Perspectives of Socio-Spatial Differentiation from Soaring Housing Prices: A Case Study in Nanjing, China

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Abstract: Launched in 1998, the market-oriented reform of urban housing has given urban housing the dual attributes of residence and investment, and led to the rapid growth of housing prices as well as the intensification of its spatial differentiation within cities. However, the spatial patterns of the differentiation and its mechanism as well as socio-spatial effects are rarely touched. This paper studies 3963 urban residential districts in central Nanjing and explores the socio-spatial differentiation pattern and process of the urban housing prices and its growth in Nanjing based on the sample data of housing transactions over 30 quarters during the period of 2009–2017. The paper concludes that, by splitting the research duration into phases of six quarters each, the average housing prices in Nanjing alternates between “rapid growth” and “relatively stable” phases. At the same time, this paper finds that the spatial heterogeneity of housing prices in the city has been enhanced constantly, and the price gap in different types of residential housing has been clearly widened. In combination with the price level, location characteristics and architectural attributes of residential districts, this paper has categorized housing in Nanjing into nine typical types in a comprehensive manner. Based on the differences in their spatial attributes such as location, comfort and scarcity etc., different types of residences exhibit different pricing and price-to-rent ratio growth models. Based on those findings, we discussed the mechanism of the socio-spatial differentiation of housing prices in Nanjing from the housing reform and strategies of urban renewal and expansion. Beyond that, we discussed the role of urban housing consumption in the process of (re)production of urban classes, and its negative effects on urban young people, rural immigrants and other disadvantaged families. At the end of the paper, the policy suggestion about the supply-side reform of the housing market to promote socio-spatial equity and sustainable development is also presented.

Keywords: housing price; residential differentiation; housing affordability; social class (re)production; social exclusion

1. Introduction

Housing reform is part of the neoliberal reforms that began in the late 1970s [1–3]. The market-oriented housing reform weakens the public product attribute of housing supply and improves the spatial heterogeneity of housing [4,5]. Under the market mechanism, different social groups choose different housing. This especially aggravates the issue for vulnerable groups in urban areas, such as young people, rural migrants, and low-income families, making it harder for them to gain access to housing [6]. These vulnerable groups are only able to choose social housing under the market mechanism. When these houses are concentrated within certain spaces in the city, a new urban spatial
segregation will be created [7]. Many studies of Western cities have found that the privatization and liberalization of housing markets have intensified the social differentiation of cities. Some studies even suggest that housing reform is a tool for governments to reshape the social structure of urban communities [8].

Since 1998, China has also gradually abolished the welfare housing system and made urban housing reform towards marketization, monetization, and commercialization [9,10]. Under this scenario, China witnesses the constantly rising housing prices in the big cities [9,11]. The housing prices have also been more differentiated during the past decades [12–14]. Because housing prices are essentially a market-oriented expression of unbalanced allocation of urban socio-spatial resources, the spatial heterogeneity of urban houses in cities has become more prominent [15,16]. As evident from influencing factors (excluding land prices and other directly related factors), conditions related to the location such as its distance from the city center [17–19], accessibility via public transport [20,21], quality of landscaping [22,23], and the level of infrastructure and support services [24,25], as well as housing attributes such as type of building and year of completion [14,26], community environment and management level [27,28], affect the differences in housing prices and their growth to different extents. Generally, urban housing is becoming more and more differentiated while the housing price is rising as a whole.

Housing is one of the most valuable assets and investments for urban households. Not only do the types and prices of urban housing reflect the urban spatial structure and residential spatial differentiation characteristics [27], they allow the mapping of differences in economic strength and class attributes of different purchasing groups [15]. In addition to its effect on the escalation of housing inequality, differences in the growth of urban housing prices also influence social wealth distribution as well as the choice of location for buyers, thus promoting the re-differentiation of the urban social stratum and living space [29]. Furthermore, related studies show that the excessive growth and over-differentiation of urban housing prices may lead to an imbalance in urban spaces [30], isolation of housing [31], inhibition of consumption [14], monopolization of education [25], as well as other urban issues. In other words, the differentiation of housing prices, or the spatial heterogeneity of urban houses, actually reflects socio-spatial inequality. As a result, spatial differentiation based on urban housing prices and the growth in such prices serves as a structured representation and market-oriented response of urban socio-spatial differentiation, as well as an essential driving mechanism to promote urban socio-spatial re-differentiation.

Some researches in China have found that housing reform and social segregation have spatiotemporal conjugation [9]. However, how the spatial differentiation of housing affects social differentiation and its mechanism is rarely touched. This paper addressed this gap. In the following chapters, this paper first analyzes the status quo of housing price differentiation in Nanjing based on the real estate transaction data from 2009 to 2017 and then identifies the different housing types in Nanjing. On this basis, the article analyzes the spatial pattern of housing spatial heterogeneity. Then, starting from the theory of the housing class, this paper discusses the theoretical connection between spatial heterogeneity of urban houses and social class segregation and constructs a conceptual framework. Finally, the conclusion and policy suggestions for the adverse effects are presented.

2. Research Area and Data Source

Located within the economically developed area along the eastern coast of China, Nanjing is a modern metropolis with great historical significance. Its urban development model, spatial organization and housing price growth are representative among big cities in China (According to the Standard of Urban Size Division, a city with a population of more than one million can be called a big city in China). Firstly, unlike other big cities such as Beijing, Shanghai, Guangzhou and Shenzhen, which had been driven by powerful policies and foreign capital, Nanjing has never experienced a “decline” or “contraction”, and has always been powered from within, hence it is a typical representative of second-tier cities. Secondly, Nanjing has a diversified urban spatial structure and an increasingly
distinct multi-center pattern of main and secondary urban areas. These represent the general model of the transformation of spatial structure in big cities of China from a monocentric city to a polycentric city. Thirdly, since the onset of the new century, commercial housing prices in Nanjing have been rising or remained stable in general, and have never undergone a drastic drop. Especially in recent years, Nanjing has earned a leading spot in nationwide rankings on housing prices and their growth rates. The research scope of this paper considers the central urban areas delineated in the latest Urban Overall Planning of Nanjing (2016), as shown in Figure 1. The research scope includes the main urban areas within the Ring Road (as the main urban areas are spread across a large area, they are subdivided into the inner urban areas enclosed by the City Wall of the Ming Dynasty, Hexi New Town, and the peripheral urban area according to their different spatial development characteristics) as well as three secondary urban areas known as Dongshan, Xianlin and Jiangbei. The research scope covers an area of around 741.5 km².

![Figure 1. Study area: Central districts of Nanjing.](image)

This study adopts the residential district as the basic unit. The study area covered 86.9% of the total number of residential districts in Nanjing. As of 2017, there were approximately 6.5 million people and 3963 residential districts in the study area. The data used in this study are from the China Real Estate Price platform (www.creprice.cn), which is a subsidiary of the China Real Estate Association. These data include: The average selling, rent price and transaction volume of each residential district in the research area every quarter from the fourth quarter of 2009 to the first quarter of 2017; the attributes of each residential district, such as the time of completion, type of building, geographic coordinates, floor space, number of units, plot ratio and green plot ratio, etc.

3. Spatio-Temporal Differentiation of Housing Price Growth

3.1. Soaring Housing Prices and Price-to-Rent Ratios

Over the course of 30 quarters between late 2009 and early 2017, the average housing prices of residential districts in the researched areas rose from 10,664 yuan per square meter to 27,343 yuan per square meter, representing a growth rate of more than 1.5 times and exhibiting an apparent cyclic
pattern. On the whole, with every six quarters (one and a half year) as one phase, average housing prices alternate between “fast growth” and “relatively stable” from Phase I to Phase V (Figure 2). In comparison with the fluctuating growth of housing prices, monthly average rental prices remained relatively stable, with an increase from 21 yuan per square meter in 2009 to 31 yuan per square meter in 2017. Since the end of 2008, China’s real estate policy has gone through four alternating stages of “stimulus-austerity” (Table 1). Considering the hysteresis of the policy effects, the cyclical change of housing price growth roughly coincides with the cycle of China’s real estate regulation and control.

![Housing price graph](image)

**Figure 2.** The change in housing price in Nanjing from the 4th Quarter of 2009 to the 1st Quarter of 2017.

<table>
<thead>
<tr>
<th>Time</th>
<th>Main Policies</th>
<th>Policy Aims</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>Since October 2008, the central bank has implemented a series of policies, including lowering the contract tax, exempting stamp duty and land value added tax, and lowering the interest rate of loans.</td>
<td>Policy changes from controlling the real estate market to saving the real estate market.</td>
</tr>
<tr>
<td>2010–2013</td>
<td>The government increased the down payment for second homes; Housing purchase restrictions were introduced in major cities; Local governments will expand the construction of affordable housing.</td>
<td>Curb excessive housing price rises.</td>
</tr>
<tr>
<td>2014–2016/9</td>
<td>The government relaxed the housing purchase and loan restriction; The central bank reduced the required reserve ratio and increased liquidity.</td>
<td>Help the housing market destock.</td>
</tr>
<tr>
<td>2016/9–</td>
<td>Use of various financial instruments to deflate asset price bubbles</td>
<td>Curb the rapid rise of housing prices in first—and second-tier cities.</td>
</tr>
</tbody>
</table>

The housing bubble was the precursor of the Southeast Asian financial crisis in 1998 as well as the global financial crisis in 2008. Therefore, the continuous rise in housing prices in major Chinese cities has raised the concern of Chinese scholars with regards to the “rationality” and the “bubble” risk of housing prices [32,33]. The “price-to-rent ratio” of housing (the housing price per square meter of building area/the monthly rent per square meter of building area) is an important indicator to measure the real estate bubble in the West (a range between 200 and 300 is considered relatively reasonable). According to European and American standards, the “price-to-rent ratio” in the big cities of China has

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**Table 1.** Major real estate policies since 2009.

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**Stimulus response** (Table 1). Considering the hysteresis of the policy effects, the cyclical change of housing price growth roughly coincides with the cycle of China’s real estate regulation and control.
broken through the “rational” level as early as the end of the last century [34,35]. However, if concrete national circumstances, such as China’s rapid economy development and urbanization and residents’ investment and consumption habits, etc., were to be taken into consideration, the phenomenon that the “price-to-rent ratio” of urban real estate in China is higher than that in Europe and America at the present stage is rational to a certain extent. One cannot simply use the value of the “price-to-rent ratio” to give a direct diagnosis on the housing market bubble in China.

However, there is no doubt that the “price-to-rent ratio” of urban housing and its changes are able to reflect the relative level of urban “housing price risk” and its evolution trend. Between 2009 and 2017, the average “price-to-rent ratio” of urban housing in Nanjing had shown a fluctuating upward trend similar to that of housing prices, and had risen from 507 to 882 on average. This was especially pronounced during phase V, when there was a reverse in housing prices and rents for the first time in Nanjing, that is, housing prices had gone up continuously and rental rates had continued to decline, which led to the substantial rise of the “price-to-rent ratio”. The housing price represents the “transaction value” of the housing, that is, “the property of the investment goods”, while the rent represents the “utility value” of the housing, that is, the “property of the consumer goods” [36,37]. The constant increment of the “price-to-rent ratio” in Nanjing from 2009 to 2017 shows that the increase of urban investment housing consumption, representing the gradual separation of housing prices from the real housing supply and demand relationship, and indicating the aggravation of urban housing price risk and the possibility of the existence of real estate bubbles.

3.2. Increasing Spatial Differentiation and Fragmentation of Housing Prices

To observe the general trends and differentiation patterns of housing prices and price-to-rent ratios, we divided the research area into cells by 500 m × 500 m using the fishnet analysis tool in the ArcGIS software (Figure 3). In 2009, the average housing price of the inner city was around 20,000 yuan per square meter. Prices decrease progressively from the inner city in an outward manner in Hexi New Town, peripheral areas and the three secondary urban areas and was usually lower than 10,000 yuan per square meter in the Jiangbei Area where the housing price was the lowest, hence presenting a clear “core-peripheral” structure [38] (Figure 3a). In contrast, the “price-to-rent ratio” was lower in the inner city as compared with the peripheral areas, and lower in the main urban areas as compared with secondary urban areas. In most main urban areas, the average “price-to-rent ratio” was below 600, and the overall spatial heterogeneity was not high (Figure 3b).

By 2017, while housing prices had increased substantially, the spatial heterogeneity had become more pronounced. Hexi New Town and renowned school districts in the inner city were the main concentrated areas with high values, while housing prices of new high-rise apartments scattered across the inner city, enclosed communities in suburbs with superior views, and luxurious villas in the suburbs have reached 50,000–60,000 yuan per square meter; the low-value areas with housing prices below 20,000 yuan per square meter were located at the remote fringes of the city, such as Luhe in the north of the Yangtze River, etc.; Prices of a large number of traditional residential houses in the inner city, enclosed communities in the suburbs, and houses in the new urban areas of the suburb were moderate. The spatial heterogeneity of the “price-to-rent ratio” was also aggravated, with the “price-to-rent ratio” of a small quantity of “renowned school district housing” in the inner city and suburban villas rising up to more than 1800. This means that it would take at least 150 years to recover the housing purchasing cost in the virtue of rent when one does not factor in interest and price changes.
The degree of dispersion of housing prices and price-to-rent ratios in different urban areas and between the urban areas in Figure 4 shows that during 2009–2017, the housing prices and the price-to-rent ratios in various urban areas had risen substantially; the degree of dispersion of housing prices between and within the urban areas had been clearly intensified, especially the gap between the maximum and minimum limits of the housing prices and the price-to-rent ratios. For example, in 2009, the gap between the highest and lowest housing prices was 18,034 yuan per square meter, and the gap between the highest and lowest price-to-rent ratio was 445. By 2017, the gap between the highest and lowest housing prices had increased to 45,578 yuan per square meter, and the gap between the highest and lowest price-to-rent ratio had soared to 2763.

As evident from the reasons for the strengthening of spatial heterogeneity and the enlarged gap between the maximum and minimum limits of housing prices and price-to-rent ratios, while housing prices reflect the “exchange value” of housing, rental rates are able to reflect the “utility value” of
prices reflect the “exchange value” of housing, rental rates are able to reflect the “utility value” of housing. Along with the continuous and rapid rise of housing prices, the attribute of housing as an investment good has been enhanced. Compared with rental rates, which is mainly affected by traditional location factors such as residential comfort, commercial facilities, traffic conditions, etc., housing prices are more dependent on the potential of value maintenance or value increment, such as whether these houses are located in renowned school districts, whether residents are able to enjoy exclusive landscapes, policy benefits or other rare and special factors related to the location (Song, 2018). Apart from the influencing factors of location and along with the continuous differentiation of the types, ages, grades of urban housing, as well as the collage-like and fragmented layout within the city, the housing prices and the price-to-rent ratios of urban housing have presented increasingly significant spatial heterogeneity.

3.3. Typical Residential Quarters and the Characteristics of Their Housing Prices

Based on differences in various attributes, such as residential location, type of building, housing prices and price-to-rent ratios, this paper has identified the following nine types of residential district with distinct characteristics:

Type I: Multi-story traditional houses. Scattered throughout the inner city, these houses are usually dormitories for organizations and welfare-oriented public housing that were completed in the 1980s and 1990s; the buildings feature an orderly and compact layout but lack modern facilities and services such as parking spaces, elevators, greenery and property management, etc. The prices of such houses are moderate, having the most stable growth and negative growth is rare. These houses have the lowest price-to-rent ratio as well as the smallest range for growth compared to the other types of residential quarters, thus reflecting the relative rationality of the housing prices and the sustainability of their growth.

Type II: High-rise apartments. Distributed within the urban center, along urban trunk roads, and at the vicinity of metro stations, etc., these houses are usually small-to medium-sized units with a high plot ratio. These houses are usually located in smaller residential communities in low quantities and scattered across the city. Prices of apartments undergo a similar growth pattern as that of multi-story traditional houses, but have a larger range for growth. The “price-to-rent ratio” of such apartments is slightly higher than that of traditional houses, but lower than the city average, demonstrating the relatively active demand on such apartments as well as the main drive of the contradiction between supply and demand for the promotion of the growth of housing prices.

Type III: Houses located in the same districts as renowned schools. These houses are mainly found at the vicinity of the top public primary and secondary schools in the inner city. These houses may be found in various types of building, especially in multi-storey traditional quarters. Although their quality is usually not high, the scarcity of such houses has resulted in the swiftest and most drastic growth in housing prices. As qualifications for entry into public primary and secondary schools are tied to housing ownership, tenants are unable to enjoy the added value of “school district housing”, thus the “price-to-rent ratio” is the highest and shows the fastest growth.

Type IV: Houses in new city centers. Located in the Hexi New Town, these are mainly medium- and high-end high-rise enclosed residential communities. The Hexi New Town is a popular area for real estate development. The houses here boast of high housing prices and high rental rates. Prices of such houses are only second to that of houses located in renowned school districts. However, the “price-to-rent ratio” is not high and rather similar to the average ratio of the entire city, showing that the fast growth of housing prices has been driven by actual strong demand.

Type V: Houses with superior views. These houses are usually found at the vicinity of large-scale landscape resources located at the periphery of the City Wall of the Ming Dynasty, such as natural mountains and water bodies like the Purple Mountain and Xuanwu Lake. Usually found in high-rise buildings, low-rise buildings and villas, these houses are scarce, exclusive and enclosed. The prices of such houses are high and they grow quickly. The growth range of such housing prices is ranked third
among the types; the “price-to-rent ratio” is significantly higher than the city average, reflecting their strong attribute of investment goods.

Type VI: Other enclosed houses. These houses are distributed across the main urban areas outside the inner city and within the Ring Road. These are usually middle- and high-end commercial residential communities constructed after 1998, which have adopted an enclosed management. The growth of such housing prices and the change in their “price-to-rent ratio” are relatively stable, similar to that of the city average, and therefore are the most representative of the general state of urban housing.

Type VII: Houses located in core areas of new towns. These houses are usually located in the core areas of Dongshan, Xianlin and Jiangbei, which are the secondary urban areas. Usually found in large- and medium-sized enclosed residential communities, which had been completed at the present century, these houses are large-scale and diversified, feature compact spaces and their residential facilities require further improvements. After 2016, the housing prices and the “price-to-rent” ratios had witnessed a more dramatic growth compared to the other types of houses, reflecting the strong investment demand in these new residential areas which is driven by the growth of housing prices.

VIII: Luxurious villas. These villas are located in suburbs where the natural landscape is excellent. These villas are usually in small quantities and are enclosed, with high green plot ratios and a low plot ratio. Compared with the other types of houses, villas are the most special. Their prices may be high but they grow slowly, and phase characteristics are not so apparent. Both their growth of housing prices and “price-to-rent ratio” reflect their instability.

Type IX: Houses located at the urban fringe. These are houses located in the suburbs outside the main and secondary urban areas, and are mostly newly constructed middle and low-end, large-scale commercial housing and social housing. These houses are found in remote locations and are widely dispersed. They do not enjoy the benefits of urban locations and lack the necessary infrastructure such as public transportation, business, education and medical facilities, etc. The housing prices are low and grow slowly, while rental rates grow even more slowly. The “price-to-rent ratio” has gradually exceeded the city average, indicating that the actual demand on housing is relatively insufficient.

As mentioned above, the differentiation of housing price is the marketization of spatial heterogeneity of urban houses. The spatial pattern of the nine types of residential district is shown as follows (Figure 5).

Figure 5. The spatial pattern of the nine types of residential district.
4. Discussion: Mechanism and Socio-Spatial Effects of Spatial Heterogeneity of Urban Houses

4.1. Explanations for Spatial Heterogeneity of Urban Houses

Since the housing reform, the real estate market has played a pivotal role in propelling the urban development and redevelopment in China [39], which in turn promoted the remarkable transformation of the urban social spatial structure. The spatial heterogeneity of housing prices and the aggravation of social differentiation are rapidly overlapping. The mismatch of housing supply and demand [40] and the imbalance in space supply and demand of public resource [15] are considered the important reasons for the rise and differentiation of housing prices. Although the former is due to market factors, the latter is not entirely caused by market factors. In fact, many scholars believe that the private sector represented by developers is the provider of capital, but its impact on local governance is minimal and remains subject to strict regulation by the local government—the local government directs the path and pace of urban development through policy interventions, financial leverage and land transfer, etc [41,42]. As Wang has mentioned, China’s housing reform has preserved some characteristics of socialism and has yet to form a substantial secondary market or market exchange. Therefore, understanding the formation of spatial heterogeneity of urban houses in China cannot be completed from the perspective of the market, but needs to be integrated with a broader social and political background [43].

Firstly, the extension of the Danwei (work unit). Although the real estate market had appeared after the housing reform, this does not mean that there was no spatial differentiation of housing before the housing reform. Before the housing reform, urban residents had mainly obtained welfare housing through the Danwei system, which was not related to the market, but was based on political privilege [11]. In general, before the reform, the quality and location of the housing distributed to the leaders, administrators and professional technical personnel of public departments, as well as the facilities of such housing areas such as sanitation, culture and education, etc. were superior to those of communities for workers [44]. After the housing reform, the Danwei system did not die out completely, but had continued to a certain extent in urban social spaces [45]. In fact, most multi-storey traditional houses in Nanjing were former new villages or communities for workers. Along with economic restructuring, enterprise reform and emigration, these communities with inferior facilities, which had been occupied by workers, have disappeared rapidly. In contrast, numerous public service institutions, such as renowned public schools and hospitals have found their way into the core areas of the inner city and the vicinity of the provincial and municipal governments. Such a trend had given rise to the category of houses located in the renowned school districts. Although such houses have not benefited from the urban renewal after the reform, they still benefit from the scarcity of public resources, become preferential commodities on the real estate market, and their prices have kept rising.

Secondly, land capitalization and over-marketization of property development. Wu and Cheng believed that China’s rapid urbanization is a cyclical shift between low-density expansion and high-density infill [46]. Low-density expansion is led by the government’s public infrastructure investment, and aims to activate the rental gap between urban peripheral lands. On one hand, it provides land revenue to the government [47], while on the other, it attracts capital inflow and allows a gradual transition to the high-density infill phase. Nanjing has continued to employ this strategy in the development of its new towns, and had formed three secondary urban areas, namely Xianlin, Dongshan and Jiangbei. However, if the benefit from land capitalization is greater than the capital benefit from the physical industry investment, the land market and real estate market will become the cash cow of the government, enterprises and even individuals [48]. This is also the reason why the housing prices and the price-to-rent ratios of houses located in the core areas of these three new towns Xianlin, Dongshan and Jiangbei had increased simultaneously, while the rise of housing prices in Hexi new city center had not driven the increment of the price-to-rent ratio. The former resembles an investment good, while the latter has the intervention of capital and is also being supported by high-end industries and talents.
Thirdly, discriminating urban renewal strategy and its effect on residential differentiation. Urban renewal is an important means to promote the further development of the city, and the result is usually accompanied by severe social spatial exclusion [49]. This is usually because the renewal of urban spaces does not concern the upgrading of historical buildings or improvement of existing communities. Instead, it is focused on the improvement of existing spaces to attract higher-end talents, who are mostly the elite and affluent groups [50]. Therefore, not only will the improvement of urban spaces increase urban housing prices, it will also have a strong extrusion effect on industries with low added value. The urban industrial space will move from the low end of the value chain to the high end of the value chain, from being labor-intensive to capital-intensive, thus adapting to the employment structure of the elite and affluent groups. As a result, urban development should focus on the improvement of human capital and the creation of spaces, which are attractive to professionals and high-end industries through the renewal of such urban spaces. Nanjing is no exception to this law. In this research, the high-rise apartments around urban centers and main roads, as well as other enclosed residences outside the main urban areas and within the Nanjing Ring Road have gradually attracted middle classes working in the companies and units with relatively high rates of return on labor, such as productive service industry and scientific research institutes, etc. The price-to-rent ratio of these apartments also reflects the conflict between supply and demand in the housing market. Meanwhile, the centralized layout of social housing at the urban fringes has encouraged the middle and low classes to come together in such areas, and the prices and rents of such houses are always in the lower range. As Knox had mentioned, urban population distribution is not solely the result of spontaneous residential migration, but also the product of residential space supply structure [51].

In general, the overall rise in housing prices after the housing reform is closely related to the market mechanism of supply and demand. However, the differentiation of increments in housing prices is much more complicated. The unbalanced distribution of urban resources, involvement of capital, and passive distribution of different residents led to the continuous escalation in spatial heterogeneity of housing. The real estate market transforms such spatial heterogeneity into the differentiation of housing prices, further isolating urban social spaces through the process of price screening (Figure 6). Not only will the differentiation of housing prices aggravate the segregation of urban social spaces, it will also further affect the production and reproduction of the social strata.

![Figure 6. Mechanism of housing prices differentiation.](image_url)

4.2. Consumption of Urban Houses: The (re)Production of Urban Classes

Rex and Moore put forward the concept of “housing classes” in 1967. They believed that the possession of property rights, like the possession of means of production, was an important basis for stratification [52]. Saunders further pointed out that, housing, transportation, education, health care and other important “products”, of which ownership is produced by consumption [53]. They can provide both the certain autonomy and control right that non-owners are unable to enjoy.
determinants that are related to life chances, i.e., residence, mobility, culture and even the privilege of life itself. In other words, the differentiation of housing prices is not only due to the difference in housing quality, but more of a result of the differences in the housing location, school district and related infrastructure. In the context of Bourdieu, it can be understood that urban housing binds the different economy, culture and social capital. Thus, housing consumption provides access to the cultural and social resources of the community where the housing is located [54]. This is both a sign of class status and the cultural capital and social capital invested by the middle class for them and their children, and it enables their generations to inherit the identity of their stratum, that is, to realize the reproduction of the social stratum. The purchase of a house is not simply an economic behavior, but also the choice of a way of life and the identity of a class [55]. The path of class production and reproduction is embedded in this choice (Figure 7) [25].

![Figure 7. (Re)production of social class through the consumption of urban houses.](image)

Launched in 1998, the market-oriented housing reform has led the transformation of housing from a public product provided by public sectors such as state-owned enterprises and government, to a commodity supplied by the market system. This transformation has disintegrated the social spatial pattern of Chinese cities, which was established upon the Danwei system and based on political privilege [56]. Although social differentiation formed by the political power hierarchy still exists [45], housing has gradually become an important factor to measure social status and promote social differentiation [9,57]. As the housing reform continues and secondary housing markets are being formed gradually, the earlier unbalanced distribution of urban high-end public resources can be reversed through the real estate market. At the same time, the resulting differential land rent has further affected the investment of private capital and the urban renewal strategy, hence increasing the spatial heterogeneity of urban housing prices. As mentioned above, the housing price differentiation formed because of the spatial heterogeneity of housing can be understood as the market-oriented expression of the different economy, culture and social capital of urban housing. Thus, the nine types of residential district in this study can also be further classified according to their economic, cultural and social capital contents (Figure 8). As significant differences in buying power exist among the different social classes, the urban middle and upper classes may occupy these capitals through the real estate market. Thus, housing has become an effective means for the middle and upper classes to maintain their class status and realize class reproduction [25].
The rapid rise in urban housing prices has made it more difficult for many to own houses in the cities, especially vulnerable groups such as young people, rural migrants and low-income families. Using the low-income group in Nanjing (the lowest 20% of one-fifth of per capita income) as an example, the housing price-to-income ratio of houses in renowned school districts was as high as 84.6 in 2017, and that of houses at urban fringe was 20.5. The growth in housing prices in the first- and second-tier cities had made it extremely difficult to purchase a home and resulted in increasing rental rates, thus leading to the effect of excluding and extruding newcomers as well as the emergence of social phenomena such as “outmigration”, “ant tribe”, “worm house”, “house slave”, etc. The enlarged gap in the housing price-to-income ratios between different types of houses restricts the freedom of families or individuals to select their type of houses, and gradually forms and aggravates the earlier phenomenon of residential spatial differentiation driven by consumer buying power.

Table 2. Housing price-to-income ratios of different types of residences in Nanjing in 2009 and 2017.

<table>
<thead>
<tr>
<th>Types</th>
<th>Multi-Storey Traditional Houses</th>
<th>High-Rise Apartments</th>
<th>Houses Located in Renowned School Districts</th>
<th>Houses Located in New Urban Centers</th>
<th>Houses with Superior Views</th>
<th>Other Closed Houses</th>
<th>Houses Located in Core Areas of New Towns</th>
<th>Houses Located at the Urban Fringe</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>12.6</td>
<td>16.7</td>
<td>18.1</td>
<td>13.9</td>
<td>15.5</td>
<td>12.6</td>
<td>6.0</td>
<td>4.6</td>
</tr>
<tr>
<td>2017</td>
<td>23.8</td>
<td>28.5</td>
<td>43.3</td>
<td>29.9</td>
<td>29.3</td>
<td>23.6</td>
<td>16.9</td>
<td>10.3</td>
</tr>
</tbody>
</table>

Note: Luxurious villas were excluded due to their unique traits.
5. Conclusions

The real estate market formed after the housing reform in China has released significant capital energy, hence allowing property-led urban (re)development to become the main driving force for the urban sprawl and urban renewal in China. The development of real estate has promoted the development of cities, which in turn has further promoted the prosperity of the real estate market. During this process, housing prices have gradually escalated to the point where two or three families and generations now share the burden of buying a house. House ownership has gradually become a new standard that divides the “Haves” from the “Have-nots” in urban areas. Therefore, housing has become the foundation for the formation of social identity and class status, and serves as a crucial factor in the process of social differentiation [55]. Through the investigation on the real estate market, we can conduct a further study on the social differentiation and its mechanism [56].

The rise of housing prices is the manifestation of the contradiction between supply and demand in the market. However, the differentiation of housing prices is not entirely determined by the market. According to the research of this paper, the differentiation of housing prices is caused by the spatial heterogeneity of housing. The spatial heterogeneity of housing can be understood as the differences in the economic, cultural and social capital behind such housing. These differences had existed before the housing reform. However, the gap has been widened by the intervention of capital after the reform, as well as the discriminating urban renewal strategy and its effects. In turn, the increasingly growing social differentiation of the Chinese society has been further highlighted and reinforced. Urban middle and upper classes have better housing and gain more economic benefits when housing prices rise. At the same time, their offspring have an advantage in future social competition due to the cultural capital and social capital attached to their housing [25]. Social housing continues to be planned and constructed at urban fringes, hence trapping the vulnerable groups in these areas, which will undoubtedly limit their upward social mobility, as well as that of their offspring.

Beyond that, this study also indicates that simply providing vulnerable groups with living space in urban areas will not eliminate the huge gap between the social strata. In order to resolve potential socio-spatial problems caused by the rapid growth of housing prices in Nanjing and the widening gap between the types of residential areas, it is necessary to promote the supply-side reform of urban real estate to ensure the sustainable development of the real estate market, as well as to promote the equal and fair use of urban social spaces. For example, we can reform the school district system and reduce spatial differences in educational resources, or standardize housing concession standards to avoid privatization of urban landscape, take full account of spatial location factors such as public transport and convenience of living, etc., while increasing the supply of social housing. In summary, the unbalanced layout of urban resources and the unbalanced development of cities should be reduced to avoid the isolation of social spaces caused by housing.

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