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Forecasting Urban Housing Land Needs: A Comparative Analysis of Chinese Cities



Abstract: In urban centers across China, the actual annual land supply frequently fails to meet government projections, significantly impacting local economic and social development. This study bridges the gap in prospective analyses of governmental decision-making concerning urban housing land supply. Employing fuzzy set qualitative comparative analysis, this research examines the housing land supply in 50 Chinese cities, including 16 first-tier and 34 non-first-tier cities. The goal is to explore the decision-making combinations that influence the supply of housing land, thereby aiding in the formulation of governmental policies. Our findings indicate that in first-tier cities, forward-looking decisions rely on low fiscal pressure, with purchase restrictions and land supply restructuring acting in tandem. In contrast, in non-first-tier cities, high population density or significant fiscal pressure necessitate enhancements in land supply structures without implementing purchase restrictions to sustain forward-looking governance. Additionally, while forward-looking decisions depend on numerous conditions, it is generally simpler to circumvent non-forward-looking decisions. This investigation integrates forward-looking theory into real estate research, offering valuable insights for the formulation of governmental land supply strategies.

Keywords: Land supply, forward-looking decision-making, heterogeneity, fuzzy set qualitative comparative analysis.

I. INTRODUCTION

Land serves as a fundamental production factor and a scarce public resource crucial for economic development. In China, the strategic management of state-owned construction land plays a pivotal role in shaping both economic and social landscapes. Despite its importance, disparities often exist between the projected and actual supply of housing land within these regions, raising significant concerns over urban planning and development.

The rapid expansion of the real estate sector, driven by escalating demand, has led to severe consequences such as the formation of real estate bubbles, loss of arable land, and environmental degradation. These challenges underscore the need for effective governance and strategic planning by governments, which are the primary stewards of land resources. Strategic interventions by governments, whether fiscal or administrative, are indispensable for managing the housing land supply and ensuring sustainable urban development.

Research by Fan et al. (2021) demonstrated that increased fiscal pressure elevates land prices, thereby influencing land supply policy implementation. Furthermore, in cities with substantial budget deficits, revenue from land transfer fees significantly impacts local commercial real estate markets and consequently, the land supply. Administrative strategies, including purchase restrictions and price controls, are direct methods used by governments to regulate land supply, with purchase restrictions being notably significant.

The strategies for land supply vary significantly between cities in China, often categorized by their tier status. First-tier cities typically constrain the development of urban residential and commercial land to elevate land prices and boost revenues. In contrast, non-first-tier cities may offer land at reduced prices to stimulate local economic growth. This variability results in a complex interplay of economic, social, and administrative factors that shape land supply decisions across different regions.

To address the scant discussion in literature on how various factors are configured to influence proactive land supply decisions, this study employs fuzzy set qualitative comparative analysis (fsQCA) to explore how multiple determinants interact and shape the forward-looking nature of land supply decisions in 50 Chinese cities. This method allows us to dissect the complex causal pathways and provide nuanced insights that can inform policy formulation aimed at enhancing the efficacy of land supply management.

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II.A REVIEW OF THE LITERATURE

A. Forward-looking decisions

Drawing on Simon's (1955) theory of bounded rationality, forward-looking decisions are defined as decision-making behaviors that prioritize and focus on future-oriented information, interests, references, and actions. Pot (2018) emphasized that such decisions embody the foresight necessary for organizational adaptation and change. In dynamic and uncertain economic and managerial environments, decision-makers must base their choices not only on current needs and preferences but also on anticipations of future directions (Tapinos, 2018). Bosetti et al. (2022) further elaborate that forward-looking decision-making requires a detailed understanding of the decision context, including the background, the scope of information assessment, and the strategic planning for future trends and challenges.

In this context, this study employs the realization of urban housing land supply plans as a metric to assess the forward-looking nature of governmental decision-making. Effective decision-making in this realm requires governments to consider both current urban developments and future projections, enabling them to implement strategic interventions or policy measures to enhance land supply strategies. This research aims to dissect the interplay between forward-looking and reactive decisions to bolster governmental planning and policy formulation, providing a framework that guides not only current but also future urban development initiatives.

B. Government level

The career advancement of local officials in China is closely tied to the economic performance of their regions, with the real estate sector playing a pivotal role due to its substantial contribution to GDP growth, fixed asset investment, urban employment, and bank loans (Chen et al., 2012; International Monetary Fund, 2014). The government exerts considerable influence over this sector through policies such as purchase restrictions and land supply restructuring, thereby actively shaping market dynamics (Ratcliffe et al., 2021).

Cao et al. (2015) analyzed data from 70 cities and observed that purchase restriction policies significantly reduce real estate transactions, particularly in cities heavily reliant on real estate for fiscal revenue and economic growth. Wu and Li (2018) further noted that these policies have varying impacts in first-tier versus non-first-tier cities, with more pronounced price declines in the former. This differentiation underscores the government's role in managing economic stability and growth through strategic land supply adjustments.

Wang (2011) argues that the government's choice of land supply strategies—whether limiting the mode, total amount, or specific uses of land—is crucial for regulating housing price disparities and enhancing land utilization rates. During economic booms or recoveries, the benefits of increased land supply can be counteracted by rising land prices, whereas in times of economic downturns, tightening land supply can help stabilize the economy (Diao and Yan, 2014).

Yang et al. (2019) highlight the capital-intensive nature of the real estate sector and its susceptibility to local governmental fiscal pressures. When fiscal pressures mount, local governments may increase land sales to boost revenues, illustrating the direct link between fiscal health and land supply decisions. Wang et al. (2016), utilizing panel data from 280 cities, investigated how local governments' dependence on land finance influences their land supply strategies.

In this study, we analyze the interplay of purchase restrictions, land supply structuring, and fiscal pressures to determine their collective impact on the forward-looking decisions regarding housing land supply in both first-tier and non-first-tier cities.

C. Economic and social dimensions

Drawing on rational bubble theory and dynamic equilibrium thinking, Shu Geng and Economy (2019) assessed the growth of real estate bubbles and investor expectations across 31 provincial administrative units in China from 2002 to 2017. Their analysis revealed significant heterogeneity within China's real estate market. Echoing these findings, Onyegiri (2016) emphasized that urban housing land supply should align with the prevailing trends in housing demand. This alignment is crucial for sustainable urban development, as mismatches can intensify competition in the secondary land market, leading to increased housing prices and living costs.

Duan et al. (2021) identified three primary factors influencing housing demand: per capita GDP, per capita disposable income of urban residents, and the area of housing sales. Building upon this framework, Xiong et al. (2020) forecasted commercial housing demand, noting distinct regional needs and the influence of variables like

per capita GDP, housing area per capita, population density, and the completed area of commercial housing on market dynamics.

Further analysis by Li et al. (2022) and Gong & Yao (2022) highlighted additional determinants of housing prices, including the stock of existing houses, employment rates, interest rates, and local economic conditions. Collectively, these factors underscore the complex interplay between economic and social elements in shaping housing supply decisions.

This study will focus on population density and per capita GDP to explore their impacts on the forward-looking decision-making processes concerning land supply. By examining these variables, we aim to elucidate how economic and social contexts contribute to strategic land use planning and policy development.

III. METHODS

A. Fuzzy Set Qualitative Comparative Analysis (fsQCA)

This study employs the fsQCA method for several compelling reasons. Firstly, fsQCA allows for the identification of multiple concurrent causalities, enabling the simultaneous presence and interaction of various variables, which helps to map out complex causal paths (Fiss, 2011). This capability is crucial as it transcends the limitations of traditional quantitative approaches by accommodating asymmetry in data analysis.

Secondly, fsQCA is particularly well-suited for exploring the multifaceted nature of forward-looking decision-making in housing land supply. It effectively handles the complexity of multiple influencing factors where forward-looking outcomes are not deterministic but rather result from various combinations of conditions (Pappas and Woodside, 2021).

Thirdly, the method is adept at managing continuous variables, which dominate this study's data set. fsQCA converts these continuous variables into a set membership ranging from 0 to 1, thereby preserving the nuanced differences across data points and enhancing the qualitative clarity of the analysis (Verweij, 2013).

The fsQCA process in this study unfolds in three distinct steps:

1. Calibration: The initial step involves calibrating the data where each variable's raw score is transformed using the direct calibration method to achieve a value between 0 and 1. This standardization helps to uniformly assess the influence of each variable.

2. Necessity and Sufficiency Analysis: This step examines the relationships between conditions (independent variables) and outcomes (dependent variables). It identifies necessary and sufficient conditions for the occurrence of specific outcomes, providing insights into causal dependencies and prerequisites.

3. Construction and Analysis of the Truth Table: The final step involves compiling all calibrated data into a truth table. This table is then analyzed to discern distinct patterns and configurations that lead to the observed outcomes, thereby revealing the underlying structure of the decision-making process.

Through these steps, fsQCA offers a robust framework for dissecting the complex causal architecture of policies affecting urban land supply, providing valuable insights into the strategic elements that drive forward-looking decisions.

B. Data Collection

This study analyzes a dataset comprising 50 cities across China, selected based on their inclusion in the "2020 Urban Commercial Charm Ranking List" published by the First Financial Daily. The ranking categorizes cities into 16 first-tier and 34 non-first-tier cities, providing a diverse framework to examine the variances in urban housing supply decisions amid regional heterogeneity. Figure 1 illustrates the geographic distribution of these sampled cities across China, providing a visual representation of their regional placement.

Data pertaining to financial expenditure pressure, population density, per capita GDP, land supply structure, and other relevant metrics were sourced from the Statistical Yearbook of Chinese Cities. These indicators reflect the administrative and economic diversities across the sampled locations. Additionally, information regarding local purchase restriction policies was retrieved from the official websites of the respective municipal governments, ensuring that the policy context for each city is up-to-date and accurate.

In line with the methodology of Deng and Chen (2019), all variables in this analysis are treated as nominal values. This standard approach in real estate studies in China facilitates comparisons and maintains consistency across different variables and datasets.

This comprehensive and systematically categorized data set provides the foundation for examining the complex dynamics that influence urban housing land supply decisions, considering both economic conditions and policy interventions.



Fig. 1 Sampled cities and their locations in China

C. Analysis Methodology

This study employs fsQCA 3.0 software for analysis, focusing on calibration—the process of assigning values to cases based on their membership in collective sets (Manosuthi et al., 2024). Calibration was performed using the "four value fuzzy set calibration method" and the "average anchor point method" integral to QCA analysis techniques. The "four value fuzzy set calibration method" operates on quartile arithmetic calibration scaling [0-0.33-0.67-1], determining the extent of a case's membership in both the result and condition variables. Full membership is indicated by "1", while "0" denotes no membership. Values between "0" and "1" reflect varying degrees of membership intensity.

Furthermore, some variables are calibrated using the "mean anchor method," which divides continuous variables into quartiles based on their objective distribution, assigning values [0, 0.33, 0.67, 1] accordingly. The specific calibration and assignment rules for variables are detailed in Tab. 1.

Tab. 1 Measuring, operating and calibration conditions

Category	Variable	Tags	Measurement	Calibration
outcome variable	Forward-looking decisions	FWL	Whether the government's supply decisions are forward-looking can be measured to a certain extent by the fulfillment of the housing land supply plan for the year.	The ratio of the actual supply of housing land to the planned supply for the year, i.e. the average anchor point
Conditional variables	restrictive purchasing policies	HPR	(a) The introduction of purchase restrictions has reduced the demand for urban housing to some extent, thereby affecting the supply of urban housing land (An et al., 2019).	Distribution of cities with no purchase restriction policy: 0 The distribution of cities with restrictive purchasing policies is: 1
	Pressure on fiscal balances	outer paper	Against the background of regional disparities, local governments face varying degrees of pressure on their fiscal revenues and expenditures. In general, the greater the pressure on government revenues and expenditures, the greater the likelihood that more land will be sold to generate fiscal revenues (Tong et al.2).	Ratio of local general budget expenditures to local general budget revenues, average anchor point
	Land supply structure	LUS	The structure of land supply reflects the intensive use of urban residential land, and the structure of urban land supply has a positive impact on the supply of land for housing.	Ratio of urban residential land area to urban built-up land area, average anchor point
	Population density	PD	Population density is used to describe the concentration of population in a city. The greater the population density, the greater the demand for housing and the greater the supply of land. Density (Xiong et al., 2020).	Number of people per unit area of land (land area/number of people), average anchor point
	GDP per capita	PCGDP	GDP per capita is used to describe the level of economic development of cities. The higher the value, the greater the demand for housing and the corresponding increase in the supply of land for housing.	Per capita GDP of each region (total regional output/total regional population), average anchor point

Result Variable: Prospective Decision

In dynamic and uncertain environments, decision-makers not only assess current needs and preferences but also anticipate future developments. This study adopts the realization of urban housing land supply plans as a measure of the forward-looking nature of housing land supply decisions, quantifying it by the ratio of actual to planned housing land supply in a given year (Pólvara et al., 2020).

Conditional Variables:

1.Purchase Restriction Policy: As a regulatory measure, purchase restrictions significantly influence the real estate market's supply-demand balance (Fang Ying et al., 2016). This study employs a dichotomous calibration, where "0" indicates no government intervention and "1" indicates active governmental market intervention through purchase restrictions.

2.Fiscal Expenditure Pressure: Highlighted by Lin et al. (2022), the capital-intensive nature of the real estate sector is significantly influenced by local government fiscal pressures. This variable is measured by the ratio of local government general budget expenditures to revenues, calibrated using the mean anchor method.

3.Land Supply Structure: Government adjustments to the land supply structure can impact housing land supply decisions (Diao and Yan, 2014). This study uses the ratio of urban residential land area to total urban construction land area as an indicator, calibrated with the mean anchoring method.

4.Population Density: Defined as the number of inhabitants per unit area, higher population densities typically correlate with increased housing demand (Xiong et al., 2020). This study calibrates population density using the average anchor method.

5.Per Capita GDP: Serving as an indicator of urban economic development, regional GDP per capita positively affects housing land supply decisions. It is calibrated using the average anchoring method.

Theoretical Framework:

Following Schneider and Wagemann (2010), this study emphasizes set relations over correlations. Combining conditions can either be cross (indicated by "**") or parallel (indicated by "+"). Set-theoretic relationships focus on necessity and sufficiency (Gerrits and Verweij, 2018; Pappas, 2021). A condition is considered necessary if it invariably leads to an outcome and sufficient if it alone can produce the outcome. Consistency and coverage indices are used to evaluate the strength and explanatory power of these relationships, with consistency above 0.8 indicating a sufficient condition and above 0.9 a necessary condition.

This analytical approach allows for a nuanced understanding of the interplay between variables and their impact on urban housing land supply decisions.

D. Testing Necessary Conditions

Once the membership values are assigned to cases, it is essential to test for necessary conditions. This step confirms whether specific conditions must invariably be present for a particular outcome to occur. In fsQCA, a necessary condition is one that always appears when the outcome does; without this condition, the outcome cannot manifest. Although necessary conditions might be excluded from simplified solution formulas in fsQCA, their influence on the results remains significant.

The necessity of various conditions for making forward-looking decisions regarding housing land supply is detailed in Tab. 2. Following the criteria established by Koo and Li (2016), a consistency level above 0.9 is required for a condition to be deemed necessary. However, as shown in the table, none of the conditional variables in this study meet this threshold, indicating that no single condition is indispensable for forward-looking decision-making in housing land supply. This suggests that governmental bodies in different cities adopt varied approaches to housing land decisions.

Tab. 2 Analysis of the conditions necessary for forward-looking decision-making

Conditions	Consistency	Coverage
HPR	0.509	0.719
outer paper	0.785	0.660
LUS	0.854	0.792
PD	0.872	0.667
PCGDP	0.703	0.779

The table illustrates that while certain conditions show higher levels of consistency, none surpass the necessary threshold of 0.9. Consequently, these conditions cannot be considered strictly necessary, reinforcing the concept that multiple factors, often in combination, influence the decision-making process regarding housing land supply in various urban environments.

E. Adequate Configuration of Conditions

Upon completion of the fsQCA analysis, three types of results are derived, each varying in complexity: the complex solution, the parsimonious solution, and the intermediate solution. The complex solution is the most comprehensive but often too intricate for practical application. The parsimonious solution distills the core elements that strongly correlate with the outcome variables, albeit at the expense of a deeper understanding. The intermediate solution, which incorporates both core and auxiliary elements, is preferred for its balanced approach. Auxiliary elements are those with a weaker correlation to the outcome variable, allowing for a nuanced understanding of the different elements' effects.

To thoroughly analyze the significance of each condition, this study utilizes the logical simplification method proposed by Ragin (2006). This method clarifies the results and categorizes different causal paths based on the distinction between core and auxiliary elements. The results of this classification are displayed in Tab. 3.

Tab. 3 Configuration of Logical Conditions for Forward-Looking and Non-Forward-Looking Decisions

Configuration	Visionary					short-sighted decisions					
	Tier 1 cities			Non-Tier 1 cities		Tier 1 cities			Non-Tier 1 cities		
	1	2	3	4	5	6	7	8	9	10	11
HPR	●	●	⊗	⊗	⊗	⊗	●	⊗		⊗	
Fully enclosed	⊗	⊗	⊗	⊗	●	⊗	⊗	⊗	⊗		⊗
LUS	⊗	⊗	●	●	●		⊗		⊗		
PD	●		⊗	●	⊗	⊗	●		⊗	⊗	⊗
PCGDP		●	●	⊗	⊗			⊗		⊗	⊗
Typical cases	8、13	11、4	14	39	49	6、16	8、13	32、26	24、18	46、49	29、26
Consistency	0.847	0.804	0.846	0.819	0.807	0.960	0.915	0.988	0.991	0.956	0.983
local coverage	0.421	0.650	0.280	0.469	0.616	0.432	0.361	0.585	0.671	0.624	0.699
Unique coverage	0.141	0.230	0.280	0.077	0.224	0.432	0.361	0.059	0.056	0.099	0.030
overall consistency	0.793			0.747		0.939			0.952		
overall coverage	0.931			0.693		0.793			0.913		

Note: ● and ● indicate the presence of conditions, ⊗and⊗indicates that the condition does not exist,blank indicates that the condition is not relevant. where, ● and⊗denotes the core conditions, ● and⊗Indicates an auxiliary condition.

Adhering to the causal asymmetry assumption principle of fsQCA (Olan et al., 2019), four sets of truth tables were constructed for both first-tier and non-first-tier cities. These tables facilitate governmental forward-looking decision-making and the avoidance of non-forward-looking decisions. Following Feinshmidt's (2020) method, the conditions affecting the results in each configuration are divided into core and auxiliary conditions, with a consistency critical point set at 0.8 (recommended value >0.75). The four sets of results include 11 configurations spanning government level, economic and social level, land supply strategy level, and forward-looking decision-making.

Configurations for Forward-Looking Decisions in First-Tier Cities (Schemes 1, 2, and 3):

The overall consistency of the intermediate set is 0.793, with individual logical condition combinations ranging from 0.794 to 0.962 in consistency. All combinations exceed the 0.8 threshold, indicating robust consistency. These configurations collectively reduce the pressure on government revenue and expenditure as an auxiliary condition. Scheme 1 identifies the implementation of the purchase restriction policy and a non-intensive land supply structure as core conditions, with higher population density as an auxiliary condition. Scheme 2 distinguishes itself by prioritizing high per capita GDP as a core condition and considering population density as irrelevant. Scheme 3, markedly different from the first two, emphasizes high GDP per capita, gross regional product, and intensive land supply structure as core conditions, with low population density and reduced fiscal pressure as auxiliary conditions.

Configurations for Prospective Decision-Making in Non-First-Tier Cities (Schemes 4 and 5):

The overall consistency of the intermediate set is 0.747, with a consistency greater than 0.8 across logical condition combinations. The coverage level of 0.693 indicates that these configurations account for 69.3% of the samples. Both schemes consider the non-purchase restriction policy and low per capita GDP as auxiliary conditions, maintaining consistency in the structure of intensive land supply, albeit differing in financial

pressure and population density. Scheme 4 combines low fiscal pressure with high population density for forward-looking decisions, whereas Scheme 5 pairs high fiscal pressure with low population density.

Configurations for Non-Forward-Looking Decision-Making in First-Tier Cities (Schemes 6 and 7):

The overall consistency of 0.939 and a coverage of 0.793 signify that these configurations represent 79.3% of the first-tier city samples. Scheme 6 considers GDP per capita and land supply structure as irrelevant, with low population density and non-purchase restriction policy as core conditions, complemented by low fiscal pressure. Scheme 7 indicates that a purchase restriction policy, when combined with high population density, an imperfect land supply structure, and minimal fiscal pressure, tends to result in actual housing land supply falling short of the planned supply, demonstrating non-forward-looking decision-making.

Configurations for Non-Forward-Looking Decisions in Non-First-Tier Cities (Schemes 8, 9, 10, and 11):

These schemes cover 91.3% of the sample with an overall consistency of 0.952, confirming their representativeness and reliability. Unlike the first seven schemes, the non-forward-looking configurations in non-first-tier cities lack core elements, and each element negatively contributes to non-forward-looking decisions. Schemes 8 and 10 are similar, with low per capita GDP, minimal fiscal pressure, and low population density not implementing the purchase restriction policy, easily leading to non-forward-looking decisions. Schemes 9 and 11 show that low fiscal pressure and population density, combined with either low per capita GDP or an unreasonable land supply structure, predispose governments towards non-forward-looking decisions.

IV. DISCUSSION

A. Theoretical Implications

This study provides significant insights into the configuration of forward-looking decisions in urban land supply within first-tier and non-first-tier cities. These insights are categorized into three major findings:

1. Synergistic Policies in First-Tier Cities

Analyzing the conditional allocation from Schemes 1, 2, 3, 6, and 7, it is evident that first-tier cities experiencing lesser fiscal pressure can generate greater real estate demand, particularly in areas with high population density or high per capita GDP. These observations resonate with findings from Zhou and Zhang, suggesting that governmental interventions such as the purchase restriction policy coupled with adjustments in land supply structures can facilitate forward-looking decisions. This is especially true when fiscal pressures are minimal, where strategies such as reducing urban housing land supply or enhancing land supply structure without imposing purchase restrictions can lead to better outcomes, aligning with observations by Cao et al. (2015) and Jue et al. (2013).

2. Decision-Making in Non-First-Tier Cities

Based on the configurations from Schemes 4, 5, 8, 9, 10, and 11, non-first-tier cities demonstrate a complex landscape in making forward-looking decisions. These cities often exhibit a lower consistency and coverage in forward-looking decision-making compared to their non-forward-looking counterparts, indicative of the significant constraints they face. Pot et al. (2019) noted similar challenges in smaller cities concerning forward-looking investment decisions in urban infrastructure. This study extends this insight to housing land supply, where non-first-tier cities with high population densities or significant fiscal pressures benefit from an improved land supply structure without restrictive purchase policies. This approach aids in achieving planned housing land supply, contrasting with the differential responses observed in the real estate markets of first-tier and non-first-tier cities post-implementation of purchase restrictions (Wu Ying & Li Ying, 2018).

3. Ease of Avoiding Non-Forward-Looking Decisions

Our analysis highlights that forward-looking decisions are typically contingent on multiple conditions, thus making non-forward-looking decisions more avoidable. The forward-looking decision schemes exhibit multiple related variables with two to three core conditions, while non-forward-looking schemes feature fewer related variables and almost no core conditions. This delineation underscores the complexity and multi-faceted nature of forward-looking decision-making, which contrasts with findings by Pot et al. (2019) who suggested that forward-looking decisions could be facilitated regardless of the organizational analytical capacity. The distinct paths leading to non-proactive decision-making in both city tiers, especially concerning financial and demographic conditions, highlight the critical role of government behavior in fostering forward-looking decisions.

B. Practical Implications

This study offers crucial insights for local governments concerning housing land supply decisions. The decision-making process for urban housing land supply is recognized as a multifaceted and dynamic event, influenced by a myriad of environmental factors. As such, the variability in economic levels and population densities across different cities implies that land supply decisions should not be uniformly applied but tailored to reflect the specific characteristics and complexities of each region (Su Heqian, 2020).

Drawing from the foresight decision allocation plans elaborated in this study, it becomes evident that under varying urban population densities, per capita GDP levels, and government fiscal pressures, tailored approaches are essential. The government's strategy should involve a combination of implementing purchase restriction policies and adjusting the land supply structure among other interventions. Such strategic adjustments are vital for manipulating the market dynamics to determine an optimal housing land supply strategy, ultimately fostering the healthy development of the real estate market.

By aligning land supply decisions with local economic and demographic realities, governments can more effectively promote sustainable urban growth and real estate market stability. This study thus serves as a practical framework for policymakers to enhance decision-making processes, ensuring that interventions are both contextually relevant and strategically sound.

V. CONCLUSIONS

This research has addressed significant gaps in understanding how urban housing land supply decisions are made, particularly under the framework of forward-looking investments. By employing the Qualitative Comparative Analysis (QCA) method, we have delineated precise conditions that foster proactive decision-making across different tiers of cities in China. Our findings reveal that the determinants of forward-looking decisions are not uniformly applied across all city tiers but vary significantly between first-tier and non-first-tier cities.

For first-tier cities, the study underscores the importance of local population density and per capita GDP in determining the necessity of implementing purchase restriction policies or adjusting the land supply structure. These cities benefit from strategies that balance fiscal pressures and demographic demands to enhance real estate market dynamics effectively.

Conversely, in non-first-tier cities, it is crucial to improve the land supply structure and avoid imposing purchase restrictions, particularly in areas with high population density or substantial fiscal pressures. This approach facilitates better alignment with the actual housing needs, promoting sustainable urban development and economic growth without exacerbating housing affordability issues.

Our research not only offers a novel perspective on urban housing land supply decision-making but also enriches theoretical understanding and provides a practical guide for local governments to craft effective land supply policies. By integrating forward-looking theory with governance practices, this study contributes to a nuanced framework that supports strategic land use planning and policy development.

Moving forward, policymakers are encouraged to consider these differentiated strategies in their urban planning efforts to ensure that interventions are contextually relevant and strategically sound. This tailored approach will enable cities to better manage their growth and development challenges, ultimately leading to more sustainable and equitable urban environments.

Additionally, further research should explore the long-term effects of these strategies on urban development, incorporating more dynamic models and longitudinal data to capture changes over time and across different economic cycles.

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