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Value Capture Beyond Public Land Leasing: Funding Transit and Urban Redevelopment in China's Pearl River Delta

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Abstract

The globally wide research community has limited knowledge of China's value capture practices beyond the straightforward public land leasing practice. This research is built on a set of case studies of how China's city governments use indirect land sector revenue to fund urban transit projects and urban redevelopment projects in Pearl River Delta. The methods used in our case studies include semi-structured interviews and participant observation. Our findings are that value capture tools in China have been stimulated by city governments' efforts to fund the ever-growing needs for municipal projects and services. The general and major value capture mechanism is predicated on China's public (national) land ownership system. But the rising level of living demands for a broader range of service has led city governments to innovate with more value capture tools. These tools enable better matching of the funding needs of specific projects with the increment in land value arising from these projects. The issues relevant to central government leadership and the bottom-up city initiatives for value capture leads to variation of the same value capture tool across different cities. It thus leaves significant space for institutional innovation, effectiveness improvement, and a variety of expectation on private sector participation.

Keywords: Value capture; public land ownership; China; transit finance; urban regeneration; affordable housing; negotiated development; developer obligations; land use regulation

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Introduction

The topic of this research may sound surprising to many: why would Chinese cities need to innovate in land value capture tools, usually associated with private land ownership systems? If all urban land in China is owned by the State, doesn't the government capture all land values up-front, whenever it transfers developable land to the highest bidder? Our research is set out to look with a flashlight, deeply into the complexities of the interactions between land ownership, land economics, and land use regulation within the China context. This investigation unveils a fascinating set of stories, told almost in live broadcast, of how some Chinese local governments are inventing new policy tools within the context of a national land system. They do so to help finance the constantly rising set of public expectations for enhanced public services. Despite China's uniqueness in some respects — and perhaps thanks to its uniqueness — we will argue that the lessons derived from China bear relevance to an especially broad set of countries, both in the Global South and the Global North.

Conceptual Framework: The Many Facets of Land Value Capture

The concept of land value capture is more complex than it seems. To understand the differences among the various value capture mechanisms analyzed within the Chinese context and how they fit into the international picture, one needs a broader conceptual framework of value capture, its evolution and its alternative rationales.

The Growing Global Interest in Land Value Capture

In recent years, the term "land value capture" (LVC) is increasingly becoming the globally known term[1] to denote a broad set of public sector tools (based on laws, policies, and practices) designed to reap some or all of the uplift in real estate values as a source of public finance. The purpose is to fill in for insufficient funding sources for the growing needs and expectations for improved public services around the world. Conceptually, the range of targeted public goods is not finite: it can be narrow or broad. Over time, the "wish list" of public goods to be financed

[1] Previously, there was a plethora of terms used in isolation by different languages or legal-family countries. See Alterman 1988; 2012.

through LVC has tended to expand, from a narrow list of local infrastructures, small parks and some tapes of public buildings, to an open-ended variety of other social, environmental and housing services. In practice, the degree and manner of recouping the added value, as well as the public services or goods that may be targeted, will vary greatly across countries and time, from almost no value capture to extensive practices. These variations will reflect the legal context, alternative funding sources, governance capacities, and socio-political views (Alterman 2012).

The general concept of LVC is now more than a century old, with roots in late 19th century Britain (Booth 2012), but practices around the world have probably been limited to only a few, isolated countries, with little knowledge exchange (Hagman and Misczynski 1978) were pioneers). Recently, however, global organizations such as the UN and the World Bank are rediscovering LVC (see, for example, the special dissemination guidebook by UN Habitat 2016). This revived interest reflects a growing awareness of the huge gap between the global ambitions to improve living and environmental conditions, as recently expressed by UN Habitat III's Sustainable Development Goals, and the dearth of financial resources to implement them.[2] The scant systematic comparative research about the use and effectiveness of value capture tools is not enough to support cross-learning.

The global intention today is much more ambitious than the spotty history of value capture in advanced-economy countries. The goal is to reach developing countries, and tailor the knowledge about LVC tools to their needs and capacities. This is where our research report can contribute to international knowledge. China is at an in-between developmental stage, spanning attributes of both developing countries and advanced economies. Government institutions in China are acknowledged to be very "fast learners" and serve as models for many other countries (Yang 2007; Zhao 2017). Our study focuses on the manner and degree to which Chinese cities have been able to import, or self-innovate, in tailoring value capture tools to meet fast-evolving needs.

[2] See for example https://www.unssc.org/courses/financing-sdgs-mobilising-finance-sustainable-development/

A Typology of Value Capture Rationales and Their Relevance to China

The field of value capture is still characterized by a lack of rigorous distinctions among concepts and terms, and by confusion about the differing basic rationales underlying each tool. In countries where some types of value capture tools have been challenged in courts (different tools at different times and contexts), the importance of matching a given tool to its appropriate rationale becomes visible and vital. But recognition of the differences in rationales is important on a day-to-day policymaking level even in countries, such as China, where the legal framework grants government bodies considerable leeway for discretion. Because this study is intended for mutual learning, it is especially crucial to distinguish among the different rationales.
The systematic conceptual classification and terminology proposed by Alterman (2012) will be useful for our study. Her comprehensive classification distinguishes between the *rationales* underlying the various tools, and the *cause of the land value uplift.* The classification covers not only private-land contexts (wherein most of the value capture tools have emerged) but also spans the Chinese national land-release system. Alterman distinguishes among three sets of value capture instruments, differentiated by their basic rationales. Each of the value capture mechanisms discussed in this paper falls into one or more of the following categories:

(1) Macro Value Capture Through Public Land Ownership: This rationale is embedded in national (or municipal) land ownership. Value capture is expected to operate due to the public control of land use designation, manner and timing of release and the price. There aren't many advanced-economy countries where land is nationally owned, but there are some examples of municipal land banking (Anderson 2012). Beyond the advanced economies, several developing countries, including Vietnam and Ethiopia, do have nationally owned land, and the findings from our study will be relevant to them once they make more economic and governance progress.

The macro rationale applies to the dominant Chinese land policies in urban areas. The local government determines the land use and development rights through the planning process, decides when to release land for development, and controls the bidding process (Abramson 2011). Apart from some exceptions, such as public-service agencies and specific state-preferred industries, the land is usually released to market-based corporations who are the highest bidders. This system means that, in principle, almost the full value of undeveloped land converted to urban is captured within the public purse. The major budget sources of local governments in China are indeed based on this type of value capture, practiced on a large-scale unknown in other countries. Nevertheless, in reality, there are gaps between these upfront resources and the ongoing needs of urban development and redevelopment. This interstitial zone is the breeding ground for the value capture innovations reported here.

A small-scale version of the public-ownership rationale can be seen in a variety of public-private partnerships initiated occasionally in many countries. A government body that owns a particular land parcel or buildings can leverage its land rights and partner with a market developer. The latter will deliver an agreed public good or services in exchange for benefits from the real estate. One of our case studies falls in this category.

(2) Direct Value Capture: This rationale is based purely on the concept of the "unearned increment." The idea is that the specific land holder did not created the uplift in land values, and thus he or she should share the increment with the general public. Under this rationale, there is no need to demonstrate any causal linkage between the land development project that contributes the funds and the location or type of public good to which the funds are channeled. There is also no need to show geographic proximity. Conceptually, the funds could be used for any public services or goods to benefit any group at any location.

Terminology varies across countries, languages and traditions, and it is not consistent. Terms sometimes used in the context of direct value capture are "betterment," "windfalls," and "plus value." In current UK legal terminology, "planning obligations" may denote both direct and indirect value capture modes (see below).

The value increase for direct value capture could stem from several sources: a) a land use planning decision (plan approval, amendment, variance, grant of a building permit) that grants higher-value land use or building rights; b) construction of public services financed by the public which raises the value of adjacent land, such as roads, transit lines, or parks; or c) general rise in real estate prices, not causally related to a specific public decision. Direct value capture can take the form of a tax or levy on the added real estate value, or it can be an in-kind obligation to deliver some public good somewhere in the city, unrelated to the project's impacts.

Direct value capture is less prevalent around the world than its elegant rationale may suggest as demonstrated by Alterman (2012) in her 13-country survey. Apparently, the idea of social sharing is less appealing politically, and in the absence of national legislation, such value capture tools are likely to be more difficult to defend in courts on an ad hoc basis than the tools based on other rationales. In practice, some value capture instruments display a mixture of direct and indirect rationales (to follow).

Among the cases reported here for China we do find examples of direct value capture rationales, or mixed direct and indirect rationales, where the city government has asked developers to pay for city-wide benefits.

(3) Indirect Value Capture: The rationale for value capture is not derived simply from the fact that the uplift in land values is unearned. The rationale must "hide" under some ancillary, less ideological reasoning. There are two types of (related) rationales:

- **Physical Conditions to Meet Standards**

The local government will not allow a development project to go forth without ensuring specific public services according to accepted standards. If the developer does not supply these services, the project will not proceed. Usually, under this limited rationale, the services required are to be located on-site or close by. This rationale is the simplest to apply legally and politically. It is the justification behind common infrastructure fees or levies in many countries, or for requirements for in-kind land dedication or construction of specific public services in lieu of fees. There is no internationally shared term for this type of value capture tools. Americans may call them "exactions" or "land dedication requirements," and the British "conditions for planning permission" (Healey et al. 1993). There is a variety of other terms in other legal systems.

In the Chinese context, this basic type of indirect value capture is already well entrenched in many cities, having emerged despite the large sums derived from the land-lease sales. The conditions imposed on developers are set in local planning or design codes during the approval of detailed site plans. An example is Shenzhen's planning guidelines (2004). In order to get construction permissions, the developers are obliged to deliver specified types of services on site or in close proximity to the project.

- **Internalize Impacts (Negative Externalities)**

The rationale for this broad category of instruments is fairness: the new project will create the need for new or expanded pubic services outside the premises of the project. If these services are not supplied, the quality of existing services will be degraded. Negative impacts may include overcrowded schools, environmental degradation, loss of affordable housing or jobs, etc. If the developer does not internalize these impacts, these costs will fall on the general public finance. Under this rationale, so long as a causal impact can be demonstrated (called "rational nexus," in some US states), the public services do not have to be located on site, nor in close proximity. However, as distances increase, proof of a causal link may become more difficult. The laws or policies in some countries do not allow value capture unless the services are provided in close proximity to the project that contributes the funds.

The terminology for this large category of tools is especially confusing. In the USA, "impact fees" is a precise term used in some jurisdictions, but the less specific term "exactions" is also used. In the UK, the term "planning obligations" covers both the direct and indirect value capture rationales. In recent years, a legal revision has limited the span of planning obligations and substituted them, partially, for a type of impact fee called community impact levy (Alterman 2012).

Several of the cases discussed here in the Chinese context fall under the category of impact-based rationales.

Modes of Obtaining the Public Goods: Mandatory (Prescribed) or Negotiated

There are several possible ways by which value uplifts can be captured, each with different public policy and legal implications (not discussed here). We have already alluded to some of these modes, but they deserve a systematic list.

Briefly, we distinguish among the following modes:

(1) Taxes or levies prescribed in legislation and accompanied by preset rules of calculation;
(2) Fees based on calculation of impacts (case by case);
(3) Prescribed in-kind delivery of some public goods (land allocation, construction, or construction and operation);
(4) Negotiated delivery of some public good (in money or in-kind) and
(5) Combinations of the above.

Prescribed, mandatory modes are more transparent and, in many countries, easier to defend legally. In this report we shall often refer to them as "developer obligations." On the other hand, negotiated modes, based on government discretion, and the agreement of the developers (often without much other choice) are more flexible and can adjust to evolving needs (Healey et al. 1995; Erlich and Alterman 2020; Muñoz-Gielen 2018). Given the light-speed development pace in Chinese cities, one could anticipate that negotiation-based value capture would be increasingly attractive to meet the many challenges that arise over time.

Income Flow and Incidence Point: One-time or Ongoing

Value capture tools also differ in terms of their income flow. The discussion above has largely referred to tools that deliver the services (money; land; or construction) at once, at specific incidence point. Examples are an "unearned increment" tax paid following a particular planning-regulation decision; a tax paid at the occasion of land transactions; an impact fee paid at the occasion of a building permit; or a road constructed before project completion. These types of value capture tools are the dominant ones because they can deliver predictable and tangible amounts of money or public goods.

The concept of value capture can also accommodate tools that supply income on an ongoing basis. An example is income from public leases that are not paid in advance, as in China, but monthly or annually. However, such leasehold systems are on decline among advanced-economy countries, such as in the Netherlands (Needham 2014).

The most obviously example of a flow-based value capture tool is the property tax. However, except in a few countries, such as the USA, these taxes tend to diverge over time from the increase in land values, and thus reach very low percentage levels. Furthermore, the purpose of property taxes is not only, or mainly, value capture. Property taxes are primarily targeted to finance ongoing urban maintenance costs. The American example of "tax increment financing"

assumes that new development or redevelopment will indeed create a major tax-revenue increment. This instrument may not be applicable to many other countries.

China does not yet have a real property tax, although this topic is now 'hot' on the legislative agenda. The rationale for the late arrival of the property tax is partly related to the widely held conception that the macro value capture system in China means that once the developer (and residents) have paid the hefty sums for the initial land lease, they should not be expected to "pay again." The prevalent conception is that all public services, including ongoing urban maintenance of services, should be paid from these resources. However, the resources from land-lease sales are sometimes insufficient or inappropriate for financing ongoing urban maintenance services. One of the cases reported in this study recounts how a major city has innovated with a value capture tool intended to pay for ongoing maintenance costs.

Research Questions

As noted, the overall aim of this research is to enable learning from the experience of Chinese cities that have innovated in value capture tools. Our study aims to delve deep into the value capture topic in the China context, and to look for tools that have emerged "bottom up" beyond the institutionalized land-lease sale system, which we have classified about as "macro, or embedded value capture." The lessons are intended both for cities in China and for other countries with relevant shared attributes. For this purpose, we have posed three research questions:

(1) Description: **What are the characteristics of the currently used Chinese value capture instruments from an internationally comparative perspective?** What are their rationales and extent of practical application? We will go beyond the macro land-leasing instrument and focus on the more innovative tools.

(2) Evaluation: **To what extent are the current value capture instruments adequate for the variety of urban needs and major projects?** For the evaluation we will develop a set of criteria, described below. These criteria will help us to provide preliminary assessments of the degree to which the innovative value capture tools do indeed contribute to better urban management within each of their specific contexts, such as: suitability of income sources in terms of amount; timing; location; and distributive-justice considerations.

(3) Prescriptive: **Based on the evaluation, how can the cities we studied improve the way they apply the tools**? Are there alternative LVC mechanisms better suited to the challenges faced by Chinese mega-cities?

Following each case study, we will respond to the three questions as relevant to that case. Toward the end of this report, we will revisit these questions cumulatively and discuss cross-

national lessons. For this discussion, we will highlight the special Chinese context once again, and will discuss the degree of transferability of the lessons drawn.

Methodology, Case Selection, and Evaluation Criteria

To answer our research questions, we rely largely on the case-study approach. This is an appropriate method because there is no prior data base that records and describes emerging value capture practices that might have enabled the use of statistical sampling and analysis methods. Indeed, such databases are unlikely because the field of value capture in China (and in many other countries) includes bottom-up innovations proposed ad hoc and experimentally. We decided to focus on the project level rather than the city-wide level. This choice of case studies enables us to view what specific needs for infrastructure-finance are created, and to understand why and how a particular tool has been created. By understanding the specific context for the emergence of each tool, we can point out whether there may have been opportunities to design other, possibly more appropriate, value capture tools suited to concrete needs. In our case studies, we also used semi-structured interviews and participant observation.

Reasons for Selection of the Topics and the Pearl River Delta Region

The cases chosen pertain projects of urban transit and urban redevelopment in China's Pearl River Delta. We selected these cases as reflecting land-based value capture in Chinese cities for three reasons.

First, projects of urban transit system and urban redevelopment can demonstrate a solid link between source of value rise and potential beneficiaries. This 'benefit principle' offers opportunities to design case-specific value capture tools where costs and benefits are better connected with each other.

Second, both urban transit systems and urban redevelopment projects require major financial investments. Often, they cannot rely solely on the direct value capture resources generated by the general land leasing mechanism. Between 2016 and 2020, investment in urban rail transit systems in China will be around US$250 billion (Sun et al. 2017). Such a number means that municipal governments will need financial support from indirect value capture mechanisms. In terms of urban redevelopment, He (2006) argues that Chinese megacities have high demands for urban redevelopment because they have difficulties to transform rural land to urban land. Urban redevelopment normally consumes enormous capital. For instance, redeveloping Pazhou Village in Guangzhou has cost around CNY4.47 billion (about US$304 million). This huge scale of investment provides significant opportunity for additional value capture.

Thirdly, Pearl River Delta is selected due to its special role in China's reform and its leadership in promoting both urban transit systems and urban redevelopment. Pearl River Delta is always a pioneer to other Chinese regions in terms of innovations in institutions; developmental strategies; industrial patterns; and values. Therefore, contemporary efforts of value capture in the Pearl

River Delta might have hold welcomed lessons for other Chinese regions. Hong Kong Mass Transit Railway Corporation (HKMTR) initiated its first mainland China transit line in Shenzhen — the main megacity in the Delta. Due to its limited amount of construction land reserves, Shenzhen depicts the greatest challenges of urban redevelopment in China. In 2014 alone, Shenzhen approved 210.59 hectares (ha) — 36 percent of the total area of land leases — for urban redevelopment. From 2011 to 2014, 129,300 affordable housing units were constructed as part of the developer obligation in relevant urban redevelopment projects (Wang 2016).

Case Selection — The Specific Projects

We will focus on three main value capture instruments:

a) *Joint development* in rail transit projects. In building Shenzhen's urban transit lines, the municipal government has particularly learned from Hong Kong's rail+property model. This model has even been used to fund a regional rail network in Pearl River Delta.

b) *Developer obligations* as indirect value capture, in the context of urban redevelopment. In 2008, Shenzhen municipal government announced a regulation that required developers to contribute at least 3,000 square meters and no less than 15 percent of the project's land to public purposes, such as infrastructure and social facilities. In addition, provision of affordable housing is often a precondition for approval of a redevelopment project.

c) *Transport impact assessment* is required as part of the planning process. The rationale for this tool is similar to *impact fees* in the USA. The assessment may indicate a need to build additional roads or related facilities to balance the redevelopment-based impact.

These three instruments will be analyzed within the conceptual and internationally comparative framework introduced above. The specific cases are representatives of different value capture instruments. The Guangzhou-Qingyuan Line in the regional transit system and Line 4 in Shenzhen's urban railway transit system will represent joint development; the redevelopment of Dachong Village and Hubei Village in Shenzhen is selected as cases of developer obligations; and Zhongshan is the case for studying transport impact assessment. The examples cases are illustrated below.

Evaluation Method and Criteria

The second research question is evaluative. Given the limited scope of this research project (in time and financing), our evaluation will be based on our own perceptions and insights from the case studies. A less research-subjective method could have been developed within a large project, such as systematic application of the evaluative criteria by a set of stakeholders with different points of view. This and other methods we leave to further research.

The third and fourth questions are prescriptive, and thus also have evaluation as their bedrock. These questions too will be answered based on the knowledge we have gained from the case studies, and on our international familiarity with the field of value capture.

We have developed a set of normative evaluation criteria, drawn from the international literature and adjusted to the Chinese context. These are presented in textbox 1.

Textbox 1: Criteria for Evaluation

1) Economic / financial effectiveness and reliability in supply of a public good / public service (compared to other tools). In the Chines context, the new value capture tools should be assessed considering the existence of financing from the macro value capture system;
2) Enhanced control of the timing of delivering public goods and services;
3) Enhanced positive externalities;
4) Mitigation of negative externalities;
5) Flexibility in meeting new needs or implementing new policies;
6) Promoting visible linkage between the payment and the benefit;
7) Promotion of social or distributive justice;
8) Fairness to private developers; and
9) Public transparency for all stakeholders.

As is usually the case with evaluation criteria, some of them may compete with each other. For example, criteria 6 and 7 will often contradict each other because they are derived from two converse rationales for value capture, as discussed above. One is based on the indirect value capture conception based on impact mitigation, and thus seeks to promote direct linkage between those who pay and those who benefit (the "rational nexus mentioned above; see also Iacono et al. 2009); the other is based on the direct value capture rationale, and thus intentionally decouples such linkage in order to redistribute costs and benefits according to social-justice considerations.

The evaluation will address the benefits and problems of operating joint development; developer obligations; and impact assessment. In particular, the public-private partnership perspective will be employed. A workable public-private partnership firstly should consist of jointly-determined goals; collaborative and consensus-based decision making; non-hierarchical and horizontal structures and processes; trust-based and informal — as well as formalized — relationships; synergistic interactions among partners; and shared accountability for outcomes and results (Brinkerhoff and Brinkerhoff 2011).

In addition, a successful public-private partnership requires some crucial governance elements in the coordination process. These may include governments' ability to adequately manage and protect property rights; enact equitable and quality bureaucratic processes; enable effective capital markets; and establish clear rule of law (UN-Habitat 2016).

The analysis will consider China's specific institutional background, namely, the dominant role of local governments; public ownership of land; regulations delivered by the central state; and special role of State-Owned Enterprises (SOEs). Such institutional factors might significantly affect value capture processes, especially the public-private partnership in joint development.

Joint Development for Rail Investment and Station Area Development

Throughout the world, transit investment and transit-oriented development have been proposed as an alternative to low-density and automobile-dependent development (Curtis et al. 2009). The basic idea is to create a built environment with mixed land use; relative high density; and pedestrian- and cyclist-friendly amenities; which better supports transit ridership (Zhang 2007; Mejia-Dorantes et al. 2012). There is a strong belief that cost of living can be reduced and quality of life can be improved by locating affordable housing around the stations of reliable and high-capacity transit.[3] Doing so in china has a special meaning considering its 14 million new urban residents each year and its high population density.

The idea of joint development of transit and real estate properties has been well known in mainland China since the early stage of metro construction, partially because of its practice in Hong Kong by Hong Kong Metro (HKMTR). Its first practice, however, did not happen until Shenzhen City Government and Hong Kong Metro reached an agreement in 2009 on the construction of metro Line 4 (Luan et al. 2014).

Shenzhen is a major city in Guangdong Province. It borders Hong Kong on the north. It is China's first and most successful special economic zones. The municipality covers an area of 1,991 square kilometers, with a total population of 13 million in 2017. Its GDP ranked third among all Chinese cities (behind Beijing and Shanghai). It is the fifth city in mainland China to have a metro line, following Beijing; Tianjin; Shanghai; and Guangzhou. Planning for the system began in early 1980s. The system opened on December 28, 2004. Shenzhen Metro Corporation Limited (in short Shenzhen Metro) currently has 8 lines; 199 stations; and 285 kilometers (km) of total trackage in operation. The majority of Shenzhen's metro system is operated by Shenzhen Metro. Line 4, however, is operated by Hong Kong Mass Transit Corporation (Shenzhen) Limited, which is a branch of Hong Kong Metro, whose involvement was driven by the idea to

[3] The US Department of Transportation and Department of Housing and Urban Development once joined force to promote transit-oriented development (http://reconnectingamerica.org/news-center/reconnecting-america-news/2009/hud-dot-to-promote-affordable-sustainable-communities/).

better integrate Hong Kong and Shenzhen into a single economic region, and by a desire to benefit from Hong Kong Metro's longstanding excellence in rail transit operation and station area real estate development.

Case 1: Joint Development in Shenzhen City

In 2004, soon after Shenzhen began to operate its metro lines, Shenzhen's municipal government and HKMTR made an initial agreement on the 30-year franchise of Longhua Line, largely following a build-operate-transfer (BOT) protocol. Among the several lines planned for construction, Longhua Line was selected for its connection with Hong Kong at the Futian border crossing point. In this initial agreement, HKMTR would build an extended segment of 16 km and operate the whole line for 30 years. HKMTR would cover the engineering costs and receive right-of-way contribution from the municipal government. Additionally, Shenzhen's municipal government would not pay any operational subsidy. Instead, building upon HKMTR's Property+Rail model, Shenzhen's municipal government would transfer development rights of 240 hectares (2.9 million square meters) of land around stations at a negotiated price. Those land parcels were close to five planned stations in a relatively underdeveloped area. It was hoped HKMTR could use development profits to recoup engineering cost and operation deficits. For Shenzhen government, this partnership could provide a window for observing modern rail mass transit investment and operation.

This initial agreement was subject to the approval by the central government, who rejected this agreement for its violation of preexisting rules issued by the central government on oversea investment in China. The central government's regulation on foreign direct investment (FDI) in urban rail specifies that foreign capital cannot control urban rail operation, which means that municipal government should retain its control on rail transit development and operation. The arrangement grants autonomy to HKMTR, as long as it meets contract stipulations. One additional reason came from the regulations regarding urban land transfer. In 2006, the Chinese central government promulgated two new land regulations, instituting an auction requirement and restraining negotiation-based land transfer from the city governments to developers. Local governments should no longer transfer land to enterprises by negotiation if a portion of the land is used for commercial projects.

A modified version of this agreement was finally approved in March 2009. Shenzhen government would provide RMB5.2 billion in cash subsidy to HKMTR over 10 years, which replaces the 240-hectare land transfer in the initial agreement of 2004. In the real estate sector, HKMTR obtained only one piece of land for its train depot and real estate development. HKMTR follows the regulations set for typical real estate developers. It pays municipal government a lump-sum lease fee and collects sales or rental revenue when the property become available on market. HKMTR's sole control of Longhua Line, however, was kept as is. The central government treated it as a special case. Land development right was transferred to Hong Kong metro through a listing process, where only developers with an experience of metro operation are allowed to participate. This clause ensured that Hong Kong Metro would get that piece of land.

Since then, Shenzhen Metro, the trail transit operator owned by the municipal government, also began to receive municipal land for real estate development. By 2014, Shenzhen Metro had gained six land parcels for depot usage and used its air rights for housing and office development. Those parcels have arrived as land grant and with social obligations. It is still unclear how or whether Shenzhen Metro benefits from it financially because Shenzhen Metro has to build low-income housing on behalf of the municipal government. According to Shenzhen's 12th Five Year Plan, the municipal government should build 24,000 units (16.2 million square meters) of low-income housing. The exact portion assigned to Shenzhen Metro is unknown to the public. For now, Shenzhen Metro claims to be the biggest developer in Shenzhen because of land parcels granted by the municipal governments.

Interestingly, since then, Hong Metro made no progress with any other projects in China with its rail+property model. In 2010, Shenzhen Metro and Hong Kong Metro once cosigned a memorandum to study the potential for cooperation in planning; land development; and financing for the Guangming Line, which extends the metro system from Longhua Line's Shenzhen North Station to Guangming District in the northwest direction. Under this memorandum, Shenzhen Metro and Hong Kong Metro would create a joint venture, in which Shenzhen Metro as the municipal delegate would keep 51 percent of the ownership and Hong Kong Metro keep 49 percent. This joint venture would build and operate the Guangming Line and oversee several property developments projects in station areas. This joint venture arrangement surely helps to meet the regulation of the central government. The final result is a bit surprising. Shenzhen Metro alone will move forward this project even though the rail+property model is still kept as a vital component.

The idea of joint development soon spread to other places where rail transit systems are built, and municipal governments need financial resources to build the system. Those examples are quite similar to the Shenzhen model. The metro operator, who is owned by the municipal government receive transferred land development rights from the municipal government. It then uses this resource to leverage bank loans and to build the metro systems. It also partners with real estate developers to convert the development rights into real estate properties. The sales profit from the real estate sector is then used to pay back the bank loan and to fund metro construction and operation. In some circumstances, when the system extends beyond a single city, multiple governments even work together on joint development possibilities. One particular innovative example happens around the inter-city rail network in Pearl River Delta, where the province government and municipal government create a partnership for joint development.

Under the jurisdiction of China's Guangdong Province, Pearl River Delta (PRD) is one of the most industrialized and urbanized areas in China. PRD has an area of 54,700 square kilometers. It covers nine cities, including Guangzhou and Shenzhen. With a good understanding of the resource and environment implications of road-based transportation, the Guangdong provincial government has lobbied the central government enthusiastically for funding and technical support for a regional passenger rail system. The inter-city rail transit network plan approved by the central government in 2003 includes 543 kilometers of track, and a total investment amount

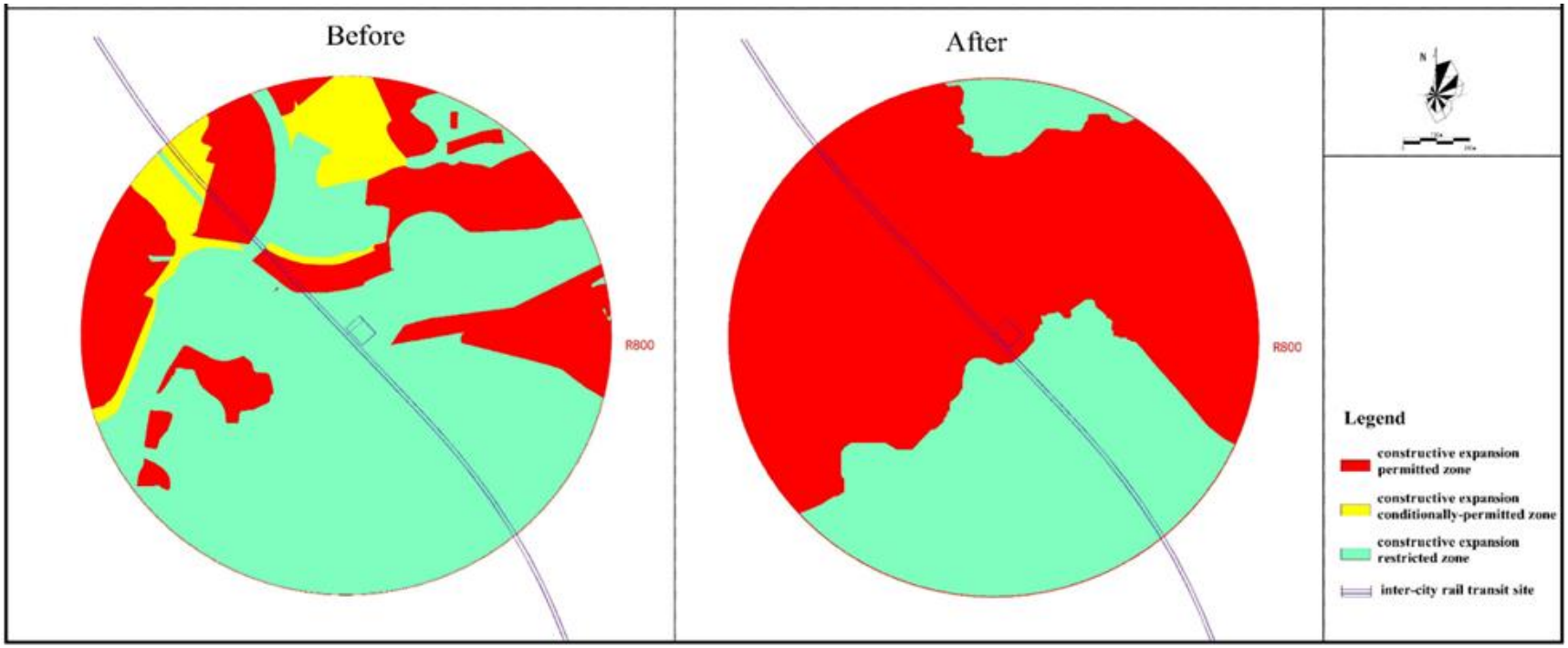
of 129.5 billion Chinese Yuan (about US$20.85 billion). The central government agreed to cover 50 percent of the cost at the beginning, but it withdrew its commitment in 2011, which forced the province government to look for other funding sources. The solution is a value capture approach jointly backed by province and municipal governments. This value capture approach is well illustrated by the development planning around Yinzhan station.

Case 2: Joint Development for the PRD Rail Project at Yinzhan Station

Following the general guidelines approved by the provincial government, Qingyuan City government reached an agreement with the Guangdong Province government in December 2011. Qingyuan City government will share the land development benefit with the province government. A joint venture, Qingyuan Real Estate Company, was cofounded by the province government and the city government. This joint venture is assigned the responsibility to plan and develop the land within 800 meters of the railway station, excluding the rail project's right of way.

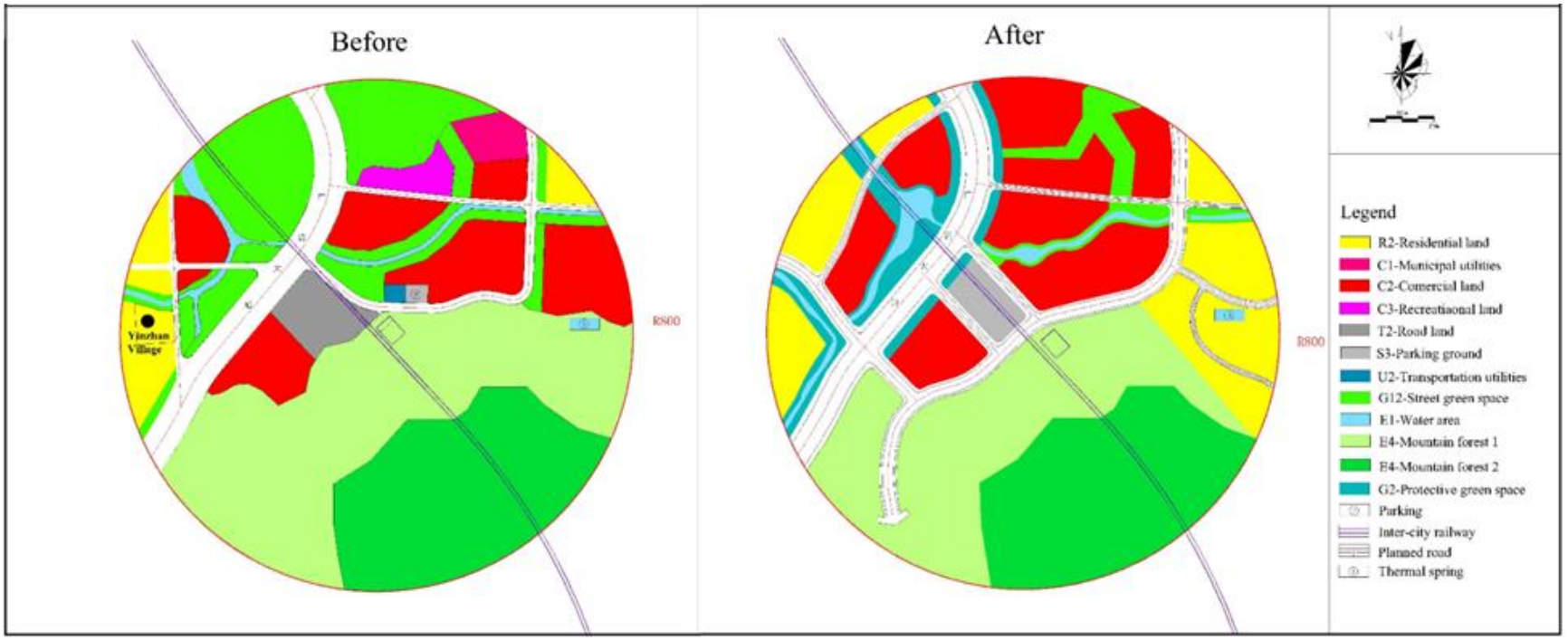
On the primary land market where the joint venture leases multi-decade land use rights to developers. The collected land lease revenue will be used to cover the land development cost, such as road construction; water; and drainage. Under current share, 51 percent of the profit, which is the difference between land development revenue and cost, will go to the province government and 49 percent go to the Qingyuan municipal government. The province government will use this revenue to cover the cost of this project. On the secondary market, the joint venture can collect: 1) fees and taxes associated with real estate transactions; 2) rental income from properties owned by the joint venture; and 3) sales revenue from sold properties developed by the joint venture. Any operational profit from the secondary market should be firstly used to balance the operational deficit of the rail service. After the deduction for transit operation deficit, if surplus exists, 51 percent belongs to province government and 49 percent goes to the Qingyuan City Government. If real estate operational profit cannot completely offset transit operational deficit, the province government and the city government as the joint owners are responsible to fill the gap.

Figure 1. Zoning Adjustment at Yinzhan Station



Source: Li et al. (2013)

Figure 2. Plan Adjustment at Yinzhan Station



Source: Li et al. (2013)

This financial arrangement gives both the province government and the municipality pressures and incentives to economize land usage around the stations. Following the general principles of transit-oriented development, the joint venture immediately initiated several changes in zoning and land development planning around the forthcoming Yinzhan Station. The preexisting zoning, which was written by the land bureau of Qingyuan Municipality, was changed and then approved by the provincial land department in February 2012. A comparison of the pre- and post-change zoning indicates a significant increase in land zoned for development within 800 meters, shaded in red in figure 1. The provincial government encouraged development around stations by prioritizing land quota for station areas.

Meanwhile, the land development plan (figure 2) in the station area was also adjusted by the municipal bureau of planning. The revised plan redefines urban function and development intensity based on the role Yinzhan Station will play in the whole network. Without the new inter-city railway, Yinzhan station area would be an underdeveloped parcel at the urban periphery. More than half of the land was planned to be preserved for wild growing vegetation. Several developable parcels were planned to be commercial, which would serve the residence in a small town nearby. In the revised plan, Yinzhan is defined as a focal point of tourism and recreation activities in PRD. As inter-city railway increases accessibility and brings more development opportunities, land within 400 meters of the station is re-planned for tourism and other commercial uses. Land surrounding the natural thermal springs and forest is now planned for high-end housing.

Response to the Research Questions

(1) What are the characteristics of the currently used Chinese value capture instruments from an internationally comparative perspective?

As already noted in the opening sections of the paper, in China, the management of urban land is typically controlled by each municipal government, even though the land is formally owned by the central state. Local governments also control land-use planning, and the timing which they wish to release land to the market. This degree of local control — rare around the world — gives Chinese city governments a natural advantage to explore value capture opportunities. They already have one major, “built in” value-capture mechanism which delivers huge amounts of revenue. In our conceptual classification we categorized this as a “macro” (or embedded) type of value capture. In fast urbanizing China, with high-density cities, when land is first converted from rural to urban, local governments can indeed capture most of the value increment between rural and urban (unless large sums have to be paid to rural residents — communal farms — located close to a city’s expansion path). Cities release land for development via tender or auctions to the highest bidders, who then get a long or mid-term land lease. Thus, China has become a global example of how national land ownership can be used for value capture.

However, China is also a leading example of the inherent limitations of the macro value capture strategy based on public (in this case, national) land ownership. The focus of this paper on public transport projects and on urban regeneration provides concrete example of these shortcomings. These issues are described next.

First, most of the income from land leasing enters the general city budget and is not directly linked to the causal source of the value increment. Thus, large projects such as public transport have to compete with many other ongoing services and projects that local governments in China are expected to supply. Before the first experimental joint development mechanism reported here was established, development of metro stations depended on receiving financing from the "deep pocket" of the general revenues from land leasing. But in such situations, the financing of transportation projects has to compete with the many other "mouths to feed." There is no linkage built into the system, between the income from land development and the investment in metro stations. Even when it is clear that a metro station is a direct generator of higher land values, reliance on the land-lease system alone will not guarantee enough financing for the metro. Furthermore, metro projects are so expensive and city governments can rarely pay out of pocket. By Chinese regulations, city governments cannot borrow directly from the banks.

The second limitation concerns the flow of revenue over time. In the macro value capture system in China, the major revenue comes in one lump, at the initial sale of land leases. In theory, if all urban needs could be foreseen and planned, the large upfront revenues could be managed to enable prescheduled financing of future anticipated and prioritized projects. This capacity is, however, unrealistic anywhere, and especially in face of the dynamism of Chinese cities and society. Thus, even with good management, the land-lease income is unlikely to meet all ongoing needs. Not all needs are predictable or hold the same priority among politicians over time. Cities age and standards also evolve. Capturing value increase to finance needs that evolve over time cannot rely on the general land-leasing system alone.

Relative to other urban services, transit services usually hold high priority and are easier to plan in advance than some other services. However, metro operations need a subsidy on a yearly basis. This mismatch between income from real estate sector and the expenditures on the transportation sector plant seeds of uncertainties and struggles for metro funding in the coming years. Thus, before the innovative experiments reported here, metro stations and similar projects in Shenzhen did indeed receive financing from the revenues derived from land-lease sales (as they still do in most cities). However, the usual source of funding was seen as insufficient. In addition, the municipal government also saw the opportunity of capturing value from the transit projects to channel to other public services and fulfil other goals — ones that may be more difficult to finance. Shenzhen city leveraged its full control over the land, together with its planning-regulation powers, in order to extract additional revenues. The idea of experimenting with public-private partnership thus seemed natural. Through joint developments, the municipality was able to control the relationship between metro investment and land value

appreciation and to capitalize on it. As shown in the case of the Line 4 project and PRD's rail network project, joint development serves not only as a funding strategy for metro investment and operation, but it can also serve as a stimulus for more efficient land usage, as illustrated by the case of the Yinzhan Station. These are only two of many examples of this kind of partnerships. In addition to value capture through partnerships, cities like Shenzhen and Shanghai have also begun to use their land-use regulation powers to boost development potential along metro stations, including density bonuses for developers, and adjustment of land development rights. As more cities discovered the high development potential clustered around metro stations, joint development of transit-oriented land use began to shape the urban landscape of Chinese cities.

(2) To what extent are the current value-capture instruments adequate for the variety of urban needs and major projects?

One may argue that the joint development innovations may not have been so essential given China's public land ownership system and the land values that it is able to capture. Even without joint development, the investment for metro can still boost land value nearby and the city government can receive increased land lease fees, which could be used to fund the operation of the metro corporation. This observation is correct, as most cities in China have not yet followed Shenzhen's example in creating joint development arrangements. However, the introduction of the innovative value capture tool of joint development can help to attain higher-level goals for the city, beyond just the ongoing operation of the metro system.

According to our evaluation criteria, the two cases of joint development would score quite high. The joint development has created higher certainty for the metro corporation that its financing will be assured for the future, based on its own real estate revenues. The partnership can also overcome the limitation that city governments cannot borrow directly from the banks. The metro corporation uses the development right on land parcels to leverage bank loans, thus adding to its financial resources.

The higher financial certainty now enables the metro system to make public transportation affordable for the long term. Equally important is the potential of the metro systems to decarbonize urban development. China is now the largest automobile market in the world. Cities like Beijing; Shanghai; Guangzhou; and Shenzhen are now congested with passenger cars. Gasoline consumption; CO2 emissions; and air pollution are severe challenges. By enabling massive investment in metro infrastructure and creating opportunities for transit-oriented development and joint development, more urban activities will be clustered around metro systems. Urban residents are now able to travel more by metro than by car. The high occupancy rate and the crowded peak hours entail huge transportation and environmental benefits.

The joint development projects discussed here reveal how the more innovative of China's cities have been able to design relatively sophisticated value capture approaches built upon public land ownership. The mechanism described above ties land lease revenue with rail transit investments and enables the municipal government to collaborate with the provincial government for inter-city rail project. This unique financial; contractual; and inter-institutional structure has proven to be effective in recouping land values for the achievement of a cluster of public goods. It has achieved one of the most difficult tasks that often limit innovation in public policy: overcoming institutional barriers and creating a vibrant and effective working relationship across several local and provincial initiations, while harnessing the less-encumbered private sector with its inherent capacity for further innovative solutions. These approaches are effective in that they are designed to tackle specific needs at hand. However, they are by no means perfect.

Furthermore, the municipality is also using the joint development projects to fulfil their social obligations. These have evolved over time, as China enhances its passage from a developing country to an advanced economy with higher standards of living. For example, affordable housing was not (and still is not) a major goal in many Chinese cities. Today, Shenzhen is one of the leaders in this realm. But this goal has come late, after most land reserves of the city have been built up with market-rate housing. In recent years, the city government of Shenzhen found an innovative way of locating and financing affordable housing by means of the joint development tool. Affordable housing was built on top of the train depots operated by Shenzhen Metro, owned by Shenzhen City Government. This assignment of a social obligation to an enterprise would have been impossible without public land ownership. As land development right was transferred to the Shenzhen Metro, the price was negotiated in favor of the metro operator. The surface area for the affordable housing is thus indirectly subsidized. The assignment of the obligation for social housing is thus viewed as reasonable from the perspectives of both the city government and the metro operator. This arrangement also provides a very good location for affordable housing. Other affordable housing projects in Shenzhen have been criticized for their undesirable location. This tendency to locate affordable housing away from the more desired locations is notoriously characteristic of many cities and countries around the world and has been criticized by academics and policymakers since the 1950s (Meyerson and Banfield 1955). The value capture strategy designed for the Shenzhen metro station would score highly in providing subsidized housing at an optimal location in proximity to the metro service, providing excellent accessibility to employment; commercial; and public services.

The joint development instruments, however, do have some limitations as value capture tools. The monetary connection between metro and land might also create some undesirable outcomes, at least from a short-term perspective. The opportunity to capture more value can skew planning decisions, with questionable impacts. When planning for metro lines, the city is likely to locate some of the stations in underdeveloped areas where there are land parcels whose value increment will be higher. The anticipated financial flow helps both the city government and the metro corporation to leverage bank loans. The ridership of the new metro line, however, may not

appear desirable, until the development or redevelopment around the stations catch up. Fortunately, the demand for real estate in the currently underdeveloped metro corridors rises quickly.

This preference for underdeveloped sites comes at the expense of underserved locations where development is more saturated and there is high demand for transit. This consequence may be desirable from a funding perspective, but undesirable from a distributive justice perspective. And yet, the quick development pace of major Chinese cities also means that the current deficit in ridership will likely be relieved in a few years and the degree of service will even out.

(3) Are there alternative value capture mechanisms better suited to the challenges faced by Chinese megacities?

The joint development of transit has harnessed several value capture tools in a single packet and has succeeded in furthering several goals at once. Yet, the toolkit of value capture offers even more instruments that Chinese cities could consider.

China does not have property tax today. It has been under discussion in the past decade, but no conclusion has been reached on when the tax will be announced. Some value capture tools, especially tax increment financing practiced in some US cities, are predicated on the existence of a property tax. If the tax is introduced, one could anticipate that innovative cities such as Shenzhen might consider how to design the tax to produce more than an ongoing stream of funding for urban maintenance services.

In the realm of joint venture development there are, however, some specific limitations. In China, there are special limitations on foreign investment capital. While the rail+property model is widespread in China, Hong Kong Metro, from which most Chinese city governments have learned this model, has not initiated any other project of this kind in mainland China. The Shenzhen Line 4 project is an exception. Hong Kong Metro was later involved in the construction of metro lines in Beijing and Hangzhou, but those projects do not have a real estate component. In Shenzhen, when the city government planned to develop Line 6, the project came close to being contracted out to Hong Kong Metro. But eventually, Shenzhen Metro, the city government-funded corporation, got the job.

The reluctance to work with foreign or private corporations is understandable. Such partnerships involve a very different process and complex legal hurdles. These create difficulties in figuring out the necessary details in advance. Once the contract is signed, it is very difficult to make any changes. For example, there were many complaints about the crowding of Line 4. Shenzhen city government asked Hong Kong Metro to increase the train length from four cars to six cars. But Hong Kong Metro refused to do so, based on the clause that Hong Kong Metro has the authority to make operational decisions.

By contrast, when working with Shenzhen Metro, the city government can speed up the project process without worrying too much about contract details, as the metro corporation is 100 percent owned by the city government. It also gives the city government more flexibility to change the project components and operational details in a late stage. The transportation commission of Shenzhen, a branch of the city government, is authorized by the city government to communicate with Shenzhen Metro on various items of metro planning; construction; and operation. The public land ownership, to some extent, disadvantages private sector participation.

Developer Obligations in Urban Redevelopment

This part aims to investigate an expanding process of developer obligations in urban redevelopment in Shenzhen, China. Shenzhen has been considered a pioneer for its institutional innovations and an experimental site for the other parts of the country (Cartier 2015). This process will be described in terms of geographic scale; size; range; and rationales, compared to international cases and evaluated by its advantages and risks.

As noted in the conceptual framework, we use the term developer obligations to denote a variety of public policy instruments directed at capturing land values from the private sector through the regulatory mechanisms of planning or public works (Alterman 2012; Muñoz Gielen and Lenferink 2018). Commitment to a value capture obligation is often a precondition for approval of an amendment proposed by a developer, or for granting of planning or building permission. Developers may be required to finance infrastructure and other public facilities, such as roads; stations; affordable housing; and parks (Alterman 1990b; 2012). Due to the complex transformations involved in urban regeneration, this special context may provide a greater variety of public needs. Where the redevelopment is lucrative, redevelopment may also provide enhanced opportunities for value capture.

In the Chinese context, where land is initially leased for a specific development, redevelopment normally requires re-contracting between public and private actors, accompanied by revision of the urban planning regulation — usually enabling higher density of more lucrative type of land use. Chinese municipal governments are authorized to lease out state-owned land to private bodies at the full market price in the format of open auctions. Income from the land lease process will contribute to finance infrastructure and social services (Anderson 2012). This Chinese value capture mechanism — which Alterman classifies as “macro” (or embedded) — is applied easily to recouping land revenues when land is initially released for urban development. However, in urban redevelopment, developer obligations as a value capture approach may function differently. Due to the uncertainties in the economics of redevelopment, the usual Chinese modes of auctions or bids are difficult to apply. Because the concept of developer obligations is based on planning regulation rather than land sales, it can be fine-tuned to relate to the special contexts of redevelopment. Within the broader set of tools of developer obligations, there are some that

are based on prescribed — but tailor-made — exactions, and others that are based on case-by-case negotiation. Negotiated development is, in theory, the most effective way to match the needs for more or different public services with the real economic capacity of each specific development. However, negotiated development in various countries often encounters legal challenges for the fear that it might attract collusion or corruption (Erlich and Alterman, 2020).

Chinese "urban villages" are a unique phenomenon of urbanization. It is unique to China because it reflects China's special land regime, where urban development can legally occur only on land formally transferred to urban municipalities from their former rural status (He, Liu, and Webster 2010). The term "urban villages" is literally an oxymoron, but informally a very large-scale phenomenon in Chinese urban regions where agricultural villages located close to urbanizing areas gradually attract urban residents who seek inexpensive housing. Through market forces, not planning, these "villages" incrementally become quite densely built up with multi-story housing, as shown in figure 3.

The legal status of this housing is shaky, if not starkly illegal, but it is tolerated by the authorities because it provides affordable housing not available in the "formal" city. Over time, some "villages" become quite densely populated with multi-story apartment housing without a legal status. Usually there are inadequate urban services, and the housing may be substandard. They are gradually swallowed by the large city and may become low-grade urban enclaves. Thus, an increasing number of urban villages need regeneration.

Redevelopment of urban villages in Shenzhen has been a priority in the local government's agenda. Shenzhen has almost exhausted undeveloped and developable land. It increasingly relies on urban redevelopment to supply developable sites. Since 2011, urban redevelopment has become the major source of land supply in Shenzhen. In 2013, Shenzhen had 10.35 million apartment housing units with a total floor area of 520 million m^2. Of these, 6.5 million apartments and 260 million m^2 are located in urban villages. These villages are the major target of urban redevelopment (Bureau of Housing and Construction in Shenzhen 2017). Since 2004, the government's policy was to encourage demolition and rebuilding of village land. This policy, understandably, faced substantial resistance, particularly from the residents who had to relocate as a result of village redevelopment. The procedure of urban village redevelopment today largely follows the government regulation titled *Policies for Three Types of Redevelopment*, which was issued in 2009. This policy encourages market-led approaches along with negotiations between developers; villagers; and governmental actors. This approach has led to significant progress in urban redevelopment in Shenzhen (Lai and Tang 2016; Lai, Wang, and Lok 2017) .

Urban redevelopment can encompass many approaches. Here, we distinguish between "redevelopment" and "upgrading" or regeneration. Redevelopment in this paper employs demolition and rebuilding to reconstruct the entire area. The alternative approach of upgrading these neighborhoods could be incrementally improved while keeping most of the housing intact.

However, there are strong forces that have pushed for the redevelopment approach in China. Part of the motivation has to do with the much higher opportunities for value capture by the city when redevelopment can increase the floor-area-ratio (FAR) — and thus the price of land — many folds. In this way, a city such as Shenzhen can receive revenues from the prosperous real estate market and use the income stream — or additional developer obligations — to fund the necessary public services. Chinese cities are less motivated by social and environmental objectives. One should add, however, that in many cases, the villagers themselves prefer the redevelopment approach over incremental regeneration because they too share in the large uplift in real estate values.

The redevelopment of the urban villages in Shenzhen was viewed until recently as the primary approach to dealing with the problems posed by the large-scale informal housing on village site. What used to be composed of small agricultural plots next to a concentration of small homes or mid-rise apartments owned by the village members, have become dense de facto urban neighborhoods, but with dubious legal status. Over time, the residential area becomes saturated with additional housing units constructed by the villagers for rent to urban dwellers without appropriate government permits. These gradually become dense neighborhoods with various mixtures of adequate affordable housing units alongside substandard ones. The urban services are grossly inadequate. In the redevelopment process, the developer will tear down the existing buildings and compensate the villages with new housing units built legally, as part of the redevelopment projects. The exact amount of compensation is always subject to negotiation between the developer and the villagers. In a typical setting, the new properties received by the villager have a floor area equivalent to the torn-down building, but with much higher quality and higher market price. A difficult issue to resolve is the status of the many extra housing units built by the villagers illegally, well beyond their own units. In some cases, the negotiation capacity of the villagers — and the value increment to be realized by the new development — allows villagers to get hefty compensation, meaning a major share in the windfall. Thus, the previous "illegal" or "informal" housing is replaced by legal housing. The city government welcomes this transition for many reasons, including the ability to impose on the developers the obligation to contribute a variety of public goods.

Developer obligations were harnessed to serve the regeneration policies. Before a policy shift in 2009, developer obligations — to the extent that they were used — were linked mainly with urban planning regulations and codes issued by the central or municipal governments. Since 2009, Shenzhen City Government has introduced a series of policies on developer obligations in urban redevelopment. In parallel, the magnitudes of the redevelopment projects have increased, and the rationales of developer obligations have been shifted.

These new policies include the following items. First, the 2009 municipal regulation *Measures of Urban Redevelopment* built the foundation for executing urban redevelopment in Shenzhen. This set of policies established the notion of a "redevelopment unit plan" to guide the implementation.

A redevelopment unit plan determines the spatial boundary of a redevelopment project. The plan also imposes specific obligations on developers, including infrastructure and social facilities. A complementary municipal regulation titled *Rules for the Implementation of Measures of Urban Redevelopment* was published in 2012. Since then, every two years a new edition of *Rules for the Implementation* are to be published. The redevelopment plan and the rules of implementation constitute the first type of developer obligations entailed in urban regeneration, which largely follow the planning codes.

The second important document concerning developer obligations was issued in 2011. This document is titled *Temporary Rules for Ratios of Public Housing in Urban Redevelopment Project*, signaling Shenzhen's effort to supply public housing through urban regeneration. With this document, the whole area of Shenzhen is divided into three zones. Within respective zones, 12 percent; 8 percent; and 5 percent of newly constructed residence must be public housing. This pioneering policy binds public housing with urban redevelopment on the exact project site.

The third important policy document is titled *Temporary Rules for Ratios of Innovative Industrial Space in Urban Redevelopment Project*, which was introduced in 2015. This policy statement has created a new category of developer obligations, namely, innovative industrial space. It asks for office or production space especially tailored to incubate technology startups. Floor area of this kind will be provided by the developers; transferred to the municipal government; and then allocated to various startup companies according to government guidance and requirements.

The most recent type of developer obligations related to redevelopment emerged from *Temporary Rules to Encourage Supplying Lands for Public Goods in Urban Redevelopment*. For the first time, it imposes on developers a duty to deliver land of a certain size to the city government for public purposes. It encourages developers to contribute more than 20 percent of redeveloped land for public functions, such as infrastructure; social facilities; green space; and transport facilities. A first glance at this policy might wrongfully suggest a reduction of developable land for the developer. In practice, this policy actually encourages developers to assemble a bigger piece of land for their projects, which is now justified by their land contribution to the municipal government.

To sum up, the above-mentioned expansion of developer obligations since 2009 starts with the requirement from *Shenzhen Standards and Rules of Urban Planning* (2004), which specifies roads; schools; hospitals; and parks. Public housing was added in 2011 and then innovative industrial space in 2015. The specific amount of developer contribution has increased over the course. The rule of 2015 asked for 12 percent; 8 percent; and 5 percent of new construction to be used as innovative industrial space in Shenzhen's Zone 1, Zone 2, and Zone 3; in 2016, the requirement increased to 12 percent in all three zones. Requirement for public housing contribution had a similar increase. Behind these changes is the evolving development priority

by the city government. Developer obligations in Shenzhen are not only viewed as a tool to ensure sufficient supply of public infrastructure and services, but also a venue to promote economic development. Public housing is built not only for relatively low-income households already in the city, but also to attract young talent migrating from other parts of China.

The contribution of developers in many circumstances extends beyond the amount required by the standards of urban planning. For instance, redevelopment projects normally submit more than 30 percent of the cleaned land to the city government while the required minimum is only 20 percent. This additional 10 percent arrives through the negotiation between the city government and the developer. As long as the real estate market is sufficiently strong, the developer is willing to contribute a higher amount of land. Other elements, such as the location of public projects, are also negotiable. For example, developers naturally tend to locate public housing at relatively remote locations and save the best areas for market-rate projects. The city government may ask for better locations for the required public housing.

Case 3: Developer Obligations in Two Villages' Redevelopment in Shenzhen

The previously mentioned expansion of developer obligations can be illustrated with a comparison of two redevelopment projects: Dachong Village Redevelopment and Hubei Village Redevelopment. The Dachong project was initiated in 2007 as a cooperation between Dachong Village and China Resources Land, a giant SOE (State Owned Enterprise) as the developer. In 2011, Dachong redevelopment plan has been approved by the municipal government, following the negotiation between the developer and the municipal government. With this plan, a floor area of 2.8 million m² will be added on top of 0.68 million m² of land. Among the new buildings, the floor area for public housing will be 53,600 m² (1.9 percent of the total). Other social facilities, including a middle school, have a total floor area of 64,500 m² (2.3 percent of the total). As a whole, only 4.2 percent of new floor area can be classified as developer obligation.

Hubei project was initiated in 1992. The developer is China Resources Land, the same as that of Dachong Village. After a long period of negotiation among the villagers, the developer, and the government, a redevelopment unit plan was submitted to the municipal government and publicized in December 2018. On the site, an area of 14,478.5 m² is classified as a historical preservation neighborhood, which has historical buildings originating from the Ming Dynasty (AD 1368–1644). A floor area of 2.06 million m² will be added to the land of 0.4 km². In addition, 4 percent of the total floor area is for public housing; 7 percent for innovative industrial space; and 1.8 percent for public facilities, such as schools; kindergartens; a health care center; an electricity converting station of 220 kilovolts (kV); and a bus terminal. Compared to the minimum requirement by the municipal government, the developers' contribution is 1,000 m² above the minimum in public facilities, and 18,000 m² above the minimum requirement for public housing. The space for innovative industrial space is 100 percent newly added as a response to the new municipal requirement. Adding up all developer contributions in public

housing; innovative industrial space; social facilities; parks; and roads, 35.5 percent of the lands, and 12.8 percent of floor area will be transferred to the city government when the project ends. Among these items, the project of historical preservation; the electricity converting station; the 1,000 m² for public facilities; and the 18,000 m² for public housing are additional requirements beyond the minimum standard. They are demanded by the government in the negotiations.

Figure 3. Location and Current Situation of Dachong Village and Hubei Village

Source: Authors.

Comparing these two redevelopment projects, Hubei project apparently has much larger developer contribution than Dachong project. The proportion of developer obligations in total floor area has risen from 4.2 percent in Dachong project to 12.8 percent in Hubei project. In addition, Hubei project has more types of developer obligations than Dachong has. There is no innovative industrial space in Dachong project. This increase in Hubei project reflects the policy change of the city government. As a counterstrategy, the developer of the Hubei project tried to locate part of their social facilities outside of the redevelopment site to lower down the cost. However, the necessary negotiation would have been too complicated, and the developer finally abandoned this possibility.

The developer contribution in the publicized plan results from both statutory regulations and close-door negotiation, the latter of which tends to produce criticism for the lack of transparency. In the Dachong case, the developer eventually built more commercial floor area than what it could typically be allowed. In the Hubei case, the developer, and the government also preferred a close-door negotiation until Hubei 120, a loosely organized grassroots organization, changed the dynamics. Hubei 120 was initiated by a group of artists; urban planners; and scholars. In 2016, this group organized workshops and other activities to promote the preservation of Hubei Village. Its voice has reached relevant designers; planners; scholars; journalists; as well as government officials. As a result, a former plan submitted by the developer was turned down and the approved one put considerable area of the village under preservation.

Responses to the Research Questions

(1) What are the characteristics of the currently used Chinese value capture instruments from an internationally comparative perspective?

The newly invented developer obligations in urban redevelopment in Shenzhen have answered a real urban necessity and have filled in for the shortcomings of the institutionalized macro value capture system of land leasing, and the small-scale requirements based on planning codes. The institutionalized tools are grossly inadequate in the context of urban redevelopment, and certainly not in urban regenerations. These tools are geared to new development, where the uplift in land values is translated into revenues at a predictable timing — the initial land lease sales. With blank-slate new development, the planning codes can take care of the financing of the on-site services. This is not entirely the case in urban redevelopment, even with the (debatable) demolition approach. Because demolition must be negotiated, in practice, and the developers will likely incur relocation and compensation costs, the income from the land-lease sales after demolition is not assured as in totally new development. Thus, the two institutionalized modes of value capture are not fully applicable to urban redevelopment, especially where the city and the developers must contend with the dense informal, uncontrolled development in “urban villages,” where there are almost no pre-existing public services.

The new mechanisms of value capture have been invented “bottom-up” to meet the needs in this particular type of urban regeneration. Since they have to be tailor-made to very specific contexts, it is only natural that they have taken on a more negotiable nature during the interaction between developers and public-sector agencies. In terms of the public goods targeted for financing through developer obligations, Shenzhen has used the opportunity of urban regeneration to add new categories, that may be innovative on a global scale, such as the duty to supply industrial space for start-ups. The purpose of this developer obligation is to stimulate urban innovation and fuel industrial development. This rationale displays the capacity to see the “big picture” of urban needs, rather than a narrow map of community services.

(2) To what extent are the current and new value capture instruments adequate for the variety of urban needs and major projects?

If we leave aside the debate about the proper approach to dealing with the urban villages — urban redevelopment or contextual urban regeneration — the value capture tools developed by the city would score quite high on our set of criteria. They have evolved through learning "on the go" to meet constraints and yet reflect the fast-rising expectations for better urban living. These developer obligations are flexible and will help the city in meeting the costs of the specific needs of each redevelopment and the expected urban services. The city has even been able to use developed obligations to finance a newly-invented public good — affordable floor space for innovative industries, under the rationale that this would contribute to the economic base, and socioeconomic wellbeing, of the city as a whole. There is no linkage there at all, with no negative externalities created by the new development. This is direct value capture for a city-wide (even nation-wide) public good. The capacity to leverage developer obligations in this way indicates a very high degree of innovation, even on an international scale.

As explained in our conceptual framework, there are different rationales to back the use of developer obligations in general, and urban redevelopment in particular. The more prevalent rationale, which we called "indirect value capture," restricts government's capacity to impose obligations by requiring proof of linkage between the new development and the demand it creates for new or expanded public facilities or infrastructure. Some ordinary public services, such as schools; hospitals; parks; and roads can follow this rationale easily. The obligations for services with the most direct linkage to new development are specified by the Shenzhen's *Standards of Urban Planning* (2004, 2013). These facilities are often expected to be provided on site.

The second type of rationale, which we called "direct value capture," underpins the obligations that serve the general public good. There, the rationale is simply that developers (and future buyers) are enjoying a significant uplift in real estate value, which they did not create themselves. Under this rationale, government has the right to cream off some of this windfall for the general public good, without any need to demonstrate a causal linkage with the specific development that provides the financing. This type of value capture underlies the requirements for affordable housing (which benefits residents of the city as a whole) and for floor area for innovative industries (which presumably benefits the entire urban economy). The government believes that these measures can help to attract and retain young professionals and to build creative industries.

This ability of our case study cities to draw both types of rationales, without encountering legal barriers, would add to the "score" of the value capture methods used in our redevelopment case studies. Not many countries could invent value capture mechanisms that span both types of rationales without necessitating explicit, national level legislation. However, under the social

justice; fairness; and transparency criteria, the cases reported here will not score as high. All these new rules and regulations are developed in a relatively closed government-dominant process. Other social groups, such as developers and communities, have very limited involvement in relevant legislative processes. The constantly emerging new requirements imposed on developers in urban redevelopment mainly represent the perception of the public interest as viewed by government, not necessarily the variety of views about urban needs. At the same time, as noted, all these newly established rules and regulations do have clear public interest rationales. The government seems to target what it sees as the benefit of the majority of the urban population. This goal is well demonstrated by the use of developer obligations to contribute — even if modestly so — to the undersupplied affordable housing stock. Similarly, the innovative obligation to supply industrial space is motivated by a city-wide goal and can contribute to the economic energy of the specific neighborhoods as well.

In the scope of this study, we do not purport to evaluate the degree to which the city-wide goals are indeed furthered by these specific development obligations. Are they only a "drop in the bucket" of city-wide needs? Developers don't usually pay out of their pockets; they try to include the costs within the sale price of what they build. Have these extra obligations possibly increased the cost of market housing or commercial space, due to cross-subsidy? Could market forces have supplied these public goods more efficiently, even if not at particular locations? These questions are especially pertinent in the context of the urban villages, which supply large amounts of affordable housing created by the market and rented at low prices partly because they are not regulated, and the public services are inadequate. There is a large demand for this type of housing, which urban redevelopment wipes out. This type of analysis is well beyond the scope and methodology of our study and is a challenge to tackle anywhere.

(3) Are there alternative value-capture mechanisms more appropriate for the challenges faced by Chinese megacities?

Shenzhen's momentum to expand developer obligations in urban redevelopment has its own risks. Firstly, negotiation is the main mechanism to achieve agreement between the developers, the villagers, and the government. However, these negotiations have been less regulated and did not display enough transparency. International cases have presented many possibilities to improve transparency in negotiation. For instance, Shenzhen may learn from "planning obligations" (formerly called "planning gain") in the U.K. — the nation that pioneered in creating a clear legal framework for negotiated developer obligations (Alterman 2012). There, a statutory framework determines the negotiation processes — who is authorized to negotiate; with whom; which other actors have standing to influence the negotiations; and the rules for ensuring transparency.

The British norms may be too ambitious for the Chinese legal and political circumstances (as they are for most countries). A more modest way to promote transparency would be to encourage

a citizen-based organization, such as Hubei 120 historic preservation group, to be involved in the negotiations and, thus, increase transparency. Yet, China's third sector is still rather embryonic relative to many western countries, but the Hubei case is encouraging.

Secondly, the quality of municipal governance processes can be improved. In the Hubei project, the proposed off-site location of public facilities was given up due to its institutional complexity, requiring cooperation among different land-lease holders. Furthermore: if urban regeneration instead of demolition becomes a more prevalent strategy regarding urban villages, city government would need more fine-tuned tools to enable in-situ upgrading of housing and improved urban services. For these purposes, the kit of value capture tools should be expanded to include "acupuncture," fine-grained instruments such as "transfer of development rights" or "purchase of development rights." None of these are easy to use (even in the U.S. where they were invented), but in the dynamic and flexible Chinese context, these tools could flourish.

Transportation Impact Assessment as a Venue for Green Transportation

In our conceptual framework, we often mentioned the idea that the attribution of responsibilities for financing or supplying public services could be based on the anticipated impacts of a particular project. This notion is perhaps the most highly developed in the field of transportation, and transportation facilities are among the most expensive items on the list of urban services. The technique called transport impact assessment (TIA) is thus a promising tool to coordinate the nexus between land development and its transport impacts. TIA refers to a study required to assess the transport consequences of a construction project. It opens the possibility for the developer to contribute to green transportation.

TIA as a policy and planning tool for development management will likely involve multi-sectoral coordination. In China this would mean the municipal planning bureau; the land resource bureau; the department of transportation; the mass transit company; the developers; and other relevant stakeholders. All these have to work together to identify effective solutions and implement them. This requires exchange of knowledge; opinions; and resources among such a diversified set of sectors. Chinese cities may or may not have accumulated the necessary expertise and institutional capacity to ensure a smooth run of TIA. We devoted one of our case studies to TIA practices in order to learn about their degree of effectiveness in determining the division of responsibility for the supply of transportation services.

Zhongshan is a major city on the west bank of the Pearl River. It covers a land area of 1,784 square kilometers and had 3.21 million residents by the end of 2016. Under the guidance of national TIA guidelines in 2011, Zhongshan city government released a local TIA technical standard and implementation policy in 2013. This city has a relative formal and transparent TIA review process. Many cities in China have their TIA reviewed only by officials of local planning

authorities. But Zhongshan's planning bureau invited external experts to review many of their TIA reports. One of the authors of this article has been invited to participate in TIA review, which enables us to have a better understanding of the details behind the TIA reports. It also creates opportunities for us to interview relevant stakeholders.

Where transportation facilities are concerned, the responsibility of developer's contributions is rather well articulated in China. There is a national requirement to conduct a TIA for new projects. The division of responsibilities to supply the facilities is generally clear. When traffic impacts are identified and specific facilities are needed, those falling within the project site will be the responsibility of the developer, and the others will be the government's responsibility. In practice, however, the boundary could become hazy and negotiable. Bus terminals and bike-sharing stations are typical examples. Those facilities may or may not be located on the project site. The negotiation process is not always smooth and easy to resolve, as suggested by the case of Jinyulanwan Garden project in Zhongshan.

Case 4: Supplying Bus Terminal in Zhongshan City

The Jinyulanwan project is a residential project located in Shiqi District, close to Zhongshan's central business district (CBD). This project covers a land area of 143,000 square meters and a floor area of 542,000 square meters, with a FAR of 2.96. The developer commissioned a local team of consultants to work on the TIA. Considering the significant impacts of this development project, the consultant proposed a series of mandatory and optional measures. Those mandatory measures are improvement items within the project site (that is, vehicular road and access management). They naturally become the responsibility of the developers. The developer is also expected to collaborate with the government and the bus transit company on a few other items, for example, the new bus stops. According to the TIA study, a pair of bus stops will be added on the west side of the project. Since one half of the pair will fall on the project site, the developer has to collaborate with the bus company on this matter. Another two items are listed as optional ones, as the supply of these two items is clearly beyond the project site and the responsibility of developers. Whether they will be addressed depends on the city government.

The developer submitted the TIA report to the municipal planning bureau for a technical review. The bureau held the first round of review in August 2014. While agreeing with the consultant

and the developer on the recommended measures, the review committee[4] clashed with the developer on the possibility of locating a new bus terminal on the project site. The developer's argument for not having a bus terminal on this project site was rejected by the review committee, and the TIA report was disapproved. The municipal planning bureau held the second round of reviews in October 2014, when the updated TIA report adds the debatable bus terminal as a required measure for the developer to build.

Note that the conflict arises not because the developer had a different understanding of whether a bus terminal is needed, but because there was ambiguity about the division of responsibility for granting land for the bus terminal. All agreed that the bus terminal was required because the additional demand needs a new bus terminal. While the city government viewed this as the developer's responsibility, the developer had a different understanding. The developer argued that the supply of public transport, including bus terminals, is the city government's responsibility. After all, the developer argued, it had paid the city government a big amount of money for the land lease and the development rights, assuming that the city government should provide the necessary public infrastructure and service beyond the project itself. In addition, the developer argued that incorporation of a bus terminal on the project site will inevitably increase the project cost, and even lower the property value because of the noise and other nuisances associated with the terminal. Although relevant regulations were silent on where the bus terminal should be located, the TIA review committee agreed with the municipal planning bureau and a bus terminal was eventually added into the TIA report and became the developer's responsibility. Upon the completion of this facility, its operation will be transferred to the city bus transit company.

This conflict is an excellent example of the tension between the different rationales for value capture: the developer voiced the view that the macro value capture system based on the sale of land leases with development rights implies an assumption — almost an underlying contract — that the municipality should use the revenues to fund the public services. This view is probably held by the vast majority of Chinese citizens (and is one of the arguments against the introduction of a property tax). However, as all our case studies show, this assumed division of labor is changing. The macro value capture does not meet all the needs of Chinese urbanization.

[4] The review committee was composed of representatives from the Municipal Bureau of Transport; Municipal Bureau of Housing and Construction; Municipal Bureau of Land Resources; Traffic Police Division; Zhongshan Bus Transit Company; and a few invited experts, including one of the authors of this article.

The conflict of interests is even more complex, and entails “big money.” Even if a vacant parcel were available on city land, the city government would likely prefer to sell the land lease with development rights to another developer for a big lump-sum payment, as many Chinese city governments have done to raise municipal revenue. In the case described, the impact assessment indicated that the new bus terminal is needed due to the additional demand created by the new residential project. Thus, the city government was able to use the impact-mitigation argument and insist that the terminal should be located on the project site.

From a broad public policy perspective, the use of developer obligations to enhance public transit makes good sense. Ensuing enough supply of bus stops and terminals is important for transit development. Bus transit companies in China are typically owned or partially owned by city government, and its operation need to be subsidized by the city’s revenues. Transit service expansion in high-density city centers is badly constrained by the availability of bus terminals. As land becomes more and more expensive, and the opportunity cost for using government land for bus terminals increases, governments are likely to shift more of the burdens toward the developers.

Responses to the Research Questions

(1) What are the characteristics of the currently used Chinese value capture instruments from an international comparative perspective?

Quantified impact assessment is a rather sophisticated tool for justifying value capture. Systematic quantified assessment of impacts as a basis for setting developer obligations is not common in most countries (beyond environmental impact assessment, which is not discussed here). Transportation services — including roads and public transport — are relatively easier to quantify than some other public services. In some countries, the allocation of responsibility is clearly prescribed in law and practice, in other countries it remains partly vague — especially regarding local roads; bicycle lanes; or bus-stops.

Ostensibly, China’s national land ownership and transfer of rights through leases only should have made the division of responsibilities clearer than in market-led systems. One would expect this issue to be tougher in countries where most development is on private land, and where there are no macro value capture instruments. It is in these contexts that the pioneering indirect value-capture tools emerged. However, it turns out that the China’s land system is no panacea. In China, the land development rights purchased from the city government has a clearly defined development intensity, and the develop pays the maximal price. It is not surprising that a developer would assume that the government will provide all the infrastructure necessary to realize this development intensity. Despite the existence of national rules about land-lease sales, the issue of who should pay for this transportation improvement is defined differently by different Chinese cities. In Shenzhen, the government does usually pay for the infrastructure

costs, either directly or indirectly. But in Zhongshan, there is no clear statement of division of responsibility.

Fortunately, in the case analyzed, thanks to the prosperous real estate market, the inclusion of the bus terminal probably will not significantly hurt the profitability of the project and it will go ahead, despite the lengthy negotiations.

(2) To what extent are the current value capture instruments adequate for the variety of urban needs and major projects?

The bus terminal case would not score highly according to our evaluation criterial. Indeed, it is the less praiseworthy case among our set of case studies. The land policy of leasing land with clear development rights to the highest bidder should have demonstrated greater assurance for the supply of public services, especially where transit systems are concerned. These are the lifeblood of Chinese megacities. The mandatory TIA review process is a good policy, and it could have served as a solid base for determining responsibilities for the supply of transportation facilities including, and especially, green transportation modes. However, national government has not incorporated in the TIA any rules about the need to determine financing responsibility for any of the transportation types, and there is no clear priority for green transit. Such decisions are left to the discretion of the municipal governments.

The Zhongshan case demonstrates the problems that arise from the disconnection between the TIA and obligation to finance transit. We already noted that part of the reason lies in the vagueness about rules pertaining to the division of obligations to supply the land and funding for the services. An additional factor is that the stakeholders, who could have acted on behalf of green transport modes, played a very passive role in the TIA. The public bike company was not invited to attend the review meeting. The municipal bus transit company participated in the meeting, but it was not motivated to bring up any service improvement of significant cost because the transit operator would not be expected to gain any additional funding through the TIA process. The company has a fixed annual budget. Although the developers could be asked to deliver relevant facilities such as bus stops and terminals — as they indeed were — the bus transit company needs to cover all additional service costs, which may or may not incur an immediate increase in government subsidy.

Further complications arise from the vagueness about land allocation for the transportation facility — whether on city land or the land leased by the developer. Shouldn’t the city government be responsible to plan and designate land parcels for bus terminals in advance, before it announces a bid for land leases and development rights? Can the developer reject the request by arguing that the transaction around the lease and development rights does not contain any mention of a bus terminal? These questions are never asked in the TIA review process, which is disconnected from the relationship between the government and developer.

Furthermore, the legal rights of the private sector vis-à-vis government bodies are not very firm in China. Government has very broad discretion to determine what is the public interest, even when its interpretation entails placing the burden on a private developer while government itself may, in some situations, act as a competitor in the land market.

At the same time, there are some smaller, innovative ways in which local governments have been using incentive-based developer obligations to propel green transportation. These are worth attention. Some city governments have used their land-use regulation powers to design incentives that encourage developers to collaborate with the city government on green transport. For example, to motivate developers to build bus terminals on the project site, Zhongshan Municipal Government Office (2014) issued the *Government Office's Reply on the Implementation of Zhongshan City Parking Requirements in Construction Projects*. This document specifies that developers building bus terminals on project sites would qualify for a relaxation in the number of automobile parking slots that they must provide. Every 100 square meters of floor area allocated to public transport can lead to a reduction of 12 parking slots for cars. This could mean a financial saving for the developer. Developers who build bike-sharing stations can get a reduction in the number of private bike parking facilities that they must supply. Each public bike slot can replace three private bike parking slots.

(3) Are there alternative value capture mechanisms better suited to the challenges faced by Chinese megacities?

The way by which the municipal government dealt with the bus terminal received much criticism in our evaluation. There are better ways to handle such issues. It is doubtful that allocating land and finances for a bus terminal should rely on ad hoc developer obligations. Transportation impact assessment should enable planners to identify facilities or services that need significant land parcels or entail large engineering cost, such as bus terminals. These needs can be projected in advance based on the permitted, and anticipated land use, and development intensity. Thus, if there are any developer obligations, these can be specified well ahead the land transaction. In the Chinese context, the developer who bids for the land development rights can, thus, factor it into the price offered. This determination could also be the basis for negotiating with the city government. This is the approach employed by the Shenzhen local government, despite this city's fast pace of development. Shenzhen then allocates the proper public budgets for the necessary transit services. If Shenzhen can plan ahead, other cities can probably do so too. More local and smaller facilities can be included in clearly specified developer obligations through the city's planning code.

Conclusions

In our conclusions, we first summarize some of our insights with regard to China, which could be useful for the cities we studied or for other major Chinese cities. Then, we share our thoughts about what other countries might learn from China.

Lessons for Major Cities in China

In our introduction, we noted that our topic is likely to be surprising to many readers. Wouldn't China be one of the last places to look for the practice of value capture instruments? Although it is not the only country with a national land ownership system in urban areas, China, among other countries, has gone the furthest to institutionalize a macro value capture approach intended and assumed to capture all or most of the "unearned increment" for the public budget. This is accomplished through the nation-wide policy that (in most cases) urban land would be controlled by the city and will be released for development to the highest bidder. Economic theory would assume, that this method would indeed "cream off" all the value increment created by the new permitted land use and density. Given China's fast-developing cities, the value increment from rural to urban is very significant and was assumed to be an adequate source for financing all necessary public services and goods.

Our case studies, however, demonstrate that these assumptions are not entirely correct. Our findings demonstrate that some Chinese cities have in fact designed and implemented a variety of value capture tools. They have been especially innovative, considering that they are working against the backdrop of the macro value capture system. The emerging tools are not yet very widespread and could be regarded as experimental. We have also demonstrated that there are still built-in tensions between the very notion of developer obligations and the rules of the game embedded in the macro national land ownership and land-lease sale system.

Based on what we discovered, we expect the momentum of experimenting with new value capture tools to extend to more cities and to expand to more public purposes. Here are a few major lessons we can offer.

First, the rise of joint development in a group of Chinese cities symbolizes the need for this model to fund metro investment and operation. However, the popular rail+property model today has been dramatically shifted from what it was when firstly copied from Hong Kong. It is now the metro corporation in relevant cities to implement their own versions of rail+property models. The collaboration between the city government and its own metro corporation helps the city government to speed up its plan for a metro-backed city. The transfer of land development right from the city government to the metro operator has been simplified. No auction procedure may be required today. The city government uses the land development right as its investment for rail

transit. As a return, the metro corporation not only shoulders the heavy responsibility of urban passenger transportation, but also a portion of the government's responsibility in social housing.

In the spread of this model of joint-development, the government-owned metro corporation has demonstrated an overwhelming advantage over its private competitors. The transfer of land development right from the city government to its own metro corporation can be simplified with a negotiation process, without violating the national law regarding land development right transfer. The clause in the contract with the metro corporation can be modified later, when the city government feels necessary, without any significant barrier. The not-for-profit municipal metro corporation is willing to shoulder reasonable social obligations assigned by the municipal government, such as social housing and employment for special groups.

Second, the practice of developer obligations in Shenzhen demonstrates two categories of obligations: the mandatory one; and the negotiable one. The expansion of the mandatory obligations from roads; sewage; schools to social housing; and incubators reflect the pressure of the city government to provide much needed resources to sustain Shenzhen's competitiveness. Social housing is required by the housing needs of the working-class households in a city with skyrocketing housing prices. The addition of incubator space reflects the city government's seek for sustained innovation and job growth.

Third, it is the category of non-mandatory, partly negotiated obligations that adds much complexity and dynamics to the urban redevelopment process. The negotiation between the developer; the city government; and other stakeholders has the potential to create higher quality place, at the expense of project progress. Note that the developer does not always play a passive role in the negotiation for non-statuary obligation. The developer has the opportunity to add other public items, as long as the expected benefit for the developer is significantly higher its cost. When public infrastructure and service is undersupplied, it may not arise from the interest of the developer itself. Insufficient supply of parking and schools will surely depreciate the value of the housing units and, thus, lower the profitability of the overall project. From this perspective, appropriate statuary regulation is also much needed as it helps to solve the potential undersupply resulting from the developer's lack of knowledge of the linkage between public infrastructure supply and project profitability. Pressures from civil society, such as community organizations and nongovernmental organizations (NGOs), can also press developers to provide adequate public goods.

Fourth, the tools of transport impact assessment, made obligatory by national government, arrived at a period of rising congestion. It could have created the opportunity for the city government to manage travel demand and transportation supply at the project level with appropriate contribution from developers. Our case study of this topic unveils the shortcomings of this instrument. There are remaining issues to be resolved, such as how to leverage the developer to invest more in green transportation modes, and how to find spaces for facilities with

significant nuance. So far, issues of this kind have not attracted as much attention as joint development and developer obligations. However, some logical thinking and reasoning can point out directions for reasonable improvement. Items that can be determined through urban planning and design standards are much easier to carry out through developer obligation than impact assessment. The different treatment of bus terminal in Shenzhen and Zhongshan is a typical example. The transport impact assessment should thus be used more as a remedial measure after completion of the main planning process, rather than as a precondition for approving the planned redevelopment. Thus, its roles in value capture and development management should be more limited than it is today.

Fifth, we have also seen how a city government can use developer obligations to help achieve emerging public policy goals, which could be seen as "social obligations" based on social justice considerations. The conception of social obligations is gradually arriving in China only now, and the general budgetary resources derived from land lease sales is probably not enough to achieve them. We found two examples: 1) developer obligations are used to provide affordable housing to fill in, even modestly, the huge shortage of such housing and the lack of prior policies to plan in such housing; and 2) developer obligations are used to supply a prescribed amount of floor space for innovation-based industries such as for incubators. This is a new public purpose that could surprise many of us. Despite some resistance, the city governments have managed to push these new goals through.

China's approach is effective. However, it is still unknown whether it is sufficiently efficient. The participation of the private sector is still limited. Private enterprise has almost no role in joint development today. The urban redevelopment process does not explicitly disadvantage private enterprises, but it is still difficult for them to compete in redevelopment projects of a significant size. Only the impact assessment process appears to play a relatively neutral role. No finding suggests a bias toward either state-owned or private corporations. A higher presence of public-private partnership may suggest significant economic benefit, but also some significant political and social costs.

The public land ownership system will likely continue in the future. The role of government to promote economic development and to fulfill various social obligations is unlikely to shrink. Other innovations might plug in, creating new dynamics, whose magnitude is difficult to predict at this stage. For example, it was announced in March 2019 that China will adopt legislation to introduce property tax, for the first time.

Introduction of the property tax would be a totally new source of funding for local governments, an institutionalized supplement to the revenues from the land-leasing system. It would be interesting to follow how Chinese cities learn to use this all-new financial resource and what effect it will have on the room for developer obligations. Will its introduction reduce the incentive, and legitimacy, of some of the new developer obligations? City governments could

free more of their revenues derived from the land-lease sales to supply the full slate of public services, without imposing any on private developers. Alternatively, the new financial instrument could have a reverse effect. Some cities will see it as another opportunity to create a new value-capture instrument by leveraging the property tax as an incentive for developers to supply public services in exchange for a reduced tax or a delayed payment. This type of leveraging, though not globally prevalent, is used by some US local authorities (such as tax increment financing). The new and independent stream of public finance should also loosen to some extent the Gordian knot between public land leasing and government planning and public services priorities. Loosing this tie may help to improve, to some extent, municipal revenue sustainability and results in more flexibility for private-sector participation.

Lessons for Other Countries

China is in many ways, one of the world's most fascinating "urban laboratories." China merits this status not only because of its scale (there are other very big countries) and its speed of urbanization, but primarily because of its governments' willingness and capacity to learn from their own experience and from other countries. We divide the knowledge-transfer paths in two: advanced-economy countries; and developing countries. For each path of knowledge transfer, however, it will be necessary to recognize the relevant attributes of the Chinese land policy and governance contexts that may either propel or restrict transferability of practices.

Lessons for Advanced-Economy Countries: A Mirror for Self-Scrutiny

Chinese cities have been able to take a leap in the adoption of value capture tools. Although the history of some of the value capture tools goes back several generations (each tool with its own isolated country-based history), Chinese cities have been able to collect tools practiced in different contexts in one or more other country. The UN effort at disseminating value capture tools, noted in our introduction, is very recent. Most countries that practice some form of value capture do so almost in isolation from others. The recent increase in academic effort at comparative analysis has a long way to go before it seeps down to law and practice.

Thus, the major Chinese cities we studied had to make efforts to "import" the value capture tools from other countries. This effort was not easy or natural because the context of national land ownership and the structure of public finance both seem to negate the very expectation that private or semi-private developers should participate in some of the public services. Against this backdrop, Chinese cities can serve as role models for cross-national learning and adaptation to local circumstances. The Chinese experience demonstrates, clear and loud, that developer obligations can be a powerful tool for molding urban policy, even where other finance resources are available.

The Chinese cities we studied demonstrated an enviable capacity to innovate: they created new formats, and — most importantly — were able to expand the notion of "public goods" well beyond the traditional list of public service. For example, the idea of imposing affordable housing on private developers after they have paid a large value capture payment (that is, the land-lease bid price in China) would meet resistance from the development sectors, and likely also legal restrictions. And even if exactions of affordable housing become an acceptable norm, it would be legally and politically difficult for governments to answer emerging needs that had no earlier precedents, such as the "incubator space" in one of our case studies. Governments are often unable to respond to new expectations in our fast-changing societies.

In the cases we studied, we also witnessed the rise of negotiated modes of developer obligations, in addition or instead of the mandatory, prescribed modes. Negotiated development obligations encounter more legal difficulties in many Western countries than mandatory modes. Many courts tend to be suspicious of them. In our view, negotiated modes do have many advantages as supplementary tools, and should be viewed more positively. The relaxed attitude displayed by Chinese cities towards this approach can be seen as a model for further study.

So, Chinese cities can be envied for their flexibility and capacity to innovate and act quickly. However, to some extent, these capacities come at a price. The attributes that Chinese governance does not yet possess, are attributes that Western cities and nations probably would not want to give up.

- The Chinese legal system grants Chinese governments greater leeway than in Western countries. Chinese city governments are rarely challenged in court by litigious developers, land-lease holders, or other interest groups. They don't encounter the costs and delays caused by litigation, which tend to restrain innovation. Thus, local (and national) governments possess a large degree of discretion for making and implementing new rules and can act upon them relatively quickly. Many of the tools we discussed, if implemented in other countries, would likely encounter one or more legal barriers. This would be especially true for the negotiated formats of the tools described. Although, in our view, negotiated development has many advantages, the courts in many countries don't favor it.

- Modes of good governance in China are still far from, say, EU expectations. The rules about compulsory public participation and transparency are still evolving (as we saw in some of the case studies). There are no legal equivalents, say, to the *Aalborg Charter* in the EU, which mandates transparency and participation in environmental decisions (which may span urban planning too).

- In China, the civil-society sector is still at an embryonic stage in comparison to most Western countries. This is changing gradually, but quite slowly. In Western countries, the views of civil society group — often contending ones — are an important factor and value in both the

promotion and restriction of developer obligations. Apart from one exception — NGOs concerned with historic preservation — our case reports hardly show any influence of the civil society sector, for better or for worse.

- The role of the development sector is also probably different in China than in many Western countries. Many of the largest development corporations in China do operate in the market system but are owned — in part or in whole — by the state. The political dynamics of the developers' sector are very important in Western countries and are especially visible regarding attempt to impose developer obligations. We are not sure how these dynamics differ in the Chinese context, but we assume that there are relevant differences. This topic is beyond our research, and requires other perspectives for analysis, drawn from political science.

Despite these important legal and governance differences, the Chinese experience with developer obligations should be welcomed by Western countries as a mirror for self-scrutiny: Have Western countries tied their hands too much — legally and politically — in being able to respond to the growing, and fast changing expectations for better public services?

Lessons for Developing Countries: A Role Model to Emulate

China is not alone in having an all-national land ownership system (in China it applies to all urbanized areas). Until the collapse of the Union of Soviet Socialist Republics (USSR) and its allies in Eastern Europe, there were many more countries with all-national (or quasi-national) land ownership. The vast land nationalization actions by the various communist and socialist regimes in early and mid-20th century, including China itself, were not structured to reap land values. In fact, they often created value loss rather than gain. In the former USSR and Eastern European countries, national land ownership was, in many ways, detrimental to city form and good land use (Bater 1980; Strong et al. 1996). As China is making its way from a developing to an advanced-economy country, its experience with value capture holds important lessons for those developing countries with national land ownership.

There are several developing countries in this category — including Vietnam; Ethiopia; and Laos. China is certainly the largest and most populous country in this category. Most other countries in this category are poorer and at an earlier stage of development, both economically and in governance. Given China's fast economic development and speed of urbanization in the past two to three decades, this country can indeed serve as a role model for these and similar developing countries.

The dominant Chinese land-lease sale system is probably already well known by decision makers in these countries (and certainly by the various international donor organizations). What is not known is the increasing importance of developer obligations. This "under the radar" mode

of public finance is exposed in our research, and it too, holds important lessons for developing countries.

The major lesson is that urban development cannot rely only on the land-lease system and the income it generates. This will be adequate for initial years or stages of development. But urban dynamics are such that, in the later stages of urban evolution, there will be new needs for public services that were not or could not be planned and budgeted in advance. It is unreasonable — and undesirable — to expect developing countries with a national ownership system, to adopt developer obligations early on. The governance system is not mature enough to sustain developer obligations because they depend on a functioning land-use regulation system. However, it is worthy to think ahead, based on China's path-breaking experiences. Developer obligations are likely to emerge at some point and, by anticipating them, developing countries can skip some of the dilemmas and uncertainties surrounding these supplementary modes of financing public services.

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