Rights Allocation: Land-Use Control Innovations for Fostering the Development of New Quality Productive Forces

Authors

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Abstract

The development of new quality productive forces has introduced a new spatiotemporal logic into urban development. Rising demand for mixed land use and spatial flexibility increasingly challenges the traditional land-use control system characterized by single function and fixed tenure. Local governments have therefore pursued a range of institutional innovations, yet practice still faces complex implementation chains, weak enforceability and limited market response. The underlying reason is that these innovations have already touched the restructuring of spatial rights, while policy and research still lack a systematic understanding of the logic of rights allocation. From a rights-allocation perspective, this paper first traces how traditional land-use control assigns real rights, and then analyzes three widely explored policy instruments - mixed land use, flexible tenure and lease-before-transfer, and industrial supervision agreements - showing how they add interactive negotiation and creditor-right arrangements onto real rights. These instruments improve the flexibility and precision of land-use control, but they also produce incomplete property rights and new institutional tensions. Through multi-case empirical analysis in Shanghai, the paper verifies the new spatiotemporal logic of new quality productive forces and reveals the real existence of these tensions. It then proposes five directions for policy optimization: classified registration of spatial rights, a progressive real-rights system, tiered disclosure and market-based exit mechanisms for industrial supervision agreements, a flexible joint-review mechanism combining comprehensive standard land with integrated project coordination, and procedural separation of government roles.

Keywords

new quality productive forces; land-use control; spatiotemporal logic; rights allocation; institutional tension; incomplete property rights

Introduction

New quality productive forces are driven by innovation and generated through revolutionary technological breakthroughs, innovative allocation of production factors and deep industrial transformation and upgrading [Note 1]. Innovation activities now display a new spatiotemporal logic. Temporally, rapid technological iteration shortens product and enterprise life cycles, requiring land use to change more frequently [Note 2]. Spatially, the integration of multiple functions is becoming stronger. Traditional land-use control, built around single use and fixed tenure, is therefore being challenged by new spatial and temporal demands.

In response, cities such as Beijing, Shanghai and Guangzhou have recently issued intensive land-use control innovation policies [Note 3]. These policies mainly emphasize three directions: mixed land use, flexible tenure and lease-before-transfer, and industrial supervision agreements. Yet practice has exposed persistent problems. New industrial land with mixed uses may generate planning disorder and regulatory failure [1-4]. Lease-before-transfer policies face unstable enterprise investment expectations [5]. Industrial supervision agreements are constrained by disputes over their legal nature and by the practical difficulty of disposing of non-compliant enterprise land [6-7].

From a rights perspective, these problems are not simply technical defects in policy design. They arise from structural contradictions in governance. The three policy instruments all intervene in the original static real-rights arrangement. Mixed land use shifts the content of real rights from static locking to dynamic negotiation. Flexible tenure, lease-before-transfer and industrial supervision agreements attach creditor-right obligations, such as industrial direction and output level, to real rights. However, both research and policy making have paid insufficient attention to the proposition that land-use control innovation is essentially a reallocation of rights. As a result, current policies often follow a supply-demand matching logic. Although they introduce new governance tools to respond to new needs, they also release many unexpected institutional tensions and generate the difficulties described above.

In this paper, institutional tension refers to the structural contradiction that emerges when land-use innovation policies increase regulatory flexibility while creating new constraints and uncertainties for government governance and market expectations. The paper therefore introduces a rights-allocation analytical framework to re-examine the rights logic of land-use control innovation: how traditional land-use control assigns static real rights; how the three innovation policies intervene in that assignment; and how such intervention produces three forms of incomplete property rights - ambiguous, transitional and constrained property rights - thereby generating institutional tension. On this basis, the paper draws on in-depth fieldwork with enterprises, local governments and development platforms in Shanghai to verify the practical expression of these tensions, and proposes policy optimization suggestions oriented toward resolving them. The aim is to provide theoretical grounding and policy reference for land-use control innovations suited to the development of new quality productive forces.

1 Existing Research Progress and Gaps

1.1 Spatial Demand Characteristics and Governance Principles of Innovation Are Broadly Recognized

Classical innovation geography has clearly revealed the internal relationship between innovation output and spatial characteristics. Innovation-district theory shows that multi-functional integration is a key spatial condition for stimulating innovation [8]. Creative-class theory further reveals the strong preference of innovative actors for diverse, inclusive and functionally mixed urban spaces [9]. Cases such as Silicon Alley show that innovation activities have clear temporal flexibility: space evolves rapidly with technological iteration and cannot easily be anticipated or satisfied by long-cycle static spatial supply [10].

Chinese scholarship has formed a relatively clear consensus on the spatial needs of new quality productive forces. Studies generally argue that source innovation is highly uncertain, while technological innovation requires deep integration among knowledge, capital and markets. Spatially, this requires strong functional combination among research and development, pilot testing, production and services. Temporally, it is expressed in shorter enterprise life cycles and rapid iteration of spatial demand. Together, these features create the core requirements of industrial space for new quality productive forces: highly integrated mixed space is needed, while long-cycle and fixed-use supply models are hard to adapt. If planning relies on a priori methods, it often struggles to match dynamically evolving technologies and market needs [11-13]. Consequently, spatial governance principles such as layered governance, precise supply, functional mixing and flexible land supply have become broadly accepted in the literature [14-16].

1.2 Land-Use Control Research from a Rights Perspective Remains Unsystematic

At the policy-research level, cities have proposed many innovations around the spatial needs of new quality productive forces and have gradually focused on three core policy tools: mixed land-use policies responding to demand for spatial integration; flexible tenure and lease-before-transfer policies responding to rapid temporal iteration; and industrial supervision agreements supporting life-cycle management [17-19]. Existing research, however, tends to view these policy innovations through supply-demand matching. It pays less attention to the fact that such policies are, in essence, adjustments to spatial rights [20] and a reconstruction of traditional real-rights assignment.

Research on spatial rights is also fragmented. In legal theory, spatial rights were identified relatively early as a new type of property right [21] and, within the real-rights system, as a typical usufructuary right based on public ownership of land [22]. In rural land studies, some scholars have begun to discuss the theoretical logic through which farmland property-rights reform can support agricultural new quality productive forces [23]. In the field of urban construction land, however, research examining industrial land-use control from a rights perspective remains relatively sparse. Some studies have noted the relationship between insufficient market incentives under lease-before-transfer and restrictions on construction-land rights [24], and the institutional tension between creditor-right constraints in industrial supervision agreements and the real-right protection of land-use rights [25]. Yet these works have not analyzed the internal logic of land-use control from the perspective of rights allocation. This gap is the entry point and core contribution of this paper.

2 Land-Use Control Innovation: From Static Real-Rights Assignment to Dynamic Rights Allocation

The concept of rights allocation is proposed because rights and interests better describe current land-use governance than the narrower concept of real rights. Real rights are a strict legal concept emphasizing direct control over and exclusivity in a specific object. Rights and interests are more comprehensive: they include legally protected rights, interests and related economic benefits, and are better suited to government scenarios in which legitimate interests in a specific field are dynamically regulated. Compared with one-off real-rights assignment, rights allocation better captures the changing role of government in current land-use control innovation. Real-rights assignment is a one-time authorization, whereas rights allocation is a continuous and innovative structural arrangement of a bundle of rights.

Accordingly, this paper defines rights and interests as a rights system based on ownership, centered on usufructuary rights and extended to various derivative interests. Its content is grounded in real rights, while its scope is dynamically adjusted according to public governance goals. It covers the full powers of real rights and extends to development rights and capitalizable benefits granted or limited by public policy. This definition is consistent with the institutional goals set out in the guidance on reforming the property-rights system for natural-resource assets: clear attribution, explicit rights and responsibilities, and strict protection correspond to the static rights foundation, while smooth circulation and effective regulation correspond to dynamic rights governance.

Land-use control innovation that supports new quality productive forces is therefore, in essence, a progression from static real-rights assignment to dynamic rights allocation. The three innovation policies promote this transition in different ways. Mixed land use shifts land use from single-use static locking to multi-use dynamic negotiation. Flexible tenure and industrial supervision agreements add continuing

creditor-right governance onto real-right assignment. Land-use control thus evolves from single static assignment of real rights toward dynamic rights allocation (Figure 1).

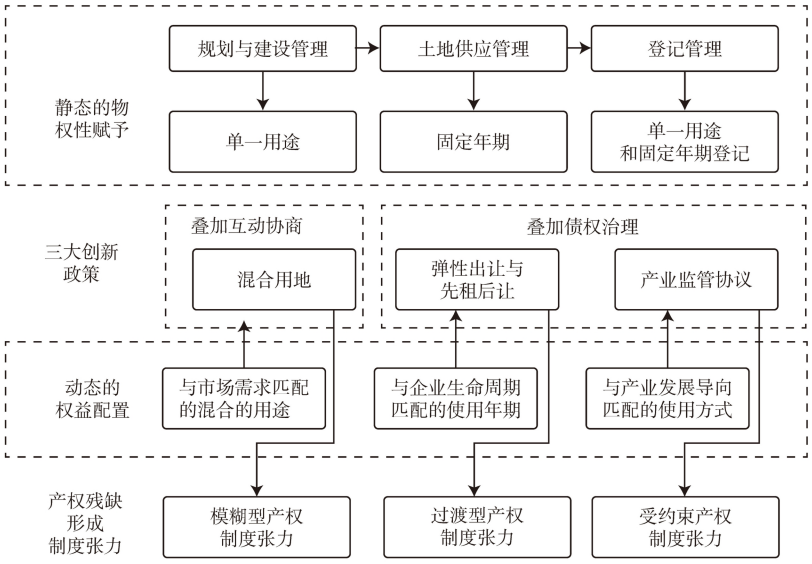

Figure 1. Analytical framework: from static real-rights assignment to dynamic rights allocation

2.1 Traditional Land-Use Control: Static Assignment of Real Rights

The traditional land-use control system is an institutional system centered on usufructuary rights. Through four core links, it creates a one-off static assignment of real rights (Figure 2).

First, planning conditions preset the content of real rights. Based on detailed planning and land-use classification, the content of real rights is established before land supply. Fine-grained land-use categories define the boundary of use powers, while development intensity determines the upper limit of spatial powers.

Second, land supply determines right holders and core elements. Based on land-use type, land-use rights are assigned through allocation or bidding, auction and listing procedures, which determine the user, tenure and use. The traditional supply system grants long-term real rights of 40, 50 or 70 years according to land-use type, and these rights are no longer adjusted once determined.

Third, construction management locks in the content of real rights. Technical review in architecture, fire safety and environmental protection constrains specific use powers. Parameters such as building setback and height control implement the spatial boundaries of neighboring rights and easements, completing the final spatial locking of real-right content.

Fourth, registration management completes public notice of real rights. Registration gives real rights formal legal effect and turns them into asset rights that can be traded and financed. At this point, the content, subject, time and legal effect of real rights are mutually locked, forming a complete closed loop of static real-rights assignment (Figure 2).

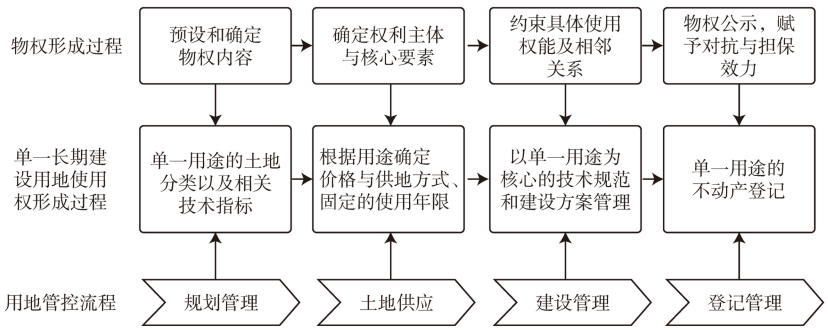

Figure 2. Property-rights assignment processes in the traditional land-use control system

2.2 Land-Use Control Innovation: Toward Dynamic Rights Allocation

The traditional land-use control system was institutionally efficient during rapid industrialization, but its internal static character increasingly becomes a structural constraint under the spatiotemporal logic of new quality productive forces. The purpose of the three regulatory innovations is precisely to overcome this constraint through more flexible and precise policy tools.

Mixed land use breaks the logic of administrative presetting and single content, decomposing rights spatially and generating them through negotiation. Mixed land use has two modes. The first is single-use compatibility: within one land-use category, a certain share of other functions is allowed. The second is a mixed mode that does not preset a functional ratio, but determines the functional composition according to the actual needs of the construction project, represented in Shanghai by M0 land and Z-class land. In the latter mode, government transfers part of the decision-making power over functional composition to land users. The content of real rights is no longer unilaterally locked by administrative presetting, but is dynamically generated through negotiation. Mixed land use thus creates institutional conditions for integrating R&D, manufacturing and services on the same site.

Flexible tenure and lease-before-transfer introduce continuing rights governance in the temporal dimension. They add creditor-right governance over time and link the acquisition of full real rights with enterprise operating performance. Under a lease-before-transfer policy, for example, during the lease period, generally five years, the user obtains contractual use rights at a price far below direct land purchase and must continue to fulfill operating obligations. After agreed performance conditions are met, the creditor-right relationship may be transformed into full real rights. Flexible tenure and lease-before-transfer greatly reduce the initial cost of land access, allow start-up enterprises to invest more capital in production activities and help avoid idle land caused by business failure.

Industrial supervision agreements impose continuing constraints in the content dimension. They add creditor-right obligations onto assigned real rights and specify, through contract, performance indicators such as industrial type, investment intensity and output benefits. These obligations become continuing conditions for the full exercise of real rights. The acquisition of real rights is no longer the endpoint of the rights relationship, but the starting point of creditor-right governance. Government uses the agreement to supervise enterprise production activities across the full life cycle. This mechanism improves both the industrial precision and the utilization efficiency of land use.

2.3 Institutional Tensions Generated by Innovation

The above three policy innovations intervene in the original static assignment of real rights and respond to the real needs of new quality productive forces. Yet within this composite rights structure, the static

and stable requirements of real rights are continuously dissolved by the relativity and dynamism of creditor rights. In the spatial, temporal and content dimensions, different types of incomplete property rights emerge, producing new institutional tensions.

Mixed land use generates ambiguous incomplete property rights. The current real-estate registration system cannot precisely record the physical boundaries of different functions in space. A register can note multiple functions, but it cannot identify which space corresponds to which function or which disposal rules apply. This creates ambiguous incomplete property rights. During initial development the problem is not prominent, but once secondary development and transfer begin, assignees cannot easily judge asset value or dispose of assets legally, and mortgage financing is also constrained. The state of being unclear in registration and incomplete in rights systematically suppresses the transfer efficiency and financing function of mixed land.

Flexible tenure and lease-before-transfer generate transitional incomplete property rights. During the lease stage, the user holds conditional and revocable transitional rights. For example, Beijing's Urban Renewal Regulations state that leased state-owned construction land may be registered according to law, while Beijing's guidance on lease-before-transfer for industrial land stipulates that if assessment is not passed, the competent department may legally recover the land-use right and cancel registration. Under such rules, enterprise market performance, capital-market conditions, adjustments to administrative assessment indicators and changes in policy goals may all reduce real-right expectations to zero. Lower expectations of property-right stability directly suppress the willingness to make long-term investments, creating an institutional paradox between the policy intention of encouraging industrial development and the policy consequence of inhibiting long-term investment.

Industrial supervision agreements generate constrained incomplete property rights. These agreements set continuing performance obligations as boundary conditions for the full exercise of real rights, but face three practical difficulties in property-rights governance. First, the transaction cost of recovering land is high, breach disposal is difficult to execute and the substantive binding force of the agreement is weakened. Second, using a supervision agreement as the basis for recovering land whose output fails to meet standards means that a creditor-right performance problem triggers the extinction of real rights; this still lacks clear legal grounds under the current Civil Code framework. Third, creditor-right obligations are attached to real rights during transfer, but effective public disclosure mechanisms are lacking. Third-party assignees therefore cannot fully understand the creditor-right burdens attached to the real rights, and market transfer efficiency is constrained.

These tensions point to two deeper issues. First, incomplete property rights systematically increase transaction costs. New institutional economists such as Coase and Barzel show that incomplete property rights inevitably raise transaction costs and reduce resource-allocation efficiency [26-27]. During initial real-right assignment, negotiation over mixed uses, performance indicators and agreement clauses greatly increases bargaining costs. During secondary governance of stock land, spatial ambiguity, temporal instability and creditor-right uncertainty compound one another and cause redevelopment transaction costs to rise sharply. Innovation increases allocation flexibility, but also raises the operating cost of the land-use control system as a whole.

Second, government faces role conflict because it enters the same rights relationship in two identities. As an administrative actor, it uses public power to impose unilateral constraints on land-use right holders. As a contractual counterparty, it forms contractual obligations with users through creditor-right

relations. The overlap creates deep conflict. Market actors worry that administrative power may override contract, while government is caught between strict contract enforcement and preventing enterprise loss. The public credibility of contractual governance is therefore difficult to sustain.

These institutional tensions do not invalidate innovation. Instead, they define the core issue for the next stage of reform: how to maintain the precision and flexibility of rights allocation while stabilizing expectations over real rights and controlling transaction costs. This is the key to making land-use control institutions more mature.

3 Empirical Research: Changes in Spatiotemporal Logic and Institutional Tensions

3.1 Research Design

Shanghai is selected as the empirical setting. The study focuses on four major industries that Shanghai prioritizes for developing new quality productive forces: biomedicine, integrated circuits, artificial intelligence and cultural creativity. At the same time, following Kotkin's argument that innovation occurs through different mechanisms in inner-city, midopolis and outer-suburban areas [28], the study selects three spatial scenarios: the central-city core, the central-city fringe and the outer suburban area (Figure 3). To understand information from different stakeholders in the development of new quality productive forces, the research conducted in-depth interviews and field investigations with enterprises, local governments, development platforms and management departments (Table 1). It systematically identifies new spatiotemporal demands and then uses multi-case analysis to examine policy effects and institutional tensions.

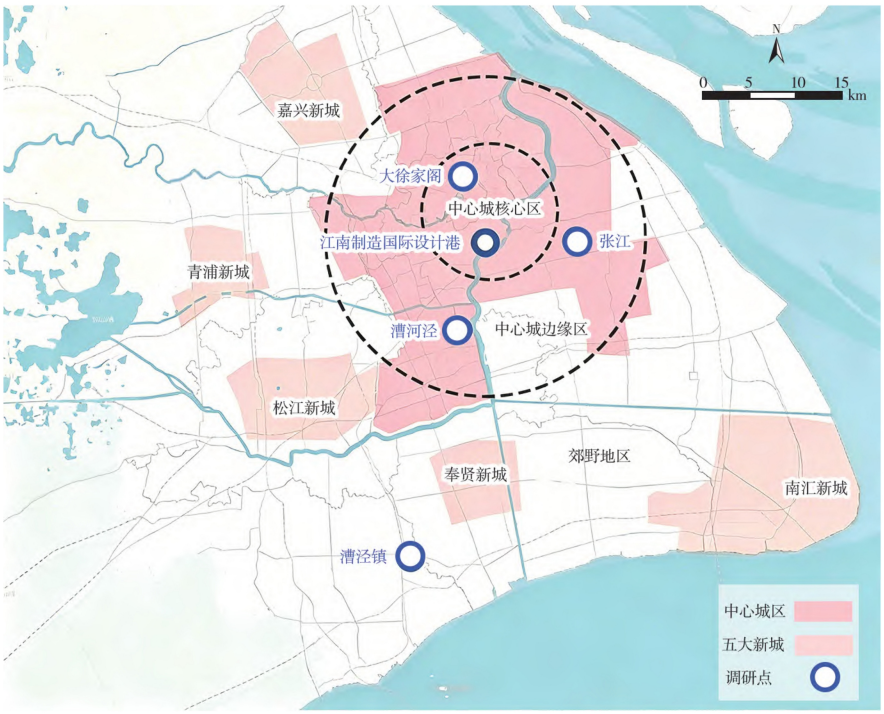

Figure 3. Spatial distribution of empirical cases

Table 1. Study areas and survey samples

Study Area	Spatial Type	Leading Industries	Survey and Interview Subjects

Daning	Central-city core	Cultural creativity	Jing'an District Culture and Tourism Bureau; Shanghai Press and Printing Co.; Hero Esports
Jiangnan International Design Port	Central-city core	Cultural creativity	Design and fashion enterprises; park operation platform
Caohejing	Central-city fringe	Integrated circuits and artificial intelligence	Caohejing Development Corporation; Caohejing Emerging Technology Development Zone Science and Technology Entrepreneurship Center; Mosu Space; Jinyu Intelligence; Yangmi Information
Zhangjiang	Central-city fringe	Integrated circuits and biomedicine	Zhangjiang Science City Construction Office; Zhangjiang Hi-Tech; Ruixin Electronics; Lingdong Micro; Shanghai Lanfan; Hengrui Technology
Caojing Town	Outer suburban area	Digital nomads and modern agriculture	Caojing Town People's Government; Shuiku Village Committee; Caojing Town Tourism Development Co.; Caiyu Technology; Yuanxiang Yingke

3.2 Changes in the Spatiotemporal Logic of New Quality Productive Forces

In the spatial dimension, development is moving from single-function zoning toward mixed spatial integration. Two typical demands for spatial mixing were identified. The first is the need of large enterprises for integrated compound space. Biomedicine enterprises, for example, expect R&D, pilot testing, production and supporting functions to be physically proximate and seamlessly connected, so that R&D and production personnel can interact frequently, experimental data and production processes can feed back immediately, and pilot results can be rapidly transformed into mass production. The second is demand for vertical mixing in high-density urban areas. Enterprises and platform

companies reported that, given high land values and floor-area requirements in dense urban areas, placing different functions on different floors - such as display and sales on lower floors, production and R&D on middle floors, and supporting services on upper floors - can stimulate interactions among functions and make effective use of the value of different floor levels.

In the temporal dimension, land-use demand is moving from long-cycle static locking toward short-cycle dynamic flexibility. Interviewed enterprises and platforms generally noted that rapid technological iteration requires production spaces to be reorganized quickly to meet the needs of different products and enterprises. Some enterprises emphasized that their demand for spatial assets changes as they move through development stages: start-ups need low-cost spaces with rich public support; growing enterprises need stable self-held spaces; mature enterprises need spaces that can be securitized and divided to organize capital and supply chains. The traditional land-use control system has difficulty adapting to the different spatial needs of enterprises at different life-cycle stages.

3.3 Case Analysis of Three Institutional Tensions

The first tension is the ambiguous incomplete property-rights dilemma produced by mixed land use. Enterprise L, a well-known leading domestic biomedicine enterprise, uses the mixed land-use mode described above, without a preset functional ratio. After construction, R&D land accounts for 51% and industrial land for 49%. The project places production, management services, R&D and life-service functions in four buildings on the same plot, and connects them as an integrated whole (Figure 4). The design enables high-frequency interaction between production and R&D, nearby rest support for production workers on three shifts, spatial support for internal and external communication services, and incubation of external small enterprises by a leading firm. Building indicators such as floor height, environmental protection and load bearing also consider possible changes in industrial type and production lines.

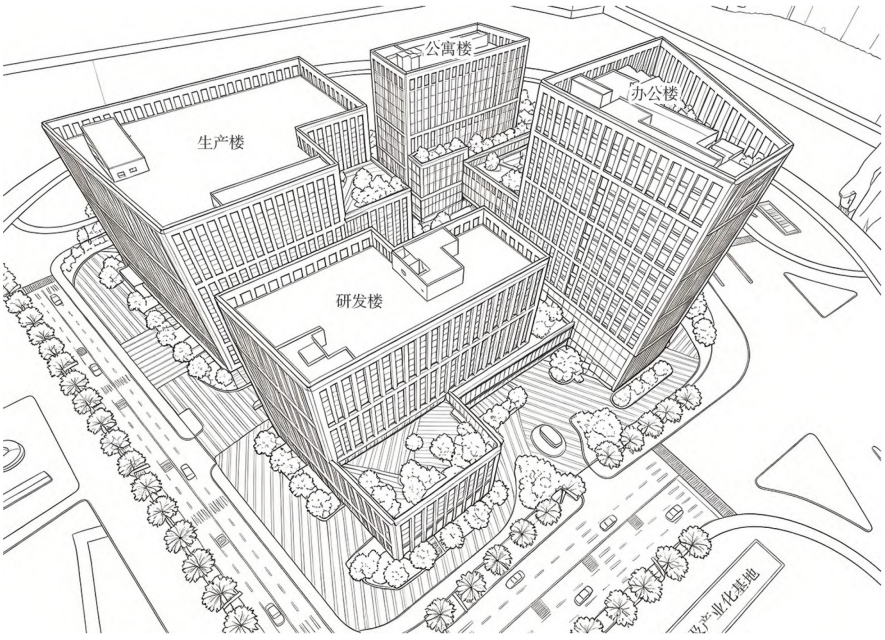

Figure 4. The site of enterprise L comprising four functionally distinct yet integrated buildings

In spatial form, mixed land-use policy effectively responded to the needs of Project L, but this project remains one of only a few successful cases in Shanghai. Enterprise interviews show that because

different land-use types have different prices and buildings with different functions follow different technical standards, the project underwent a long and difficult coordination process in approval, with high time costs. Although current construction outcomes are satisfactory, the enterprise remains worried about the future. One interviewee noted that market conditions change quickly: a project may face one situation when approved and a completely different one five years later. When enterprises encounter difficulties, they hope policy will provide room for adjustment, allowing assets to be financed and realized. If a subsidiary needs independent listing, it needs independent assets, yet the current large-certificate model cannot package a single building into a subsidiary's assets.

This demand reveals the institutional dilemma of mixed land-use policy. Mixed land use creates spatially ambiguous real rights. First, because the spatial division of property rights is ambiguous, even though Shanghai supports leading enterprises in subdividing and transferring part of their property rights, operation remains complex and uncertain. Second, mortgage financing of mixed-use plots faces valuation difficulties: C6 land and M1 land correspond to different benchmark land prices, so financial institutions find it difficult to price the mortgage value of a mixed property certificate accurately. Third, when an enterprise's operating conditions change and it needs to dispose of part of its assets, the large-certificate model makes partial disposal legally inoperable, compressing asset liquidity.

The second tension is the transitional incomplete property-rights dilemma caused by lease-before-transfer and flexible tenure. Fieldwork found that after the issuance of flexible-tenure and lease-before-transfer policies, actual implementation cases remained limited. A local government department explained that there are few lease-before-transfer cases: one enterprise is under long-term leasing without transfer, and the lease period is being continuously adjusted. Enterprises worry that if they fail assessment after the lease expires, they will not obtain the land; government also worries that if it does not grant land, enterprises will leave.

This statement reveals the institutional tension of lease-before-transfer. The system can indeed greatly reduce the initial cost for enterprises to acquire land, but subsequent instability in property-right expectations creates concerns for both enterprises and government. For enterprises, expectations of unstable real rights inhibit long-term investment. For government, the risk of losing enterprises makes it reluctant to enforce the policy strictly. The actual effectiveness of the policy tool therefore diverges from the original policy intention.

The third tension is the constrained incomplete property-rights dilemma caused by industrial supervision agreements. Interviewed enterprises, local governments and park platforms expressed concerns from different perspectives. Enterprise H stated that it was worried about supervision agreements because no one can predict future operating conditions. In fact, assessment standards have already become difficult to maintain under economic downturn. Earlier standards were high - tax revenue per mu could reach 400,000 yuan or more, with Zhangjiang regarded as one of the highest in China - but current market conditions have led to downward adjustments. Interviewees also noted that management and operation of post-construction output and commissioning are weak; in many cases land-use conditions cannot be fully supervised according to the contract.

Handling non-compliant enterprises is also difficult. One interviewee explained that the best scenario for recovering land from a non-compliant enterprise is to find another enterprise to take over, with government acting as a platform. At present, however, neither government nor state-owned enterprises have the capacity to recover such land. Previous transfer attempts failed. Later, a parcel was transferred

to government for use as an innovation platform, but operational forms were difficult unless government provided some preferential policies. Another case involved land purchased by an Indian enterprise within a park. For various reasons it has not been recovered. Government believes recovery can proceed under land-management regulations and contract requirements, but supporting policies are lacking, and the refund amount and whether interest should be included remain difficult to determine. Park management departments must both attract investment at the front end and monitor whether existing enterprises meet targets at the back end. They lack practical tools for penalizing non-compliant enterprises and worry that penalties will undermine enterprise retention.

These difficulties have multiple causes. First, government's dual identity creates role conflict. As a contractual counterparty, government has an obligation to enforce industrial supervision agreements according to contract. As an administrative actor, it also bears responsibility for maintaining enterprise stability in its jurisdiction. When enterprise output falls short, these two identities directly conflict: enforcing the agreement may drive out the enterprise, but abandoning enforcement means regulatory failure. Second, there is an inherent tension between the creditor-right constraints of industrial supervision agreements and the opposability of real rights. Land-use right holders enjoy full legal protection of real rights; industrial supervision agreements struggle to break through that protection. Without an effective market successor, government's capacity to recover land is strictly constrained both fiscally and legally, making exit mechanisms agreed in contracts difficult to operate.

4 Policy Optimization Recommendations for Land-Use Control Based on Rights Allocation

A composite rights structure that uses real rights to provide stable expectations and creditor rights to achieve precise governance is the right direction for adapting to the spatiotemporal logic of new quality productive forces. Yet this structure is not yet mature in current practice. Policy optimization should therefore follow three goals. First, reduce incomplete property rights, lower ambiguity and transitionality in rights, and establish clear disclosure mechanisms for creditor-right constraints attached to real rights. Second, control transaction costs and prevent institutional refinement from sharply increasing costs. Third, rationalize government governance structures and reduce role conflicts in rights allocation.

4.1 Establish Classified Spatial Rights Registration and Differentiate Three-Dimensional Confirmation

The three-dimensional spatial rights registration system should be improved. Priority should be given to scenarios where functional boundaries are relatively clear, transaction demand is strong and subdivision will not significantly damage the overall value of space. For industrial spaces where functions are highly coupled, business formats are closely linked and overall value depends on coordinated use, real-right units should not be over-divided merely for the sake of finer property-right definition. Otherwise, overall asset value may be damaged, spatial organization may become fragmented and planning order may be disrupted.

For such strongly mixed and composite spaces, flexible rights confirmation can be explored under clear overall rules, functional boundaries and rights proportions. Functional conversion among buildings or layered spaces may be allowed when planning and use-control requirements are met, supported by simplified and dynamic change-registration mechanisms. At the same time, flexible allocation of spatial rights can first be realized through creditor-right governance tools such as leasing, revenue distribution and internal agreement management, reducing dependence on excessive subdivision of real-right units. On this basis, a layered and classified pricing mechanism supported by three-dimensional rights

confirmation can be explored. Such a mechanism can combine benchmark land price with floor location, spatial function, possibility of use conversion, development intensity and degree of coordinated use to form differentiated pricing. It can also provide a basis for subsequent rights transactions, revenue distribution, financing valuation and dynamic adjustment.

4.2 Establish a Progressive Real-Rights System and Optimize Flexible-Tenure Policy through Intermediate Rights

The core defect of lease-before-transfer policy lies in designing the acquisition of real rights as a binary jump from creditor rights to full real rights. During economic downturn, this creates strong uncertainty over property-right expectations. A progressive real-rights system should therefore be explored. Between leasing and full transfer, smoother intermediate rights arrangements can be created to gradually strengthen enterprises' expectations of property-right stability.

For example, land-revenue payment mechanisms linked to operating duration, investment intensity and performance assessment may be explored. Enterprises would gradually accumulate stable rights in land through continuous operation and stable performance, rather than remaining for long periods in a state where rights may return to zero when the lease expires. Compared with the existing models of one-time full property-right assignment or pure leasing, such arrangements better smooth the changing spatial needs of innovative enterprises from start-up to growth and maturity. Different rhythms of rights accumulation can also be designed according to enterprise life cycles. For start-ups, the emphasis should be on lowering entry costs and improving spatial adaptability. For growing enterprises, property-right stability should be gradually strengthened to support medium- and long-term investment and financing. For declining or transforming enterprises, use adjustment, revenue compensation and exit mechanisms can guide orderly reallocation of spatial resources.

4.3 Establish Tiered Disclosure and Market-Based Exit Mechanisms for Industrial Supervision Agreements

Shanghai's 2025 guidance on supporting industrial economic development and strengthening the guarantee of planning and resource factors stipulates that when the use right of industrial land is transferred, the rights and obligations recorded in the compensated-use contract and the industrial development cooperation agreement are transferred accordingly. This shows that Shanghai has begun to institutionalize attention to the succession effect of industrial supervision agreements in land transfer. Along this policy path, the tiered disclosure mechanism and market-based exit route of industrial supervision agreements can be refined.

Basic contents of industrial supervision agreements, such as industrial type and transfer requirements, can be entered into the real-estate register or noted on the certificate. Specific performance indicators and assessment calibers can be carried through agreement filing and supplementary agreements. At the same time, because external factors such as macroeconomic changes, industrial-cycle fluctuations, supply-chain restructuring and major policy adjustments may substantially affect enterprise performance capacity and operating expectations, necessary flexible clauses should be included in industrial supervision agreements to reduce market actors' concerns about excessive constraints. For exit mechanisms, a specialized industrial-land asset-management platform can be established. Such a platform can take over parcels that fail to meet standards over the long term and, together with a land-revenue mechanism, establish rules for price discounts and benefit distribution, thereby improving the efficiency of reallocating inefficient land.

4.4 Build a Flexible Joint-Review Mechanism Combining Comprehensive Standard Land with Integrated Project Coordination

In reforming flexible planning conditions, a layered implementation mechanism should be built with comprehensive standard land as the preferred route and integrated project coordination as a fallback. For most routine flexibility needs, such as use compatibility within a certain scope, adjustment of supporting-function ratios and selection among tenure grades, planning, land and industrial authorities can preset standardized menus of flexible conditions and establish corresponding linked pricing rules. Market actors can then choose directly within clear boundaries, reducing negotiation costs.

For complex innovation projects with high functional coupling, obvious cross-department conflicts and needs that existing standards cannot cover, an integrated project-coordination mechanism is necessary. Based on a specific construction proposal, land supply, planning, construction and registration can be coordinated in an integrated way. This can prevent fragmented administrative authority from obstructing the implementation of innovative spatial-allocation schemes, while converting negotiation costs dispersed across multiple approval links into one concentrated coordination cost at the early stage. It thereby improves the connection efficiency of the overall institutional chain.

4.5 Promote Procedural Separation of Government Roles

Government roles in land-use control procedures should be separated to reduce role conflicts. Around key links such as policy making, performance identification, agreement enforcement and asset disposal, relatively separated procedural mechanisms can be established. Government should mainly undertake macro-management, rule making and standard setting. Relatively independent evaluation mechanisms can take responsibility for performance identification. Specialized platforms or professional actors can take over subsequent asset succession and disposal. Without significantly increasing organizational costs, this can reduce the degree to which government occupies overlapping roles in the same matter and improve the credibility and stability of institutional implementation.

Fieldwork shows that one local government in Shanghai has already invited third-party institutions to assist in supervising building functions, with a focus on preventing unauthorized use and inefficient land use. This confirms the operational feasibility of such measures.

5 Conclusions and Discussion

5.1 Main Conclusions

This paper introduces a rights-allocation perspective to analyze land-use control and its innovation policies, and conducts empirical research. Four main conclusions are reached.

First, the development of new quality productive forces shows a new spatiotemporal logic of mixed spatial functions and flexible temporal conversion. This change fundamentally challenges the traditional land-use control system based on single use and fixed tenure. In practice, land-use control innovation in many places still faces complex implementation chains, insufficient enforcement and weak market response. The root cause is that policy innovation has already touched the restructuring of spatial rights, while research and practice still lack systematic understanding of the underlying logic of rights allocation.

Second, traditional land-use control is essentially a static assignment of real rights. Innovative policies such as mixed land use, flexible tenure and lease-before-transfer, and industrial supervision agreements break the constraints of traditional static real rights by adding interactive negotiation and creditor-right governance. They build a dynamic rights-allocation pathway and improve the flexibility and precision of control, but they also create differentiated forms of incomplete property rights. Mixed land use

produces ambiguous incomplete property rights, flexible tenure and lease-before-transfer generate transitional incomplete property rights, and industrial supervision agreements cause constrained incomplete property rights. These incomplete rights in turn produce new institutional tensions.

Third, these institutional tensions are not abstract deductions. They are concentrated in two deeper problems: a systematic rise in transaction costs and role conflict caused by government's dual identity. The empirical analysis of Shanghai verifies both the new spatiotemporal logic of new quality productive forces and the real existence of institutional tensions. These tensions have become important constraints on enterprise investment expectations, spatial-asset circulation, agreement performance efficiency and government governance capacity.

Fourth, future optimization of land-use control policies should take rights allocation as the core orientation. Real rights should provide stable expectations, while creditor rights should assist precise governance. Policies should reduce ambiguity and transitionality in rights, prevent excessive transaction costs caused by institutional refinement, and ease government role conflicts in rights allocation.

5.2 Contributions, Limitations and Prospects

The study makes three contributions. First, it moves beyond surface analyses that focus on spatial supply-demand matching or policy-tool innovation and advances land-use control for new quality productive forces to the deeper institutional level of rights allocation. This provides a new theoretical perspective for understanding the essence of land-use control innovation. Second, it constructs a unified analytical framework from the perspective of rights allocation. This framework connects the static real-rights logic of traditional land-use control with the dynamic rights-adjustment logic of policy innovation, and brings mixed land use, flexible tenure and industrial supervision agreements into one system. It strengthens the systematic explanation of institutional tension and provides methodological support for using property-rights theory to analyze policy problems and identify optimization directions. Third, the multi-case analysis of Shanghai reveals real friction and constraints in the implementation of institutional innovation. It verifies the applicability of the rights-allocation framework and adds empirical depth to the perspective.

Several limitations remain. First, the cases are concentrated in Shanghai. Differences among cities in institutional environment, industrial foundation and governance capacity may affect the generalizability of the conclusions. In addition, due to practical fieldwork arrangements, the study lacks some spatial types such as R&D space in urban core areas. Future research should use multi-city comparison and multiple spatial types to further test and extend the analytical framework. Second, this paper focuses on applying the rights-allocation perspective, but does not fully develop the theoretical construction path of rights allocation itself. Some policy suggestions may therefore remain directional. Future work can draw on law, economics and related disciplines to deepen the theoretical system of rights allocation. Finally, the policy recommendations proposed here are mainly principled and directional. Detailed institutional design, implementation-process optimization and policy-effect evaluation require further analysis. Quantitative research and simulation can be used to improve the operability and precision of policy recommendations. Rights allocation, as an innovative direction for land-use control, still requires deeper coordinated evolution across all links of the planning management system.

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Notes

[Note 1] The concept of new quality productive forces can be traced to General Secretary Xi Jinping's important speech on September 7, 2023, at a symposium on promoting the comprehensive revitalization of Northeast China in the new era. He noted that new quality productive forces are led by innovation and generated by revolutionary technological breakthroughs, innovative allocation of production factors and deep industrial transformation and upgrading. They take the upgrading of workers, means of labor, objects of labor and their optimized combinations as their basic connotation, and substantial improvement in total factor productivity as their core marker. Innovation is their defining feature, quality is the key and advanced productive forces are their essence. The article "Developing New Quality Productive Forces Is an Intrinsic Requirement and Important Focus for Promoting High-Quality Development" was later published in Qiushi, 2024(11), providing a systematic public elaboration of this argument.

[Note 2] According to the Ministry of Industry and Information Technology's China SME Development Report (2024) and Wu Xiaobo's Corporate Vitality: A Ten-Year Observation of Chinese SMEs (2024), the average life span of Chinese small and medium-sized enterprises is only about 2.5 years, and less than half survive for 10 years.

[Note 3] The authors systematically reviewed land-use control policies in Beijing, Shanghai, Guangzhou, Hangzhou, Shenzhen and Suzhou. Since 2020, departments responsible for planning and natural resources, construction management, economic management, fire safety and environmental protection have issued many policies supporting technological innovation and the development of new quality productive forces.

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