



A Review of Research on the Impact of Land Resource Allocation on real estate Prices

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Abstract. This study explores the mechanism of land resource allocation on real estate prices using Beijing as a case study. As the capital and economic center of China, Beijing has limited land resources and strong demand in the real estate market. this paper analyses in detail four aspects: land supply policy, land use control, land auction mechanism, and policy regulation. it is found that the land supply policy affects the balance of supply and demand in the market by regulating the amount of land offered for sale, but the transmission effect of high land prices pushes up property prices. strict land use control ensures the efficient use of land resources, but it also leads to an insufficient supply of land for specific uses, which further pushes up real estate prices for the relevant uses. the land auction mechanism determines land prices through market bidding, and high auction prices have become a benchmark for market prices, affecting the expectations of developers and investors. policy control measures, including tight land supply policies and housing security policies, have directly affected market responses and property prices. based on the above analysis, policy recommendations are made to optimize land supply and disposal methods, balance use control and market demand, improve land auction mechanisms, and strengthen policy regulation and market monitoring. this study provides a new perspective for understanding the impact of land resource allocation on the real estate market and provides useful references for other cities. through a scientific and reasonable land policy, the government can effectively regulate the market, stabilize property prices, and promote sustainable urban development.

Keywords: Land resource allocation, Real estate price, Land auction mechanism.

1 Introduction

In recent years, the accelerated process of urbanization has led to a rapid increase in the urban population and a consequent rise in the demand for land resources. Especially in large cities, the limited and scarce nature of land resources has become increasingly prominent, and the imbalance between supply and demand is significant. As China's capital and economic center Beijing has experienced rapid urbanization and economic

development, with increasing population density and rapidly growing demand for land and housing [1]. However, Beijing has limited land resources, and the lack of land supply has become a key driver of property price increases. This imbalance between supply and demand has made the allocation of land resources a key factor affecting property market prices.

In urban economics and real estate economics, the relationship between land resource allocation and property prices has been the focus of academic attention. Established studies have explored the impact of factors such as land supply and demand, land rent, urban economics, and public policy on property prices from different theoretical perspectives. However, these studies tend to focus on analyses of single factors and lack a systematic and comprehensive approach. This study systematically compiles and summarizes the existing research results by means of a literature review to construct a comprehensive theoretical framework, which helps to understand more comprehensively the complex influence mechanism of land resource allocation on real estate prices.

2 Theory of land resource allocation

2.1 Theories of land supply and demand

The theory of land supply and demand is one of the basic theories for studying the allocation of land resources. Turner mentioned that the theory emphasizes the determinative role of the supply-demand relationship in the land market on land prices and property prices [2]. The scarcity of land resources determines its limited supply. Land supply restrictions can have a direct impact on price volatility in the real estate market [3]. The Government's regulatory measures on the land supply side mainly include land supply programs, land disposal methods, and land use zoning. In the supply program, the government determines the total amount of land available for sale through the annual land supply program. The formulation of land supply programs needs to take into account market demand, urban development planning, and the actual situation of land resources [4]. Zhou et al. mentioned that in terms of land disposal methods, the Government mainly supplies land through auctions, tenders, and agreements [5]. Auctions and tenders can reflect the market value of land to a certain extent, but they may also lead to excessively high land prices, thus pushing up property prices.

Population growth, economic development, and urbanization have increased the demand for land, driving up land and property prices [6]. Han et al. argued that changes in land demand directly affect price dynamics in the property market [7]. As the process of urbanization accelerates, the demand for housing is increasing, leading to rising real estate prices. The level of economic development has a direct impact on the purchasing power of residents and their demand for property. Rising income levels have made it possible for more households to afford to buy homes, thus increasing the demand for real estate. In addition, the process of urbanization, especially the expansion of large cities, has brought about a large number of people moving in, and the demand for housing by these people has further pushed up property prices.

2.2 Theory of Land Rent

The theory of Land Rent was developed by the classical economist David Ricardo [8]. Land Rent is an additional benefit to the landowner due to the unique location or fertility of the land. This land rent rises as the demand for land increases, thus pushing up land prices and property prices. Ricardo's theory of land rent suggested that the scarcity and fertility of land determined its level of land rent [9]. Land Rent is a reflection of the scarcity of land resources and is an additional benefit to landowners due to the unique location or fertility of the land. This Land Rent rises as the demand for land increases, thus pushing up land prices and property prices. Ricardo argued that land rent was a core component of land value and that the increase in land prices was mainly due to the increase in land rent [9]. In practical terms, ground rent theory explains why land prices and property prices are usually higher in urban centers and economically developed regions. Due to the scarcity of and strong demand for land in these areas, the level of land rent is high, which leads to an increase in land prices and property prices. In addition, the theory of land rent explains why changes in land use affect its market value. For example, the conversion of agricultural land to commercial or residential land will result in a significant increase in the level of land rent, which will push up land prices and property prices [10]. Marshall further elaborated on the differences in land rents for different uses of land in his land use theory, explaining how land rents are distributed in the market and affect property prices. Briassoulis mentioned that the optimal use of land depends on its relative returns and that changes in land use lead to changes in land rents and land prices [11]. Land use should be selected with the objective of maximizing economic returns, and there are significant differences in the level of ground rents for different uses of land [12]. For instance, the level of land rent for commercial and residential land is usually higher than that for agricultural and industrial land [13]. In a market economy, landowners tend to use land for purposes with higher ground rents, thereby increasing the market value of land and property prices.

2.3 Urban Economics Theory

The theory of urban economics examines the impact of land use and spatial layout on economic activity, emphasizing the relationship between the allocation of land resources within cities and economic efficiency [14]. Rational allocation of land resources can improve the overall economic efficiency of cities and promote sustainable urban development [15]. Rational allocation of land resources can improve the overall economic efficiency of cities and promote sustainable urban development [16]. The way land is used in the process of urbanization directly affects the mode of urban expansion and the price level of the real estate market. Reasonable land use planning can effectively utilize urban spatial resources, reduce the cost of urban expansion, and enhance the comprehensive competitiveness of cities. Through rational planning of urban land use and optimization of urban spatial layout, the economic efficiency of cities and the quality of life of residents can be improved [17]. For instance, through rational planning of the location and proportion of commercial, residential, and industrial areas, traffic costs and environmental pollution can be reduced and the overall economic

efficiency of the city can be enhanced. In addition, rational land use planning can also ease the tension of urban land resources and reduce excessive fluctuations in property prices.

In practical application, the theory of urban economics provides a theoretical basis for governments to formulate land use planning and urban development policies. Through scientific planning of urban land use and rational allocation of urban spatial resources, the government can effectively guide the direction of urban development and enhance the economic benefits of the city and the welfare of its residents. For instance, by increasing the number of public service facilities and the area of green space, improving the urban environment, and enhancing the quality of life of residents, the Government can attract more enterprises and talents to move in and promote the sustainable development of the urban economy.

2.4 Public Policy Theory

Public policy theory focuses on the role and function of the government in the allocation of land resources and examines the ways and effects of the government's regulation of the land market and the property market through policy instruments [18]. The Government's role in the allocation of land resources is crucial, and its policy measures have a direct impact on the supply and demand in the land market and the volatility of property prices. The Government regulates the supply and use of land through various policy instruments, including land use control, land supply schemes and land disposal methods [19]. These policies have a direct impact on the market supply and demand for land, thereby affecting property prices. In respect of land use control, the Government imposes land use classification and restrictions through planning and regulations. For instance, land is classified into different uses such as residential land, commercial land, and industrial land, and the development intensity and plot ratio of each type of land are prescribed [20]. The stringency of use control has a direct impact on the supply and market price of land. Strict use control may lead to an inadequate supply of land for specific uses, pushing up the prices of the relevant properties. On the land supply program, the Government determines the total amount of land available for sale through the annual land supply program [7]. The formulation of a land supply program needs to take into account market demand, urban development planning, and the actual situation of land resources. A reasonable land supply plan can balance market supply and demand and stabilize property prices. In terms of land disposal methods, the Government mainly supplies land through auctions, tenders, and agreements [21]. Auctions and tenders can reflect the market value of land to a certain extent, but they may also lead to excessively high land prices, thus pushing up property prices.

3 Mechanisms for the impact of land resource allocation on property prices

The mechanism by which land resource allocation affects property prices is complex and multidimensional, involving multiple aspects of policy and market response. The

following is a detailed discussion of the impact mechanism from four aspects: land supply policy, land use control, land auction and price formation mechanism, and policy regulation and market response.

3.1 Land Supply Policy

Land supply policy is one of the main means by which the Government influences property market prices by controlling the supply of land. The core of the land supply policy is to regulate the balance between the supply and demand of land and to prevent the market from becoming too hot or too cold. Li et al., mentioned that the Government determines the amount of land available for sale each year through annual land supply programs [22]. These programs are usually based on urban development plans and forecasts of market demand, with the aim of ensuring that there is sufficient land supply in the market to meet demand. An increase in the supply of land can ease the pressure on the demand for land in the market, thereby curbing the rise in property prices. Conversely, a tightening of land supply will lead to an imbalance between supply and demand in the market, pushing up property prices. Tightening the land supply policy usually leads to an increase in real estate prices, while increasing the land supply helps to curb the rapid rise in house prices [23]. The Government carries out land supply through auctions, tenders, and negotiated grants. Auctions and tenders are open and competitive, reflecting the real market demand for land and prices. An agreed grant is usually used for land for specific purposes, such as industrial land and infrastructure land, and its price is more stable. High land prices under the auction and tender methods will be transmitted to the property market, leading to an increase in property prices. Therefore, the Government needs to take into account the market response and the impact of land prices on the property market when formulating the mode of land disposal.

3.2 Land use control

Land use control divides and restricts land use through planning and regulations, and the market value and price of land for different uses varies significantly. The strictness of land use control has a direct impact on the efficiency of land resource allocation and property market prices. Strict land use controls can lead to an insufficient supply of land for specific uses, which in turn pushes up property prices for that type of use [24]. Restricting the supply of residential land can lead to tight supply and demand in the housing market and push up property prices. Changes in land use and rezoning can significantly affect land and property prices. For instance, the market value of industrial land converted to residential or commercial land usually increases significantly. The value-added effect of land brought about by the change of use will be directly reflected in property prices. The Government needs to take into account market demand and optimal allocation of land resources when making changes in use, so as to avoid market imbalance caused by excessive restrictions.

3.3 Land auctions and price formation mechanisms

Land auctions are an important way for the Government to dispose of land, and the price of land is determined through a competitive market mechanism [25]. Auction prices not only directly reflect the market value of the land, but also have a significant impact on the prices of the surrounding property market. Land auctions determine the transaction price through public bidding. The auction price is usually influenced by a number of factors, including the location, use, development potential, and market demand for the land. High auction prices often serve as a benchmark for market prices, influencing investors' and developers' expectations of market trends, which in turn pushes up neighboring property prices [26]. For instance, in high-demand cities such as Beijing, land auction prices are often higher than market expectations, thus driving up neighboring property prices. The transparency and competitiveness of the auction mechanism has an important impact on the formation of land prices [27]. A transparent and fair auction mechanism can effectively prevent land prices from being artificially inflated and maintain the normal order of the market. Transparent and competitive auction mechanisms can attract more potential buyers to participate in the bidding, thus more accurately reflecting the market value of land and preventing speculative behavior from unduly influencing land prices.

3.4 Policy regulation and market response

There is a complex interaction between government land policy regulation and market response. Policy regulation includes a variety of means such as land supply plans, use control, and tax policies, while the market response is reflected in the behavioral adjustments of investors and developers [28]. Adjustments in government land policy can have a significant impact on the market in the short term. A tight land supply policy will immediately raise market expectations of land scarcity and drive up property prices. The immediate effect of the policy is mainly transmitted through market expectations and psychological expectations. Investors and developers will adjust their investment and development plans according to the policy changes, thus affecting market prices. The long-term effect of the policy needs to be gradually digested and adjusted by the market, and the market reaction after the implementation of the policy usually has a lagging effect. In formulating and adjusting its policies, the Government needs to take into account the long-term impact of market cycles and policies in an integrated manner [29].

4 Case study: Beijing

As the capital and economic center of China, Beijing is typical and representative of its land resource allocation and real estate market. By analyzing Beijing, we can gain an in-depth understanding of the specific impacts of land supply policies, land use control, land auction mechanisms, and policy regulation on the real estate market.

4.1 Beijing Land Resources Allocation and Supply Policy

The types of land use in Beijing include residential land, commercial land, industrial land and public service land. Demand for residential land and commercial land is high, while the supply of industrial land and public service land is strictly controlled. Beijing has limited land resources, especially in the core urban areas where land supply is tight. To address this challenge, the Beijing Municipal Government has formulated a detailed land supply program aimed at balancing supply and demand in the market. From the Beijing Municipal Construction Land Supply Plan 2023, the Beijing Municipal Government has attempted to alleviate the supply and demand pressure in the housing market by increasing the supply of residential land [30]. Beijing primarily conducts land sales through auctions and tenders to ensure that land prices reflect market demand [25]. Auctions and tenders increase market transparency and competition, but they also lead to higher land prices, which in turn push up property prices. Between 2006 and 2012, Beijing's land auction prices reached record highs, directly contributing to the rise in property market prices. Increasing the supply of residential land has, to a certain extent, eased the tight supply and demand in the market and calmed the rapid rise in property prices.

4.2 Characteristics of Land Use Control in Beijing

The Beijing Municipal Government strictly classifies and restricts land uses, including residential land, commercial land, industrial land, and public service land, in accordance with the city's overall planning. Use control is strict, especially in core urban areas and ecological protection zones, where there are strict approval procedures for land use changes and development. For example, key areas such as the Central Business District (CBD) and the Zhongguancun Science and Technology Park (ZGSTP) have clear and stringent land use planning. In addition, the Government regularly evaluates land use, and changes in use and re-planning are carried out in due course to optimize land use. Change of use brings about a land appreciation effect that pushes up property prices. Converting industrial land to commercial or residential land increases its market value significantly, driving up neighboring property prices.

4.3 The Operation of the Beijing Land Auction Mechanism and its Implications

The Beijing Municipal Government sells land through public auctions to ensure that the bidding process is fair and just and to attract more developers to participate in the bidding [31]. The public auction mechanism is highly transparent and competitive and better reflects market demand and land values. The government sets a reserve price based on market demand and the location of the land to ensure that the price of the land reflects its market value. In most cases, the reserve price is usually high, especially in core urban areas and hotspots, resulting in high auction prices. High auction prices become a benchmark for market prices, influencing developers 'and investors' expectations of market trends and pushing up neighboring property prices. In recent years, land

auction prices in central Beijing have reached record highs, directly driving up surrounding property prices [32]. Transparent and competitive auction mechanisms can help manage market expectations and prevent land prices from being artificially inflated. However, excessively high auction prices may also lead to excessive price increases in the property market and increase market instability.

4.4 Response of the Beijing Property Market to Policy Regulation

Austerity policies quickly raise market expectations of land scarcity and drive up property prices. The Beijing municipal government reduced the supply of residential land, and market expectations of land scarcity led to a rapid rise in property prices. The Government adopts a tight land supply policy when the market is overheated, reducing the amount of land to be disposed of and controlling the rise in land prices [33]. The Beijing government meets the housing needs of low-income groups and eases market pressure by providing subsidized and affordable housing [22]. The housing protection policy has, to a certain extent, eased market demand for ordinary commercial housing and stabilized property market prices. However, the supply of subsidized housing is relatively limited and has had a limited regulatory effect on the overall market.

4.5 Conclusion

In the long run, a scientific and reasonable land policy can balance market supply and demand and stabilize property prices. The Beijing Municipal Government has gradually achieved relative stability in the market through the comprehensive use of land supply, use control, and auction mechanisms. Strict land-use control and optimized land supply policies have promoted sustainable urban development, increased land-use efficiency, and improved the urban environment and the quality of life of residents.

5 Conclusion and Policy Recommendations

Through a detailed case study of Beijing's land resource allocation and real estate market, we reveal the significant impacts of land supply policies, land use control, land auction mechanisms, and policy regulation on real estate prices. As the capital and economic centre of China, Beijing's land resource allocation and real estate market are typical and representative, providing us with valuable experiences and lessons. Based on the case study and research results of Beijing, the following policy recommendations are put forward to optimise the allocation of land resources, stabilise the real estate market price and promote the sustainable development of the city.1. According to the market demand and the urban development plan, scientifically formulate the annual land supply plan to ensure that the land supply matches the market demand and balances the relationship between supply and demand.2. In the land transfer, combine the auctions, tenders and agreement transfer In land transfers, combine auction, bidding and agreement transfer to flexibly respond to changes in the market and avoid excessive prices caused by a single transfer method.3. Regularly assess and adjust land use

planning according to market demand and changes in urban development to ensure the efficient use of land resources.4. Flexibly adjust the supply of land for specific uses while strictly controlling the use of the land to avoid imbalance in the market caused by insufficient supply.

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