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Land supply structure and urbanisation

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Abstract:

The level and speed of urbanisation in China is mainly constrained by a series of urban-rural dualistic systems, and a reasonable land supply structure can effectively promote industrial agglomeration and high-quality economic development, as well as having an important impact on the spatial expansion of cities, the residential housing market and social stability. Land supply not only affects the speed of urbanisation, but also determines the quality of urbanisation, especially playing a crucial role in improving living conditions and promoting social equity. Future research should focus on interdisciplinary integration and incorporate emerging technologies to better enhance the overall quality of urbanisation.

Keywords: Land supply structure,Urbanisation process,Economic development,Social equity

1. Introduction

Optimising land supply is crucial for enhancing urbanisation quality in China. While prior research has examined its impact on urbanisation speed, the mechanisms affecting urbanisation quality remain underexplored. Urbanisation, also known as urbanisation and metropolis, is a different translation of Urbanization in English. Different scholars have different interpretations of this definition, but basically they agree that urbanisation is a dynamic, non-equilibrium and constantly developing process in which the population and other factors continuously gather from the primary industry in rural areas to the secondary and tertiary industries in cities and towns [1]. It is important to explore the influence mechanism of land supply structure on the quality of urbanisation, and analyse the difference of its role in different stages of urbanisation, in order to provide relevant references for policy makers.

2. Overview of the structure of land supply and the urbanisation process

2.1 Definition and importance of land supply

Land supply, provided by government agencies through policy and planning, significantly influences industrial layout and economic growth as a key production factor. A reasonable land supply structure can optimise resource allocation and promote high-quality economic development. Land supply is closely related to the basic needs of residents such as housing and employment, and reasonable land supply can promote social equity and stability, while unreasonable supply may aggravate the gap between the rich and the poor, leading to the intensification of social conflicts Land use has a direct impact on the ecological environment, and scientific land supply policies can not only protect the ecological environment, but

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also achieve sustainable development, as scholars have pointed out "Accelerating the optimisation and upgrading of industrial structure is an important prerequisite for achieving high-quality development of China's economy [2]."

Table 1 The role of land supply in industrial layout, economic growth, social equity, ecological environment, etc.

serial number	case (law)	City/Region	Land supply impact areas	Specific impacts and outcomes
1	Qianhai Shenzhen-Hong Kong Modern Service Industry Co-operation Zone	Shenzhen subprovincial city in Guangdong, special economic zone close Hong Kong	Industrial layout and economic growth	Reasonable land supply has promoted the development of modern service, finance, science and technology innovation and other industries, attracted a large number of domestic and foreign enterprises, and contributed to the high-quality growth of Shenzhen's economy. Qianhai's GDP has grown at an average annual rate of more than 15 per cent, contributing to the rapid growth of the regional economy.
2	Beijing Urban Renewal Plan	Beijing, capital of People's Republic of China	Housing needs and employment opportunities	Optimising land supply, promoting the redevelopment of ineffective sites, easing the problem of housing tension and providing employment opportunities for the public, especially in the "Old City Renovation" project in the Dongcheng District, which has improved the living conditions of the residents and provided employment opportunities.
3	The problem of uneven land supply in Shanghai	Shanghai	Social equity and the gap between rich and poor	Regional imbalances in land supply have led to excessive differences in real estate prices between the central city and the suburbs, resulting in high-income groups having access to high-quality land resources in the city centre and low-income groups having to choose only remote areas, increasing the gap between the rich and the poor and exacerbating social tensions.
4	Sustainable development of land supply in Hangzhou	Hangzhou subprovincial city and capital of Zhejiang province in southeast China	Ecological environmental protection and sustainable development	Through scientific land planning, Hangzhou retains a large amount of green space and ecological space, and rationally distributes commercial, residential and other functional areas in the Qiantang River New Town project, avoiding over-development, promoting the improvement of regional environmental quality and supporting the green upgrading of industries.

2.2 Characteristics and influences of urbanisation

There is a close relationship between land supply and the process of urbanisation, and land supply directly determines the direction and scale of urban expansion, which in turn affects the overall shape of the city. As an ancient and important factor of production, as well as the carrier of all production and living activities, the way in which land is allocated is crucial to the sustainable and healthy development of a region's economy [3].

Reasonable land supply is crucial to industrial development, providing the necessary space for the construction of industrial parks, supporting industrial agglomeration and promoting economic growth and development. The optimisation of land supply not only promotes the formation of specific industries, but also facilitates the efficient allocation of resources and contributes to the high-quality development of the regional economy. The government, as a land supplier, can achieve the goal of guiding the upgrading of regional industrial structure by adjusting the amount of land supply of different land use properties. In this sense, the marketisation of land factor allocation is lower than that of other factors of production, and has a strong government intervention. This unique land system arrangement in China has played a pivotal role in the rapid development and structural change of China's economy [4]. Land supply is also closely linked to the housing market, which directly affects the living conditions and quality of life of residents, and an adequate and reasonable

land supply can effectively alleviate the housing pressure and improve the living environment of residents. Land supply policy has an important impact on the distribution of resources, which determines how social resources are distributed among different groups, thus affecting the fairness and stability of society.

2.3 The relationship between land supply and urbanisation

Land supply plays a decisive role in the spatial layout of cities, directly affecting the direction and scale of urban expansion and thus shaping the overall shape and functional zoning of cities. Reasonable land supply provides an important guarantee for industrial development, especially supporting the construction of industrial parks, which promotes the effect of industrial agglomeration, and then promotes the development of regional economy. In the classic theory of development economics, urbanisation is an important way to reduce the urban-rural income gap [5].

Land supply plays a key role in the housing market, affecting the supply of housing for residents, which in turn has a bearing on the living conditions and quality of life of urban residents; an adequate and reasonable supply of land can effectively alleviate the problem of urban housing tension and improve people's living standards. The policy design of land supply has a direct impact on the distribution of resources, which determines the access to resources among different social groups, thus affecting the fairness and stability of society. A scientific and reasonable land supply policy can promote social justice, reduce the gap between the rich and the poor, and maintain social harmony and stability.

Table 2 Impact of land supply on urban expansion, industrial development, housing market, social equity, etc.

serial number	case (law)	City/Region	Land supply impact areas	Specific impacts and outcomes
1	Land Supply and Urban Expansion in Xinjin District, Chengdu, China	Chengdu	Urban sprawl and overall morphology	Reasonable land supply has facilitated the rapid development of Xinjin District and other suburbs, promoted the balanced expansion of urban space, avoided the congestion of traditional central urban areas, and changed the shape of the city, making it more diversified and balanced.
2	Beijing Zhongguancun Science Park	Beijing, capital of People's Republic of China	Industrial Park Construction and Industrial Clustering	The construction of the Zhongguancun Science and Technology Park has been supported through reasonable land supply, which has facilitated the clustering of high-tech industries and promoted the rapid development of Beijing's science and technology industry, making it one of the most influential science and technology innovation zones in China.
3	Land Supply and Housing Supply in Shanghai	Shanghai	Housing market and quality of life of the population	By optimising land supply, Shanghai has succeeded in easing the problem of housing tension, particularly in the areas of commercial and subsidised housing, improving the housing conditions of low-income groups and enhancing the quality of life of residents.
4	Land Supply and Social Stability in Guangzhou	Guangzhou subprovincial city and capital of Guangdong	Social equity and resource allocation	Guangzhou promotes the transformation of urban villages and shantytowns through reasonable land supply, providing more living space for low-income groups, improving the living conditions of residents, reducing social inequality and promoting social stability.
5	Optimisation of Land Supply and Resource Allocation in Suzhou New District	Suzhou prefecture level city in Jiangsu	Resource allocation and industrial development	By optimising land supply, enhancing land use efficiency and promoting the clustering of high-tech industries and modern services, Suzhou has effectively promoted regional economic development and improved the efficiency of resource use.

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6	Land Supply and Social Equity in Shenzhen	Shenzhen subprovincial city in Guangdong, special economic zone close Hong Kong	Social equity and social stability	By increasing the construction of subsidised housing and implementing land market regulation, Shenzhen has succeeded in reducing the disparity between the rich and the poor, easing the contradiction between housing supply and demand, promoting social equity and stability, reducing social conflicts and enhancing social harmony.

3. Literature review

Scholars generally agree that land supply has an important impact on the spatial expansion of urbanisation, industrial structure, social equity and ecological environment. Under China's current land system, local governments hold monopoly power over the supply of land elements, and the control and intervention of land supply is an important means to promote local economic growth. Local governments not only control the total amount of land supply in the primary urban land market, but also can intervene in the quantity and price of different types of land supply, such as industrial land, residential land and commercial land, thus affecting industrial development. A reasonable land supply structure is considered a key factor in promoting industrial agglomeration, economic growth, and the transformation and upgrading of regional economies. In terms of housing supply, land supply has a direct impact on residents' housing conditions and quality of life, and overly centralised or decentralised supply may lead to problems, such as rising housing prices or wasted land resources. In terms of social equity, reasonable land distribution can reduce the gap between the rich and the poor and promote social equity and stability [6].

The impact of land supply on urban spatial expansion, economic development and social structure is one of the core topics in international research. Foreign studies show that land supply not only affects the direction and scale of urban expansion, but also determines the efficiency and quality of urbanisation. Taking the United States as an example, the adjustment of land supply policy can affect the spatial structure and development pattern of large cities, especially under the influence of land price and land use policy, the spatial layout of cities will change [7]. Foreign scholars generally agree that land supply plays a key role in industrial layout, economic growth and industrial structure upgrading. Reasonable land supply promotes balanced regional economic development, while unreasonable supply may lead to resource waste and inefficient economic operation. In terms of social equity, international studies emphasise the role of land supply in resource distribution, especially in the housing market, where reasonable land supply can improve the living conditions of low- and middle-income groups and reduce urban housing prices [15].

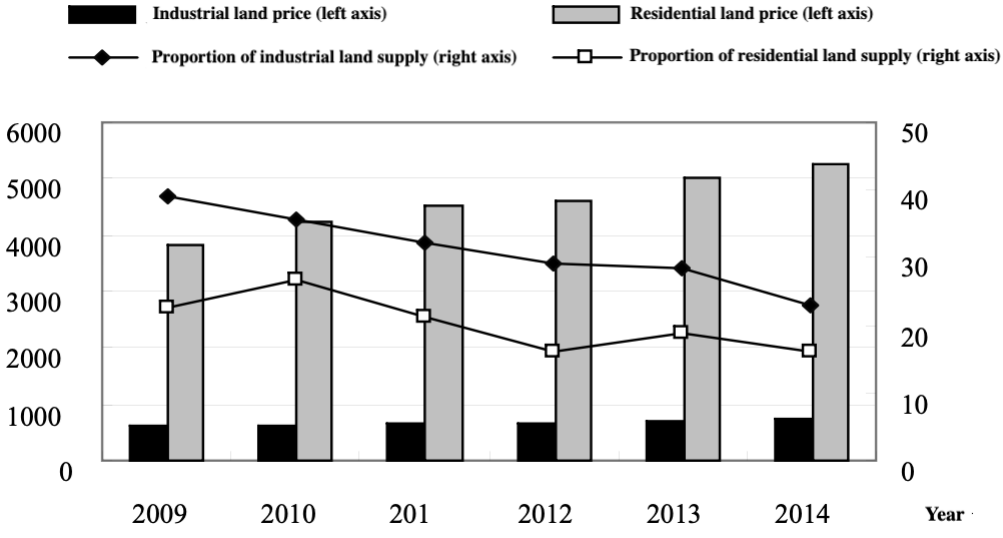

Figure1. 2009-2014 Share and price of industrial and residential land supply

4. Main research methodology and analytical framework

4.1 Quantitative and qualitative research methods

Quantitative research methods usually provide specific quantitative analyses of the relationship between land supply and urbanisation through statistical data and model construction. These methods can help researchers to reveal the direct impact of land supply on the urbanisation process from the data level, especially the effects on land use, economic growth and resource allocation. For example, regression analyses can quantitatively assess the impact of land supply changes on the rate of urbanisation, industrial structure and the income gap of residents. Quantitative research methods can also analyse the impact of land supply on different social groups and regional development by constructing theoretical models, such as production function models and utility maximisation models. Qualitative research methods, on the other hand, explore in depth the complex problems existing in the process of land supply and urbanisation through literature analysis, case studies and expert interviews. Case studies can reveal the successful experiences and lessons learnt by different cities in terms of land supply structure, while expert interviews can help to gain an in-depth understanding of the views of policy makers and their attitudes towards land supply restructuring.

4.2 Data analysis methods and advantages and disadvantages

Data analysis methods are an important part of the study of the relationship between land supply and urbanisation, and regression analysis is a commonly used quantitative analysis method to study the impact of land supply on the process of urbanisation by establishing a mathematical model between the independent variable and the dependent variable [9]. Regression analysis can help to identify key factors affecting urbanisation, such as the spatial layout of land supply, land prices, and land use efficiency. Regression analysis also has limitations, especially when there is a complex non-linear relationship between the dependent and independent variables, the accuracy of traditional regression models may be limited. Panel data analysis is also a commonly used method that can reveal the dynamic and changing relationship between land supply and urbanisation by dealing with data across time and across regions. Panel data analysis can control the time effect and individual effect and improve the reliability of the research results, but it requires a large amount of data support and the reasonableness of the model assumptions [10].

Table 3 Table of advantages and disadvantages of analytical methods

serial number	Methods of analysis	vantage	drawbacks
1	regression analysis	Helping to identify key factors affecting urbanisation	When there is a complex non-linear relationship between the dependent and independent variables, the accuracy of the regression model may be limited
2		Suitable for analysing the linear relationship between land supply and urbanisation	
3	Panel data analysis	Ability to process data across time and across regions to reveal dynamic relationships	Requires a large amount of data support and a high degree of reasonableness of model assumptions
4		Controlling for time and individual effects improves the reliability of results	
5	Case studies and textual analyses	Provide in-depth background information and interpretative analyses, especially important in policy assessments	Lack of quantitative support and high subjective influence

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5. Limitations and gaps in the study

5.1 Limitations of existing studies

Since the late 1990s, the uniqueness of land elements and land systems has become an important tool for local governments to promote economic development. Unfortunately, mainstream theoretical explanations of China's structural transformation and economic growth miracle based on the uniqueness of local governments have failed to incorporate the role of land into the analytical framework [11]. Many studies have focused too much on specific regions or cities for analysis, and lacked horizontal comparisons of cities in different regions and at different stages of development, especially the differences in the impact of land supply structure on urbanisation between less developed regions and developed regions. Most of the current research adopts a single quantitative or qualitative analysis method, and seldom combines multiple methods to conduct comprehensive analyses. Although a single quantitative analysis can reveal the specific impact of land supply, it cannot fully take into account the role of complex factors such as social, historical and cultural factors, and cannot capture the non-linear relationship between land supply and urbanisation. Although qualitative research can provide profound theoretical insights, it lacks systematic quantitative support, and the results are easily influenced by the subjective judgement of the researcher.

5.2 Research Gaps and Directions for Improvement

The interrelationship between land supply and urbanisation involves multiple dimensions such as economy, society and environment, etc. Existing researches are more confined to economic and spatial aspects, and lack of systematic analyses on social equity and environmental sustainability. For example, how to promote social equity through the optimisation of land supply, how to reduce the gap between the rich and the poor through the adjustment of land supply, and how to achieve social integration are still important directions for future research [12]. The mechanism of the role of land supply has not yet been fully explored theoretically, especially in the specific mechanism of the impact of land supply structure on the quality of urbanisation, there is a lack of refined models and empirical verification. Further research should reveal the multiple paths and mechanisms of land supply's role in promoting urbanisation by constructing a theoretical framework and combining quantitative and qualitative analyses [13]. Most of the existing studies focus on macro-level policy analyses, with less attention paid to the role of local governments in specific practices and the effects of policy implementation. The decision-making behaviour of local governments in land supply, the regulatory instruments of the land market and the impact of the differences in land supply policies on the urbanisation process are still a relatively blank research area [14].

6. Conclusions and directions for future research

6.1 Land supply affects urbanization quality through industry and housing

A reasonable land supply structure can promote industrial agglomeration and the construction of industrial parks, thereby promoting economic growth and regional economic development. At the same time, land supply is directly related to the housing conditions of residents, and optimising land supply can effectively alleviate the pressure on urban housing and improve the quality of life of residents, which in turn affects the overall quality of urbanisation.

6.2 The critical role of land supply in social equity and resource allocation

The rationality of land supply is crucial to social equity and resource distribution. Rational land supply can reduce the gap between the rich and the poor and promote social equity and stability, especially in the area of the housing market, which can improve the living conditions of low- and middle-income groups and promote social harmony and stability.

6.3 Impact of land supply on the ecosystem and sustainable development

A scientific land supply policy not only supports economic development, but also plays an important role in protecting the ecological environment. Rational planning of land supply can effectively avoid the waste of resources, promote the improvement of regional environmental quality, and lay the foundation for sustainable development, ensuring a win-win situation for both urbanisation and ecological environment protection.

References

[1] Bai, X. J., & Geng, R. Q. (2022). Is land finance an institutional resistance to industrial structure upgrading? --Based on the perspective of land resource mismatch. Exploration of Economic Issues, 07, 107123.

[2] Liu, S., Xiong, X., Zhang, Y., et al. (2022). Land system and China's development model. China Industrial Economy, 01,

3453.
[3] Liu, S., Wang, Z., Zhang, W., & Xiong, X. (2020). The exhaustion of the “land for development” model--an empirical study based on the threshold regression model. Management World, 36(06), 8092,119,246.
[4] Li, Z., Wang, J., & Che, S. (2021). Spatial abatement effect of land urbanisation promotion: internal mechanism and Chinese experience. Statistical Research, 38(12), 89104.
[5] Ding, J., & Cai, J. (2022). Constraints of the current land system on the urbanisation process in China and the measures to cope with them. Journal of Henan University (Social Science Edition), 62(01), 1420+152.
[6] Xie, D. (2018). Land supply intervention and urban-rural income gap - based on panel data from 105 cities in China. Economic Science, 03, 3548.
[7] Zhong, S., & Wang, D. (2017). Impact of land use structure evolution on urbanisation level. Exploration of Economic Issues, 05, 5969.
[8] Wang, Y. (2012). China’s urbanisation and the development of real estate industry--Research on the interrelationship and synergistic development strategy. Journal of Guangxi University of Finance and Economics, 25(05), 4954.
[9] Liu, Q., Tian, H., & Yang, Y. (2012). Quantitative study on the relationship between urban distribution and natural environment in China based on GIS and remote sensing. Geoscience, 32(6), 686693.
[10] Liu, X., Wang, L., & Zhu, S. (2016). Does urban sprawl raise households’ residential carbon emission levels? Evidence from panel data of southern Chinese cities. Journal of Southeast University (Philosophy and Social Science Edition), 18(5), 101108,148.
[11] Lv, Q., & Liu, H. (2020). Multi-scale analysis of spatial and temporal evolution of carbon emissions from energy consumption in the Yellow River Basin based on nighttime lighting data. Economic Geography, 40(12), 1221.
[12] Nian, M. (2019). Transport infrastructure, economic growth and spatial equalisation:A natural experiment based on China’s high - speed railway. Finance and trade economy, 40(8), 146161.
[13] Qiu, L., & Ye, A. (2019). Research on the reverse technology spillover effect of outward foreign direct investment:Based on a semiparametric panel spatial lag model. Soft Science, 33(4), 2933.
[14] Sun, Y., & Zhou, M. (2016). Impacts of urbanisation and industrial structure advancement on CO2 emissions in China:Based on the dual perspectives of independent and linkage effects. Resource Science, 38(10), 1846-1860.
[15] Tang, M., & Wang, K. (2018). Economic development, land urbanisation and environmental quality. Journal of East China Normal University (Philosophy and Social Science Edition), 50(2), 137-147,173.