired sites and allow NRTG to either invest directly in land redevelopment or transfer the development rights to private investors. All land parcels within 500 m radius of the stations will be qualified to have higher FARs, and land mixed use rights have been allowed by Urban Planning Bureau. Third, NRTG will re-auction the land sites to developers at market value. In addition, NRTG will cooperate with private developers to develop land around the metro railway stations. Revenue from renting or selling residential and commercial properties will be used to partly finance metro railway investment or operating costs.

Fig. 4.1: The Framework of Rail and Property Development (Hong and Suzuki 2015)



Hong and Suzuki (2015) mention a number of barriers to apply land value mechanism in Chinese cities (based on the Nanchang case):

- (1) Strict development parameters and site control plans are not conducive to maximize urban land values via TOD around stations and along corridors. They include excessive building setbacks, road width, limited emphasis on mixed land use, low differentiation in FAR, not reflecting accessibility of transit.
- (2) Public land leasing programs are not designed in transit-supportive ways. Land development rights around stations cannot be formally transferred to mass transit agencies at the start of a project in a way that enables those companies to coordinate integration of mass transit investment through public-private partnership.
- (3) Local priority is given to greenfield development rather than redevelopment of built-up area, because of fragmented property rights and the complexity of high-density redevelopment projects, limiting the application of TOD and LVC in potentially high-access area.
- (4) Transit investment in China often lacks long term financing. Revenues from the sales of development rights are the major funding source, yet they are only one-time revenue sources.

- (5) The scale of TOD in Chinese cities is small, while the superblock design for car traffic creates urban islands disconnected from other. And transit agencies have difficulty in finding experienced developers who can design and develop well-integrated spaces at the neighborhood level, even though the development rights of public land have been secured.

Inter-City Railway Project in Pearl River Delta (Li et al. 2013; Lin et al. 2016)

Primary plan: Guangdong Provincial Government collaborate with Ministry Of Rail (MOR) MOR was to take control of railway construction and share 50% of the capital expenditure. The other half was to be raised by the provincial government. Guangdong Provincial Government would take charge of operation and covering potential operating deficits. In addition, relevant municipal governments were expected to cover 30–100% of right-of-way cost. Guangdong Pearl River Delta Intercity Railway Co., Ltd. (GPIR) was officially created on September 25th, 2010. Fifty percent of GPIR is owned by Guangzhou Railway Corporation, which is the subsidiary of MOR. The other half is owned by GRCIG, who represents the provincial government. GPIR is charged to develop and operate the inter-city rail system.

Modified framework: Municipal government involvement

The new framework ties land development revenue, station area planning and transit operation together, including: a) assignment of operational funding responsibility to municipal government, b) a special zone clause for station area planning, c) joint venture of provincial and municipal government to manage station area development, d) a prioritization for land development around stations.

Value capture mechanism

On primary land market, the joint venture of provincial and municipal government leases land use rights to developers. On secondary market, the joint venture can collect fees and taxes associated with real estate transactions, rental income from property, and sales revenue from sold property.

In order to economize the land usage around stations, the joint venture initiated several changes in zoning and land development planning of the station area, inducing significant increase in land zone for development within 800 m of stations.

Problems

- (1) For projects beyond a single municipality, the institutional and policy framework to handle value capture issues at this scale are not clear.
- (2) Innovation in fiscal institutions is thus badly needed. What happened in PRD clearly illustrates the significance of policy innovation for transit funding and TOD in China.

- (3) The PRD experience particularly illustrates the interdependence between railway investment and TOD in rapidly urbanizing regions. The planned railway has severe funding shortage without a TOD-based value capture for the regional transit system. The TOD around planned railway stations cannot be prioritized by the municipal government without constructing a funding arrangement that requires the municipality to pledge that it will cover new transit's potential operational deficit.
- (4) There are differences between provincial and municipal government in terms of priority, especially on the issue of station selection and land quota.

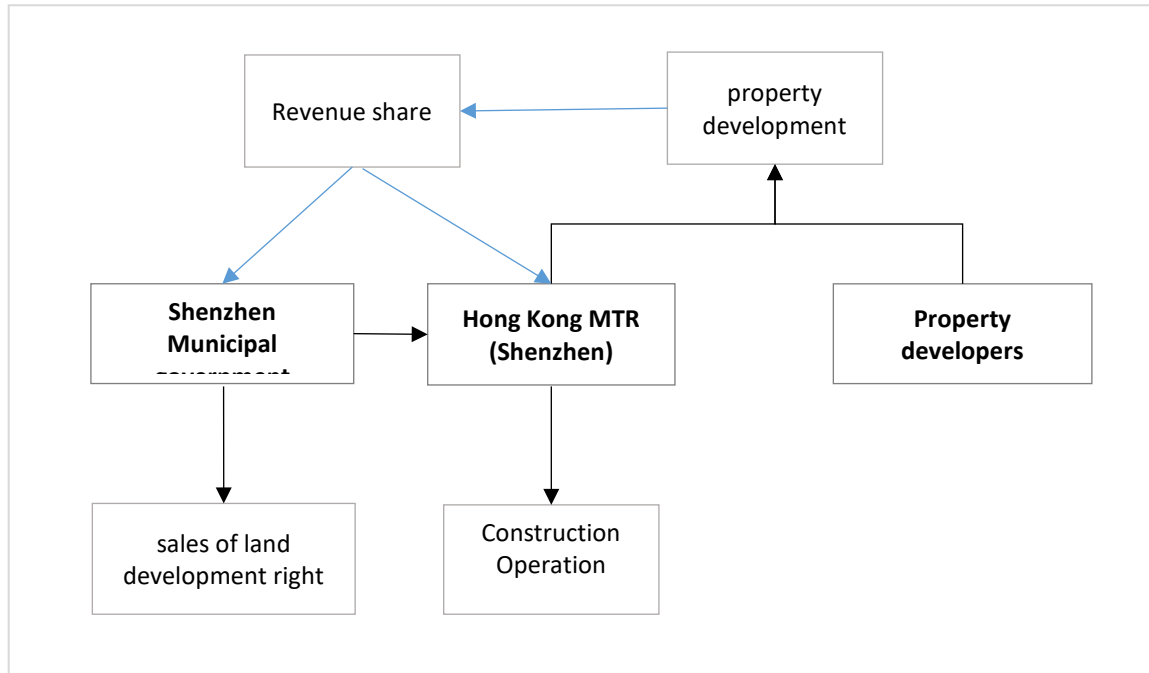
Shenzhen Railway Line 4 (Xue and Fang 2015)

Shenzhen municipal government collaborates with Hong Kong MTR Corporation, based on a franchise contract with Hong Kong MTR. According to the contract, Hong Kong Mass Transit Railway (Shenzhen) Corporation holds a 30-year franchise and takes charge of railway investment and operation in the form of sole proprietorship. In addition, Hong Kong MTR (Shenzhen) has obtained development rights of land along the No.4 line by conditional tender and action against a land price that is lower than the market price. Hong Kong MTR (Shenzhen) collaborates with other property developers to conduct property development. The local government will share the revenue resulting from property development and management with the Hong Kong MTR according to the agreement. Shenzhen municipal government has adjusted its urban development planning for railway construction and property development in order to capture land-based value derived from this railway development.

Problems

- (1) The current land leasing system does not allow the local government to lease the land to a specific company by negotiation for commercial use.
- (2) The coordination costs of transportation planning and land use planning are considerably high.
- (3) The current urban planning system does not support transit oriented development, such as mixed use.
- (4) Dependency on real estate market: property development should meet the demand of real estate market, but this is uncertain (and therefore risky).

Fig. 4.2: Framework for Cooperation (Xue and Fang 2015)



Wuhan Metro Line 2 (Sun et al. 2017)

Predetermined land reserve mode (PRL)

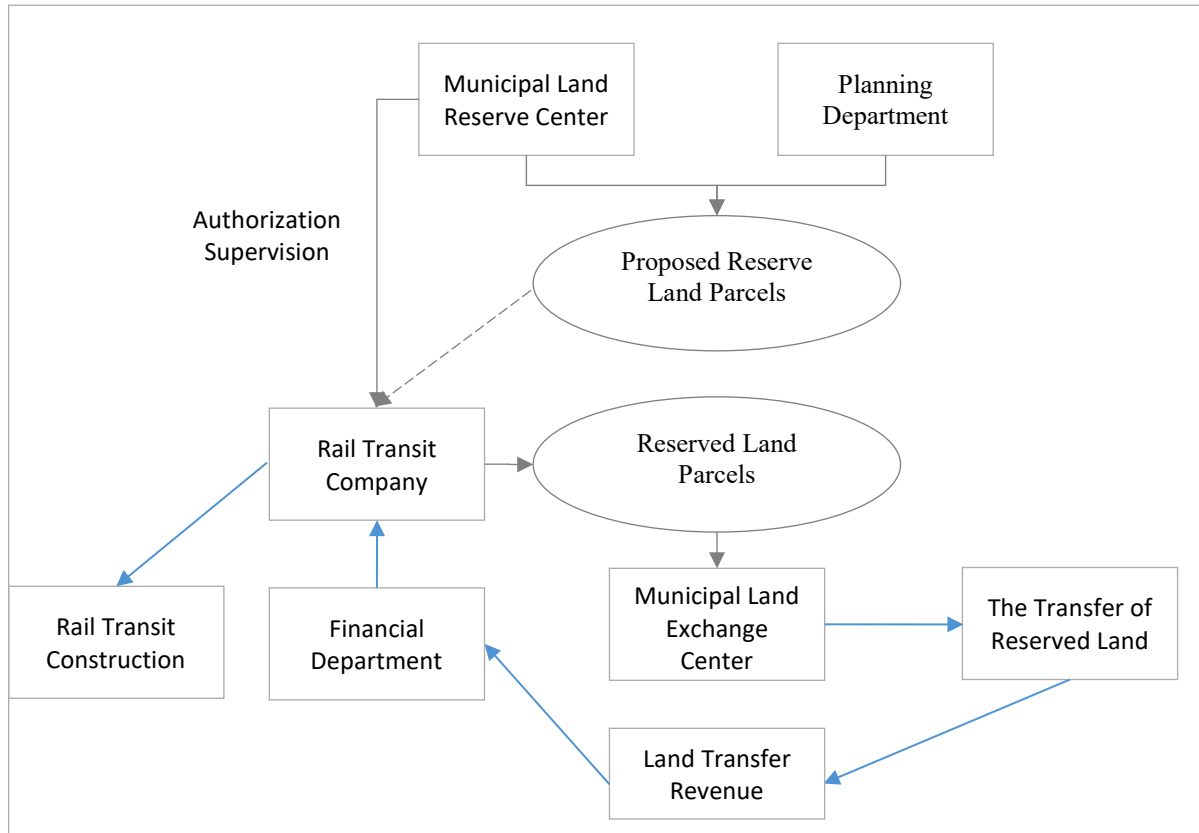
A new mode to finance urban rail transit is applied by utilizing land reserve, linking the reserve of specific land parcels with rail transit projects and using the revenue from selling the reserved land parcels to finance rail transit development directly.

The PRL process is as follows:

1. Land Reserve Center and Planning Department jointly determine the proposed reserve land parcels.
2. Rail Transit Company needs to require authorization and accept supervision from Municipal Land Reserve Center. The Rail Transit Company is responsible for financing and specific land reserve work.
3. Rail Transit Company delivers the land parcels to Municipal Land Exchange Center or Land Reserve Center. Land Exchange Center trades the parcels through bidding and auction and obtains the land transfer income.
4. The land transfer income will be handed over to Financial Department first and will then be returned to Rail Transit Company. The government finance department will deduct the necessary taxes, land reserve costs and other transaction costs, and the remaining land transfer income will be fully returned to the rail transit company through a rail transit construction special fund.

The advantage of PRL is its ability to meet the requirement of the land transfer policy in China. The main disadvantages of PRL include the difficulty of land acquisition, the dependency on real estate market conditions, and the limited amount of land parcels available. Therefore, the sustainability and stability of this revenue source cannot be assured.

Fig. 4.3: The Framework of Predetermined Land Reserve Mode (Sun et al. 2017)



Changsha Metro Line 1 and Line 2 (Nie 2013)

The funding for metro construction stems from the municipal fiscal budget, land revenue, and loans. Land revenue occupied 13.4% of financing funds for the construction of the metro line, which is not the highest rate but worked as a critical part. Changsha Metro Group is responsible for construction and operation of the metro line and tries to adopt PPP finance to subsidize the deficit of maintenance. Facing long-term financing issues, the local government attempts to utilize the development of a commercial site surrounding the metro entrance to attract private investment.

Land leasing

In 2012, Changsha Metro Group released the listing announcement; this parcel belongs to the WuGuang New City Development Co., Ltd., which is originally disposed by administrative allocation for railway or road construction use. The parcel is now reserved by the municipality

and leased for commercial use. According to the data, the parcel traded at 115 million dollars, and the entire revenue directly goes to the Changsha Metro group company as the capital for metro construction.

Fig. 4.4: Funding of Metro Construction (Nie 2013)

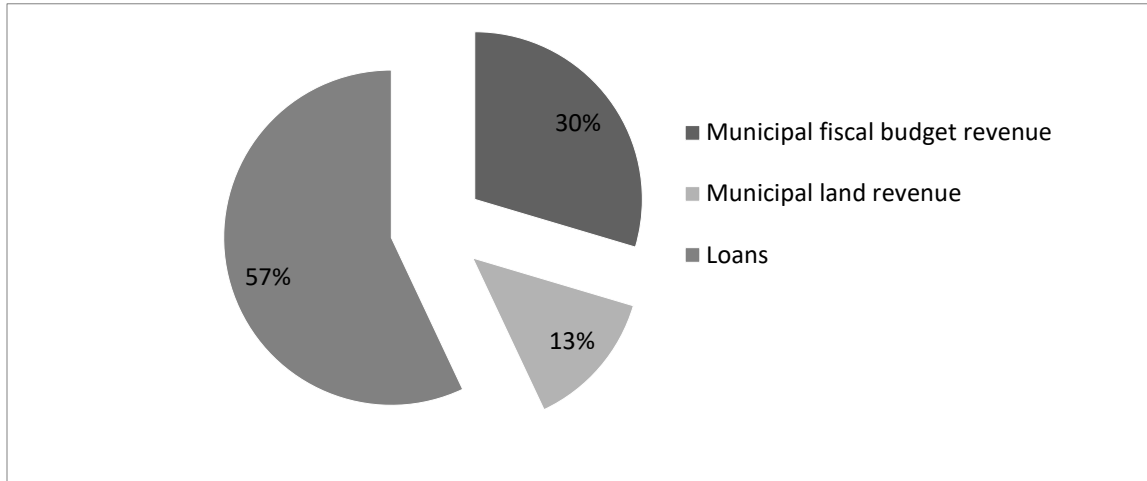
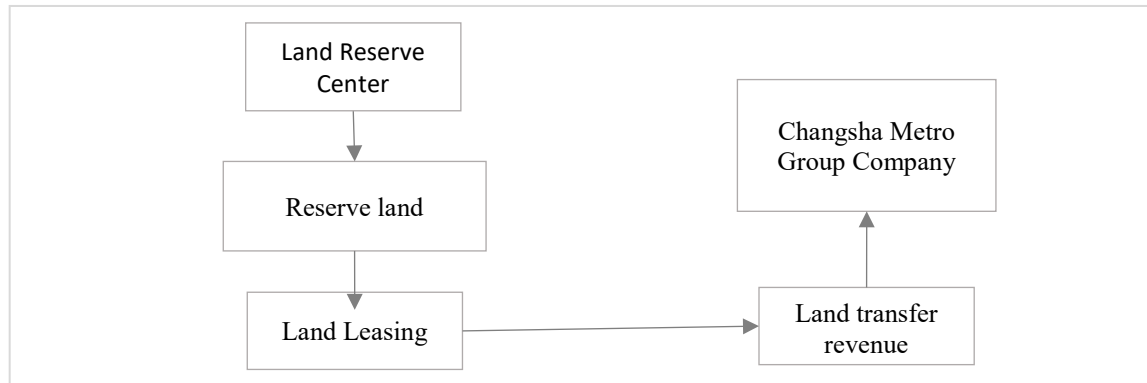


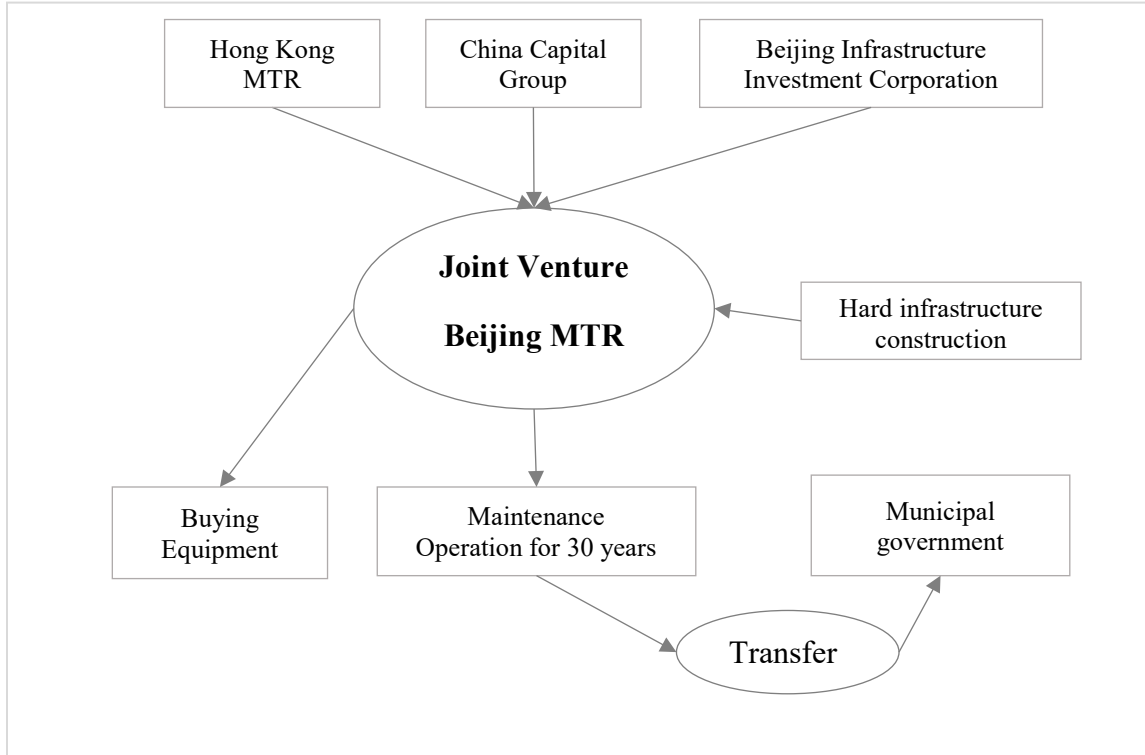
Fig. 4.5: The Framework for Land Leasing (Nie 2013)



Beijing No.4 Metro Line (Chang 2013)

To accelerate metro development for the Olympics, BIIC decided to implement a PPP model for the Beijing No.4 Metro line project (Chang 2013). In 2004, Hong Kong's MTR Corporation was selected as partner through public tender. Hong Kong MTR holds 49% of the joint venture company, while the China Capital Group and the Beijing Infrastructure Investment Corporation (BIIC) respectively hold 49% and 2%. The joint venture company was named Beijing MTR. During the construction period, the government paid for the hard infrastructure (70% of the budget), while the joint venture funded the other equipment (30% of the budget). Beijing MTR takes charge of operation of No.4 line for 30 years, and then will transfer it to Beijing government (De Jong 2010).

Fig. 4.5: The Framework for Land Leasing (Chang 2013)



5. Negotiating Integrated Land and Transport Development: A Simulation Game Approach to Innovative Value Capture Mechanisms in China

5.1 Introduction

As a potential approach to coping with the issue of the deficient provision of public infrastructure in China, the application of DOs, specifically NDOs, primarily depends on the voluntary cooperation between public and private sectors. Thus, it is significant to develop an efficient and effective negotiation process. However, little is known about the effectiveness of these negotiation processes and impact factors with regard to NDOs for TOD. In this chapter, our objective is to investigate the possibility of applying NDOs as a potential land value capture instrument in China to finance TOD, by exploring the tension between informal practice and formal rules from the perspectives of the stakeholders involved. We conducted experiments based on a serious gaming approach to illustrate the possible negotiating processes with regard to NDOs, and additional focus group meetings to unfold the participants' understanding about NDOs and its implementation in China.

This chapter proceeds as follows: Section 2 describes the land management and planning system in relation to TOD in China as the context of the study. Section 3 sketches the conceptual framework based on three interrelated dilemmas concerning NDOs. Section 4 explains the gaming experiment methodology and the focus group discussion that have been used to explore

the negotiating process in the implementation of LVC instruments for TOD. Section 5 provides the analyses and key findings of the research. Finally, section 6 concludes this study.

5.2 Trial and Error Processes for More Efficient Land Management

Given the rapid urbanization in China, there is great demand for public infrastructure, especially public transport. As explained earlier, in order to finance public infrastructure development, local governments depend heavily on land-relevant revenue as the main funding resource, especially land leasing revenue. However, this kind of funding resource has been questioned to be limited and unsustainable. In order to broaden the financial sources of infrastructure development, privatization of urban infrastructure financing has been implemented, enabled by the release of a series of policy documents in 2001. Additionally, in order to explore the potential of innovative policy instruments for TOD, experimental programs have been practiced in several cities. In those experimental programs, municipalities conducted *trial and error*-like pilot projects trying to bypass the sometimes-rigid regulation set by the central government and, within their discretionary powers, tested innovative planning approaches not yet available in the current planning system. For instance, Shenzhen has applied a joint development approach in transit areas, while Wuhan implemented a so-called land reserve system for its metro line development. This trial and error process can be considered as an urban informality. Therefore, informality constitutes an important lens for understanding the role of public sectors in land management in China.

Developer Obligations in China

Some local authorities have achieved the provision of public infrastructures by private developers by including DOs as a condition to the land leasing contract. DOs are usually required when applying for planning permissions, but that requirement varies from case to case due to the lack of consistent legislation. According to the Planning Act, there are two tiers of the statutory planning system in China. The urban master plan is the upper tier, and the detailed plan is the lower tier. DOs are determined in the detailed plan by the planning authorities. According to Tian (2014), DOs can be divided into two types, nonprofit facilities and for-profit facilities. The legal requirements to property developers to build public facilities varies from city to city in China.

In addition, property developers may negotiate with the municipality on contributions in exchange for higher FAR, after securing the land concession contract. According to Liu and Zeng (2017), this kind of negotiation had been practiced without much difficulty in the past. However, it has been stringently restricted, since the issuance of a ‘Guideline on the Management of FAR on Construction Land’ in 2012, which is quite rigorous on FAR adjustment. This shift relates to the concern with the lack of transparency and monitoring in the negotiation process. The new policy guidance has significantly constrained the discretionary freedom of local planning authorities. Hence, local authorities have less power and incentive to apply NDOs.

More recently, however, NDO practices have emerged again, especially in Shenzhen, mainly for urban village redevelopment. Usually, the municipality is in charge of urban redevelopment. In

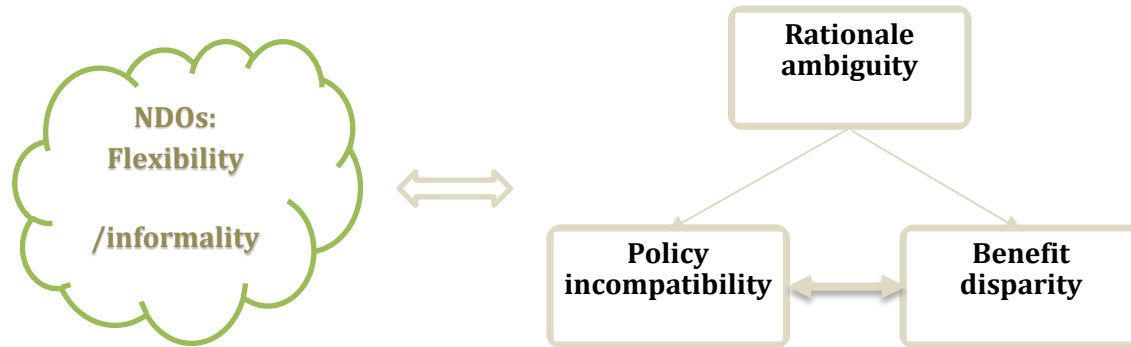
Shenzhen, the municipality has tried to implement a different role by encouraging urban village committees and developers to cooperate in designing and implementing redevelopment projects. In this case, the municipality sets a guidance to safeguard the public interests. The municipality can also intervene in the process to ensure that the public facilities and public services meet the urban land use planning standards. When fulfilling a specific standard of public infrastructure and infrastructure would reduce the financial feasibility of the project for the developer, the municipality may negotiate a higher FAR with the developer to improve this feasibility. The Shenzhen experience demonstrates the added value of the use of NDOs and may serve as a good example for other cities in the country.

5.3 Conceptual Framework

Evidently, decision-making in urban land development is complex due to multiple issues, including the involvement of stakeholders with different goals, interests and values (Samsura and van der Krabben 2012; Samsura et al. 2015). In such a situation, conflicts between stakeholders are likely. Finding a way to deal with these conflicts and satisfying the different interests is, therefore, crucial in order to bring a planning and development process forward. As a response, a wide range of planning literature has been developed to shift from a rational objective-oriented planning approach to a more communicative planning approach (Allmendinger and Tewdwr-Jones 2002; Healey 1997; Innes 1995). Central to this later approach is an ongoing dialogue involving all stakeholders who have an interest in the issue (Healey 1997; Innes and Booher 1999). In this dialogue, debate and negotiation are clearly inevitable (Hillier 2003; Fuller 2011; Ruming 2012). As argued by Forester (2009), in a conflicting situation, negotiation can provide a strong basis for implementing plans and satisfying individual and collective interests. Thus, it is important to stimulate an accommodative negotiation process in a planning and land development instrument.

Still, different aspects can hinder a successful negotiation for DOs. We can categorize them into at least three interrelated dilemmas: ambiguity about the rationale for value capture, policy incompatibility, and benefit disparity (Alexander 1992; Claydon and Smith 1997; Ennis 2003; Healey, Purdue, and Ennis 1996; Renard 2003). Figure 5.1 illustrates the relation between those dilemmas. We use the interrelated dilemmas as the conceptual framework in the present study, to analyze a negotiation process as a potential instrument of LVC to finance TOD in China. Next, these three dilemmas are explained in more detail.

Fig. 5.1: Three Dilemmas in Practicing NDOs for the Integrated Transport and Land Development



Ambiguity About the LVC Rationale

The rationale behind DOs is the foundation to reach an agreement in relation to land value capture. DOs are based on the rationale that a fair and reasonable connection must exist between the income from property development and the contributions to infrastructure (Claydon and Smith 1997; Healey et al. 1996). Generally, DOs can be categorized into two types, planning gains and impact fees. The use of planning gains is based on the notion that increased value will be shared by the whole community; the use of impact fee is based on the rationale that increased traffic caused by the new developments can be considered a negative externality that should be covered by (part of) the income from the new development. In reality, it is often difficult to clarify the boundary between these two DOs. Thus, it can be hard to answer the key question “who should pay for it?” The dilemma relates to the degree to which a clear link should exist between the size of the DOs and the development.

The lack of clearly delineated justifications tends to reduce the rationality of the use of DOs and the possibility to reach an agreement, considering that stakeholders have different goals and preferences. If the argument to impose DOs on the developer is not clear, it is likely that the developers’ willingness to contribute to public infrastructures is limited. Secondly, it may result in the lack of consistency in the use of DOs in different places. According to Healey et al. (1996), when it is left to local authorities to decide on DOs case by case, the policy would appear arbitrary and unpredictable to developers and the process of negotiation would seem secretive and potentially corrupting. Thirdly, given that there are often trade-off relations among the use of DOs for different purposes, setting the priority may be another challenge.

Policy Incompatibility

Considering that the provision of public infrastructures—due to the lack of public funding—increasingly depends on the cooperation between public and private sectors, the institutional setting within which it takes place is essential. The urban planning system forms the institutional

basis for negotiations in relation to DOs. Institutions have been considered as a tool to reduce uncertainty by establishing a stable structure for human interaction (North 1990). In contrast, one can argue that as part of a TOD strategy there should be discretionary power for public sectors to negotiate with private developers with regard to the optimal *package* of infrastructure provision, real estate development, and DO size. Thus, the second dilemma is the potential tension between institutional certainty and flexibility in negotiations.

Due to the future-oriented and normative characteristics of the planning system, it requires the legal certainty to define the desired development goals and instruments to achieve those goals. For instance, relevant regulations and laws have been developed by authorities to legitimize planning practices. In addition, planning tends to codify particular outcomes through land-use regulations and standardized decision-making models as implementation-oriented legal instruments (Savini, Majoor, and Salet 2015). However, due to the complexity of the urban system, it is necessary to enable flexible approaches to deal with uncertainty. Therefore, how to provide authoritative guidance to NDOs is a challenging issue. It needs the statutory power that enable local governments to negotiate with developers on DOs, but at the same time, it requires the flexibility for negotiation. Since there is no standard and specific arrangement on NDOs within the current legislation, the negotiation tends to take place informally. Empirical studies in the UK have provided evidence that the lack of policy support for negotiation can lead to weak bargaining positions for public authorities (Farthing and Ashley 2002).

Benefit Disparity

The extent to which public facilities are financed by private real estate developers depends on the outcome of negotiation. Bargaining power may play an important role in the outcome of the negotiation, often closely related to the stakeholders' resources. In general, public authorities bring *regulatory* sources to the bargaining table, while developers bring *financial* resources (Healey, Purdue, and Ennis 1995). Many factors may have an impact on stakeholders' bargaining power, including the availability of a well-established policy on DOs, property market conditions, and negotiation skills and expertise (Claydon and Smith 1997; Healey et al. 1995; Renard 2003). Consequently, stakeholders in a weak bargaining position may not benefit fairly from the negotiation. For instance, in a prosperous property market, local authorities may get a better result out of the negotiation than under poor market conditions, given that the developers have higher expectations with regard to their profits and are therefore more likely to contribute to public infrastructure provision.

Two different factors may explain the motivation for a developer to agree on a DO. First, in the short term, a developer can acquire development permission from a municipality by agreeing to contribute to public infrastructure provision. Second, in the long term, developers hope to build up a good relationship with the municipality for future projects and may therefore decide to contribute (Verhage and Needham 2003). One developer may be more willing to contribute than another developer, depending on the availability of resources.

5.4 Methodology

The research strategy for our study combines focus group discussions and a gaming experiment. Below, we explain these methods in more detail.

Focus Group Discussions

A focus group discussion involves gathering people from similar backgrounds or experiences together in a meeting to discuss a specific topic of interest. It is a form of qualitative research where the meeting participants' perceptions attitudes, beliefs, opinions or ideas related to the topic are asked and discussed together (Boateng 2012). This methodology allows the researcher to obtain an insight into diverse perspectives as well as inconsistencies among the participants and tries to find any common understanding towards the topics. For this study, we organized two five-hour workshop sessions to facilitate the discussion (respectively in Beijing and Shenzhen, October 2018). In total, 27 participants attended the workshops. The majority of them are experienced researchers, practitioners, and public officials in the field of spatial planning, economics, transport, land policy, and finance. The focus group discussion aimed at exploring the participants' perceptions, attitudes, beliefs, opinions or ideas as well as their expected decision-making behavior and understanding of NDO and the implementation of the related innovative instruments in China. Appendix 3 contains the topic list of the focus groups discussion.

In order to introduce the participants to the hypothetical situation in which an innovative NDO is implemented to finance TOD in China, we created a gaming experiment in which the participants were involved as the subjects of the experiment before starting the discussion. A gaming experiment provides a controlled environment for participants to experience the context for the discussion. During the discussions, the questions were structured around issues concerning their (explanation of their) strategies in the game sessions, and their opinions on the possibility to apply innovative LVCs for TOD in the current Chinese context.

Gaming Experiment

Gaming is useful for presenting a dynamic model which can be helpful in gaining stakeholders' perspective on the complex system (Duke 1974; Mayer 2009). Gaming experiments have been employed as an approach for policy analysis and decision-making support in different fields (e.g. Barreteau, Page, and Perez 2007; Mayer and Veeneman 2003; Root, van der Krabben, and Spit 2016; Samsura et al. 2015). The literature on gaming has highlighted that gaming as environments for policy research can facilitate the holistic understanding of a complex problem and support the decision-making process. The advantage of a gaming experiment is that it can provide a coherent, logical and safe environment with low cost (Duke and Geurts 2004; Mayer and Veeneman 2003). Game experiments are also particularly useful to gain information on participants' reaction and understanding of new policy instruments (Lenferink et al. 2016; Samsura et al. 2013).

In this study we focus on analyzing the application of innovative LVC instruments based on negotiation processes (i.e. NDO) which are not commonly practiced in China. The gaming

experiment can be an effective approach to exploring “what if” questions. Through properly constructing the environment that essentially mimics the negotiation process, the players may experience and learn the essence of the complex system and evaluate the effect of innovative LVCs on key indicators. The aim of the gaming experiment in this study is to deliver the decision-making environment through which these instruments are practiced and help participants to understand the procedure and core issues of these instruments which is the foundation to developing opinions.

The games are designed to focus on the negotiation process rather than the technical calculation of the amount of the contribution. The design of the scenario is based on earlier research about the Chinese land management and planning system (see section 2). Next, we provide a more detailed explanation related to the design and procedure of the game.

Game Setting and Basic Assumptions

In order to illustrate the negotiation, we created a hypothetical situation in which different actors can negotiate over the contribution to develop TOD. In general, two different negotiation scenarios can be considered. The first scenario concerns the negotiation between public authority and private developers, while the other one is about the negotiation between or among different private developers. Two games based on two innovative LVC instruments for the Chinese context were formulated that illustrate those negotiation scenarios.

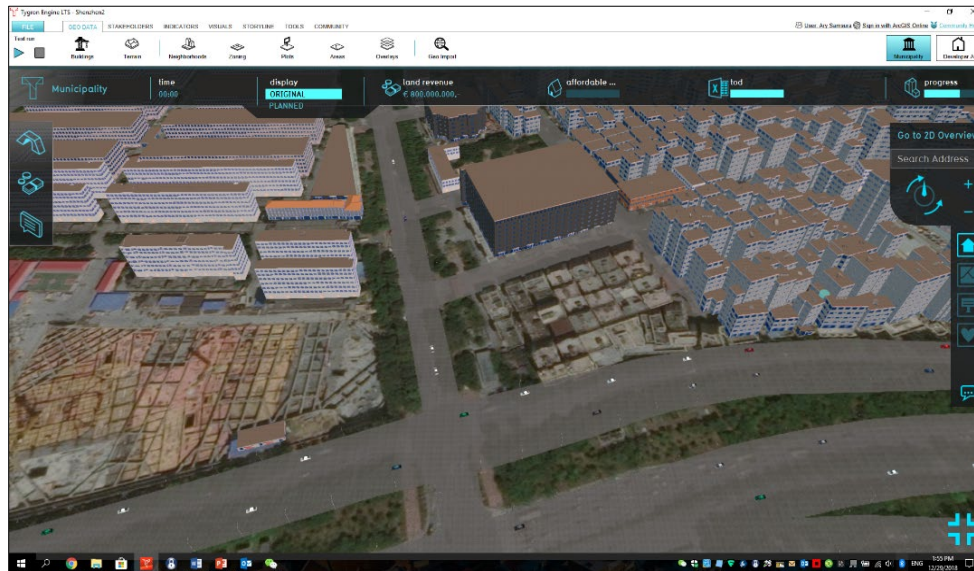
1. Inclusive land leasing game

The first scenario is concerned with the negotiation between public authority and a private developer. The public authority would be a municipality who intends to achieve certain policy goals related to urban development. For the sake of simplicity, we assume here that the goal is limited to the integration of land development and transportation development by fulfilling a demand for (affordable) housing and improving the accessibility of the location through a TOD approach. The private property developer’s goal is to maximize revenues from the development. A specific designated TOD location, situated in Shenzhen, has been delineated for this purpose. In this area, the municipality will redevelop a metro station to improve the accessibility of the area and there is a plot of land that can be leased out by the municipality to a developer for residential development. As part of the land concession contract to the private developer, the municipality would negotiate about the content of the plan containing the amount of affordable housing to be developed by the developer and the developer’s contribution to the redevelopment of the metro station. The two players have to negotiate with each other and try to reach an agreement on the plan and the developer contribution to the cost of the accessibility improvement. In this scenario, we refer to this negotiation as an innovative NDO instrument called *inclusive land leasing*.

For this scenario, a computer simulation of the area based on the real geographical information of Shenzhen city was constructed by using a Tygron® engine platform to create the environment for the game (see Figure 5.2). With this platform, the effect of a proposed plan and the contribution of the developer to the fulfillment of affordable houses and the accessibility of the area can be shown, as well as the developer’s expected revenues. Based on this information, both

the public authority and the private developer will try to make an agreement on the plan and the contribution. Although calculations of real estate values and revenues are based on information on actual real estate market conditions in Shenzhen, it should be noted that the games are not designed to focus on the technical calculation itself but rather on the negotiation process.

Fig. 5.2: Simulated Environment of Shenzhen City



2. Urban land readjustment game

This game aims at simulating the negotiation between two private developers in an urban land readjustment project. Urban land readjustment (ULR) as an LVC instrument was used to illustrate the situation. ULR referred to a process in which different land owners transfer the rights over their adjoining plots to a specific agency to be redeveloped for a better use and then having the newly readjusted plot redistributed again to them (Archer 1989; van der Krabben and Needham 2008; Muñoz-Gielen 2014). The main goal of ULR is to activate landowners to become developers by offering them a site suitable for immediate development and a more equitable distribution of development gains. The game was developed based on a scenario in which a ULR scheme is proposed to redevelop an urban village area close to the metro station. It is assumed that there are three land owners in the proposed project, each of them owning a different plot size. With the project, they are offered an additional FAR and hence additional increment values for their property. In response, the municipality requires a fixed contribution to improve a public transport facility in the vicinity of the redevelopment area. Thus, those three property owners need to negotiate among each other the allocation of increased value and their share in the contribution to planned public transport. The game consists of two rounds. In the first round, it is assumed that the ULR project can be carried out if at least two out of three owners agree to join the project and the other one can be forced by law to join. In the second round, the project can be carried out only when all owners agree on the allocation of benefits and DO.

Game Procedure

Prior to the games, the participants were briefed about the scenarios and its corresponding NDO instruments. A small survey was conducted beforehand to get information about the initial understanding of the participants on the current LVC and TOD process in China. Afterwards, the participants were randomly divided into different groups and different roles related to the game scenario were assigned to them. During the game sessions, players negotiated with each other and decided whether they would reach an agreement. The players were given a specific time limit to conduct the negotiation. The time span for the negotiation in this experiment is chosen arbitrarily and treated not as an experimental condition. After the game sessions, the focus group discussion was organized to obtain insights regarding the participants' perceptions, opinions or ideas about the implementation of NDOs as LVC to finance TOD.

5.5 Findings

In this section, the main findings of our study concerning the implementation of NDOs as LVC to finance TOD in China are described and discussed. The conceptual framework introduced in section 3 helps to frame the discussion.

Rationale Ambiguity

The pregame survey shows that the majority of participants agree, based on some experience and data that they are aware of, that usually in China the development of transportation facilities and infrastructure has a positive impact on property values in the vicinity. In addition, the large majority of participants agree that accordingly developers should contribute to public infrastructure particularly in relation to TOD. Although the majority of the participants agree that it is reasonable to introduce NDOs as LV—again, especially to finance TOD—their opinions vary on how to use it. One concern is that the boundary between the two rationales, planning gains and impact fees, seems rather vague. The vague rationale may make it difficult to determine the range and scale of the contribution. Participants generally also shared their opinion on the uncertainty related to the timing and pre-conditions to conduct the negotiation. Some participants stated that it may depend on the specific conditions of each project. However, the participants almost unanimously find it reasonable to use the (N)DOs as an income source to develop transportation infrastructure, considering the relatively clear rationale of public transport infrastructure contribution to its surrounding area. Generally, participants viewed investment for public transport as a type of public good that should be provided by the public. As stated in the workshops: *“The investment in metro stations or subways mainly is the responsibility of the public. Local governments have dedicated budgets for those types of investment.”* On the contrary, since housing prices in most Chinese cities rapidly increase and in line with discussions on social justice issue in China, it might be more plausible to use NDO to contribute to the costs of affordable housing. Some participants even argued that some municipalities have now started to prescribe the minimal share of affordable housing in new residential developments.

Another key concern of participants is the relationship between land price and DOs. In China, land leasing revenues play a major role in the local fiscal system. The Chinese land management system tends to keep land price non-negotiable as the main funding source for the public

infrastructure. Normally, the land concession fee already includes part of DOs, as stated by one participant in the Shenzhen session: *“Land price is calculated based on indicators regulated in advance, for example, the price of the land proximity to the metro station will be higher.”* Another participant in the Beijing session concurred that *“If only these two, affordable housing and contribution to public transport, is considered, it is hard to reach an agreement through negotiation. There is the trade-off relation between land price and DOs. If only DOs to transport and affordable housing are negotiated, the incentive for developers to contribute is quite low.”* Thus, participants perceive this issue as making a choice between investment in public transport and land price. This argument is confirmed by another participant in the Shenzhen session: *“In China, some local authorities would prefer to control a stable land price, instead of negotiating the highest land price. They take into account other considerations, such as more affordable housing and better infrastructures, while accepting a lower land price.”* Nonetheless, there is concern that the NDOs may reduce the investment capacity for public infrastructures in other areas, due to less land revenue.

Policy Context Incompatibility

Though the participants are aware of the advantages of the NDO, institutional restrictions are perceived as one major barrier. Over the last decades, the discourse relevant to Chinese planning has changed from discretion to certainty, in order to have more transparency and efficiency. New regulations and laws have been issued by the central government to restrict the room for negotiation. In addition, the legal prescription that requires property developers to build public facilities varies from city to city in China (Tian 2014). These findings from focus group discussions are in line with this constraint. The participants argued that *“Actually, developers are asked to construct some public facilities, and the equipment requirement is different case by case.”* Without the back-up legislation for negotiation, municipalities are limited in their capability to use NDOs.

Despite those restrictions, negotiations still take place. For instance, one participant came up with an example of pre-leasing negotiations between developers and the municipality in Shenzhen: *“Before leasing out a plot of land, Shenzhen may invite property developers to discuss about the types and amount of developer contributions to public infrastructures and the land price. After that, the municipality will determine the DOs based on the outcome of the discussion.”*

Another concern of the participants is that the flexibility of NDOs tends to cause additional (transaction) costs and uncertainty. After the simulation games, many participants mentioned that they found it difficult to reach an agreement through negotiation. In their perspective, it is time-consuming to clarify the expectations and the preference. One participant argued that *“it is difficult for developers and the municipality to reach an agreement after land leasing, even though they agree on general objectives, such as the number of affordable housing, due to different priorities.”*

The ambiguity of current legislation on DOs leads to concern about the lack of transparency and accountability. If NDOs will be practiced, some participants claim that the negative impact possibly outweighs the benefits from negotiation. Another issue is that if there would be room

for maneuver to realize certain planning goals, it probably reduces the legitimacy of the formal planning system. The tension between planning for certainty and flexibility of negotiation may also hinder the effectiveness of NDOs.

To sum up, NDOs do not match well with the current institutional context in three ways. Firstly, policy support for negotiations is absent. Secondly, there is no guarantee that the negotiation will generate optimal outcome compared with traditional instruments, considering that it carries additional costs and risks in the bargaining process. Thirdly, finding the right balance in the relationship between planning and flexibility is another issue.

Benefit Disparity

The implication of flexibility in the negotiation process also suggests that not all municipalities will benefit at the same rate. As we discussed in section 3, bargaining powers of local authorities and private developers can be crucial to the outcome of the negotiation. According to Healey et al. (1995), local market conditions particularly may have great impact on bargaining power. In a less-developed area local authorities may lack the power to negotiate a substantial DO, compared to well-developed areas. However, those less-developed areas may have a more urgent demand for public infrastructures. As stated by a participant in the Shenzhen focus group meeting: *“It can be hard for municipalities in the western part of the country to negotiate for DOs.”* It means there can be an asymmetry between the bargaining power of different public sectors and demand for new public infrastructures. The consequence of negotiation is likely to increase the gap between the developed and less-developed part of the country.

Negotiation outcomes may also depend on the local context. Such context ranges from market conditions to relationships between municipality and developer. The latter may vary with experience, skills, interests, and local connections. In the simulation games, there was only one developer in the negotiation. But participants argued that usually there would be many property developers competing for land plots. For that reason, it is crucial to have transparent and clear criteria to select the proper developers. One participant argued that: *“The authorities are very powerful, and the property developers do not have much room to negotiate in China.”* In addition to that, the outcome of DO negotiations in one area may depend on the private developer’s involvement in other projects in the same city. As one participant mentioned: *“There is the project in Luo Hu, which is in the historical area. The developer decreased the development density voluntarily and proposed to construct one hub station for 3 subway lines. They would like to contribute to public transport because it has a positive impact on their property value. And at the same time, they will negotiate for higher FAR in another area in which the increased profit can compensate the costs in this project. It is not just one project and one area.”* This view suggested that DOs are not just negotiated and agreed. Rather, they are interlinked through continuous interactions in a city and over a long period of time.

5.6 Conclusions

Based on the findings of this study, we can draw some conclusions with regard to the issue of implementing NDO as a possible LVC instrument to finance TOD in China. The results of the focus group discussions, facilitated and supported by the two gaming experiments, show that

there might be a clear, theoretical rationale behind the use of NDOs to financially support the implementation of TOD policies, but that there are still many limitations to the implementation in China within the current planning context and land management system. This limitation primarily concerns the absence of a formal institutional context that can guarantee a flexible but transparent negotiation between public and private stakeholders. Another issue is the challenge to find the right balance between the efficiency of the development process on one hand and the requirement to share the development gain that result from successful TOD policies in a fair way among different stakeholders on the other hand.

6. Institutional Barriers to Financing Transit-Oriented Development in China: Analyzing the Informal Land Value Capture Strategy

6.1 Introduction

Since there is still little research that focuses on the impact of the institutional context on land value capture strategies for transit-oriented development in Chinese cities, the study presented in this chapter aims to bridge this gap by investigating the implementation process of value capture for public transport development. More specifically, this research aims to answer the following research questions: Which institutional barriers constrain efficient land value capture for TOD in China? What kind of innovative land value capture instruments been implemented in practice to bypass these barriers? How to deal with the tension between formal rules and informal practices? Our study is based on literature review, expert interviews, a focus group meeting, and three case studies. In 2017, we conducted 14 in-depth semi-structured interviews (1–1.5 hours) with (Chinese) experts of spatial planning, economics, transport, land policy, and finance in academia, and with practitioners in spatial or transport planning, public officials from the national government, and experts working in the private sector. Questions focused on the policies and practices of Chinese land-based value capture mechanism and TOD. The focus group meeting took place in Beijing in July 2017, with nine participants attending, including senior researchers and practitioners in spatial planning and economics. In the focus group meeting, policies and cases of land value capture and TOD were discussed, and international land value capture instruments were also explored as alternative approaches in China. The case studies analyze the effectiveness of three innovative, but informal land-based value capture mechanisms for TOD development recently introduced in some Chinese cities: “rail plus property strategy,” “two steps tendering strategy” (both Shenzhen), and “land reserve strategy” (Wuhan).

The remainder of the chapter is structured as follows. Section 2 presents a conceptual framework based on the interrelations of three institutional dimensions relevant to the application of land value capture strategy for transport development. Section 3 attempts to identify the institutional barriers that prevent the implementation of effective land-based value capture mechanisms for TOD in China. Section 4 then discusses how Chinese cities find creative ways to deal with the institutional barriers, by analyzing three cases of successful value capture practices to finance urban railway transport (Shenzhen and Wuhan). These cases have in common how they are able to bypass current institutional barriers. In section 5, we refer to Needham’s theoretical argument to distinguish *regulatory* planning interventions from interventions *structuring* the market (Van der Krabben 2009; Needham 2006), to discuss alternative strategies that may introduce

respectively more effective approaches to land-based value capture for TOD and an approach to ‘institutionalize’ experimental planning strategies. In section 6, we will make some concluding remarks.

6.2 Conceptual Framework

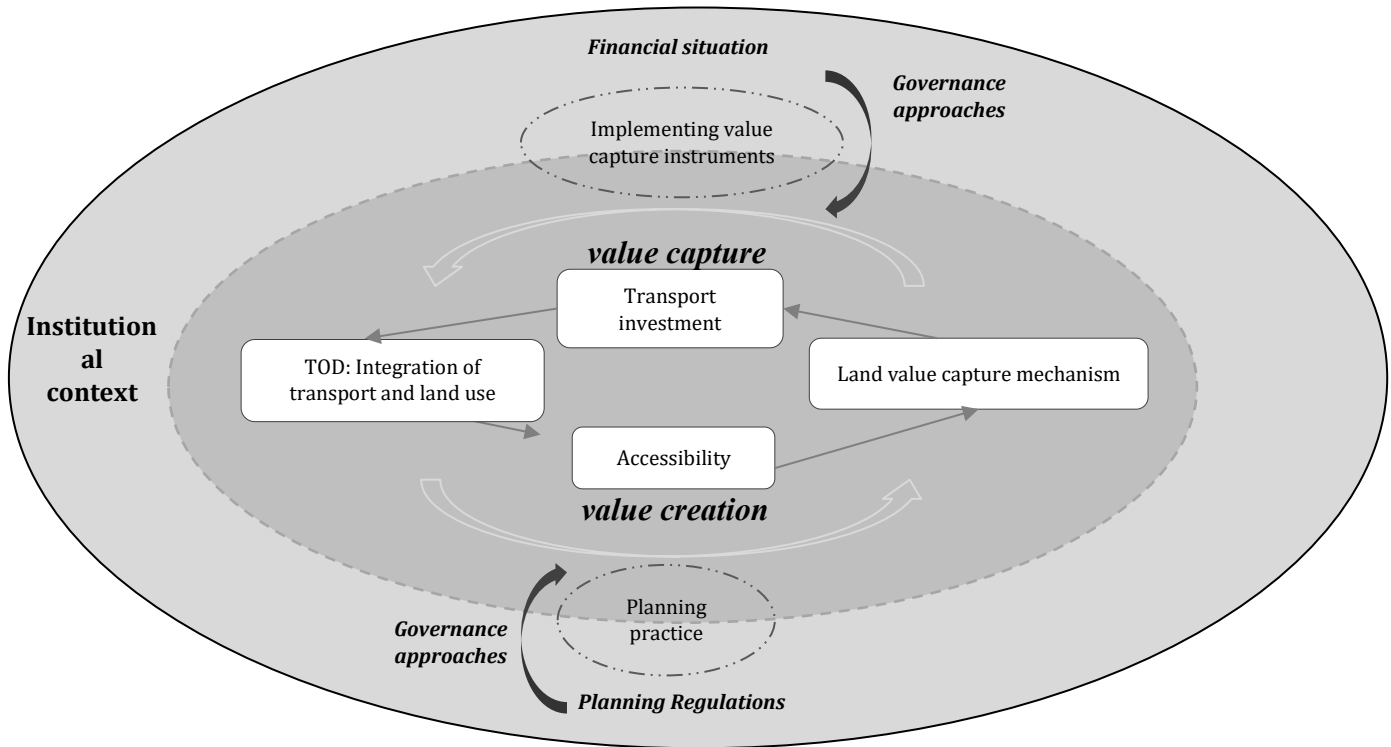
A successful TOD strategy may have a positive impact on land and property value. In turn, the increment value can be captured by financial instruments to co-finance transport investment. Depending on the institutional context and the right instruments, (part of) the increment value can be captured by financial instruments to co-finance transport investment (Ingram and Hong 2012; Van der Krabben and Needham 2008; Medda 2012; Muñoz Gielen *et al.* 2017; Muñoz Gielen and Van der Krabben 2017). Institutions are defined as the rules of the game in a society and include the formal and informal constraints that shape human interactions (North 1990). Thus, the institutional context creates both opportunities and constraints to financing TOD by a value capture strategy. We identify three dimensions of formal institutions that we believe are essential to the effective implementation of TOD making use of value capture instruments. First, it is crucial that the planning system is conducive to the integration of transport and land use, thus increasing the potential for land value creation. The extent to which the formal institutional arrangement encourages the TOD principle depends on the planning regulations that arrange the land use type and density in the transit area. Thus, planning regulations can promote integrated transport and land development in a transit area with supportive strategies. To put it in other words, the capitalized value of accessibility can be a promising funding source for transport development, given that integrated development of transport and land use can encourage potential land value increase (Alonso 1964, Dube *et al.* 2013; Mulley 2014; Muth 1969; Papa and Bertolini 2015).

Second, the application of financial instruments to capture land value requires the right financial conditions. The capitalized accessibility as the funding source for transit investment cannot be realized without effective financial instruments. Besides, the financial instruments act directly on the financial circumstances within which people make decisions (Needham 1982). Internationally, different financing instruments to capture land value increment from transport development have been used, including joint development in Hong Kong (Cervero and Murakami 2009), land readjustment in Tokyo (Murakami and Gregory 2012), transferable development rights in São Paulo (Sandroni 2010), betterment levies in Bogotá (Borrero Ochoa 2011), and tax increment finance in American cities (Dye and Merriman 2006). Referring to Suzuki *et al.* (2015b), value capture instruments can be classified into tax-based instruments and development-based instruments. Tax-based instruments usually require fiscal decentralization to implement a new tax regime, whereas development-based instruments need sound land asset management (Medda 2012).

Third, robust governance approaches should facilitate the value capture process by enhancing the cooperation of the stakeholders. Governance as the play of the game is an effort to craft order, thereby mitigating conflict and realizing mutual gains (Williamson 2000). The governance of value capture can be described as the dynamic interaction of stakeholders in the process to make planning and implement financial instruments. In the planning process, the public agencies and transit companies are engaged to ensure that transport development can deliver high accessibility

and sufficient value creation. Furthermore, the use of value capture instruments requires consensus and consent among relevant stakeholders, such as public sectors, transit companies and developers. Muñoz Gielen et al. (2017) have categorized governance approaches to land management into active, passive, and mixed approaches based on the roles of public and private bodies.

Fig. 6.1: The Virtuous Cycle of TOD and Land Value Capture Strategy Within the Institutional Context



6.3 Institutional Barriers to Land-Based Value Capture for TOD Investments in China

Land concessions are by far the most significant land-based value capture mechanism in China. By the Constitution, there is no private ownership of land in China: all urban land is state-owned, while rural land is collectively owned by the villages (except the rural land owned by the state by law) (Liu and Zeng 2017). The municipal government would sell the use rights of the serviced land to a land user for pre-specified land use. Usually, the government includes requirements for additional infrastructure into the land concession contract, to be implemented by the developer (Liu and Zeng 2017). The land concession fee is determined either by negotiated agreement between the municipal government and developer, or (predominantly) by competitive tendering. Land-related revenue from land concessions, as the main source of local fiscal revenue, can account for as much as 60% of public revenue in some cities (Ding 2007). Whereas it plays a significant role in financing public infrastructure development (Lin 2007; Fan *et al.* 2016), it is increasingly considered as a (potentially) vulnerable revenue source, as land supply is

increasingly limited in many localities and constrained by the national farmland preservation policy (Liu and Zeng 2017). The dependence on land leasing revenue leads to issues including the oversupply of land, inequality in income among cities and social tension from land acquisition (Liu and Jiang 2005; Tian and Ma 2009). In order to increase alternative financial revenue, local governments attempt to find alternative value capture mechanisms, especially for public transport infrastructure. Among these policies, integrated transport and land use development are encouraged as one alternative way to alleviate fiscal constraint of public transport. There is much evidence to suggest that transit-oriented development in Chinese cities interacts with land value (Li et al. 2013; Sun et al. 2016; Suzuki et al. 2013; Tian 2006; Xu et al. 2016; Zhang and Wang 2013). Increased accessibility has a positive impact on land and property value. However, the present institutional context does not in all respects support the implementation of an efficient financial TOD strategy.

Unsupportive Planning Regulations Leading to Separated Transport and Land Use Development

The planning system is not supportive of synergetic development of transport and land use. Consequently, it leads to insufficient land value capitalization in transit areas. First, it lacks planning regulations which are conducive to TOD principles. For instance, mixed-use land development is obstructed by the different leasing terms of different land use types. Second, there are no national planning regulations that encourage high-density development in transit areas and/or prioritize TOD development compared to non-TOD development. Although the national government has issued policies to encourage integrated transport and land development, those policies are not compulsory. As one interviewee noted: *“Some policies on transit-oriented development have been issued by central government, but they are just suggestions”* (Interviewee 5). In addition, one expert stated in the focus group meeting: *“The TOD concept was introduced to Chinese cities since the expansion of urban rail. Since then, the TOD concept has been promoted, for instance, by the World Bank in Kunming and Nanchang. However, this is just a TOD version 1.0 with little value capture due to the barriers from building regulation such as FAR and other codes.”*

Whereas local authorities have attempted to develop their own types of TOD under the absence of national standards, the practices may result in transit adjacent development. As one interviewee remarked: *“Many people talk about TOD in China and consider the high-density building blocks around the railway station as TOD. Nonetheless, it is just TAD”* (Interviewee 13). Underlying these types of development is the philosophy of growth-oriented development which regards urban planning as a tool to promote economic growth (Wu 2015). Some of the participants in the focus group meeting argued that many high-speed railway stations are located in the edge of cities without efficient connection to the city center. The assumption is that land development will happen automatically within the transit area.

Table 6.1: Main Laws, Regulations, and Policies on Integrated Transport and Land Development in China

Laws, regulations and policies		Issue year	The relevant contents
Law	Land management law	2004 (revised)	Clause 18: Top-down land use planning system
	Urban and Rural Planning Law	2007	Lacks regulations conducive to integrated transport and land development
	Property Law	2007	Clause 137: In case of commercial land, such as land for industry, commerce, tourism, entertainment, and commercial residential buildings, as well land for mixed use, intended land users should be acquired through tender, auction or other public bidding methods
Regulations	Provisional Regulations on the Transfer and Assignment of Urban Land Use Rights	1990	Clause 12: the maximum period of land use right for different land types-40 years for commercial land, 70 years for residential land, and 50 years for industrial land.
	Measures for Urban Planning	2006	Density is controlled by index. (There is no special regulation on transit area)
	National code for classification of urban land use and planning standards of development land	2012	There is no item that directly encourages mixed land use. Some municipalities have published local standards guiding mixed land use such as Shanghai, Wuhan, and Shenzhen (Xu et al. 2014).
Policy and guidance of central government	Guidance of the State Council on urban priority development of public transport	2012	Clause 3: To strengthen the comprehensive development of public transportation land. The detailed control of urban planning should be compatible with urban transportation planning. The ground and underground space of the new public transportation facilities can be developed. The profits of the

			comprehensive development will be used for public transport development.
	The opinion of the State Council on strengthening the construction of urban infrastructure	2013	Clause 5.2: To set up the financing system of urban infrastructure through the cooperation between government and market, including franchising, investment subsidies, government purchase services.
	Guidance of the State Council on the innovation of investment and financing mechanisms in the key areas to encourage social investment	2014	Clause 15: To attract social capital for urban railway development and finance transport development with integrated land development in transit areas.
	Planning and design guidelines for the area along the urban railway	2015	Clause 6.4: To encourage compact land development in the proximity of stations by specifying construction density in different types of urban railway stations.
	Opinions of the State Council on Strengthening the Management of Urban Planning and Construction	2016	Clause 17: To encourage social capital to participate in the construction and operation of public transport facilities and enhance public transport capacity.

Limited Value Capture Instruments Under Current Land and Financial Situation

Public and private partnership was officially embraced by the Chinese government in 2001, when the Chinese National Planning Committee issued the policy note entitled ‘Suggestions to promote and guide private investment.’ Since then, a series of policies have been released in order to promote the involvement of private capital in financing the public infrastructure development. Local authorities’ cooperation with the private sector to promote urban development has become increasingly popular. The common practice of infrastructure contributions follows a two steps approach. First, specific contributions and FAR are determined at the planning stage of a regulatory detailed plan (without the involvement of developers). This forms the basis for the land concession. Private developers may adjust the bidding price for the

land concession contract, depending on the required infrastructure contributions (Liu and Zeng 2017). Second, after securing the land concession contract, private developers may try to negotiate a higher FAR to meet with higher real estate demand and improve profit margins. In return, the municipal government may require some kind of developer obligation, to contribute to the increased needs for public infrastructure facilities. Liu and Zeng (2017) report that the FAR adjustments can be easily implemented through a review and voting process by the government planning committee. Developers must make an additional payment to the municipal land bureau for the additional floor area. Concerns with the lack of transparency and monitoring has led the Ministry of Housing and Urban-Rural Development in 2012 to issue a Guideline on the Management of FAR on Construction Land. It states that without a due process, FARs shall not be adjusted after the land transfer to the developer; if deemed to be necessary, the adjustment shall be conducted in accordance with the measures specified in the Guideline. However, due to the Guideline's rather rigorous procedure for the FAR adjustments, in practice most municipalities are reluctant to consider the proposed measures (all based on Liu and Zeng 2017).

Additional to land leasing, the 'rail plus property' strategy has been tentatively practiced in several cities through the cooperation among public sectors, transit companies and developers (Suzuki et al. 2015a). One of the interviewees describes the characteristics of this strategy as follows: *"The first approach is that local authorities acquire and reserve the land before the building of public transport, and then they sell the land to developers by tendering, listing, or auction. Therefore, the land transfer revenue actually is the land value increment that is captured by local governments. Another way is to allocate the land along the metro line to urban metro companies by local governments, while the metro companies take charge of property development and receive revenue from property sales. Compared with land leasing, the metro companies benefit from two parts of land value creation including the land transfer fee and property development benefits, since they obtain the land at a relatively low price through land allocation"* (Interviewee 10). Despite the experimental implementation of joint development in few cities, transit companies find it difficult to acquire land parcels through competitive land tendering (according to land transfer regulation in mainland China, land parcels for commercial use should be transferred through competitive tendering, auction or listing).

Apart from these two financial instruments, few instruments for value capture are feasible for transport development. Effective tax-based instruments, for instance, are not available due to the absence of a national real estate tax system in China. Urban planning and the land transfer system hinder the use of development-based instruments without specific regulation conducive to integrated transport and urban development. As a possible alternative, the participants in the focus group meeting discussed the use of a system of Transferable Development Rights: the sale of development rights, as separated from land leasing rights, may generate additional revenue for Chinese cities.

Inefficient Governance Without Clear Rules

Two main governance approaches correspond with current value capture instruments in China: transit company-led and public-led governance approaches. In both governance approaches, the public agencies take charge of land planning and transfer. However, one of the problems with these governance approaches is that it may be costly to coordinate different public agencies,

given the lack of an effective coordination system. First, the divergent priorities of local and regional authorities may lead to problematic regional coordination. As an example, the construction of the intercity railway system in the Chinese Pearl river delta was referred to in the focus group meeting: *“Many cities want to build a railway system directly connected to the Shenzhen railway system, but negotiations by local authorities failed due to different priorities, despite the provincial level coordination mechanism.”* Quite similar to regional coordination problems, inter-departmental level coordination problems on the municipal level are quite common as well.

It has become increasingly difficult for local authorities or transit companies to acquire land parcels. Under the current institutional arrangement, local communities are not included in the decision-making process. Private developers are reluctant to invest without clear rules delineating the terms and incentives such as density bonuses. There is also concern about equity issues with regard to land acquisition. One interviewee comments: *“It is unfair to local residents that governments acquire land parcels at low prices”* (Interviewee 1). Although local policies attempt to attract market players to share the cost of public transport, the developers are reluctant to invest without clear rules delineating the terms and incentives such as density bonuses. Therefore, it leads to uncertainty, as one interviewee remarked: *“The differences are illustrated in the aspects of stakeholders, land transfer methods, and revenue allocation”* (Interviewee 10).

Table 6.2: Institutional Barriers to Implementing Value Capture for TOD in China

Institutional dimensions	Barriers
Unsupportive planning regulations	<ul style="list-style-type: none"> •Lack of regulations conducive to mixed land-use, compact development in transit areas •Growth-oriented planning philosophy
Limited value capture instruments	<ul style="list-style-type: none"> •Land leasing no longer sustainable revenue for public transport investment. •Land transfer regulations hinder implementation of joint TOD development. •Tax-based instruments are lacking.
Inefficient governance without clear rules	<ul style="list-style-type: none"> •Many public agencies coordinate (aspects of) integrated transport and land use planning •Lack of involvement of local community •Insufficient incentive for transit companies and developers to adopt LVC. •Lack of clear rules for joint development •Problems with land acquisition

6.4 Three Case Studies of Land-Based Value Capture for TOD

In terms of value capture, TOD development can be regarded a special case due to the close and direct relations between (improved) accessibility and land and real estate value on one hand and (increased) FAR and transit ridership on the other hand. Successful TOD development in, for

instance, Tokyo and Hong Kong suggest the added value of joint development, integrating transport and land development by providing FAR incentives, and mixed-use policies (Murakami 2015). Within the current institutional context, Chinese cities must be creative to *bypass* present regulation in order to implement more effective land value capture mechanisms as a financial source for successful TOD development. Three cases in Shenzhen and Wuhan illustrate this.

Rail Plus Property in Shenzhen: The Shifting Rules of Land Acquisition

As the first special economic zone in China, Shenzhen special economic zone (SEZ) was established in 1980. It receives the central government's policy support on economic development. In 1992, the Standing Committee of National People's Congress granted Shenzhen municipality the power to enact local laws and regulations. In 2010, Shenzhen SEZ was expanded to the whole area of Shenzhen; it was considered a showcase of China's reform and opening-up (China Daily 2010). At the same time, Shenzhen has been a pioneer in China's land policy reforms (Shen and Xu 2012). For instance, land transactions were allowed by the Constitution as early as 1988, as a result of the successful experiment of land transfer in Shenzhen SEZ in the early 1980s (Ding and Knaap 2005). Shenzhen municipality enacted the 'Plan of Land Management System Reform in Shenzhen' in 2012, allowing land use rights to be used as municipal investment shares. Under the support of the central government, Shenzhen has also been allowed to experiment with innovative land value capture instruments for the financing of public transport.

To alleviate fiscal constraints, the "rail plus property" strategy was adopted by Shenzhen Metro Corporation and Shenzhen municipality, by following Hong Kong's experience (Yang et al. 2016). By 2016, the Shenzhen metro system had 7 metro lines in operation with a length of 265 km (not including the Longhua line). Shenzhen has planned to build another 6 lines with a length of 257 km, requiring an investment of about 200 billion RMB (SZMC 2016). Most of the metro lines are constructed and operated by Shenzhen Metro Corporation (SZMC), which is a state-owned company. In 2013, the department of property development in SZMC was established to take charge of property development and management around metro stations. By the third quarter of 2017, 3 million m² of property projects were under construction, and property sales reached 42 billion yuan (SZMC 2017b).

In order to ensure that SZMC can acquire land parcels for joint development, Shenzhen municipality has taken creative measures to bypass the regular tendering process. Land acquisition has taken place in two phases. First, Shenzhen found a way to exclusively lease land to metro corporations. From 2008 to 2012, conditional land tendering was applied, which requires the bidders to meet the qualification of being able to construct and operate metro lines. By 2012, SZMC had obtained land parcels of 18.45 ha. through conditional land tendering (SZMC 2012). From 2012 on, the 'Plan of Land Management System Reform in Shenzhen' empowered Shenzhen municipality to sell land parcels as investment shares, again to bypass regular land tendering. The Urban Planning and Land Resource Commission (PLC) is responsible for evaluating the value of the land parcels. The contract is signed among SZMC, PLC, and SASAC. Shenzhen municipality plans to prepare 2.18 million square meters of land for 14 real estate projects with the total building area reaching 6.93 million m² (SZMC 2017a).

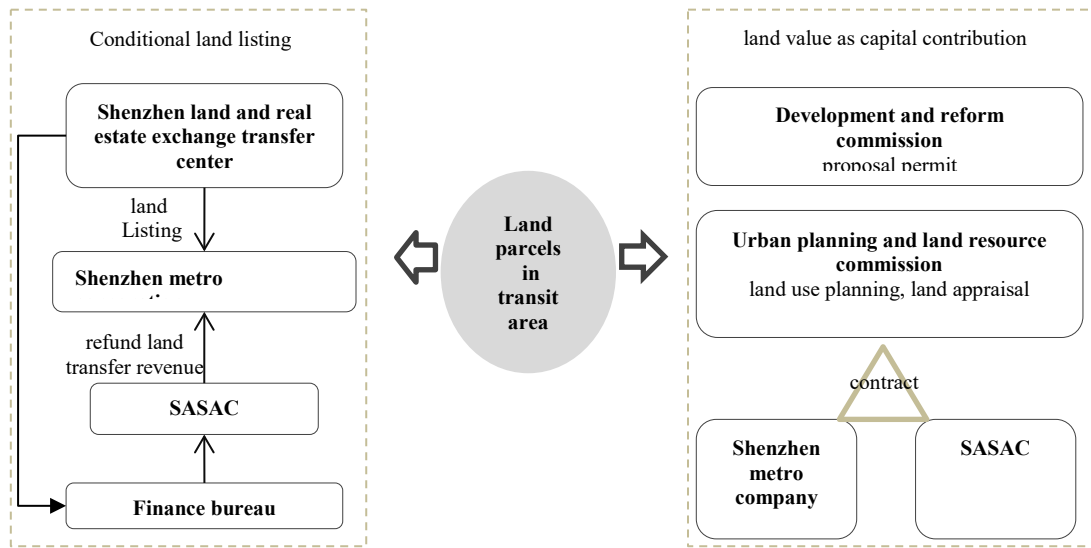
Furthermore, in order to promote TOD, Shenzhen has revised ‘*The standards and Guideline for the urban planning of Shenzhen*⁹’ in 2012, 2014, and 2017. It encourages mixed land use in the transit area and has modified the land use classifications by adding the provision of mixed land use. For instance, the guideline regulates detailed FAR for the transit area by dividing the influence area of metro stations into two distance bands, 200 m inner band, and 200–500 m outer bands. The FAR bonus in the inner band of hub metro stations can be as high as 60% of base FAR, and 40% of base FAR in the outer band; for secondary stations, the density bonus decreases to 40% and 20%. To improve governance efficiency, the land department and urban planning department in Shenzhen have been merged into the Urban Planning and Land Resource Commission, taking responsibility of land use planning, urban planning, transport planning, and land transfer.

These experimental practices illustrate Shenzhen’s innovative approaches to promote Joint development of transport and land. The key motivation is that Shenzhen as a special economic zone has policy support of central government. Nevertheless, the approach receives some critique as well. Shenzhen’s policy to leave TOD development to metro corporations requires these corporations to have sufficient expertise in real estate development. Even though transit companies can get land plots for property development, their ability in property development and management has been questioned, as one interviewee commented: “*Most of the transit companies in Chinese cities are state-owned companies in China, which are not managed in a transparent and clear way like MTR Corporation in Hong Kong*” (Interviewee 13). Another added: “*Given the inefficiency of property development by metro corporations, some municipalities changed their strategy, they preferred to lease land to private developers and invest land leasing revenue to public transport development, other than leasing land to metro corporations directly*” (Interviewee 14).

Many interviewees question the willingness of transit companies to promote the integration of transport and land development. Several interviewees note that: “*Most urban railway companies, as state-owned companies, receive a great amount of subsidy from local governments for urban rail maintenance and operations. Therefore, they do not have a strong incentive to adopting value capture instruments by integrating transportation with surrounding land use*” (Interviewee 5, 14).

⁹ 深圳市城市规划标准与准则

Fig. 6.2: Shenzhen Rail + Property



Land Reserve in Wuhan

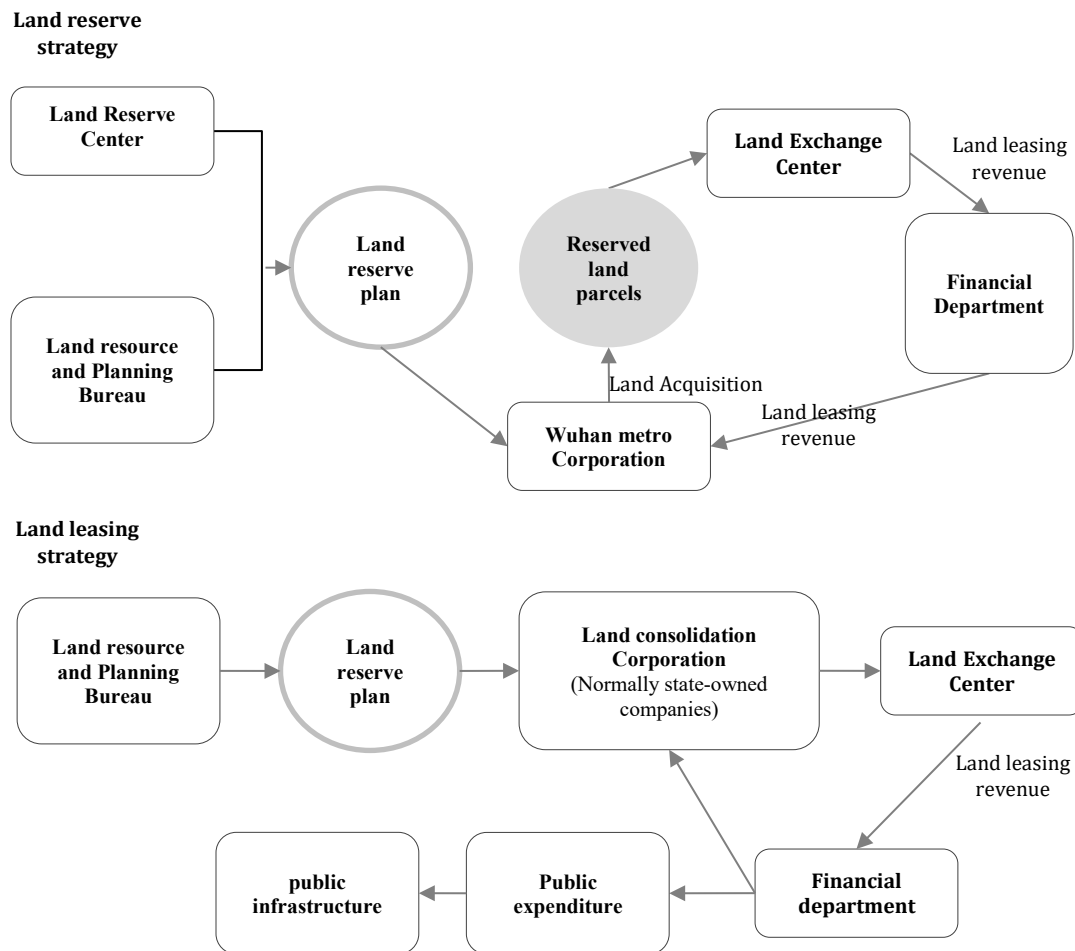
The city of Wuhan operates 10 railway lines with a total length of 288 km and plans to build another 6 lines with a total length of 110 km in 2021 (Wuhan Metro Corporation 2017). According to the construction plan approved by the national development and reform commission in 2015, Wuhan municipality wants to invest 45.96 billion RMB for urban railway development from 2015 to 2021 (DRC of Hubei Province 2015).

A so-called land reserve strategy has been implemented by Wuhan municipality to finance the expensive rail transit development policy (Sun et al. 2017). As part of this strategy, the Wuhan Metro Corporation has been made responsible for land acquisition and consolidation; subsequently land parcels will be transferred to developers by the land exchange center (which is a public agency). After land leasing, the revenue will be allocated to the Wuhan Metro Corporation for urban rail transit development.

Although the process of the land reserve strategy is in some respects similar to the common land leasing strategy, two significant differences appear. First, with the common land leasing strategy, land acquisition is carried out by state-owned companies with expertise in land consolidation, while as part of Wuhan's land reserve strategy, the transit company takes charge of land acquisition for land reserve. Second, the revenues from land leasing go to the public financial pool for general public infrastructure investment, whereas the revenues from the land reserve are earmarked for metro line development. The advantage of this approach is that it still meets the requirements of the land transfer policy in mainland China. Several cities including Ningbo, Qingdao, and Hangzhou have issued policies to support experiments based on similar principles of this land reserve strategy (Hangzhou municipality 2017). However, it is still challenging to apply this land value capture instrument in other Chinese cities, given the difficulty of land acquisition and unsustainability of funding sources. Due to the dual land rights system and

limited public participation, there is much tension in land acquisition. In addition, the construction and maintenance of the urban railway system requires sustainable funding sources, while revenue from the land reserve strategy provides a lump-sum profit only. Moreover, one participant in the focus group meeting mentioned that, different from most cities, Wuhan municipality is relatively powerful which has helped them to implement the land reserve strategy. A final remark here is that while the rail construction company earned a large profit from land banking, rail transit operations still need subsidy from the government.

Fig. 6.3: The Land Reserve Strategy for Transport Investment Versus the Common Land Leasing Strategy in China

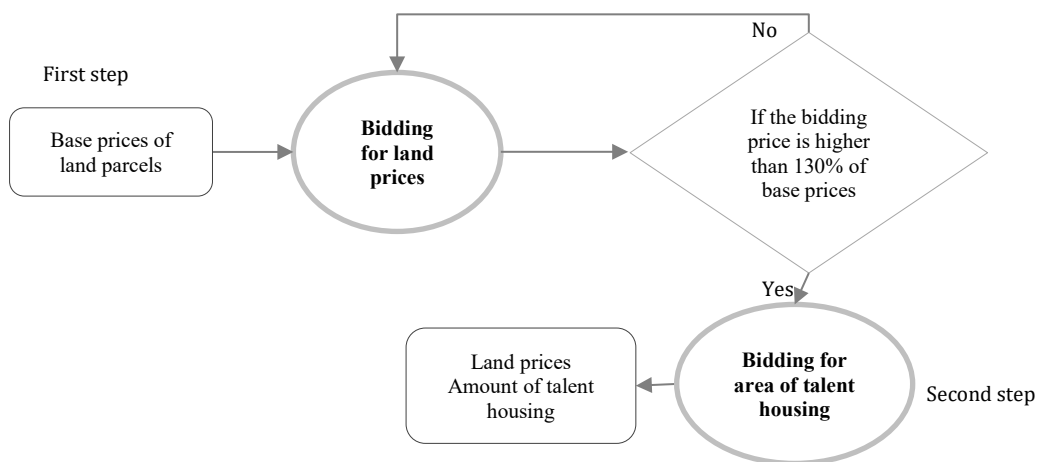


Two-Step Tendering in Shenzhen¹⁰

Shenzhen municipality has also experimentally practiced a two-step tendering process for so-called talent housing¹¹. Though the strategy is not related to TOD policies, we consider it relevant to this study as an alternative land-based value capture practice. The process of two-step tendering includes bidding for land prices and in-kind contribution in two stages. The municipality regulates the highest sales price of real estate in the project and determines the base land price of bidding according to the average market price of surrounding projects. When the bidding price is higher than the 130% of the base land price, the developers will bid for the amount of talent housing which is the in-kind contribution to the municipality.

The policy requiring developer contributions to affordable housing has also been issued in other cities, such as Nanjing and Beijing. The advantage of this approach is that it still complies with current land transfer regulation, while it creatively promotes developers to share the cost of affordable housing. Similarly, part of the costs of public transport can be shared between the public authority and private developers: after land leasing, developer contributions can be required to contribute to public transport investments. However, several problems may appear, including the method to define the size of the contribution and the dependency on local property market conditions.

Fig. 6.4: The Procedure of the Two-Step Tendering Strategy in Shenzhen



6.5 Discussion: Possible Ways Forward

Though the experimental approach to the implementation of innovative land-based value capture mechanisms for TOD development undoubtedly offers new chances for additional revenue for Chinese cities, the institutionalization of these mechanisms still seems to lag behind. Table 6.3

¹⁰ http://finance.takungpao.com/q/2016/1202/3398427_print.html

¹¹ Talent housing is a type of affordable housing, which offers housing to a group of persons with specific talent for social and economic development, and its price is normally 40% lower than market price. The purpose of this policy is to attract talented people to work in Shenzhen. (http://www.szjs.gov.cn/zfbzfw/zfzc/201501/t20150106_2774342.htm)

presents an overview of how the cases could be successfully implemented in Shenzhen and Wuhan, while the implementation in other cities is still expected to be problematic.

Table 6.3: Summary of Cases in Shenzhen and Wuhan

	Rail+ property in Shenzhen	Land reserve in Wuhan	Two-step tendering in Shenzhen
Goals	<ul style="list-style-type: none"> ●To mitigate the financial burden of urban railway development ●To promote the integration of transport and land development 	<ul style="list-style-type: none"> ●To mitigate the financial burden of metro line development ●To improve land acquisition efficiency 	<ul style="list-style-type: none"> ●To control housing prices in Shenzhen ●To increase the supply of affordable housing
How institutional barriers have been bypassed	<ul style="list-style-type: none"> ●Policy support from central government, as economic special zone ●Proximity to Hong Kong; eagerness to copy Hong Kong’s TOD policy 	<ul style="list-style-type: none"> ●Availability of land for reserve in transit areas ●Powerful municipality 	<ul style="list-style-type: none"> ●Prosperous housing market in Shenzhen ● Powerful municipality
Institutional barriers to implement this practice in other cities	<ul style="list-style-type: none"> ●Land transfer regulation ●Lack of expertise for property development ●Planning regulation does not support TOD policy. 	<ul style="list-style-type: none"> ●Dual land property rights system increases difficulty of land acquisition. ●Integrated transport and land development in the transit area ●Lack of clear regulations for funding supervision 	<ul style="list-style-type: none"> ●Lack of clear rationale for developer contributions to public transport ●Lack of clear regulations in supervising the use of developer contributions

As a way forward, institutional changes may be considered. Though we have not extensively studied possibilities for institutional changes in the Chinese spatial planning context promoting a more efficient value capture strategy to co-finance TOD policies (and for that reason, the suggestions below should be considered with care), we nevertheless want to discuss briefly two possible ways forward drawing from international experience. For that, we refer to Needham’s suggestion to distinguish between two different ways how spatial planning can help to improve efficiency in land and real estate markets, by ‘repairing’ the deficiencies in the present property rights regime (Needham 2006). He distinguishes between planning interventions that are aimed at *structuring* the market and planning interventions that are meant to *regulate* the market: “This gives two *different* ways in which society can try to achieve a desired land use. It can create and

structure rights in land in such a way that the desired land use is achieved by people working freely within that structure. Or it can influence, or steer, actions in the market in rights in land so that the outcome of people acting in that market is the desired one. And society can, of course, do both at the same time, so that the one complements the other” (Needham 2006, 13). A way to *structure* the land market in China in a different way, in order to promote more efficient TOD implementation strategies, could be to introduce a land leasing system that supports an inclusive TOD-based combined public transport and station area development investment strategy. A way to *regulate* the Chinese land market in a different way could be planning regulation that recognizes the need for experimenting with new planning instruments—particularly in times of transition—but offers a way to institutionalize the experiments.

Structuring the Market: Inclusive TOD Concessions to Metro Corporations

Since Hong Kong and China have in common the state ownership of urban land, it makes sense to investigate the possibilities of further introducing Hong Kong’s Rail Plus Property (R+P) program in Chinese cities, similar to what we described in the Shenzhen case study (section 4.1). Suzuki et al. (2015) describe the key principles that contribute to the program’s effectiveness. The Hong Kong MTR Corporation receives exclusive property development rights of state-owned land at a “before-rail” market price. At the same time, the zoning plan sets special FARs around key stations to attract private investment to strategic locations, while providing flexibility for private developers to negotiate and design. MTR then captures the land value increment created by R+P by partnering with private developers in developing the land and selling the completed development at an “after-rail” market price. It recoups the capital, operating and maintenance costs of railway projects through sharing profits. After project completion, the railway corporation stays on as an asset manager not only to capture the upfront profits of property development, but also to maximize the management-related recurring revenues from the long-term business portfolio (Suzuki et al. 2015, 7–8).

The transfer of development rights at a “before rail” market price to the MTR Corporation exclusively and the option for the MTR Corporation to sell the development rights at an “after-rail” market price would imply a *restructuring* of the current property rights regime. First, in the current system the land value increment belongs to the government. Second, while the R+P program fits well with the state ownership of land in China, the program would abandon the current strict regulation of land user rights transfer by competitive tendering.

It is important to point out that MTR is a listed company, with the Hong Kong government owning around three quarters of the shares and the general public owning the remaining quarter. It means that if MTR makes a profit, both the government and the general public earn their shares of profit. This setting has eased to some extent the concerns over the government’s granting of land use and development opportunities to MTR for the station area land. When considering the introduction of a similar model in China, one of the questions that needs to be addressed is whether China’s mainland cities could do the same.

Regulating the Market: Institutionalizing Planning Experiments

The need to cope with a changing political or economic environment such as the transitional processes in China has led to an increase in informality, due to the incapability or unwillingness of the state to implement formal institutions (Altrock 2012; Kreibich 2012). Since the economic reform in the late 1970s, China has been experiencing continuous processes of decentralization, marketization, and globalization, which has allowed local governments to actively initiate policies for local economic growth (Wei 2001), with spatial planning as a successful instrument to promote growth by the central and local authorities (Wu 2015; 2017). Whereas China's planning is proactive towards its growth agenda, it faces at the same time numerous challenges to (effective) urban governance, such as the emergence of urban villages, demand for infrastructure, and land management (Cao, Feng, and Tao 2008; He, Zhou, and Huang 2016; L. H. Li 2015; Lichtenberg and Ding 2009). Formal planning institutions often are incapable of dealing with these new challenges in a proper way. In response, as the three case studies demonstrate, local governments have attempted to bridge the gap between "inert" aspects of the formal institutional context and new urban development challenges in this transitional period by informal planning approaches, which appears to be a process of social learning through widely observed instances of trial and error (Helmke and Levitsky 2004). As commented by Altrock (2012), the strategy of "conceded informality" is used by the state on the national and provincial level not only to respond in a flexible way to upcoming challenges, but also as an experimental tool to grant some autonomy to local authorities.

Experimenting with new planning legislation and planning instruments, as a government-led informality, is by no means an exclusively Chinese phenomenon. Many countries allow planning experiments that may bypass current planning legislation to test and try out innovative planning approaches to spatial development. In order to provide a legal context for these experiments, the Dutch government decided in 2010 to introduce the so-called *Crisis- en Herstelwet* (English translation: Crisis- and recovery law). Since many real estate projects in Dutch cities had been stalled due to the international financial and economic crisis and its impact on real estate markets, the Dutch introduced this law aiming to accelerate, in a controlled way, the development of some of these stalled projects, by allowing local governments to bypass some legislative barriers to development and to experiment with innovative planning instruments. Since then, based on this law, local governments can propose innovative planning instruments that would not be allowed by the current planning legislation but may receive a formal experimental status. From 2020 on, this legislation will be part of the new spatial planning law in the Netherlands, continuing to allow biannual experimental planning approaches. Though we cannot answer the question whether such an institutionalized planning experiments approach would fit in other countries, we believe it's worth the suggestion to analyze the applicability of such an approach in China.

We would refer to this as a way to *regulate* the market: the intention is not to restructure property rights, but to steer actions in the market in rights in land so that the outcome of people acting in that market is the desired one.

6.6 Conclusions

Land value capture mechanisms can be effective financial instruments for integrated transport and land use development advocated by TOD. The effectiveness of land-based value capture mechanisms is constrained by a country's current institutional arrangements. This research has explored on one hand how institutional barriers in China prevent the effective introduction of land-based value capture mechanisms supporting TOD strategies. The key institutional constraints include unsupportive planning regulations leading to separated transport and land use development, limited value capture instruments under current land management policies, and inefficient governance in order to involve relevant stakeholders. On the other hand, our study shows how some Chinese cities have found effective, but informal ways to bypass current legislation and to implement successful innovative approaches to finance TOD implementation. We conclude with some suggestions how these experiments perhaps can be institutionalized and become part of current planning practices in the future.

References

- Alexander, E. R. (1992). *Approaches to Planning : Introducing Current Planning Theories, Concepts and Issues* (2nd ed.). Langhorne, Pa.: Gordon and Breach.
- Allmendinger, P., and Tewdwr-Jones, M. (2002). *Planning Futures: New Directions for Planning Theory*. London: Routledge.
- Alterman, R. (2012). Land Use Regulations and Property Values: The 'Windfalls Capture' Idea Revisited.
- Archer, R.W. (1989) Transferring the Urban Land Pooling/Readjustment Technique to the Developing Countries of Asia. *Third World Planning Review*, 11: 307–31.
- Arrington, G. and Parker, T. 2001. Factors for Success in California's Transit-Oriented Development. *Sacramento: California Department of Transportation, Statewide Transit-Oriented Development Study*.
- Barreteau, O., Page, C. L., and Perez, P. (2007). *Contribution of Simulation and Gaming to Natural Resource Management Issues: An Introduction*. In.
- Boateng, W. (2012). Evaluating the Efficacy of Focus Group Discussion (FGD) in Qualitative Social Research. *International Journal of Business and Social Science*, 3(7).
- Borrero Ochoa, O. (2011). Betterment Levy in Colombia: Relevance, Procedures, and Social Acceptability. *Land Lines*, 23(2), 14–19.
- Bots, P., and Van Daalen, E. (2007). Functional Design of Games to Support Natural Resource Management Policy Development. *Simulation and Gaming*, 38(4), 512–532.
- Cao, G., Feng, C., and Tao, R. (2008). Local “Land Finance” in China's Urban Expansion: Challenges and Solutions. *China and World Economy*, 16(2), 19–30.
- Cervero, R. (2004). *Transit Oriented Development in America: Experiences, Challenges, and Prospects*, Transportation Research Board, National Research Council.
- Cervero, R. and Day, J. 2008. Suburbanization and Transit-Oriented Development in China. *Transport Policy*, 15, 315–323.
- Cervero, R., and Murakami, J. (2009). Rail and Property Development in Hong Kong: Experiences and Extensions. *Urban Studies*, 46(10), 2019–2043.
doi:10.1177/0042098009339431
- Chang, Z. (2013). Public-Private Partnerships in China: A Case of the Beijing No. 4 Metro Line. *Transport Policy*, 30, 153–160.
- Chen, X., (2010). Prospect of the Transit-Oriented Development in China. *Management Research and Practice*, 1(2), 83–93.
- Cheng, Z., Ke, Y., Lin, J., Yang, Z., and Cai, J. (2016). Spatio-Temporal Dynamics of Public Private Partnership Projects in China. *International Journal of Project Management*, 34(7), 1242–1251.
- Claydon, J., and Smith, B. (1997). Negotiating Planning Gains Through the British Development Control System. *Urban Studies*, 34(12), 2003–2022.
- Curtis, C., Renne, J. L. and Bertolini, L. (2009). From Transit-Adjacent to Transit-Oriented Development. *Local Environment*, 14, 1–15.
- De Jong, M., Mu, R., Stead, D., et al. (2010). Introducing Public-Private Partnerships for Metropolitan Subways in China: What is the Evidence?. *Journal of Transport Geography*, 18(2), 301–313.
- Deng, T., and Nelson, J. D. (2013). Bus Rapid Transit Implementation in Beijing: An Evaluation of Performance and Impacts. *Research in Transportation Economics*, 39(1), 108–113.

- Ding, C. (2007). Policy and Praxis of Land Acquisition in China. *Land Use Policy*, 24(1), 1–13.
- Doherty, M. (2004). Funding Public Transport Development Through Land Value Capture Programs. Institute for Sustainable Futures.
- Doulet, J. F., Delpirou, A., and Delaunay, T. (2016). Taking Advantage of a Historic Opportunity? A Critical Review of the Literature on TOD in China. *Journal of Transport and Land Use*, 10(1).
- DRC of Hubei Province (2015). Construction Plan of Wuhan Urban Rail Transit Phase III (2015–2021).
- Dube, J., Theriault, M. and Des Rosiers, F. (2013). Commuter Rail Accessibility and House Values: The Case of the Montreal South Shore, Canada, 1992–2009. *Transportation Research Part A-Policy and Practice*, 54, 49–66.
- Duke, R. D. (1974). *Gaming: the Future's Language*: Wiley.
- Duke, R. D., and Geurts, J. (2004). *Policy Games for Strategic Management*. Amsterdam West Lafayette, Ind.: Dutch University Press; in association with Purdue University Press.
- Dye, R., and Merriman, D. (2006). Tax Increment Financing: A Tool for Local Economic Development. *Lincoln Land Institute*. Accessed August, 15, 2014.
- Ennis, F. (Ed.) (2003). *Infrastructure Provision and the Negotiating Process*: Ashgate publishing.
- Ennis, F., Healey, P., and Purdue, M. (1995). *Negotiating Development: Rationales and Practice for Development Obligations and Planning Gain*: E and FN Spon.
- Fan, X., Zheng, D., and Shi, M. (2016). How Does Land Development Promote China's Urban Economic Growth? The Mediating Effect of Public Infrastructure. *Sustainability*, 8(3), 279.
- Far East BRT. (2017). TOD in China: Challenges and Opportunities in Ji'an.
- Farthing, S., and Ashley, K. (2002). Negotiations and the Delivery of Affordable Housing Through the English Planning System. *Planning Practice and Research*, 17(1), 45–58.
- Forester, J. (2009). *Dealing with Differences: Dramas of Mediating Public Disputes*. Oxford: Oxford University Press.
- Fuller, B. (2011). Power, Adaptive Preferences, and Negotiation: Process Specifics Matters. *Planning Theory and Practice*, 12, 455–461.
- Gu, Y., and Zheng, S. (2010). The Impacts of Rail Transit on Property Values and Land Development Intensity: The Case of No. 13 Line in Beijing [J]. *Acta Geographica Sinica*, 2, 010.(In Chinese)
- Hale, C. (2014). TOD versus TAD: The Great Debate Resolved...(?). *Planning Practice and Research*, 29, 492–507.
- Hangzhou Municipality 2017. The Measures to Raise Funding Sources for Urban Rail Transit in Hangzhou.
- Healey, P. (1997). *Collaborative Planning: Shaping Places in Fragmented Societies*. Vancouver: UBC Press.
- Healey, P., Purdue, M., and Ennis, F. (1995). *Negotiating Development: Rationales and Practice for Development Obligations and Planning Gain*. London: E and FN Spon.
- Healey, P., Purdue, M., and Ennis, F. (1996). Negotiating Development: Planning Gain and Mitigating Impacts. *Journal of Property Research*, 13(2), 143–160.
- He, C. F., Y. Zhou and Z. J. Huang (2016) Fiscal Decentralization, Political Centralization, and Land Urbanization In China. *Urban Geography*, 37, 436–457.

- He, Y. (2012). On the Choice of Property and Tax Administration Mode. *Tax Research*, (3), 69–72. (In Chinese)
- Hillier, J. (2003). Agonizing over Consensus: Why Habermasian Ideals Cannot Be “Real”. *Planning Theory*, 2, 37–59.
- Hin, L. L. and L. Xin (2011) Redevelopment of Urban Villages in Shenzhen, China - An Analysis of Power Relations and Urban Coalitions. *Habitat International*, 35, 426–434.
- van den Hoogen, J., and Meijer, S. (2015). Gaming and Simulation for Railway Innovation: A Case Study of the Dutch Railway System. *Simulation and Gaming*, 46(5), 489–511. doi:10.1177/1046878114549001
- Huang, X., Cao, X. J., Yin, J. and Cao, X. (2017). Effects of Metro Transit on the Ownership of Mobility Instruments in Xi’an, China. *Transportation Research Part D: Transport and Environment*, 52, 495–505.
- Innes, J. E. (1995). Planning Theory’s Emerging Paradigm: Communicative Action and Interactive Practice. *Journal of Planning Education and Research*, 14, 183–189.
- Innes, J. E., and Booher, D. E. (1999). Consensus Building and Complex Adaptive Systems. *Journal of the American Planning Association*, 65, 412–423.
- Ingram, G. K. and Y.-h. Hong. (2012). Value Capture and Land Policies. Cambridge, Mass: Lincoln Institute of Land Policy.
- Jin, X., Zhang, Y., Chen, Y., and Song, Y. (2011). Explore the TOD Development Mode Which Suitable For China’s Characteristics: The Example of Shenzhen. *Planners*, 10, 014.(In Chinese)
- Knowles, R. D. (2012). Transit Oriented Development in Copenhagen, Denmark: from the Finger Plan to Orestad. *Journal of Transport Geography*, 22, 251–261.
- van der Krabben, E., and Lenferink, S. (2018). The Introduction of Urban Land Readjustment Legislation as an Institutional Innovation in Dutch Land Policy. *Habitat International*, 75, 114–121.
- van der Krabben, E. and Needham, B. (2008) Land Readjustment for Value Capturing: A New Planning Tool for Urban Redevelopment. *Town Planning Review*, 79(6), 651–672.
- Lai Y, Tang B. Institutional Barriers to Redevelopment of Urban Villages in China: A Transaction Cost Perspective [J]. *Land Use Policy*, 2016, 58: 482–490.
- Li, Z., Zhou, S. L., and Wu, S. H. (2014). The Impact of Metro Lines on Public Transit Accessibility and Land Value Capture in Nanjing. *Acta Geographica Sinica*, 69(2), 255–267. (In Chinese)
- Li, G. C., X. F. Luan, J. W. Yang and X. B. Lin (2013) Value Capture Beyond Municipalities: Transit-Oriented Development and Inter-City Passenger Rail Investment in China's Pearl River Delta. *Journal of Transport Geography*, 33, 268–277.
- Li, L. H., J. Lin, X. Li and F. Wu (2014) Redevelopment of Urban Village in China - A Step Towards an Effective Urban Policy? A Case Study of Liede Village in Guangzhou. *Habitat International*, 43, 299–308.
- Li, L. H. (2015). State or Market: The Role of the Government in Urban Village Regeneration in China. *International Journal of Urban Sciences*, 19(2), 157–167.
- Li L H, Li X. (2007) Land Readjustment: An Innovative Urban Experiment in China [J]. *Urban Studies*, 2007, 44(1): 81–98.
- Lichtenberg, E. and C. R. Ding (2009) Local Officials as Land Developers: Urban Spatial Expansion in China. *Journal of Urban Economics*, 66, 57–64.

- Lin, G. C. S. (2007) Reproducing Spaces of Chinese Urbanisation: New City-Based and Land-Centred Urban Transformation. *Urban Studies*, 44, 1827–1855.
- Lin, G. C. S. and F. X. Yi (2011) Urbanization of Capital or Capitalization on Urban Land? Land Development and Local Public Finance in Urbanizing China. *Urban Geography*, 32, 50–79.
- Lin, X. B., J. W. Yang, G. C. Li, L. S. Liu, X. F. Luan and W. Chen (2016) Land Value Capture and Multi-Level Governance for Inter-City Passenger Rail Transit in the Zhujiang River Delta. *Scientia Geographica Sinica*, 36, 222–230.
- Liu, Z. and Zeng, X. (2017) *Infrastructure Contributions and Negotiable Developer's Obligations in China*. Paper presented at PLPR Annual Conference, Hong Kong.
- Man, J. Y. (2012). China's Property Tax Reform: Progress and Challenges. *Land Lines*, 15–19.
- Mayer, I.S., and Veeneman, W. (2003). *Games in a World of Infrastructures*: University of Chicago Press.
- Mayer, I.S. (2009). The Gaming of Policy and the Politics of Gaming: A Review. *Simulation and Gaming*, 40(6), 825–862.
- McIntosh, J., Trubka, R., and Newman, P. (2014). Can Value Capture Work in a Car Dependent City? Willingness to Pay for Transit Access in Perth, Western Australia. *Transportation Research Part A: Policy and Practice*, 67, 320–339.
- Medda, F. (2012). Evaluation of Value Capture Mechanisms as a Funding Source for Urban Transport: The Case of London's Crossrail. *Procedia-Social and Behavioral Sciences*, 48, 2393–2404.
- Meijer, I.S. (2009). *The Organisation of Transactions: Studying Supply Networks Using Gaming Simulation*. Wageningen, The Netherlands: Wageningen Academic Publishers.
- Mu, R., and de Jong, M. (2012). Establishing the Conditions for Effective Transit-Oriented Development in China: The Case of Dalian. *Journal of Transport Geography*, 24, 234–249.
- Mulley, C. (2014). Accessibility and Residential Land Value Uplift: Identifying Spatial Variations in the Accessibility Impacts of a Bus Transitway. *Urban Studies*, 51, 1707–1724.
- Muñoz Gielen, D. and E. van der Krabben (eds.) (2019) *Public Infrastructure, Private Finance, Developer Obligations and Responsibilities*. Milton Park: Routledge.
- Muñoz-Gielen, D. and Van der Krabben, E. (2017) *Public Infrastructure, Private Finance: Developer Obligations and Responsibilities*. Paper presented at PLPR Annual conference, Hong Kong.
- Muñoz Gielen, D. M., and Lenferink, S. (2018). The Role of Negotiated Developer Obligations in Financing Large Public Infrastructure After the Economic Crisis in the Netherlands. *European Planning Studies*, 26(4), 768–791.
- Muñoz Gielen, D. M., Salas, I. M., and Cuadrado, J. B. (2017). International Comparison of the Changing Dynamics of Governance Approaches to Land Development and Their Results for Public Value Capture. *Cities*, 71, 123–134.
- Muñoz-Gielen, D. (2014) Urban Governance, Property Rights, Land Readjustment and Public Value Capturing. *European Urban and Regional Studies*, 21(1) 60–7
- Murakami, J. (2015). Rail Plus Property Program, Hong Kong SAR, China. In: Suzuki, H., Murakami, J., Hong, Y.-H. and Tamayose, B. (eds.) *Financing Transit-Oriented Development with Land Values : Adapting Land Value Capture in Developing Countries*. Washington: World Bank Publications.

- Murakami, J. and Gregory, K. I. (2012). Transit Value Capture: New Town Codevelopment Models and Land Market Updates in Tokyo and Hong Kong. *Value Capture and Land Policies*, 285–320.
- Nie, S. (2013). Land Value Capture Through Market-Oriented Public Land Leasing: The Case of Metro System Finance in Changsha City, China (master thesis). Erasmus University, Rotterdam, the Netherlands.
- North, D. C. (1990). *Institutions, Institutional Change, and Economic Performance*. Cambridge; New York: Cambridge University Press.
- Renard, V. (2003). Infrastructure Provision, the Negotiating Process and Property Market Cycles. *F. Ennis. Infrastructure Provision and the Negotiating Process*. Aldershot, Ashgate Publishing.
- Ruming, K. (2012). Negotiating Within the Context of Planning Reform: Public and Private Reflections from New South Wales, Australia. *International Planning Studies*, 17, 397–418.
- Root, L., van der Krabben, E., and Spit, T. (2016). 'Test Driving' a Financing Instrument for Climate Adaptation: Analyzing Institutional Dilemmas Using Simulation Gaming. *Planning Practice and Research*, 31(3), 250–269. doi:10.1080/02697459.2016.1158073
- Salat, S., and Ollivier, G. (2017). Transforming the Urban Space through Transit-Oriented Development.
- Samsura, D.A.A. and van der Krabben, E. (2012) Negotiating Land and Property Development: A Game Theoretical Approach to Value Capturing. *Journal of European Real Estate Research*, 5(1): 48–65.
- Samsura, D.A.A., van der Krabben, E., van Deemen, A.M.A. and van der Heijden R.E.C.M. (2015) Negotiation Processes in Land and Property Development: An Experimental Study. *Journal of Property Research*, 32(2): 173–191.
- Sandroni, P. (2010). A New Financial Instrument of Value Capture in São Paulo: Certificates of Additional Construction Potential. *Municipal Revenues and Land Policies*. G. Ingram and Y. Hong. Cambridge MA, Lincoln Institute of Land Policy.
- Savini, F., Majoor, S., and Salet, W. (2015). Dilemmas of Planning: Intervention, Regulation, and Investment. *Planning Theory*, 14(3), 296–315.
- Shin, H. B. (2009). Residential Redevelopment and the Entrepreneurial Local State: The Implications of Beijing's Shifting Emphasis on Urban Redevelopment Policies. *Urban Studies*, 46(13), 2815–2839.
- SZMC, S. M. C. (2012). Annual Report of 2012.
- SZMC, S. M. C. (2016). Annual Report of 2016.
- SZMC, S. M. C. (2017a). *Investment Introduction of Shenzhen Metro System* [Online]. Available: <http://www.szmc.net/page/aboutme/invest.html> [Accessed].
- SZMC, S. M. C. (2017b). *Property Development Introduction of Shenzhen Metro System* [Online]. Available: <http://www.szmc.net/page/propertydevelopment/about.html> [Accessed].
- Song, X., Feng C. (2010) A Summary of the Research on China 's Real Estate Tax. PLC working paper. (In Chinese)
- Su, H., Wu, J. H., Tan, Y., Bao, Y., Song, B., and He, X. (2014). A Land Use and Transportation Integration Method for Land Use Allocation and Transportation Strategies in China. *Transportation Research Part A: Policy and Practice*, 69, 329–353.

- Sun, H., Wang, Y., and Li, Q. (2016). The Impact of Subway Lines on Residential Property Values in Tianjin: An Empirical Study Based on Hedonic Pricing Model. *Discrete Dynamics in Nature and Society*, 2016.
- Sun, J., Chen, T., Cheng, Z., Wang, C. C., and Ning, X. (2017). A Financing Mode of Urban Rail Transit Based on Land Value Capture: A Case Study in Wuhan City. *Transport Policy*, 57, 59–67.
- Suzuki, H., Jin, M. and Hong, Y.-H. (2015a). *Financing Transit-Oriented Development with Land Values : Adapting Land Value Capture in Developing Countries*, Washington, World Bank Publications.
- Suzuki, H., Murakami, J., Hong, Y.-H. and Tamayose, B. (2015b). *Financing Transit-Oriented Development with Land Values : Adapting Land Value Capture in Developing Countries*, Washington, World Bank Publications.
- Suzuki, H., Cervero, R., and Iuchi, K. (2013). *Transforming Cities with Transit: Transit and Land-Use Integration for Sustainable Urban Development*. World Bank Publications.
- Suzuki, H., Murakami, J., Hong, Y.H. and Tamayose, B. (2015). *Financing Transit-Oriented Development with Land Values: Adapting Land Value Capture in Developing Countries*. World Bank Publications.
- Tao, R., Su, F. B., Liu, M. X. and Cao, G. Z. (2010). Land Leasing and Local Public Finance in China's Regional Development: Evidence from Prefecture-level Cities. *Urban Studies*, 47, 2217–2236.
- Tian, L. (2006). Impacts of Transport Projects on Residential Property Values in China: Evidence from Two Projects in Guangzhou. *Journal of Property Research*, 23(4), 347–365.
- Tian, L. (2014). *Property Rights, Land Values and Urban Development: Betterment and Compensation in China*. Cheltenham: Edward Elgar.
- Turk, S. S. (2018). Comparison of the Impacts of Non-Negotiable and Negotiable Developer Obligations in Turkey. *Habitat International*, 75, 122–130.
- Verhage, R. f., and Needham, B. (2003). Financing Public Facilities in Housing Projects: A Method for Understanding Negotiating Processes. In *Infrastructure Provision and the Negotiating Process* (pp. 19–38): Ashgate Publishing Limited.
- Wang, D., Zhang, L., Zhang, Z., and Zhao, S. X. (2011). Urban Infrastructure Financing in Reform-Era China. *Urban Studies*, 48(14), 2975–2998.
- Wong, C. P. (2000) Central-local relations revisited: The 1994 Tax Sharing Reform and Public Expenditure Management in China. *China Perspective*, 31, 52–63.
- Wu, W. (2010). Urban Infrastructure Financing and Economic Performance in China. *Urban Geography*, 31(5), 648–667.
- Wu, F. (2015.) *Planning for Growth : Urban and Regional Planning in China*.
- Wu, W. and Hong, J. (2017). Does Public Transit Improvement Affect Commuting Behavior in Beijing, China? A Spatial Multilevel Approach. *Transportation Research Part D: Transport and Environment*, 52, 471–479.
- Wuhan Metro Corporation. (2017). *Introduction of Wuhan Metro Corporation* [Online]. Available: http://www.whrt.gov.cn/public_forward.aspx??url=about.aspx?dtag=menu_index_1 [Accessed].
- Xu, J., Zhiu, J. and Wang, J. A. (2014). A Study on Planning Guidance of Mixed Use of Urban Land at Home and Abroad. *Journal of Human Settlements in West China*, 3, 015.

- Xu, T., Zhang, M., and Aditjandra, P. T. (2016). The Impact of Urban Rail Transit on Commercial Property Value: New Evidence from Wuhan, China. *Transportation Research Part A: Policy and Practice*, 91, 223–235.
- Xue, L. and Fang, W., (2015) Rail Plus Property Development in China: The Pilot Case of Shenzhen. World Resource Institute Working Paper.<
<http://www.wri.org.cn/publications>.
- Yang Y R, Chang C. (2007) An Urban Regeneration Regime in China: A Case Study of Urban Redevelopment in Shanghai's Taipingqiao Area. *Urban Studies*, 44(9): 1809–1826.
- Yang, J., Feng, C., and Cao, G. (2007). Land and Transportation Development in China: Economic Analysis of Government Behavior. *Transportation Research Record: Journal of the Transportation Research Board*, (2038), 78–83.
- Yang, J., Quan, J., Yan, B., and He, C. (2016). Urban Rail Investment and Transit-Oriented Development in Beijing: Can It Reach a Higher Potential?. *Transportation Research Part A: Policy and Practice*, 89, 140–150.
- Zacharias, J., Zhang, T. X. and Nakajima, N. (2011). Tokyo Station City: The Railway Station as Urban Place. *Urban Design International*, 16, 242–251.
- Zhang, C. and Li, X., (2016). Urban Redevelopment as Multi-Scalar Planning and Contestation: The Case of Enning Road Project in Guangzhou, China. *Habitat International*, 56, pp.157–165.
- Zhang, M., and Wang, L. (2013). The Impacts of Mass Transit on Land Development in China: The Case of Beijing. *Research in Transportation Economics*, 40(1), 124–133.
- Zhang, M., Meng, X., Wang, L., and Xu, T. (2014). Transit Development Shaping Urbanization: Evidence from the Housing Market in Beijing. *Habitat International*, 44, 545–554.
- Zheng, R. (2015). Establishing Transit-Oriented Development (TOD) on the Ground: Case-Based Analysis of Implementing TOD in China (Doctoral dissertation, Massachusetts Institute of Technology).
- Zhongguowang (2016). National Development and Reform Commission Organized a Seminar on Innovative Financing Mechanism of Urban Rail Transit Investment.
- Zhou, Z. H. (2014) Towards Collaborative Approach? Investigating the Regeneration of Urban Village in Guangzhou, China. *Habitat International*, 44, 297–305.
- Zheng, H., Wang, X., and Cao, S. (2014). The Land Finance Model Jeopardizes China's Sustainable Development. *Habitat International*, 44, 130–136.
- 郑思齐, 孙伟增, and 满燕云. (2012). 征收房产税的民意调查-对四个重点城市的调研数据分析, 林肯中心研究报告.

Appendix 1

Inclusive Land Leasing Game

There is a land plot within transit area, municipality would like to lease it out and get land revenue, while it wants to increase the accessibility in this area by constructing public transport. Developer A is the real estate company that wants to expand its market occupation, it wants to buy this land plot for residential housing. Now the land price is settled by municipality and developer A (285 million yuan). The developer will propose its development plan to get the approval of municipality. The development plan includes the number of normal housing and number of affordable housing (total number is 150).

Municipality has the requirement on the minimum number of affordable housing (32), and would like to have more affordable housing (target is 40). At the same time, municipality wants to construct new public transport to improve the accessibility in this area. It will ask developer A's contribution to public transport when developer applies approval.

Roles:

Municipality:

It is an opportunity for municipality to transform this area into more liveable and accessible area by constructing new transport facilities and increasing the supply of affordable housing. But municipality need the help of developer to realise these goals.

Aims: *To have more affordable housing; to keep or improve the accessibility.*

Actions: To approve the developer's plans which will impact the accessibility in this area (TOD indicator); To build public transport to increase accessibility in this area, and it requires the contribution for developer A; To get revenue by leasing land out; To ask developer to share the cost of public transport.

Developer

It will buy this land plot for new development, and get profit from development.

Aims: to get maximum profit.

Actions: It will apply for building approval from municipality. Decide contribution to public transport. Transfer land revenue and developer contribution to municipality if they reach agreement

Task:

Negotiate with each other and try to reach an agreement on development plan (number of affordable housing), developer contribution to public transport, type of public transport to build. If no agreement can be reached, every stakeholder will get nothing.

Information for the developer and municipality**For the developer:**

Development plans	Plan A	Plan B	Plan C	Plan D
Number of affordable housing	32	35	38	40
Number of normal housing	118	115	112	110
Expected revenue	611 million	597 million	582 million	573 million
(land cost)	285 million	285 million	285 million	285 million
Profit (revenue – land cost)	326 million yuan	312 million yuan	297 million yuan	288 million yuan

For the municipality:**The property development plans and their impact on accessibility**

Development plans	Plan A	Plan B	Plan C	Plan D
Number of affordable housing	32	35	38	40
Number of normal housing	118	115	112	110
Impact on accessibility (Decrease accessibility)	by 20%	by 15%	by 10%	by 5%

The redevelopment plans of metro station:

Type of transport	Type A	Type B	Type C	Type D
Increase accessibility by	0%	10%	15%	20%
Expected contribution from developer	0 million yuan	40 million yuan	60 million yuan	80 million yuan

Appendix 2

Urban Land Readjustment Game

Round 1

Suppose there are 3 property owners (A, B, and C) in a proposed urban land readjustment project for urban village redevelopment. Each of the property owner has different size of property as follows:

- Owner A has 100 m²
- Owner B has 200 m²
- Owner C has 300 m².

With the urban land readjustment project, they are allowed to have an additional FAR of 600 m² in total and they can lease out their property to get revenues from it based on the new values that are created from the project to their properties.

In this game, we assume that the urban land readjustment project can be carried out if **at least 2 out of three owners are agree to join the project** and the other one can be forced by law to join. We also assume that the municipality will also ask for a fixed contribution to develop/improve a public transport facility in the vicinity of the redevelopment area. In the case that there are only two owners who would like to join the project, those who join the project can enjoy the additional FAR while the one who does not join will only get the FAR as much as her/his original own property. However, everybody will enjoy the new values of their property and they can lease out their property to get revenues from it. The one who does not join the project, will also be obliged to contribute to the development/improvement of the public transport facility proportionally to the FAR of her/his property. While those who join the project, can decide among themselves how much each of them will contribute but it must cover the rest of the obliged contribution (total contribution is 12 million yuan). Table 1 below is the new values that can be created for every formation of owners to join the project and the amount of the contributions:

Table 1

Formation	Join the project				Not join the project			
	Owners	FAR	Values	Contribution	Owner	FAR	Values	Contribution
1	AB	900	36	9	C	300	13	3
2	AC	1000	42	10	B	200	9	2
3	BC	1100	45	11	A	100	5	1
4	ABC	1200	66	12	n/a			

(values¹² and contribution are in million yuan)

¹² The values also include 10% for affordable house

Your task:

Negotiate to each other, what formation do you agree to make and how are you going to distribute the values and contributions among the owners who agree to join the urban land development project. If no agreement can be reached, everybody will get nothing.

Round 2

In this game, we assume that the urban land readjustment project can only be carried out **if all the owners are agreed to join the project**. Suppose that other conditions are the same as in game 1 which include the initial size of each owners' properties, the additional FAR that can be developed, the new values created from the project (which can be leased out by the owners) and the contributions that required by the municipality to develop/improve a public transport facility in the vicinity of the redevelopment area. Therefore, only one possible of formation for the owners' collaborations to carry out the urban land readjustment project which is the formation number 4 shown in Table 1 before.

Appendix 3

The Topics Of The Focus Group Discussion

- The outcome of negotiation: Do you reach the agreement or not?
- The motivation to make your decisions;
- Is it reasonable to have the cost of public transport as developer contribution? Why?
- Do you think it is possible to have land price negotiated? Why?
- What have you learned from the game?
- What is the most important advantage of applying land readjustment in China?
- What are the most important problems that legal arrangement for urban land readjustment game should solve in China?
- What is the necessary condition for applying urban land readjustment in China? Could the planning takes be achieved by existing land policy instruments?
- Do you have suggestions to improve the game?