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Turning land into assets: local government borrowing through land assetization in China

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ABSTRACT

Local governments use state-owned land to raise massive funds to finance urban development in China. However, how is land formed and calculated as a financial asset? We aim to unpack the political-economic dynamics underpinning the phenomenon of turning land into a financial asset. Based on practices in Shanghai, Nanjing, and Jiaxing, this study provides a concrete account of how state-owned land is mobilized to secure funds by urban development corporations (*chengtous*) and the state itself through land reserve bonds. In either approach, the state manipulates asset formation and calculative techniques to achieve a favorable quantification of asset value. Therefore, the land is not a standard type of collateral but an extension of state credit. We contribute to the geography of assetization by arguing that land is turned into assets through state actions beyond being colonized by financialized techniques.

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Introduction

China's local government borrowing is based on land operations (Feng et al., 2022; Huang & Du, 2018; Pan et al., 2017; Wong, 2013; Wu, 2022). In 2013, 3.48 trillion yuan of local government borrowing was directly backed by expected land sales income (National Audit Office, 2013). Existing literature has discussed "land finance" (*tudi caizheng*) and land-based borrowing (Fan & Lv, 2012; Jiang & Waley, 2020; Lin, 2014), yet the grounded operations of local borrowing against state-owned land have been less studied. A general explanation is that local governments[1] inject land into arm's-length urban development corporations (*chengshi touzi gongsi*, *chengtous* for short), and *chengtous* can use the land as collateral to get funds from the financial market (Pan et al., 2017; Tsui, 2011). However, the process of turning land into a financial asset is unclear. Moreover, land reserve bonds (LRBs), as a new financial instrument, are introduced to enable the local government to borrow against land. It remains unclear how Chinese local governments utilize state-owned land to issue debt amid changing institutional contexts.

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To address this issue, we draw on recent studies on asset geography and land assetization (Aalbers, 2020; Halbert & Attuyer, 2016; Savini & Aalbers, 2016; Weber, 2021). Land is a major object that is eventually mobilized as a financial asset to secure funds (Christophers, 2017; Savini & Aalbers, 2016; Ward & Swyngedouw, 2018). Recent studies have emphasized the involvement of financial sector actors and the ascendency of speculative value, while operations on assets and "land" per se have been largely simplified (Bryson et al., 2017; Langley, 2021). The research on assetization aims to understand how assets are made and constituted through techno-economic practices, highlighting the technicality of financial instruments, practices, and devices (Birch & Muniesa, 2020; Chiapello, 2020). Meanwhile, scholars call for attention to the political economy of asset formation (Aalbers & Haila, 2018; Fields, 2018; Golka, 2021; Langley, 2021). Combining these two perspectives, we analyze land-backed borrowing in China from two main themes: the formation and the calculation of land assets. Asset formation involves political economic processes that render land valuable, usually including institutional arrangements, narratives, and promises (Birch & Ward, 2024; Weber, 2021). Asset calculation processes quantify the asset value by using specific calculative techniques and devices (cf. Chiapello, 2020).

We use the framework of asset formation and asset calculation to analyze the process of land assetization in China, i.e. the transformation of state-owned land into a financial asset. We identify two types: land assetization by *chengtou* and by the state (through LRBs). Both types are associated with local government borrowing. We examine the roles of multi-level governments, *chengtou*, credit rating agencies, and accounting agencies to unpack how their practices turn state-owned land into a financial asset. The analysis is mainly based on our fieldwork in Shanghai, Nanjing, and Jiaxing from 2019 to 2021.

We have three findings. First, land asset formation in China is manipulated by various state actors with limited market involvement. State-owned land is not a standard type of collateral that can be sold when debt defaults but reflects the government's commitment to repay the debt using future land income. Second, for asset calculation, local governments instrumentalize financial techniques to achieve a favorable outcome of asset value rather than being captured by the technicality of financial practices. Overall, by highlighting the political-economic dynamics of land assetization, we emphasize that local government borrowing against land is essentially predicated on its embeddedness of state credit.

This paper is organized as follows. We first position this research in studies on local government borrowing and land assetization. Focusing on the formation and calculation of land assets, empirical sections analyze two types of land assetization: by *chengtou* and by the state (through LRBs). We conclude by discussing the implications for research on land assetization and financial risks in China's local government borrowing.

Local government borrowing

Urban development finance has gained significant attention in the aftermath of the global financial crisis (Aalbers, 2020; Guironnet et al., 2016; O'Brien & Pike, 2019). On the one hand, urban infrastructures, development projects, and local services provisioning are expensive and demand massive financial investment (Guironnet et al., 2016; Kirkpatrick

& Smith, 2011; O'Brien & Pike, 2019). On the other hand, local governments are trapped in fiscal shortfalls, especially in austerity in many countries (Adisson & Halbert, 2022; Christophers, 2019; Peck & Whiteside, 2016). Therefore, local government borrowing is inevitable to continue investment, stabilize the local economy, maintain services provisioning, and even cope with historical debt (Christophers, 2019; Dagdeviren, 2023; Peck & Whiteside, 2016). Local governments usually innovate financial mechanisms to circumvent institutional limitations such as policies, regulations, and other institutional barriers set up by the state (Sbragia, 1996).

Land is a critical asset for the state to secure funding. In some cases, the state sells public land through land commodification to obtain funds (Artioli, 2021; Christophers, 2017). Besides land commodification, we focus on land-backed borrowing, where financial instruments are innovated to borrow against land value increase. For example, Tax Incremental Financing (TIF) designates a special area for redevelopment. It uses the expected tax increase to create a financial instrument that can be traded in the global financial market (Weber, 2010). As land becomes a liquid asset, land development is disconnected from the local context and impacted by global investors (Savini & Aalbers, 2016).

The role of the state is pivotal in the process of turning land into an asset. Financial operations centered on land are often internal to the state, not just enabled by regulatory changes (Adisson & Halbert, 2022; Andreucci et al., 2017; Whiteside, 2023). For example, in Taiwan, land assembly depends on the state's planning powers (Shih & de Laurentis, 2022). Nevertheless, financial techniques are not neutral; they reflect the investors' viewpoint (Chiapello, 2015). Thus, in some cases, the financial value is prioritized, and the state is reshaped to become a speculative financial player (Artioli, 2021; Penny, 2022). However, in Italy, Adisson and Halbert (2022) find that state interference actively internalizes financial devices rather than being passively colonized by the financial market. Nevertheless, they also find statecraft increasingly relies on financial sector actors, causing consistent bargaining and conflicts. The state is shaping and being shaped by the process of land assetization.

In China, local development financing is centered on the most valuable asset owned by the state – land (Cao et al., 2008; Tsui, 2011; Wu, 2022). This is associated with studies on "land finance" in China, which means that local governments receive desirable land sales income because of land monopoly (Lin, 2014; Tao et al., 2010; Tsui, 2011). Nevertheless, land is even more important for local governments to borrow than collecting land transaction fees (Pan et al., 2017; Wong, 2013; Wu, 2022).

We focus on land-backed borrowing. The process of turning land into a financial asset has been simplified (Theurillat et al., 2016; Tsui, 2011; Wu, 2022). For example, scholars believe that *chengtou* has used state-owned land as collateral or guarantees to get bank loans (Liao, 2014; Shen & Wu, 2020; Tsui, 2011). Tsui (2011) noticed that land and valuable assets are injected into *chengtou* to strengthen its balance sheets. Similarly, Pan et al. (2017) find that local governments transfer land as collateral to help *chengtou* secure loans. However, what kind of land is injected, why it is valuable, and how it is calculated are unclear.

Moreover, it should be stressed that state-owned land in China can never be a type of proper collateral because the financial market cannot force the government to sell the mortgaged land. In China, urban land is owned by the state according to the

Constitution. Local governments (on behalf of the state) can sell land use rights to bidders in the primary land market to gain land transaction fees (Lin, 2014; Lin & Ho, 2005; Yeh & Wu, 1996). As land has a value that can be realized in the land market, it can be used as collateral to raise funds. Nonetheless, collateral is a type of property that can be forfeited in the event of default. State-owned land in China cannot be given to lenders (such as banks) because it can only be sold through the state-controlled land supply system in the land market. State-owned land can never be collateral by nature. However, local borrowing against land is pervasive. According to the National Audit Office, in 2013, the outstanding balance of local government borrowing was 9.36 trillion yuan, in which borrowing directly against expected land sales income was 3.48 trillion yuan (National Audit Office, 2013). In total, 86.77% of local government borrowing was spent on the construction of infrastructure and public facilities and the preparation of land for sale (National Audit Office, 2013). Local borrowing against land is critical for securing development finance, which leads to land expansion and urban sprawl. It is intriguing to understand how the land can be leveraged as pseudo-collateral for local borrowing and associated financial risks.

Land assetization

We study China's land-backed borrowing from the lens of land assetization. First, the assets' earning power in the future is the decisive feature that differentiates them from commodities (Adisson & Halbert, 2022; Birch & Ward, 2024; Stirling et al., 2023; Wu et al., 2020). Land as a financial asset means that it can be traded and capitalized based on its expected income in the future (Birch & Muniesa, 2020). From a Marxist view, land is a fictitious capital because land transactions show its exchange value rather than use value (Andreucci et al., 2017; Christophers, 2017; Harvey, 2006). However, studies on assets emphasize financial operations linked to the future returns of land assets rather than current transactions (Birch & Muniesa, 2020; Golka, 2021). This paper studies land as a financial asset in China, which is not about how land is sold in today's land market but how its expected income is leveraged in the financial market to raise funds.

To unravel the process of turning things into assets, land assetization focuses on how the value of an asset is constructed (Birch & Muniesa, 2020; Golka, 2021). Assetization differs from commodification or marketization by emphasizing investors' perspective rather than traders' and focusing on evaluation based on future returns rather than trading prices (Birch, 2017; Langley, 2021).

Land assetization relates to financialization in two aspects. First, land assetization is the supply side of urban financialization (Ward & Swyngedouw, 2018). The creation of property rights establishes rent relations through which asset owners can repackage assets to unlock further financial products (Aalbers & Haila, 2018; Savini & Aalbers, 2016). Land has become a more financialized asset in enhanced circulation through mortgage and securitization (Zhang, 2018).

Second, land assetization often involves techno-economic practices to quantify the asset value (Chiapello, 2015; Muniesa, 2011; Weber, 2021). As assetization channels future value production into present circulation, it demands the mediation of the financial market and the usage of specific calculative techniques to value the risks

(Birch & Muniesa, 2020). By analyzing financial professionals' practices, Chiapello (2015, p. 5) finds their colonization by applying "financialized techniques and calculation methods." The investors' viewpoint is embedded in the process of assetization, showing "the financialization of valuation" (Chiapello, 2015).

Unpacking land assetization: asset formation and asset calculation

Studies on assetization have been inspired by a social constructivist view, focusing on professional knowledge and the usage of calculative devices (Birch & Muniesa, 2020; Chiapello, 2015; Weber, 2021). Nevertheless, we need to bring in a political-economic perspective to unpack the power dynamics in asset-making (Golka, 2021). Combining these two perspectives, we propose an analytical framework – asset formation and asset calculation – to analyze why land is valuable and how it is quantified.

First, we use "asset formation" to unpack why land is rendered as valuable. Land assetization is first built upon a set of social relations concerning the enclosure and the land (property) ownership, from which the exchange value is anticipated (Andreucci et al., 2017; Birch & Ward, 2024). This process is associated with institutional and organizational arrangements on ownership and entitlements (Andreucci et al., 2017; Bryson et al., 2017; Lagna, 2015; Whiteside, 2019). Meanwhile, ownership alone does not necessarily make a land plot an asset. Asset formation needs narratives, promises, and guarantees to justify its value in the financial market. TIF is an example of a state's commitment to increase its tax base to facilitate financial operations (Weber, 2021). We use "asset formation" to investigate the ownership, promises, and narratives attributing value to state-owned land in China. First, China's land tenure has deliberate "ambiguity," wherein the state maintains land ownership while facilitating land use rights transactions to promote land development (Ho, 2001; Sa, 2020). Second, local borrowing against land was usually processed through their corporations (*chengtous*). We will analyze how *chengtous* use state-owned land for borrowing and their relations to local governments.

Second, we use "asset calculation" to analyze how land value is calculated. Asset calculation is the process of determining how much funds lenders can borrow (Weber, 2021). It relates to calculative methods and professional actors' involvement, yet power dynamics are still involved (Langley, 2021). Asset calculation requires calculative devices, which may include financialized valuation devices. Chiapello (2015) summarizes three main financialized valuation devices: net present value, probability-based estimation, and market prices. However, the space for maneuvering is huge (Muniesa, 2011). Selecting calculative methods and using the same calculative technique can lead to wide variations. These choices are often influenced by the power relations between state actors and various financial sector actors, including accounting agencies, credit rating agencies, and banks. For example, Weber (2021) argues that although financial calculative devices reflect the financial sector's ascendency, the state takes advantage of financial devices. Lagna (2015) describes how municipalities in Italy use accounting artifice to achieve political strategic purposes. Thus, asset calculation can be processed through disguised financialized devices that do not necessarily demonstrate the financial logic. Asset calculation can only be understood by incorporating the relations and power dynamics beyond calculative techniques (Fields, 2018; Weber, 2021).

We draw on asset formation and calculation to understand how land can be leveraged as pseudo-collateral for local borrowing in China's contexts. We emphasize that turning land into a financial asset is both a political-economic and social-technical process, involving interactions between various state actors and selected calculative devices. First, we aim to unpack why land is considered valuable by examining ownership transfers and promises underpinning land assetization in China. Second, we strive to investigate calculative processes. Instead of seeing calculation as a purely technical issue, we focus on how these processes are shaped by state interventions.

Methodology

Based on the analytical framework, this paper interrogates two types of land assetization: land-backed borrowing by *chengtou* and by the state itself (through LRBs). We first illustrate land assetization in two historical phases in China. The first phase relies on *chengtou* borrowing and the second phase includes both *chengtou* borrowing and the issuance of LRBs against land. We conducted comprehensive desk research to analyze the financial operations of *chengtou* and the issuance of LRBs based on secondary data. These data were retrieved from the Chinabond website,[2] Shanghai Clearing House, and the Wind dataset.[3]

We further analyzed land assetization based on practices in Shanghai, Nanjing, and Jiaxing. The case studies are used to explore local land-based operations. These cities are pioneers in financial innovation for local government borrowing. For example, Shanghai issued the first *chengtou* bond in China. Jiangsu Province has the largest outstanding *chengtou* debt. Zhejiang Province has the most *chengtous* in number (Feng et al., 2022). We conducted fieldwork in Shanghai, Nanjing (Jiangsu Province), and Jiaxing (Zhejiang Province) to explore innovative land-backed local borrowing practices. Three cities are not to compare but to expand the sample. Despite case-specific particularities, local reliance on land revenue, *chengtou* borrowing, and local government bonds are similar (Table 1). Interviews with practitioners in one city resonate with practices in other cities to present a complementary understanding. In total, twenty-two interviews were conducted with managers of *chengtou*, government officials, and urban planning scholars from 2019 to 2021.[4]

Semi-structured interviews were designed to understand the operations of *chengtou* and LRBs from different angles. Interview transcripts were coded and analyzed

Table 1. Basic information of three cities (2022).

	General info		Local revenue		Local debt-related info			
City	Population (million people)	GDP (trillion yuan)	General budgetary revenue (billion yuan)	Land conveyance fees (billion yuan)	Number of *chengtou*	Interest bearing debt of *chengtou* (billion yuan)	Outstanding *chengtou* bonds (billion yuan)	Outstanding local government bonds (billion yuan)
Shanghai	24.76	4.47	760.82	379.87	240	1101.92	344.05	853.86
Nanjing	9.49	1.69	155.82	139.26	125	1542.08	534.36	298.82
Jiaxing	5.55	0.67	103.00	70.57	260	576.30	271.78	162.61

Notes: General information, local revenue, and bond data are retrieved from local financial bureaus. Data on *chengtou* borrowing are retrieved from Wind dataset.

thematically. This paper uses three *chengtous* in three cities for illustration. These corporations are selected because they are high-profile corporations, 100% owned by the city governments. They are pseudonymized to guarantee that our interviewees would not be identified. Various corporate reports, financial reports, and project records were analyzed to complement the understanding of land assetization.

Land assetization in China: two phases

Land assetization through chengtou

The foundation of land assetization is that state-owned land is valuable. In 1988, the central state revised the Land Administration Law to detach land use rights from land ownership to set up a land market for trading land use rights. This is a deliberate choice to promote local development while maintaining the state ownership of urban land (Ho, 2001). Local governments can receive considerable funds by selling land use rights to developers (Lin & Ho, 2005; Yeh & Wu, 1996). Hence, land has a value that can be collateralized and serves as a financial asset for local government borrowing.

Chengtou has been the major player in land-backed local borrowing because local governments were not allowed to issue debt before 2014. Local governments encountered financial pressure because of limited local tax share and accelerating local expenditures due to rapid urbanization (Pan et al., 2017; Wong, 2013). Local governments sought to borrow without violating the Budget Law to deal with fiscal voids. Thus, they set up *chengtou* to circumvent the central regulations (cf. Sbragia, 1996). *Chengtous* are state-owned enterprises owned by local governments that conduct land development projects and infrastructure (Feng et al., 2022; Jiang & Waley, 2020; Pan et al., 2017; Shen & Wu, 2020). They are backed by local governments to borrow against state-owned land.

Local governments usually allocate land to *chengtou* to enhance its asset level and seek financial products. As Figure 1 shows, the interest-bearing debt of *chengtou* has surged in the past 15 years. This liability data includes bonds and other types of borrowing, such as

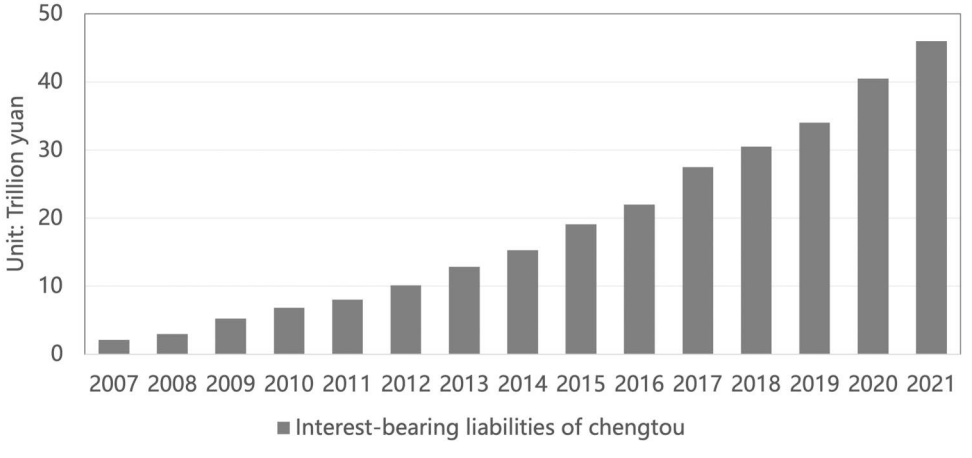

Figure 1. Interest-bearing debt of *chengtou* in China (2007–2021). Source: Wind dataset.

mortgages and loans. At first, the main financial instrument was land mortgages. In the aftermath of the global financial crisis in 2008, the central state initiated a stimulus plan to ask local governments to invest heavily in the built environment. Local governments were not legally allowed to borrow, so the fundraising task was transferred to *chengtou*. Hence, *chengtou* excessively borrowed during the four-trillion yuan stimulus plan era from 2008 to 2010 (Bai et al., 2016; Liao, 2014; Pan et al., 2017). In particular, *chengtou* can use land as an asset to enhance its asset level to access the bond market and issue *chengtou* bonds (Pan et al., 2017; Tsui, 2011). *Chengtou* bonds are mainly purchased by commercial banks, insurance companies, and trust companies. Various forms of *chengtou* debt are also repackaged and traded in the secondary financial market. For example, commercial banks repackaged *chengtou* bonds to create trust loans and wealth management products that can be sold to households (Chen et al., 2020). Thus, land assetization through *chengtou* paves the way for further financialization.

Land assetization through chengtou *and LRBs: 2014–present*

Local government borrowing through *chengtou* accumulated massive debts, causing a severe issue of implicit local government debt. Therefore, the central state has initiated a series of regulations on local government debt since 2014 (State Council, 2014). It aims to prohibit hidden channels for local borrowing. Since then, state-owned land injection into *chengtou* has been forbidden. Nevertheless, local governments circumvent central regulations to support *chengtou* in maintaining its operation (Feng et al., 2022). *Chengtou* has become a service provider for government-related land projects. It still conducts land preparation projects and infrastructure construction and expects local government purchasing in the future. These land projects still enhance the asset level of *chengtou*, facilitating its financial operations. Therefore, *chengtou* debt continues to increase (Figure 1).

Meanwhile, LRBs were designed in 2017 to enable the local government to borrow directly against the land. In 2014, the Budget Law was revised to authorize local governments to issue local government bonds (Li et al., 2023b). LRB is a special bond that local governments borrow against land. Local governments can issue it to raise funds for land reserve projects, and the bond will be repaid by land sales revenue in the future (Feng et al., 2024b). In 2019, the issuance of LRBs reached 0.68 trillion yuan, comprising 13.8% of the local government bonds issued in the same year. LRBs, like other local government bonds, are mainly purchased by commercial banks (Li et al., 2023a). The latest report shows that commercial banks buy 78.50% of local government bonds (Ministry of Finance, 2024). These banks can repackage bonds into wealth management products and sell them to individual investors. By examining land assetization in two phases, we aim to understand how local borrowing against land occurs.

Land assetization by *chengtou*

Asset formation: land value promised by the local government

For land assetization by *chengtou*, the fundamental question is why state-owned land is valuable for *chengtou* to raise funds. Naturally, ownership justifies the future returns

from land sales, and hence, the local government, as the owner, can use its land ownership for financial products. A prevailing story is that the local government injects land into *chengtou* so that *chengtou* can mortgage land for funds (Pan et al., 2017; Tsui, 2011). However, whether *chengtou* legally "owns" the land and in what form is obscure. We find that the government's promise is the key element of "worth attribution" (cf. Chiapello, 2015). The promise attributes the expected land income (received by the local government) to *chengtou* and lays the foundation for land assetization. Despite differences in operations before and after 2014 due to institutional changes, land assetization by *chengtou* is not processed based on ownership transfer but on the local government's promise (Figure 2).

Before 2014, local governments promised to inject future land sales income into *chengtou*, turning land into a financial asset of *chengtou*. First, most land recorded by *chengtou* as an asset was reserved land (*chubei di*), which means land before transactions. "Owning" land means holding land use rights in China. However, only land after conveyance has certificates indicating land-use types and development restrictions. As the reserved land has not been traded in the primary land market, *chengtou* does not legally obtain the land use right.

In an interview with a manager, we asked about the issue of land injection (*tudi zhuru*). We found that land injection, which means land ownership transfer from the city government to corporations, does not happen.

> It is not about land injection. The government just gives us an area for land development. We (*chengtou*) prepare it and sell it. The government never gives us a piece of land; it only designates an area. (Interviewee 3, *chengtou* manager, September 2019)

The explanation is clear: land ownership never changes from the city government to the corporation. The city government only designates a specific area exclusively developed by the *chengtou*. Similarly, L Chengtou conducts land reserve projects in an industrial park in Shanghai. It works as follows,

> L Chengtou carries out site leveling and facilities building in the industrial park. After land preparation, the land reserve center conducts land bidding, auction, and listing. The land

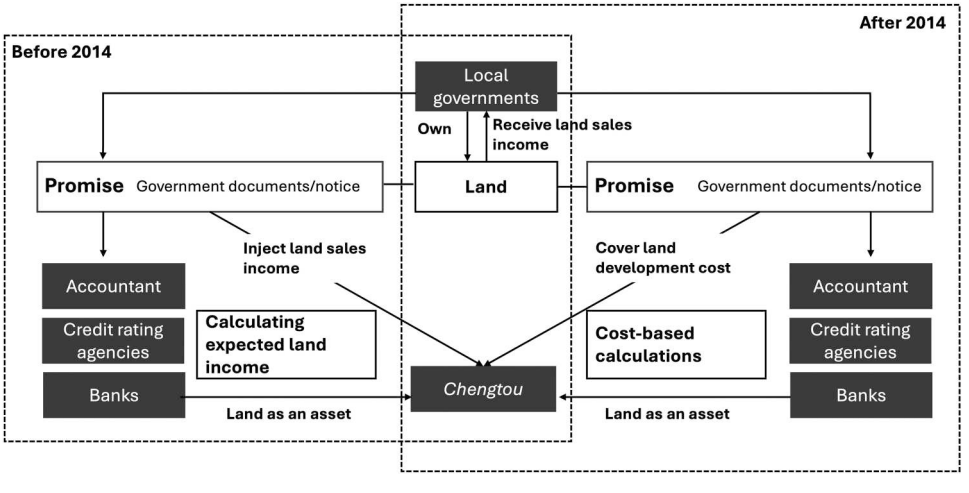

Figure 2. Land assetization by *chengtou* before and after 2014.

> belongs to the land reserve center. Hence, there is no need to inject land into L Chengtou. Enterprises that successfully bid for the land will pay the full amount of land conveyance fees to the special account[5] of the Shanghai government. (L Chengtou report, 2018)

This quotation also indicates that land ownership transfers never happen. Asset formation relies on the local government's return on land income.

Second, local governments provided government notices as commitments to ensure that their *chengtous* were exclusively engaged in land development and could be redeemed for future gains. For example, the Jiaxing government released a government notice (*zhengfu chaogaodan*) in 2004 and minutes of a special meeting (*huiyi jiyao*) in 2013. These documents stipulated that "the income obtained from the land within the development scope of X Chengtou will be distributed between the municipal finance bureau and the corporation" (China Lianhe Credit Rating Corporation, 2015). The distribution scheme is that the local financial bureau would repay the cost of land development and the profits (land conveyance fees deducting cost and fees) to X Chengtou. Similarly, the Shanghai government stipulated that it would return all the land sales income (after deducting cost) in a specific area to L Chengtou. In Nanjing, the government promulgated a government notice in 2012, which promised to pay back 70%−80% of land sales income to Y Chengtou. With these government promises, although *chengtou* did not actually "own" the land, it had the right to get the profit from expected land rent in the designated area. Therefore, the nature of "land injection" was not predicated on land use right transfer but on governments' promises. Hence, accounting agencies recorded reserved land as an asset of *chengtou*, whereby *chengtou* could enhance its asset level, get land mortgages, and unlock bonds.

An institutional change occured in 2014. However, we find that land is still recognized as an asset by *chengtou* because of the government's commitment to repay land development costs. In particular, land reserve projects (*tudi chubei xiangmu*) are still conducted by *chengtou*, including leveling land and providing related facilities. As explained by an interviewee,

> The state was clearing up hidden government debts in 2014. The land preparation function of *chengtou* is detached. All the costs of primary land development are paid by local finance. It means that land primary development was classified as a hidden government debt and could not be done. So now, land sales revenue is no longer related to *chengtou*. Meanwhile, all the land development costs should be covered by the government. (Interviewee 11, *chengtou* manager, August 2020)

Therefore, land projects become an asset for *chengtou* as the government will repay the investment cost. Asset formation is also built on the government's promises. These promises include various contracts, notices, and minutes. For example, the city government signed a contract with Y Chengtou in Nanjing in 2016. According to the contract, Y Chengtou conducts land preparation for the government. "It will receive its investment cost plus 20%−30% of the cost from the government." (China Chengxin International Credit Rating Co., 2020) While in Shanghai, *chengtou* can only earn a few thousandth of investment costs besides cost repayment (Interviewee 12, *chengtou* manager, August 2020). The justification for treating land as an asset shifts from "owning" reserved land to government purchasing land projects, yet the government's commitments remain the core.

Asset calculation: from expected land revenue to cost-based calculations

The asset formation has transformed from sharing land sales revenue to land cost repayment, leading to changes in asset calculation. While calculations before 2014 estimated land value in the future, now cost-based calculations are in use.

Before 2014, the calculation process was to estimate the return of land conveyance fees. Accountants usually used present market prices to calculate the expected land revenue. Nevertheless, asset calculation is more instrumental rather than technical in practice. For example, the land value calculation remained unchanged in many cases, which should not be if financialized calculations were used. For instance, according to the audit reports of X Chengtou, land recorded as inventory in its asset list did not change from 2010 to 2014. "X Chengtou owns[6] 287,500 square meters of reserved land worth 1.74 billion yuan." (China Lianhe Credit Rating Corporation, 2015) This calculation was based on the market prices of land transactions in 2010. Meanwhile, 7,847 *mu* of land developed by X Chengtou was sold in the land market from 2010 to 2014. Due to land sales and fluctuating land prices, the remaining value of land as an asset should change. However, the figure recorded in the inventory list remained unchanged for five years, indicating the value of X Chengtou's reserved land remained unchanged. If reserved land is a standard financial asset, its value would be subject to changing land prices and land use plans. The value of land would update. The actual practice is the opposite. The unchanged land value calculation shows that the land asset owned by *chengtou* is more like an instrument for credit enhancement than an asset calculated by financialized techniques.

After 2014, *chengtous* cannot claim their expected income from land sales revenue. Nonetheless, the state's promise of repaying development costs justifies land assets "owned" by *chengtou*. Accordingly, asset calculative devices have changed from market price to cost-based calculations. *Chengtous* are the service provider of government purchasing. Therefore, they record all their investment in land projects into *entrusted construction projects* (*shoutuo daijian xiangmu*), also in the inventory category. For example, according to the credit rating report of X Chengtou in 2020, the investment cost in government-related land projects was 22.47 billion yuan, which accounted for around 61% of the total assets in 2020. In three *chengtous* in different cities, the investment cost of land projects accounts for more than 30% of their total assets (Figure 3). Therefore, land remains pivotal for *chengtous* in enhancing their asset levels. Even if the local government cannot reimburse the development costs in time, *chengtous* continue to use cost-based calculations to strengthen its asset level. With augmented assets, *chengtou* lowers its leverage ratio, which enables it to explore further financial products such as bonds in the financial market. Through this accounting artifice, *chengtou*'s assets and liabilities expand simultaneously. In doing so, *chengtou* continues to invest in local development projects, infrastructures, and land preparation. It should be stressed that cost-based calculative tactics still reflect the earning power of land, betting on the government purchasing of land development costs. Therefore, these land projects are financial assets that could be used by *chengtou* to access financial products such as project loans and *chengtou* bonds, which is land assetization. However, financialized calculations such as discounted cash flow are not in use. Again, asset calculation is not through financialized techniques.

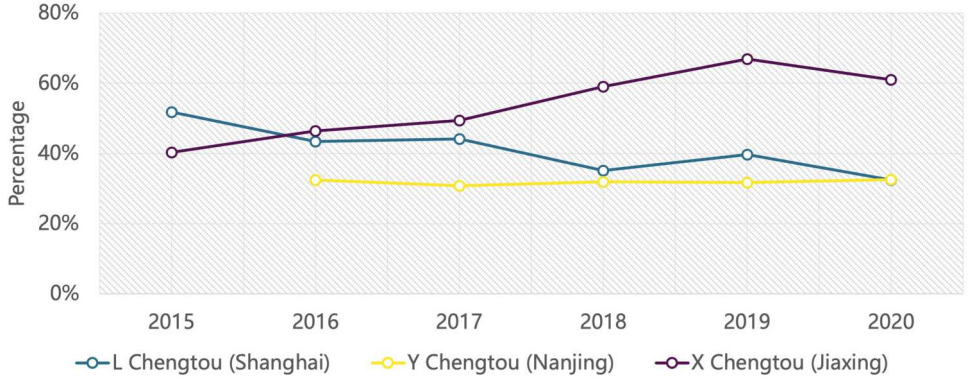

Figure 3. The contribution of land-related investment cost to the asset of *chengtou*. Source: Audit reports of L Chengtou, Y Chengtou, and X Chengtou (2016–2021).

Based on the analysis, we advance the previous understanding of land-centered *chengtou* borrowing. First, the state's promises are the core rather than ownership transfer. Either reserved land or land development projects recorded by *chengtou* as assets do not have exchange value; their value is generated by the rent that the local government promises. Therefore, land embodies the government's credit rather than being transferred to *chengtou* (cf. Pan et al., 2017; Wu, 2022). Second, reserved land and land projects belong to the local governments; hence, they cannot be foreclosed when *chengtou* defaults. Land is not properly collateralized.

Land assetization by the state through LRBs

Asset formation: state credit embodied in land revenue

Besides *chengtou*, the state uses the land to raise funds through LRBs. We use "the state" here to indicate that LRBs are not backed by a single level of government but multi-level state credit. This financial instrument is designed to be repaid by future gains in selling land. Nevertheless, we find that LRB is delinked from the expected income of specific land parcels. It relies on the state's credit in a general sense.

First, according to the regulations on LRBs, they are designed to support land reserve projects. And the profitability of land reserve projects should guarantee the repayment of LRBs. As stipulated by the central state,

> Land reserve projects that apply for land reserve bonds should have a stable source for repayment. The corresponding income contributing to the governmental fund should be able to repay the principal and interest. The project's revenue and financing should be self-balanced. (Ministry of Finance, 2017)

Land reserve projects are valuable because the local government can sell the serviced land and get land conveyance fees. The local government legally receives the land sales income, while *chengtou* relies on the government's repayment. It seems that LRB is more like a project-based bond, such as TIF in the United States, betting on the future growth of a specific area (Weber, 2010, 2021). However, unlike TIF, which is tied to a specific land parcel, we find LRB delinks from its land project in two aspects.

First, LRB is managed by a quota approval system before entering the bond market. As explained by one official from a land reserve center,

> LRBs are not issued by us (land reserve center); they are issued by finance departments because they are government debt. If I (land reserve center) plan to develop a land plot, I (land reserve center) can apply to the municipal government. The municipal government will package all the applications to the provincial government. Because I don't have money and land cannot be used for financing, I (land reserve center) apply to the government and hope to get some funding through bonds. It is also a financial channel. However, this type of financial channel is strictly regulated by various state levels, from the Ministry of Finance to provinces and municipalities. The land reserve center needs to apply, and then there is a distribution process. It is also to raise some funds for local land development; otherwise, if the brakes (restrictions on land borrowing) are suddenly applied, there will be no money to do it. (Interviewee 14, government official, August 2020)

Based on the explanation, the issuance procedure is as follows (Figure 4). First, local land reserve centers and financial bureaus compile the plan for land projects and submit it to upper-level governments. The provincial-level governments file all the plans to the Ministry of Finance. At the end of this year, the Ministry of Finance will assign a quota for LRBs for each province for the following year. Within the approved quota, provincial governments finally distribute the quota to lower-level governments and issue LRBs. Therefore, quota approval is fundamental before the bond issuance. Meanwhile, provincial-level governments rather than local governments issue LRBs on behalf of all the lower-level governments, including municipal governments, county governments, and district governments. Provincial-level governments usually do not conduct land reserve projects themselves but issue and manage LRBs for local governments. That is, actors who actually conduct and benefit from the land project are detached from the issuance system. Unlike *chengtou* borrowing backed by the local government, the state as a whole, rather than a specific local government, supports the management of LRBs.

Second, LRBs can be rolled over by refinancing bonds and gradually delinked to specific land plots. Although LRBs are designed to be repaid by the land income of specific land projects, land transactions are unpredictable. Consequently, many land

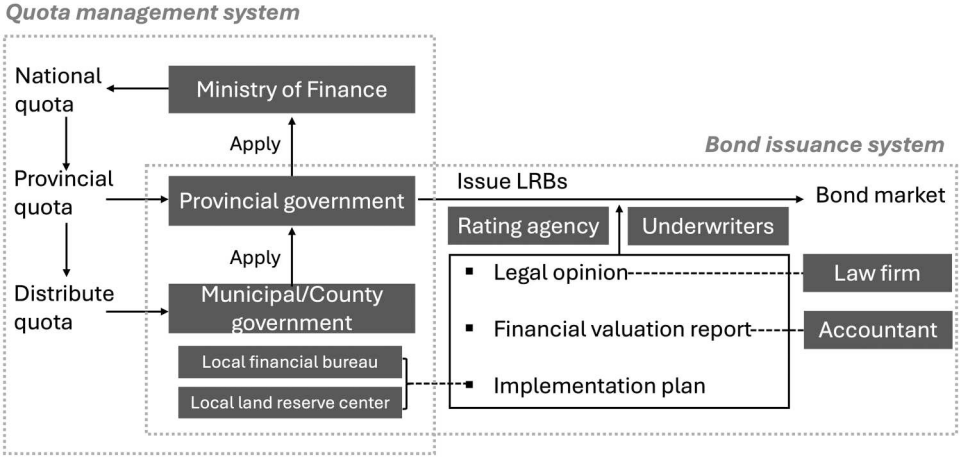

Figure 4. The management and issuance of land reserve bonds.

projects cannot get land sales income on time. In Shanghai, for example, a LRB of 1.4 billion yuan was issued in 2017 to finance a land reserve project in the Pudong district. This project aimed to prepare 48 hectares of land for relocated housing. However, only 45,000 m^2 of land had been sold with 0.54 billion yuan by the end of 2021. Moreover, local governments can hardly gain land income as expected because of the stagnancy of the land market in the post-COVID-19 era. When an LRB cannot be repaid on time, the financial market does not have the right to foreclose on the land because the land supply is solely controlled by the state. Meanwhile, the state would not let a local government bond default. Provincial governments issue refinancing bonds to repay the LRB. For example, we find that all mature LRBs were repaid by refinancing bonds in Shanghai (Figure 5). In particular, a three-year LRB issued in 2017 was first refinanced in 2020 when it matured and then refinanced again in 2023. Refinancing bonds, unlike LRBs, do not specify their use for land projects. Refinancing bond issuance is simple, only indicating which mature bond is being refinanced. When a LRB is refinanced multiple times, the latter refinancing bond is issued to repay the previous refinancing bond. It is no longer explicitly linked to the original LRB, let alone a specific land parcel. The payment of an LRB effectively delinks from its associated land when the bond is refinanced repeatedly. Hence, LRBs are backed by state credit in a general sense rather than by the profitability of a specific land plot. This de-linking does not strengthen the financial market's impact on local development projects (cf. Savini & Aalbers, 2016) but leads to extensive local borrowing and rolling debt issues.

Asset calculation: flexible financial techniques to achieve a favorable outcome

After being approved by upper-level governments, local governments prepare bond issuance documents. These documents include implementation plans, financial evaluation reports, legal opinions, and credit rating reports. The first three are provided or facilitated by local governments, including municipal, district, or county-level governments (Figure 4).

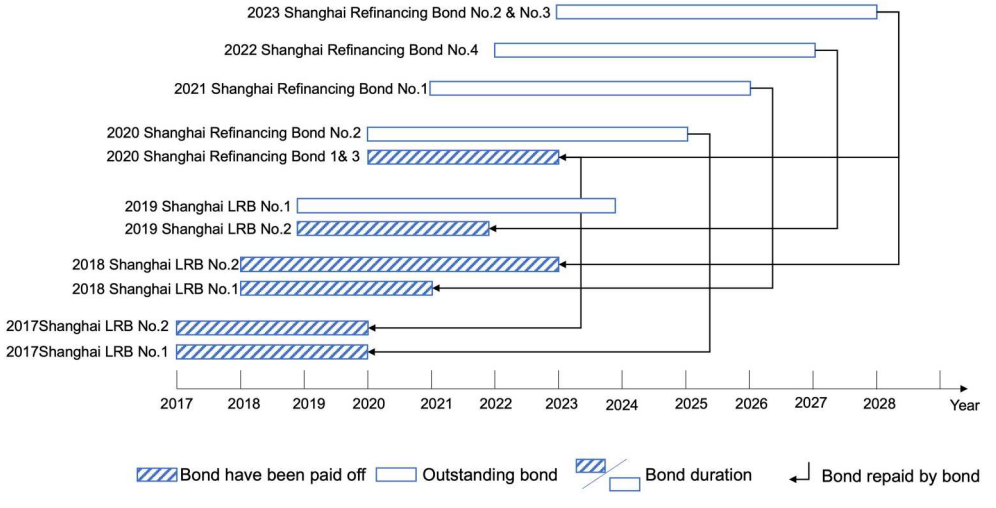

Figure 5. Land reserve bonds are repaid by refinancing bonds in Shanghai (2017–2023). Source: Data collated from bond issuance reports released by the Shanghai Financial Bureau.

First, local financial bureaus and land reserve centers prepare implementation plans detailing the information of planned projects backed by LRBs. Based on the plan, accountants are invited to compile financial evaluation reports. These reports estimate the expected land revenue and aim to demonstrate that the bond can be repaid by expected land income. Third, law firms are included in the review of all the qualifications. Legal opinions are given to validate that projects are approved by legal documents and that accounting agencies are qualified. After receiving all the documents from lower-level governments, provincial governments invite credit rating agencies to provide rating reports. Finally, provincial governments can issue LRBs in the bond market.

The most important figure for bond issuance is the ratio of expected land income to financing costs, including the principal and interest. This figure is called the coverage ratio (*fugai zhishu*). However, there is no standardized method to estimate the future income of land parcels. Different accountants adopt various methods to estimate land income. We analyzed all the LRBs in Shanghai, Nanjing, and Jiaxing from 2017 to 2022. We find 11 calculation techniques (Table 2). In some cases, accountants applied future-value estimation methods, using the GDP growth rate of the city as a proxy for land price growth in the following years until land transactions. Other accountants used the average market price of nearby land plots to estimate the land price in the future. In cases where land price was hard to predict, accountants even used investment costs to estimate future income. In doing so, the coverage ratio can never be below 1. Moreover, calculative devices for land projects in the same bond can differ. For instance, in 2018, an accountant in Shanghai used five calculative methods to estimate the land income of eleven land reserve projects in a single bond (Shanghai Huzhong Certified Public Accountant Co., 2018). Calculative devices are used flexibly by accountants.

Accountants assist the local government in bond issuance. They selectively adopt calculative techniques to demonstrate that expected land income can cover the cost. Thus, all the financial reports elucidate that the bond can be repaid by future income. The report by accounting agencies is finally approved by local financial bureaus. This procedure guarantees that the coverage ratios of all LRBs are above 1. As a result, every LRB issued by Shanghai, Nanjing, and Jiaxing gets the same top credit rating, AAA. The quota approval system determines how many LRBs can be issued before the bond

Table 2. Calculation methods to estimate land unit price.

Calculation type	Calculation formula
Future-value	(Average market price of nearby land plots in the past two years) $*$ $(1 + 8\%)^{Year}$
Future-value	(Average market price of nearby land plots in the past firve years) $*$ (1 + GDP growth rate of the city last year)^{Year}
Future-value	(Average market price of nearby land plots in the past firve years) $*$ (1 + GDP growth rate of the district last year $*$ 80%)^{Year}
Future-value	(Average market price of nearby land plots in the past three years) $*$ (1 + Average GDP growth rate of the district in the past three years)^{Year}
Market price	Average market price of nearby land plots in the same year
Market price	Average market price of nearby land plots in the previous two years
Market price	Average market price of nearby land plots in the previous five years
Market price	Land benchmark price
Market price	Land benchmark price * 70%
Cost-based value	Investment cost
Mix method	Residual method (based on present housing price) *0.8+ Base land price modification method*0.2

Notes: Collated data based on financial evaluation reports of all the LRBs issued for land projects in Shanghai, Nanjing, and Jiaxing (2017–2019).

issuance. Accountants' calculations are a procedural process manipulated by local governments and accounting agencies. The calculation procedures are seemingly complex but instrumental.

Discussion

This paper illustrates two Chinese pathways to land assetization and subsequent financial expansion: using land as a financial asset for local government borrowing. For land assetization by *chengtou*, land is treated as an asset in *chengtou*'s balance sheets and can be used to access mortgages and bonds. For land assetization through LRBs, land assetization means bond issuance against land income. Based on these practices, we reflect on asset geography in three aspects.

First, we contribute to understanding the role of the state in land asset formation. In the literature, the state can sell the public land or package the expected revenue streams from land to create credit that can be used to circulate finance (Langley, 2021; Savini & Aalbers, 2016; Whiteside, 2023). The state provides conditions for financialization or internalizes financial techniques to become financial players (Adisson & Halbert, 2022; Christophers, 2018; Shih & de Laurentis, 2022). China shows similar features in internalizing financial techniques to raise funds for state strategic goals (cf. Adisson & Halbert, 2022; Whiteside, 2023). Nevertheless, we reveal the complexity of multi-scalar state actors in land assetization. The actual landowner – the local government – is not directly involved in financial processes. It borrows through its proxies, i.e. *chengtou* and provincial governments. *Chengtou* is a proxy that does not own the land but can claim land as an asset because of the promised rent. The asset formation does not rely on ownership transfer. This is different from land companies in Canada because these corporations own public land (Whiteside, 2019). For LRBs, provincial governments issue and repay the bond for local governments. By involving upper-level governments, LRBs show a reverse trend of state rescaling. Many studies find that urban financialization is enabled by the disciplinary power of city governments (Coq-Huelva, 2013; O'Brien & Pike, 2019). Yet, LRBs signify a trend of centralization (Feng et al., 2024a). In both types of land assetization, the actual landowner – local government – is insulated from financial processes. As the land gradually delinks from its financial products, it is not effectively collateralized. Although local borrowing seems to be against the land, lenders (such as banks) can hardly impact the local management of state-owned land (contrary to Ashton et al., 2016; Savini & Aalbers, 2016). Meanwhile, the local government utilizes financial techniques and influences financial actors to issue the debt. The deliberate de-linking enables the Chinese state to extend its power through the financial market without being reshaped by financial values (cf. Wu, 2023).

Second, while we begin by analyzing technical procedures and calculative devices in land assetization, we find calculations are manipulated by local authorities rather than adhering to the financial logic. In many studies, financial devices and calculations are not neutral, leading to power restructuring (Adisson & Halbert, 2022; Artioli, 2021; Weber, 2021). For example, Birch and Muniesa (2020) argue that assetization is a process where financial logics are taken by social actors. Chiapello (2020) illustrates the social-technical process of financialization as financial actors gain power by implementing financialized techniques in assessing asset value. Muniesa (2011) points out

that the value of an asset is in the hands of financial professionals. However, in China's case, the stretch of financial techniques is prominent. Land value is not in the hands of accountants or auditing agencies. The flexibility of financial techniques is used to justify the financial goals of the state, reflecting the exercise of the power of the state rather than the influence of financial professionals. These practices suggest that land assetization may not extend the financial professionals' logic as shown in the extant literature (cf. Birch & Muniesa, 2020; Chiapello, 2020). The state is not being passively colonized by the financial market (Adisson & Halbert, 2022; Lagna, 2015).

Third, we contribute to understanding the financial risks of local government borrowing backed by land. While studies believe that financial expansion in China is enhanced by land as collateral (Pan et al., 2017; Theurillat et al., 2016; Tsui, 2011; Wu, 2023), we question why and how land can be collateral when foreclosure can never happen. We find risks associated with land assetization are not evaluated by financial professionals but loom large because of the unconditional purchase of state credit. Since 2014, the central state has restricted land-backed borrowing to regulate local borrowing. However, *chengtou* debt has increased continuously, coupled with an upward trend in local government bonds. The outcome of the regulations is unsatisfactory partly because of the circumvention of local governments to explore extrabudgetary funds through financial innovations (cf. Sbragia, 1996). Moreover, the financial expansion was not triggered by the land collateral but by the state credit extension. As long as cheap credits provided by the state can be readily accepted by the financial sector actors (e.g. commercial banks, institutional investors, accountant agencies), financial expansion persists, and financial risks accumulate.

Conclusion

Echoing the call for understanding the blind spot of turning land into an asset (Birch & Muniesa, 2020; Birch & Ward, 2024; Fields, 2018; Golka, 2021; Langley, 2021), we have unpacked how land is rendered and calculated as an asset for local borrowing in China. First, through an analytical framework of asset formation and asset calculation, we emphasize that land value is externally added by state promises and state actions. Second, we interrogate two types of land assetization in China: by *chengtou* and by the state (through LRBs). In both approaches, the state injects credit into the land before it is used to unlock financial products in the financial market. Land becomes an embodiment of the state credit rather than proper collateral. Therefore, land assetization in China does not reflect the power of the financial logic but rather the extension of the state power. We contribute to asset geography by highlighting that the state can manipulate the technical processes of assetization. In China, local borrowing has expanded by using land as pseudo-collateral, effectively betting on future government payments. Further research is suggested to explore how land-backed borrowing impacts urban development, especially in the post-COVID-19 era when the property market is stagnant and local financial status deteriorates.

Notes

1. Local governments refer to sub-national governments that could directly manage the local land market. These include direct-administered municipalities, prefecture-level governments, county governments, and district governments in China.

2. The Chinabond website, https://www.chinabond.com.cn, is an official website publishing bond details and reports.
3. Wind is a financial platform that provides economic data for financial professionals in China. It collects historical data on *chengtou*, especially those issuing bonds.
4. The list of interviewees is shown in appendix 1.
5. Special account (*zhuanxiang zhanghu*) is a specific financial account through which local governments collect land conveyance fees. This quotation means that L Chengtou does not receive the land sales income directly. The income is transferred to the financial account of the local government.
6. The rating report uses the word "own.". In fact, as explained by interviewees, X Chengtou never owns the reserved land. The city government only permits it to develop a designated area. However, the credit rating agency accepts that the corporation "owns" the land.

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Data availability statement

Data will be available on request.

Research ethics and consent

This research was conducted in accordance with the UK General Data Protection Regulation and UCL's Code of Conduct for Research. Data protection was registered in UCL. Ethical approval was obtained from the UCL Research Ethics Committee (Project No. 16409/001). All the recorded interviews were conducted with the verbal consent of the interviewees. No names were collected, and identifiable information was removed for publication.

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References

Aalbers, M. B. (2020). Financial geography III: The financialization of the city. *Progress in Human Geography*, *44*(3), 595–607. https://doi.org/10.1177/0309132519853922

Aalbers, M. B., & Haila, A. (2018). A conversation about land rent, financialisation and housing. *Urban Studies*, *55*(8), 1821–1835. https://doi.org/10.1177/0042098018759251

Adisson, F., & Halbert, L. (2022). State financialization: Permanent austerity, financialized real estate and the politics of public assets in Italy. *Economy and Society*, *51*(3), 489–513. https://doi.org/10.1080/03085147.2022.2073064

Andreucci, D., García-Lamarca, M., Wedekind, J., & Swyngedouw, E. (2017). "Value grabbing": A political ecology of rent. *Capitalism Nature Socialism*, *28*(3), 28–47. https://doi.org/10.1080/10455752.2016.1278027

Artioli, F. (2021). Sale of public land as a financing instrument. The unspoken political choices and distributional effects of land-based solutions. *Land Use Policy*, *104*(March), 105199. https://doi.org/10.1016/j.landusepol.2020.105199

Ashton, P., Doussard, M., & Weber, R. (2016). Reconstituting the state: City powers and exposures in Chicago's infrastructure leases. *Urban Studies*, *53*(7), 1384–1400. https://doi.org/10.1177/0042098014532962

Bai, C.-E., Hsieh, C.-T., & Song, Z. M. (2016). *The long shadow of a fiscal expansion*. National Bureau of Economic Research.

Birch, K. (2017). Rethinking value in the bio-economy: Finance, assetization, and the management of value. *Science, Technology, & Human Values*, *42*(3), 460–490. https://doi.org/10.1177/0162243916661633

Birch, K., & Muniesa, F. (2020). Introduction: Assetization and technoscientific capitalism. In K. Birch & F. Muniesa (Eds.), *Assetization: Turning things into assets in Technoscientific capitalism* (pp. 1–41). MIT Press.

Birch, K., & Ward, C. (2024). Assetization and the 'new asset geographies'. *Dialogues in Human Geography*, *14*(1), 9–29.

Bryson, J. R., Mulhall, R. A., Song, M., & Kenny, R. (2017). Urban assets and the financialisation fix: Land tenure, renewal and path dependency in the city of Birmingham. *Cambridge Journal of Regions, Economy and Society*, *10*(3), 455–469. https://doi.org/10.1093/cjres/rsx013

Cao, G., Feng, C., & Tao, R. (2008). Local 'land finance' in China's urban expansion: Challenges and solutions. *China & World Economy*, *16*(2), 19–30. https://doi.org/10.1111/j.1749-124X.2008.00104.x

Chen, Z., He, Z., & Liu, C. (2020). The financing of local government in China: Stimulus loan wanes and shadow banking waxes. *Journal of Financial Economics*, *137*(1), 42–71. https://doi.org/10.1016/j.jfineco.2019.07.009

Chiapello, E. (2015). Financialisation of valuation. *Human Studies*, *38*(1), 13–35. https://doi.org/10.1007/s10746-014-9337-x

Chiapello, E. (2020). Financialization as a socio-technical process. In P. Mader, D. Mertens , & N. van der Zwan (Eds.), *The Routledge International Handbook of Financialization* (pp. 81–91). Routledge. Available at: https://www.taylorfrancis.com/books/9781351390378/chapters/10.43249781315142876-7

China Chengxin International Credit Rating Co. (2020). *Credit rating report on Y Chengtou*.

China Lianhe Credit Rating Corporation. (2015). *Credit rating report on X Chengtou*.

Christophers, B. (2017). The state and financialization of public land in the United Kingdom. *Antipode*, *49*(1), 62–85. https://doi.org/10.1111/anti.12267

Christophers, B. (2018). *The new enclosure: The appropriation of public land in neoliberal Britain*. Verso Books.

Christophers, B. (2019). Putting financialisation in its financial context: Transformations in local government-led urban development in post-financial crisis England. *Transactions of the Institute of British Geographers*, *44*(3), 571–586. https://doi.org/10.1111/tran.12305

Coq-Huelva, D. (2013). Urbanisation and financialisation in the context of a rescaling state: The case of Spain. *Antipode*, *45*(5), 1213–1231. https://doi.org/10.1111/anti.12011

Dagdeviren, H. (2023). Austerity urbanism, local government debt-drive, and post COVID predicaments in Britain. *Journal of Economic Geography*, *24*(2023), 79–94.

Fan, G., & Lv, Y. (2012). Fiscal prudence and growth sustainability: An analysis of China's public debts. *Asian Economic Policy Review*, *7*(2), 202–220. https://doi.org/10.1111/j.1748-3131.2012.01234.x

Feng, Y., Wu, F., & Zhang, F. (2022). Changing roles of the state in the financialization of urban development through chengtou in China. *Regional Studies*, *56*(8), 1259–1270. https://doi.org/10.1080/00343404.2021.1900558

Feng, Y., Wu, F., & Zhang, F. (2024a). Building state centrality through state selective financialization: Reconfiguring the land reserve system in China. *Environment and Planning A: Economy and Space*, *56*(3), 766–783. https://doi.org/10.1177/0308518X231212974

Feng, Y., Wu, F., & Zhang, F. (2024b). New land reserve institution and changing entrepreneurial urban governance in China. *Cities*, *152*, 105242. https://doi.org/10.1016/j.cities.2024.105242

Fields, D. (2018). Constructing a new asset class: Property-led financial accumulation after the crisis. *Economic Geography*, *94*(2), 118–140. https://doi.org/10.1080/00130095.2017.1397492

Golka, P. (2021). Assetization: A technoscientific or financial phenomenon? *Finance and Society*, *7*(1), 88–93. https://doi.org/10.2218/finsoc.v7i1.5593

Guironnet, A., Attuyer, K., & Halbert, L. (2016). Building cities on financial assets: The financialisation of property markets and its implications for city governments in the Paris city-region. *Urban Studies*, *53*(7), 1442–1464. https://doi.org/10.1177/0042098015576474

Halbert, L., & Attuyer, K. (2016). Introduction: The financialisation of urban production: Conditions, mediations and transformations. *Urban Studies*, *53*(7), 1347–1361. https://doi.org/10.1177/0042098016635420

Harvey, D. (2006). *The limits to capital*. Verso.

Ho, P. (2001). Who owns China's land? Policies, property rights and deliberate institutional ambiguity. *The China Quarterly*, *166*, 394–421.

Huang, Z., & Du, X. (2018). Holding the market under the stimulus plan: Local government financing vehicles' land purchasing behavior in China. *China Economic Review*, *50*, 85–100. https://doi.org/10.1016/j.chieco.2018.04.004

Jiang, Y., & Waley, P. (2020). Who builds cities in China? How urban investment and development companies have transformed Shanghai. *International Journal of Urban and Regional Research*, *44*(4), 636–651. https://doi.org/10.1111/1468-2427.12918

Kirkpatrick, L.O., & Smith, M. P. (2011). The infrastructural limits to growth: Rethinking the urban growth machine in times of fiscal crisis. *International Journal of Urban and Regional Research*, *35*(3), 477–503. https://doi.org/10.1111/j.1468-2427.2011.01058.x

Lagna, A. (2015). Italian municipalities and the politics of financial derivatives: Rethinking the Foucauldian perspective. *Competition & Change*, *19*(4), 283–300. https://doi.org/10.1177/1024529415581969

Langley, P. (2021). Assets and assetization in financialized capitalism. *Review of International Political Economy*, *28*(2), 382–393. https://doi.org/10.1080/09692290.2020.1830828

Li, Z., Wu, F., & Zhang, F. (2023a). Adaptable state-controlled market actors: Underwriters and investors in the market of local government bonds in China. *Environment and Planning A: Economy and Space*, *55*(8), 2088–2107. https://doi.org/10.1177/0308518X231174023

Li, Z., Wu, F., & Zhang, F. (2023b). State de-financialisation through incorporating local government bonds in the budgetary process in China. *Journal of Economic Geography*, *23*(5), 1169–1190. https://doi.org/10.1093/jeg/lbad016

Liao, F. (2014). Quenching thirst with poison? Local government financing vehicles — past, present, and future. In B. L. Liebman & C. J. Milhaupt (Eds.), *Regulating the visible hand?* (pp. 69–84). Oxford University Press.

Lin, G. C. S. (2014). China's landed urbanization: Neoliberalizing politics, land commodification, and municipal finance in the growth of metropolises. *Environment and Planning A: Economy and Space*, *46*(8), 1814–1835. https://doi.org/10.1068/a130016p

Lin, G. C. S., & Ho, S. P. S. (2005). The state, land system, and land development processes in contemporary China. *Annals of the Association of American Geographers*, *95*(2), 411–436. https://doi.org/10.1111/j.1467-8306.2005.00467.x

Ministry of Finance. (2017). Measures for the administration of local government land reserve special bonds (trial). Available at: http://www.gov.cn/xinwen/2017-06/01/content_5198939.htm#1.

Ministry of Finance. (2024). *The market report of local government bonds (April 2024)*. Retrieved November 6, 2024, from https://kjhx.mof.gov.cn/yjbg/202406/t20240605_3936514.htm.

Muniesa, F. (2011). A flank movement in the understanding of valuation. *The Sociological Review*, *59*(2), 24–38. https://doi.org/10.1111/j.1467-954X.2012.02056.x
National Audit Office. (2013). *No.32 Notice in 2013: The audit report for government-related debt*. Retrieved August 3, 2022, from https://www.audit.gov.cn/n5/n25/c63642/content.html.
O'Brien, P., & Pike, A. (2019). 'Deal or no deal?' Governing urban infrastructure funding and financing in the UK city deals. *Urban Studies*, *56*(7), 1448–1476. https://doi.org/10.1177/0042098018757394
Pan, F., Zhang, F., Zhu, S., & Wójcik, D. (2017). Developing by borrowing? Inter-jurisdictional competition, land finance and local debt accumulation in China. *Urban Studies*, *54*(4), 897–916. https://doi.org/10.1177/0042098015624838
Peck, J., & Whiteside, H. (2016). Financializing detroit. *Economic Geography*, *92*(3), 235–268. https://doi.org/10.1080/00130095.2015.1116369
Penny, J. (2022). "Revenue generating machines"? London's local housing companies and the emergence of local state rentierism. *Antipode*, *54*(2), 545–566. https://doi.org/10.1111/anti.12774
Sa, H. (2020). Do ambiguous property rights matter? Collective value logic in Lin Village. *Land Use Policy*, *99*(December 2019), 105066. https://doi.org/10.1016/j.landusepol.2020.105066
Savini, F., & Aalbers, M. B. (2016). The de-contextualisation of land use planning through financialisation: Urban redevelopment in Milan. *European Urban and Regional Studies*, *23*(4), 878–894. https://doi.org/10.1177/0969776415585887
Sbragia, A. M. (1996). *Debt wish: Entrepreneurial cities, US Federalism, and economic development*. University of Pittsburgh Press.
Shanghai Huzhong Certified Public Accountant Co. (2018). *The self-balancing evaluation report of land reserve bond in Pudong district in* 2018.
Shen, J., & Wu, F. (2020). Paving the way to growth: Transit-oriented development as a financing instrument for Shanghai's post-suburbanization. *Urban Geography*, *41*(7), 1010–1032. https://doi.org/10.1080/02723638.2019.1630209
Shih, M., & de Laurentis, C. (2022). Social governance for value creation: State-led land assembly, the property mind, and speculative urbanism in Taiwan. *Urban Geography*, *43*(5), 784–792. https://doi.org/10.1080/02723638.2022.2054582
State Council. (2014). No.43 Document on strengthening the management of local government debts. http://www.gov.cn/zhengce/content/2014-10/02/content_9111.htm.
Stirling, P., Gallent, N., & Purves, A. (2023). The assetisation of housing: A macroeconomic resource. *European Urban and Regional Studies*, *30*(1), 15–35. https://doi.org/10.1177/09697764221082621
Tao, R., Su, F., Liu, M., & Cao, G. (2010). Land leasing and local public finance in China's regional development: Evidence from prefecture-level cities. *Urban Studies*, *47*(10), 2217–2236. https://doi.org/10.1177/0042098009357961
Theurillat, T., Lenzer Jr, J. H., & Zhan, H. (2016). The increasing financialization of China's urbanization. *Issues & Studies*, *52*(04), 1640002. https://doi.org/10.1142/S1013251116400026
Tsui, K. Y. (2011). China's infrastructure investment boom and local debt crisis. *Eurasian Geography and Economics*, *52*(5), 686–711. https://doi.org/10.2747/1539-7216.52.5.686
Ward, C., & Swyngedouw, E. (2018). Neoliberalisation from the ground up: Insurgent capital, regional struggle, and the assetisation of land. *Antipode*, *50*(4), 1077–1097. https://doi.org/10.1111/anti.12387
Weber, R. (2010). Selling city futures: The financialization of urban redevelopment policy. *Economic Geography*, *86*(3), 251–274. https://doi.org/10.1111/j.1944-8287.2010.01077.x
Weber, R. (2021). Embedding futurity in urban governance: Redevelopment schemes and the time value of money. *Environment and Planning A: Economy and Space*, *53*(3), 503–524. https://doi.org/10.1177/0308518X20936686
Whiteside, H. (2019). The state's estate: Devaluing and revaluing 'surplus' public land in Canada. *Environment and Planning A: Economy and Space*, *51*(2), 505–526. https://doi.org/10.1177/0308518X17723631
Whiteside, H. (2023). State and collective ownership : Thwarting and enabling financialization ? *Urban Geography*, *44*(2), 326–336. https://doi.org/10.1080/02723638.2021.1986973

Wong, C. P. W. (2013). Paying for urbanization in China. In Roy W. Bahl, Johannes F. Linn, & Deborah L. Wetzel (Eds.), *Financing metropolitan governments in developing countries* (pp. 273–308). Lincoln Institute of Land Policy.

Wu, F. (2022). Land financialisation and the financing of urban development in China. *Land Use Policy*, *112*, 104412. https://doi.org/10.1016/j.landusepol.2019.104412

Wu, F. (2023). The long shadow of the state: Financializing the Chinese city. *Urban Geography*, *44*(1), 37–58. https://doi.org/10.1080/02723638.2021.1959779

Wu, F., Chen, J., Pan, F., Gallent, N., & Zhang, F. (2020). Assetization: The Chinese path to housing financialization. *Annals of the American Association of Geographers*, *110*(5), 1483–1499. https://doi.org/10.1080/24694452.2020.1715195

Yeh, A. G. O., & Wu, F. (1996). The new land development process and urban development in Chinese cities. *International Journal of Urban and Regional Research*, *20*(2), 330–353. https://doi.org/10.1111/j.1468-2427.1996.tb00319.x

Zhang, Y. (2018). Grabbing land for equitable development? Reengineering land dispossession through securitising land development rights in Chongqing. *Antipode*, *50*(4), 1120–1140. https://doi.org/10.1111/anti.12390