Tohoku University Research Center for Policy Design Discussion Paper

TUPD-2026-008

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May 2026

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The Effects of Primary School Access on Housing Prices: Evidence from the Public-Private School Enrollment Reform in Guangzhou, China

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Abstract

This paper examines how changes in school admission rules affect housing market capitalization across urban neighborhoods in a deterministic public school assignment system. We study the 2020 Synchronous Enrollment Policy (SEP) in Guangzhou, China, which synchronized public and private school admissions and replaced selective private admissions with lottery allocation, thereby increasing uncertainty in private school enrollment while leaving public school catchments unchanged. Using transaction-level data on second-hand housing sales from 2018 to 2021 matched with official public primary school catchment maps, we implement a difference-in-differences strategy comparing price changes across neighborhoods inside and outside high-quality public school districts before and after the reform. We find that the policy increased the housing price premium associated with high-quality public school zones by approximately 4.2 percent. The capitalization effect exhibits systematic spatial heterogeneity: it is stronger in urban core districts, attenuates with residential distance to assigned schools, and is amplified in areas with greater exposure to elite private schools. These findings suggest that the housing market consequences of admission reforms depend critically on pre-existing educational competition structures and intra-urban spatial structure.

JEL Classification: R21, R31, H44, I28

Keywords: School access; Housing prices; Education policy; School quality capitalization

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1 Introduction

The capitalization of educational resources into housing prices have been well documented in the literature. A large body of empirical evidence from diverse institutional settings consistently shows that differences in public school quality are systematically reflected in property values (Black, 1999; Cheshire and Sheppard, 2004; Gibbons et al., 2013; Dhar and Ross, 2012; Jayantha and Lam, 2015; Collins and Kaplan, 2017). In institutional environments where school admission is determined by residential location, households are generally willing to pay a substantial premium to reside within the catchment areas of high-quality public schools (Bogart and Cromwell, 2000; Sedgley et al., 2008). Consequently, scholars and policymakers have long debated whether the introduction of school choice mechanisms—such as private, charter, or magnet schools—can weaken the spatial linkage between educational resources and housing markets and thereby mitigate inequality arising from education capitalization (Nechyba, 1999; Fack and Grenet, 2010; Schwartz et al., 2014; Zheng, 2022).

China's compulsory education system provides a particularly relevant institutional context for examining these issues. Under the proximity-based enrollment rule, admission to public primary schools is strictly tied to residential addresses. While this arrangement enhances administrative predictability and implementation efficiency, it also makes access to high-quality public education highly dependent on geographic location. A growing body of research has shown that in major Chinese cities such as Beijing, Shanghai, and Guangzhou, this institutional design significantly increases demand for school district housing and leads to substantial price premiums in areas assigned to elite public primary schools (Huang et al., 2020; Zheng et al., 2016; Feng and Lu, 2013; Chan et al., 2020). Conversely, when a residential property is rezoned out of a high-quality school catchment, its market value often declines significantly (Wen et al., 2017; Peng et al., 2021).

In practice, private schools in China have functioned as a quasi school-choice mechanism, partially relaxing geographic constraints. Unlike public schools, private primary schools traditionally conducted selective admissions through interviews, document reviews, and academic assessments, often enrolling students across administrative boundaries. Moreover,

private schools typically operated on an earlier admissions timeline than public schools, allowing families to apply to private institutions first and revert to public schools if unsuccessful. This institutional arrangement provided some households with an alternative pathway to access high-quality education without relocating.

However, such flexibility also contributed to educational stratification and social inequality. Because private schools were allowed to screen students, their student bodies often disproportionately consisted of children from more advantaged socioeconomic backgrounds, reinforcing stratification across schools and potentially weakening competitive pressures on nearby public schools. As Brasington (2000) argues, when households can access education through private schools, their demand for improvements in public school quality may decline endogenously, thereby affecting incentives for public education provision. Against this background, the city of Guangzhou implemented the Synchronous Enrollment Policy (SEP) in 2020. The reform required public and private schools to adopt a unified admissions timeline and prohibited private schools from using examinations or interviews in the selection process. When applications exceeded capacity, private schools were required to admit students through a computerized lottery. The stated objective of the policy was to curb selective admissions and enhance fairness in compulsory education enrollment.

Although intended to promote equity, the SEP fundamentally altered the educational choice environment faced by households. Under the new system, families could no longer apply to private and public schools sequentially; instead, they were required to choose a single track at the outset of the admissions process. Families opting for the private track faced admission uncertainty through lottery allocation and, if unsuccessful, were typically reassigned to ordinary public schools. In contrast, families selecting the public track could secure deterministic admission to high-quality public primary schools, conditional on residing within the designated catchment area. This institutional trade-off likely prompted households to reassess residential decisions and potentially reallocate housing demand toward high-quality public school zones. Even reforms designed to promote fairness may therefore generate unintended capitalization effects through housing markets (Zhu et al.,

2023).

The SEP in Guangzhou provides a quasi-natural experiment to examine this mechanism. The policy neither altered public school catchment boundaries nor changed the quality of public school provision. Instead, by synchronizing admissions and introducing lottery allocation for private schools, it increased uncertainty in private school admission outcomes while leaving deterministic public school assignment unchanged. In this institutional setting, households faced a clearer trade-off between guaranteed access to public schools and uncertain participation in private school lotteries.

A growing body of research has begun to examine the housing market consequences of synchronous enrollment reforms across Chinese cities. For example, Zou (2024) and Chen and Li (2023) analyze Chengdu, while Jin et al. (2023) and Zhu et al. (2023) provide evidence from Shanghai. These studies document policy-induced changes in housing price premiums associated with public school catchments. Building on this emerging literature, this paper shifts attention from average capitalization effects to the structural conditions under which such effects arise. We ask whether a reduction in the certainty of private schools as an alternative educational pathway leads households to reallocate educational choices through the housing market. Specifically, does the SEP strengthen the housing price premium associated with high-quality public primary school catchments? Moreover, does this effect vary systematically across space—for example, with residential distance to assigned schools, across different urban regions, or with the intensity of pre-reform private school competition?

To answer these questions, we construct a dataset of second-hand housing transactions in Guangzhou from 2018 to 2021, matched with official public primary school catchment maps at the community level. We employ a difference-in-differences framework comparing housing price changes before and after the reform between high-quality public school districts and other public school districts. Because catchment boundaries remained fixed during the sample period, identification does not rely on rezoning or changes in school quality, but rather on the reform-induced change in the educational choice environment. Our main findings show that following the implementation of the SEP, the housing

price premium associated with high-quality public primary school districts increased significantly, with an average log price increase of approximately 4.2 percent per square meter. The policy effect exhibits systematic spatial heterogeneity: it is more pronounced in core urban districts, stronger among properties located closer to high-quality public schools, and amplified in areas with greater exposure to elite private schools. Overall, these results indicate that the housing market response to the reform varies across urban space.

This paper contributes to the literature on education policy and housing market capitalization in three ways. First, we demonstrate that the degree of capitalization of public school quality is conditioned by the availability of outside options, thereby advancing the existing literature. Rather than treating the enrollment reform as a homogeneous policy shock, we exploit spatial heterogeneity in the distribution of high-quality private schools to test a substitution effect mechanism. We find that in communities with historically higher densities of high-quality private schools and closer proximity to them, the policy-induced capitalization effect is significantly amplified. This suggests that prior to the reform, the private education sector, as a viable outside option, endogenously restrained households' demand for public school catchments. When the reform disrupted the deterministic admission mechanism of private schools, household demand was reallocated toward public school zones, thereby magnifying the price response of public school housing premiums. These findings indicate that the magnitude of the market effects of enrollment reforms depends on the strength of the pre-existing educational competition structure.

Second, we find that this policy-induced capitalization effect exhibits pronounced spatial stratification within the city. The public school premium displays a clear asymmetry, being concentrated primarily in core urban districts characterized by intense educational competition and highly inelastic housing supply, while the effects in sub-core and peripheral areas are considerably weaker. This pattern suggests that the housing market consequences of education policy are not homogeneous, but are closely associated with the internal spatial distribution of educational resources and the level of activity in local housing markets. Therefore, when evaluating the economic consequences of enrollment reforms, it

is necessary to incorporate intra-urban spatial stratification into the analytical framework rather than relying solely on aggregate average effects.

Finally, at the micro level, we identify a continuous spatial gradient in capitalization driven by micro-spatial frictions associated with daily commuting. By modeling the distance between residential communities and their assigned public primary schools as a continuous variable, we find that the school premium declines significantly as distance increases. In the context of primary education, daily commuting coincides with citywide peak traffic hours, imposing substantial time constraints on households. Moreover, given the young age of primary school children, families place particularly high value on commuting safety and convenience, making the marginal cost of commuting highly sensitive to physical distance across urban space. As a result, even under a deterministic catchment-based school assignment system, the observed distance-decay pattern suggests that households are willing to pay a premium for walkability and spatial proximity in order to minimize these high-frequency daily commuting frictions. This finding further indicates that even under a deterministic school catchment regime, households' valuation of public schooling remains highly sensitive to micro-level physical distance.

The remainder of the paper is organized as follows. Section 2 introduces the institutional background and policy details. Section 3 presents the empirical strategy. Section 4 describes the data and variable construction. Section 5 reports the main empirical results. Section 6 analyzes mechanisms. Section 7 provides robustness checks. The final section concludes.

2 Institutional Background

2.1 Proximity-based Enrollment

Since the enactment of the Compulsory Education Law of the People's Republic of China in 1986, China has implemented a nine-year compulsory education system covering both primary and junior secondary education. Within this framework, public primary schools adopt a proximity-based enrollment system, under which school assignment is determined

by students' registered residential address.

This proximity-based enrollment system establishes a direct and rigid spatial link between residential location and access to public educational resources, giving rise to the phenomenon commonly referred to as school district housing (SDH). SDH denotes residential properties located within the catchment areas of high-quality public primary schools, for which homeownership guarantees enrollment in the designated school. Given the scarcity and unequal spatial distribution of elite public educational resources, households strategically acquire housing within these catchment areas to secure guaranteed access to preferred public schools. This geographically constrained assignment mechanism leads to the capitalization of public school quality into residential property prices. Existing studies have shown that residential properties located near top-performing schools generally command noticeable price premiums. For example,Zheng et al. (2016) use quasi-experimental data from Beijing and find that homes located within the catchment areas of top-ranked primary schools are priced approximately 21% higher than comparable non-districted homes; Chan et al. (2020) report similar results for the Shanghai housing market. Importantly, for homeowner households, residence within a public school catchment area confers a deterministic right to enroll in the designated public primary school, rather than merely increasing the probability of admission.

2.2 Aligning Public and Private School Admissions

To promote greater equity in compulsory education, the Guangzhou municipal government officially announced the adoption of the SEP on January 17, 2020. The policy mandated that public and private primary schools begin their enrollment registration on the same date. Its main objective was to reduce educational inequality caused by private schools selecting top-performing students through early admissions processes.

Prior to the implementation of the SEP, public and private schools operated under distinct enrollment systems. Public schools adhered to a proximity-based admission policy, whereby students were assigned to designated schools based on their registered residential address. In contrast, private schools were not subject to geographic constraints and

typically adopted merit-based selection procedures, including entrance examinations and interviews. In addition to these institutional differences, there was also a temporal gap in the admissions timeline. Private schools usually commenced enrollment earlier—often in March or April—while public school admissions began later, typically in June. This staggered schedule allowed families to apply to private schools first and, if unsuccessful, to subsequently purchase a residence in a preferred public school district before the public enrollment deadline. As a result, households could effectively pursue multiple enrollment strategies to increase their chances of securing a place at a high-quality school.

The implementation of the SEP introduced several institutional changes to the school admission system (see Table A1). First, the policy required both public and private primary schools to initiate their enrollment procedures simultaneously, typically in April each year. This reform eliminated the previously staggered timeline and removed the sequencing advantage that families had previously used to apply to both school types consecutively. Second, the SEP prohibited private schools from using entrance examinations and interviews as part of their selection criteria. In cases where the number of applicants exceeded available seats, admissions were determined through a computerized lottery system. These changes significantly increased uncertainty in private school admissions by removing academic screening and introducing randomness into the placement process. As a result of the unified admission schedule, families were required to make an initial commitment to either the public or private school track without knowing the outcome in advance. Households that opted for private schools but failed to secure a spot in the lottery were subsequently assigned to public schools with the lowest enrollment priority. Compared to families who chose public schools from the outset, these households faced more limited options in the second round of placement, often resulting in assignment to lower-ranked schools based on remaining seat availability.

Against this backdrop, some households may have responded by prioritizing residence-based access to elite public schools, potentially driving up housing demand in those catchment areas. Empirical studies have observed similar patterns following the SEP implementation in major cities(Chen and Li, 2023; Jin et al., 2023; Zou, 2024).

3 Empirical Methodology

This study employs a difference-in-differences (DID) approach to estimate the impact of the SEP, announced in January 2020, on housing prices in Guangzhou. The DID framework compares changes in housing prices before and after the policy between residential communities assigned to high-quality public primary schools and those assigned to other public primary schools. Communities zoned to high-quality public schools constitute the treatment group, while communities assigned to non–high-quality public schools serve as the control group.

The baseline DID specification is given by:

$$\log(P_{ict}) = \delta \left(HighQuality_c \times Post_t \right) + \beta X_{ict} + \mu_c + \theta_t + \epsilon_{ict}, \tag{1}$$

where $\log(P_{ict})$ denotes the logarithm of the unit transaction price (CNY per square meter) of property i in community c at time t. The variable $HighQuality_c$ is an indicator equal to one if community c is assigned to a high-quality public primary school, and zero otherwise. $Post_t$ is a post-policy indicator equal to one for transactions occurring after the implementation of the SEP. The interaction term $HighQuality_c \times Post_t$ captures the DID estimator δ, which measures the differential change in housing prices in high-quality public school districts following the reform.

The vector X_{ict} includes observable housing characteristics. In the main specification, we control for building area and orientation grade. This parsimonious specification is designed to isolate the treatment effect while minimizing the risk of overfitting. Community fixed effects (μ_c) are included in all specifications to absorb time-invariant neighborhood characteristics such as location, baseline amenities, and pre-existing differences in school quality, while year fixed effects (θ_t) capture common macroeconomic shocks and citywide housing market trends.

It is important to clarify the interpretation of the estimated treatment effect given the citywide implementation of the SEP. Because the policy applies uniformly to all public primary schools, housing demand in both high-quality and non–high-quality public

school districts may be affected. Our empirical strategy therefore does not rely on the assumption that the control group is completely unaffected by the reform. Instead, the DID framework identifies the relative change in housing prices between high-quality and other public school districts within the same public education system. The estimated coefficient thus captures a relative capitalization effect rather than an absolute effect of the SEP on the overall housing market.

Under this framework, potential spillover effects to non–high-quality public school districts do not violate the identifying assumptions of the DID design, provided that citywide shocks affect treatment and control groups in a similar manner. The identifying variation arises from heterogeneous exposure to the reform across school quality tiers, which preserves the validity of the parallel trends assumption. Standard errors are clustered at the community level to account for potential within-community correlation over time. A positive and statistically significant estimate of δ indicates that the SEP increased the housing price premium associated with access to high-quality public primary schools.

4 Data

4.1 Housing Transaction Data

This study employs second-hand housing transaction data from Guangzhou, covering the period from January 2018 to January 2021. The data are sourced from Lianjia, a leading online platform for second-hand real estate transactions in China.[1] The datset provides information on housing characteristics, actual transaction prices and dates, geographic coordinates, and neighborhood identifiers.

Second-hand housing transactions offer a credible measure of households' willingness to pay in the residential property market, as prices are determined through arm's-length transactions between buyers and sellers. During the sample period, public primary school catchment boundaries associated with existing residential communities in Guangzhou

[1]Source: Lianjia official website: `https://bj.lianjia.com`. Lianjia provides publicly accessible records of completed second-hand housing transactions, including realized transaction prices and transaction dates. While the platform's website primarily displays current listing information, the dataset used in this study is constructed from historical records of completed transactions rather than listing prices.

were fixed and clearly defined by the local education authority. This institutional feature allows each housing unit in the sample to be consistently linked to the same designated public primary school across all years, which is essential for a stable treatment definition in a difference-in-differences framework. The use of second-hand housing data is consistent with the standard practice in the literature examining the capitalization of school quality and the housing market effects of school admission policies. Recent studies analyzing the impact of the Synchronous Enrollment Policy and related education reforms in China rely on comparable transaction data to identify households' valuation of public school access (Chen and Li, 2023; Jin et al., 2023; Zou, 2024).

Rental data are excluded from this study because school assignment rules in China's compulsory education system operate differently for homeowners and tenants. For homeowner households, residence within a public school catchment area confers a deterministic right to enroll in the designated public primary school. This ownership-based assignment mechanism constitutes the institutional foundation of SDH and underlies the capitalization of public school quality into housing prices. By contrast, although tenant households residing within a catchment area may be formally eligible for enrollment, they do not enjoy the same guaranteed assignment when school capacity is limited. As a result, rental status is not associated with a stable or deterministic linkage between residential location and public school access. Consistent with this institutional distinction, existing studies find that school quality is capitalized more strongly in housing transaction prices than in rents (Zheng et al., 2016), and in some cases rental yields may even decline near high-performing schools due to restricted access for tenant households (Feng and Lu, 2013; Zhang and Chen, 2018). Focusing on second-hand housing transactions therefore provides a more accurate measure of households' willingness to pay for guaranteed access to public schools.

4.2 Data Processing

Given the sparsity of daily real estate transaction data, this study aggregates raw transaction records on a monthly basis, using calendar months as the unit of analysis to

summarize transaction volumes and prices. This temporal aggregation helps preserve the underlying price trends of SDH while mitigating statistical noise caused by insufficient daily transactions.

The analysis is restricted to transactions involving properties classified as commercial housing, based on the following considerations. First, commercial housing features clearly defined property rights and market-based pricing mechanisms, which allow transaction prices to more accurately reflect the capitalization of school district quality. Second, compared to other housing types such as affordable housing[2] and collectively owned housing,[3], commercial housing markets offer more complete and transparent transaction data, facilitating the control of confounding factors related to differences in property ownership. In addition, by excluding villas and other high-end residences, this study reduces housing heterogeneity, thereby improving the precision and robustness of estimates regarding the marginal effect of school district quality.

This study focuses exclusively on primary SDH. The rationale stems from the zoning policies in Guangzhou, where the boundaries of primary school districts are clearly defined within each administrative district and remained unchanged throughout the sample period. By contrast, secondary school zoning varies substantially across regions—some districts implement direct advancement from designated primary schools, while others adopt different allocation mechanisms—making consistent identification across neighborhoods less feasible, and therefore falls outside the scope of this study.

4.3 Community-School Mapping and School Quality Classification

This study systematically constructs a community-to-school matching database through the following steps. First, we collected official documents such as the Implementation Guidelines for Compulsory Education School Enrollment issued by the Guangzhou Munic-

[2]Affordable housing mainly refers to state-subsidized housing such as economically affordable units and price-capped housing, whose resale and circulation are subject to government regulations.

[3]Collectively owned housing refers to residences built on collectively , where property rights are held by rural collective economic organizations. Such housing typically lacks full market tradability.

ipal Education Bureau and various district governments between 2018 and 2021. These documents clearly define the school district boundaries for each public primary school, often using roads, natural geographic markers, or specific residential communities as delimiters. Based on this information, we constructed a precise matching database linking residential neighborhoods to their designated public primary schools.

Following the official school rating system implemented in Guangzhou prior to 2007—which classified public primary schools into provincial-level, municipal-level, and district-level key schools—this study defines any school that received such designation as a *high-quality public school*. Residential neighborhoods assigned to these schools are categorized into the treatment group, while the remainder are placed in the control group.

Since the official classification system that designated provincial-, municipal-, and district-level key schools was discontinued after 2007, relying solely on this system would omit many schools that are widely perceived as high-quality today. To ensure that our classification more accurately reflects current realities, we supplemented the official list with additional schools that, although lacking formal government recognition, are consistently cited as desirable by parents. Specifically, we identified schools that frequently appear in online education forums, and discussion platforms.[4]

For private primary schools, a multi-source data integration approach was employed. We systematically gathered and cross-validated information from education-focused news coverage, social media platforms, and parent discussion forums. Private schools consistently recognized by at least three independent sources and enjoying a strong public reputation were included in our list of *high-quality private schools*. Using the Google Maps API, we retrieved the geographic coordinates of these schools. Based on the WGS84 coordinate system, we calculated the great-circle distances between each residential neighborhood and its nearest high-quality private school using the Haversine formula, thereby constructing a quantitative measure of spatial access to educational resources.

[4]Representative sources (in Chinese) include discussion platforms such as:
`https://m.ke.com/fang/huodong/24919`
`https://www.jzlt100.com/question/171831`
`http://www.gzshdhr.com/sys-nd/365.html`
`https://www.sohu.com/a/638573784_121123816`
`https://www.163.com/dy/article/G00IQO5E0535AXR2.html`

4.4 Variable Definition and Descriptive Statistics

The main outcome variable is the unit housing price, defined as total transaction value divided by floor area (CNY per square meter). All regressions use the logarithm of unit price. Baseline controls include *Building Area* (square meters) and *Orientation Level*, an ordinal measure of building orientation. These variables capture core property attributes while maintaining parsimony in specifications with high-dimensional fixed effects. We additionally compile neighborhood and structural characteristics—such as floor area ratio, green coverage ratio, property management fees, parking fees, and distances to major amenities. These variables are not included in the baseline specifications but are used to characterize pre-policy conditions and in auxiliary analyses. They reflect time-invariant spatial features rather than outcomes affected by the SEP.

Table 1 reports pre-policy summary statistics by assigned public school district type. Residential communities in high-quality school catchments exhibit systematically higher prices and distinct structural and locational characteristics relative to ordinary districts. These differences reflect persistent spatial sorting patterns. Our identification relies on within-community variation over time, and all specifications include community fixed effects to absorb time-invariant heterogeneity. Figure A1 shows monthly housing transaction volumes from January 2018 to January 2021. Transaction activity declined sharply in early 2020 during the COVID-19 outbreak and recovered thereafter. We construct a measure of monthly newly confirmed COVID-19 cases to account for pandemic-related fluctuations in housing demand. Public school catchment assignments and community characteristics remain stable throughout the sample period.

In sum, the descriptive evidence indicates that structural differences between school districts predate the reform and that the institutional assignment framework remains unchanged during the sample period.

Table 1: Pre-policy Characteristics of Residential Properties by School District Type

	High-quality public school districts		Ordinary public school districts	
	Mean	Std. Dev.	Mean	Std. Dev.
Unit housing price (CNY/m^2)	35644	14809	30297	11396
Building area (m^2)	75.35	28.35	83.06	29.56
Building age (years)	15.46	5.89	12.18	7.13
Orientation grade	1.92	0.81	1.90	0.82
Floor area ratio	2.84	1.51	2.61	1.29
Green coverage ratio	0.32	0.10	0.36	0.11
Property management fee	1.38	0.78	1.78	0.95
Parking fee	233.91	136.83	204.35	108.94
Distance to nearest subway station (m)	710	665	1,410	1,439
Distance to nearest hospital (m)	412	300	669	646
Distance to nearest primary school (m)	395	318	409	275
Distance to nearest middle school (m)	583	334	1201	1180
Observations	3714		2279	

Notes: This table reports descriptive statistics for residential property transactions occurring before the implementation of the SEP. Differences in levels reflect long-standing spatial sorting and neighborhood heterogeneity. All regressions include community fixed effects to absorb time-invariant differences.

5 Results

5.1 Event Study

To validate the parallel trends assumption underlying the DID model, we conducts an event study analysis. Figure 1 presents the estimation results.

The horizontal axis represents the time window relative to the implementation of the policy, measured in quarters (Q). Q−8 to Q−1 correspond to the eight quarters preceding the reform, while Q+1 to Q+4 denote the first through fourth quarters following its introduction. The reference period (Q0) is omitted. The vertical axis reports the estimated coefficients from regressions that trace the evolution of relative housing price differences over time, together with 95% confidence intervals. Because the dependent variable is specified in logarithms, the coefficients can be interpreted as approximate percentage differences relative to the reference period.

Prior to the policy change, the estimated coefficients are close to zero and statistically indistinguishable from zero, indicating similar housing price dynamics across school catchment areas before the reform. Following the policy introduction, the coefficients become positive and statistically significant, suggesting a rapid adjustment in housing

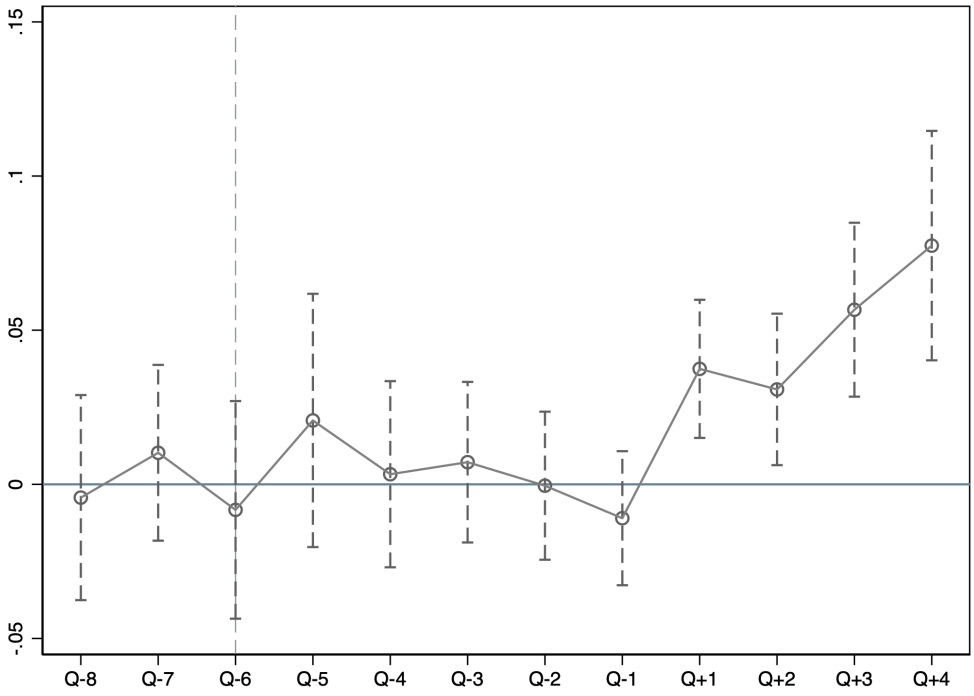

Figure 1: Event Study: Dynamic Effects of the SEP on Housing Prices. The horizontal axis indicates the time window relative to the policy implementation, measured in quarters (Q). Q−8 to Q−1 represent the eight quarters before the policy, and Q+1 to Q+4 represent the quarters after the policy. The baseline period (Q0) is omitted and serves as the reference category. Note: The vertical axis presents the estimated coefficients from the event study regression, where the dependent variable is the logarithm of housing prices. Thus, the coefficients can be interpreted as approximate percentage changes in housing prices relative to the baseline period.

prices in catchment areas of high-quality public primary schools. The timing of this adjustment is consistent with institutional features of China's primary school enrollment system. Public primary school enrollment typically takes place in September, with registration materials submitted several months earlier, often around June. For households seeking access to public schools through residential eligibility, it is therefore sufficient to purchase a qualifying property and complete household registration prior to the registration deadline. As a result, changes in admission system can be quickly reflected in housing market activity and prices, leading to observable price adjustments shortly after the policy announcement.

5.2 Main Result

Table 2 presents the baseline regression results on the impact of high-quality public school districts on housing prices following the implementation of the SEP. Column(1) includes community fixed effects, while Column (2) further adds year fixed effects to account for common time-varying shocks.

In column (1), the coefficient on $HighQuality \times Post$ is 0.0425 and statistically significant at the 1% level, indicating that, after the policy reform, the logarithm of unit housing prices in high-quality school districts increased by approximately 4.25% on average. A similar result is obtained in column (2), where the estimated coefficient is 0.0416 and remains significant at the 1% level. These findings consistently confirm the presence of a policy-induced price premium for properties located in high-quality public school districts.

Among the control variables, the coefficient on Orientation Grade is positive and statistically significant across specifications, suggesting that housing units with better orientation command higher prices. This result is consistent with the Chinese housing market context, where favorable orientation—typically associated with improved sunlight exposure and ventilation—is a valued housing attribute that is capitalized into prices. The coefficient on Building Area is negative and statistically significant, implying that larger units are associated with lower unit prices, holding other factors constant. This

pattern reflects a well-documented quantity discount in housing markets, whereby the marginal willingness to pay per square meter declines with total floor area due to budget constraints and diminishing marginal utility of space (Rosen, 1974; Cheshire and Sheppard, 1995; Goodman and Thibodeau, 1995). In the context of Chinese urban housing markets, particularly within school district housing, larger units often face a more limited pool of potential buyers and therefore transact at lower unit prices despite having higher total prices. Similar negative relationships between unit price and housing size have been documented in studies of Chinese housing markets (Zheng and Kahn, 2008; Deng et al., 2012).

The adjusted R^2 values in the baseline specifications are relatively high, reflecting the inclusion of community fixed effects that absorb persistent, time-invariant differences in housing prices across residential communities. To assess whether the high explanatory power of the model is driven by the treatment interaction term or by the fixed-effects structure, we estimate alternative specifications that vary the inclusion of community fixed effects and the treatment interaction, as reported in Table A3. When community fixed effects are included, excluding the interaction term between high-quality school designation and the post-reform period leaves the adjusted R^2 largely unchanged, indicating that a substantial share of price variation is captured by time-invariant community characteristics rather than by the interaction term alone. In contrast, omitting community fixed effects leads to a sharp decline in the adjusted R^2, highlighting the central role of fixed effects in explaining cross-sectional housing price variation.

Overall, the empirical results indicate that the implementation of the SEP significantly increased the price premium of properties in high-quality public school districts. Under heightened uncertainty in educational choices, households appear more inclined to secure access to high-quality public education by purchasing housing in desirable school catchment areas. This finding is consistent with existing evidence and provides further support for the view that education policy reforms can have substantial spillover effects on housing markets (Zou, 2024; Chen and Li, 2023; Jin et al., 2023).

Table 2: Baseline Regression Results

	(1)	(2)
HighQuality × Post	0.0425***	0.0416***
	(0.010)	(0.010)
Post	-0.0037	–
	(0.010)	–
Orientation Grade	0.0106***	0.0104***
	(0.000)	(0.000)
Building Area	-0.0008***	-0.0008***
	(0.000)	(0.000)
Observations	13219	13219
Adjusted R^2	0.960	0.960
Number of Communities	922	922
Community Fixed Effects	Yes	Yes
Year Fixed Effects	No	Yes

Notes: The dependent variable is the log of unit housing price (CNY/m^2). Standard errors clustered at the community level are shown in parentheses. All regressions include community fixed effects. Column (2) additionally controls for year fixed effects. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

6 Heterogeneous Effects and Mechanisms

This section investigates the mechanisms through which the SEP is capitalized into housing prices and examines how the magnitude of this effect varies across spatial and institutional dimensions. While the baseline results establish a relative increase in housing prices in high-quality public school districts following the reform, they do not by themselves reveal why or where this capitalization is strongest. We therefore explore three complementary channels that shape households' responses to the SEP: spatial proximity to assigned public schools, regional differences in urban development and educational competition, and the role of elite private schools as outside options.These analyses clarify how institutional school assignment, commuting constraints, and changes in educational choice uncertainty jointly govern the housing market response to the policy.

6.1 Distance to Public Schools and Commuting Constraints

We examines how the housing price response associated with access to high-quality public primary schools varies with residential distance to the assigned school. Rather

than discretizing distance into arbitrary intervals, we model distance as a continuous variable and directly estimate its interaction with the high-quality school indicator. This specification allows us to capture smooth spatial gradients in housing price responses and avoids sensitivity to ad hoc distance cutoffs.

Specifically, the regression includes an indicator for high-quality public primary schools, the straight-line distance (in meters) between each residential community and its assigned school, and their interaction. This framework permits the price premium associated with high-quality public schools to vary continuously with distance, while maintaining consistency with the institutional one-to-one assignment between communities and public schools.

Table 3 reports the results. The interaction term between high-quality public school access and distance is negative and statistically significant, with an estimated coefficient of approximately -0.00007 ($p < 0.01$). This implies that, holding other factors constant, a 100-meter increase in distance from the assigned school reduces the housing price premium associated with high-quality public schools by about 0.7 percentage points. In other words, although access to a high-quality public school raises housing prices on average, this premium is strongest for residences located closer to the school and gradually attenuates with distance.

These findings suggest that the capitalization of public school quality into housing prices operates not only through institutional school assignment but also through spatial accessibility. In the Chinese institutional context, primary school students typically require daily accompaniment by parents or grandparents, making commuting distance a salient determinant of time costs and household routines. As a result, even marginal increases in distance can meaningfully affect households' valuation of school access.

Our results complement and refine existing evidence in the literature. For example, Zou (2024) study a similar synchronous enrollment reform in Chengdu and find no significant variation in policy effects across discrete distance bands of 1,000, 1,200, and 1,500 meters. They interpret this pattern as evidence that capitalization primarily reflects the institutional one-to-one assignment between communities and public schools, rather

than geographic proximity. Two considerations help reconcile these findings with ours. First, by modeling distance continuously rather than using relatively wide distance bins, we are able to detect smooth spatial gradients that may be obscured by discretization. Second, differences in urban spatial structure and school density between Guangzhou and Chengdu may influence how proximity interacts with institutional assignment. In denser urban environments, small differences in distance can translate into meaningful variations in daily commuting costs, thereby amplifying the role of spatial accessibility even when school assignment itself is institutionally fixed.

These results highlight that institutional assignment and geographic proximity are complementary mechanisms through which education policies are capitalized into housing markets, and that their relative importance may vary with urban context and spatial structure.

Table 3: Effects by Distance to Assigned Public Primary School

	(1)
	Effects by Distance to Assigned School
HighQuality × Post	0.067***
	(0.013)
Distance to Primary School (m)	0.000389***
	(0.000018)
HighQuality × Post × Distance	−0.000071***
	(0.000025)
Orientation Level	0.010***
	(0.001)
Building Area	−0.000792***
	(0.000107)
Observations	13219
Adjusted R^2	0.963
Number of Communities	922
Community Fixed Effects	Yes
Year Fixed Effects	Yes

Notes: Standard errors are reported in parentheses. The dependent variable is the logarithm of unit housing prices. Distance is measured as the straight-line distance (in meters) from each residential community to its assigned public primary school. All regressions include community and year fixed effects. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

6.2 Heterogeneous Effects by Region

Table 4 documents pronounced regional heterogeneity in the capitalization effects of the SEP. The estimated effect is large and statistically significant only in Guangzhou's Core Area, where housing prices in high-quality public school districts increased by approximately 10.4 percent following the reform. This magnitude is substantially larger than the citywide average and highlights the central role of spatial context in shaping households' responses to education policy.

The strong effect observed in core districts reflects the interaction of intense competition for educational resources, a dense supply of elite public schools, and the presence of high-quality private schools that previously served as a viable outside option. By increasing uncertainty in private school admissions, the SEP induced households in these areas to reallocate demand toward residential locations that guarantee access to top public schools, resulting in a sharp increase in housing price premiums. This finding is consistent with evidence that the capitalization of school quality is more pronounced in high-priced urban segments, where households place greater value on educational certainty (Wen et al., 2019).

In contrast, the estimated effect in Sub-Core Areas is small and statistically insignificant. These districts are characterized by a more limited supply of elite schools and weaker private schooling alternatives, such that the reform did not materially alter households' feasible education choices. As a result, housing demand and prices exhibit little response to the policy. Similarly, no significant effect is detected in Non-Core Areas. In these peripheral districts, housing markets are thinner, educational resources are sparse, and residential location decisions are less tightly linked to school access. Under such conditions, the SEP does not generate meaningful shifts in housing demand or price capitalization.

These results demonstrate that the housing market response to the SEP is highly localized and depends critically on the pre-existing educational and urban environment. Policy-induced changes in school choice uncertainty are capitalized into housing prices only where education is a binding constraint and where residential location remains the primary channel for securing access to high-quality public schools.

Table 4: Regional Heterogeneity Analysis

	(1) Core Area	(2) Sub-Core Area	(3) Non-Core Area
HighQuality × Post	0.104^{***}	0.007	−0.030
	(0.010)	(0.020)	(0.020)
Orientation Grade	0.010^{***}	0.015^{***}	0.004
	(0.000)	(0.000)	(0.000)
Building Area	-0.001^{***}	-0.001^{***}	-0.001^{***}
	(0.000)	(0.000)	(0.000)
Observations	5737	5306	2176
Adjusted R^2	0.92	0.85	0.91
Number of Communities	495	256	171
Community Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes

Notes: Standard errors are reported in parentheses. All regressions include community and year fixed effects. The dependent variable is the log of unit housing price. The sample is split by region, with districts grouped based on their level of urban development and access to educational resources. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

6.3 The Role of Elite Private Schools as Outside Options

We next examine how elite private primary schools shape the mechanism through which the SEP affects housing prices. A key institutional feature in our setting is that access to public primary schools for homeowner households is determined deterministically by residential location, whereas admission to private schools is inherently uncertain and subject to selection or lottery-based allocation. Accordingly, private schools function as an outside option to the public school system throughout the study period rather than as an alternative assignment mechanism; the SEP primarily affects the uncertainty associated with this option by replacing selective admissions with lottery-based allocation.

Previous literature shows that the availability of private schools can weaken the capitalization of public school quality into housing prices by allowing households—particularly higher-income families—to opt out of the public system without relocating (Nechyba, 1999, 2000; Fack and Grenet, 2010; Tang, 2021). In this framework, households face a trade-off between purchasing housing to secure deterministic access to high-quality public schools and relying on private schools as a relatively predictable outside option. The SEP alters this trade-off by increasing uncertainty in private school admissions, thereby reducing the attractiveness of the private school option and shifting demand toward housing in

high-quality public school catchment areas.

If this mechanism is operative, the housing price response to the SEP should be stronger in areas where private schools played a more prominent role in households' pre-reform educational choice sets. Importantly, this mechanism does not reflect probabilistic assignment within the public school system, nor does it involve overlapping public school zones. Each residential community in our setting is linked to a single designated public primary school, and public school admission for homeowners does not operate as a lottery.

We empirically assess this mechanism along two spatial dimensions: (i) residential proximity to elite private primary schools, which captures the relevance of private schools as a feasible outside option prior to the reform; and (ii) the local density of elite private primary schools, which reflects the intensity of private school competition in the surrounding area.

Table 5 reports heterogeneous effects by residential distance to the nearest elite private primary school. The estimated impact of the SEP is substantially larger in communities located closer to private schools. Within a 2-kilometer radius of an elite private school, housing prices in high-quality public school districts increase by approximately 8.6 percent following the reform. The magnitude of the effect declines monotonically with distance and becomes statistically insignificant beyond 4 kilometers. Importantly, these estimates compare high-quality public school districts with other public school districts within the public system, conditional on exposure to nearby private schools, and therefore do not reflect differences between public and private school sectors.

This spatial pattern is consistent with a demand reallocation mechanism driven by changes in the private school outside option. Prior to the SEP, households residing near elite private schools could rely on relatively predictable private school admissions to secure high-quality education without purchasing housing in high-performing public school catchment areas. As a result, the capitalization of deterministic public school access into housing prices was muted in these locations. When the SEP increased uncertainty in private school admissions by introducing lottery-based allocation, this outside option weakened. Households that had previously relied on private schools reallocated demand

toward high-quality public school districts within the public system, leading to a stronger post-reform price response relative to other public school districts.

Table 5: Heterogeneous Effects by Distance to Elite Private Primary Schools

	(1) Full Sample	(2) Within 2km	(3) Within 3km	(4) Within 4km	(5) Above 4km
HighQuality × Post	0.042***	0.086***	0.074***	0.071***	-0.025
	(0.010)	(0.010)	(0.010)	(0.010)	(0.050)
Orientation Grade	0.010***	0.012***	0.011***	0.010***	0.010***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Building Area	-0.001***	-0.001***	-0.001***	-0.001***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	13219	6733	8710	10099	3120
Adjusted R^2	0.96	0.96	0.96	0.96	0.96
Number of Communities	922	494	687	796	126
Community Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: This table reports heterogeneous effects of the SEP on housing prices conditional on residential proximity to elite private primary schools. The dependent variable is the logarithm of unit housing prices. Standard errors are reported in parentheses. All regressions include community and year fixed effects. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

While proximity to private schools captures the intensive margin of exposure to private schooling alternatives, it does not fully reflect the breadth of available options. Table 6 therefore examines whether the local concentration of elite private schools further shapes the magnitude of the policy-induced housing price response. The interaction between the post-reform indicator and private school density is positive and statistically significant, indicating that each additional elite private primary school within a 4-kilometer radius is associated with an increase of approximately 1.1 percent in the housing price premium of high-quality public school districts following the reform.

The results suggest that variation in the housing price response to the SEP is shaped by the pre-reform educational landscape. Proximity to assigned public schools governs how intensively households capitalize deterministic public school access through daily commuting convenience, whereas proximity to and density of private schools determine the strength of the private school outside option that constrains such capitalization. When private schooling alternatives become less predictable, demand reallocates within the public system, amplifying housing price responses in areas where the private school option

Table 6: Private School Density and Housing Price Effects

	(1) Full Sample	(2) Private School Density
High-quality × Post	0.042***	0.017
	(0.010)	(0.019)
High-quality × Post × Private Density	–	0.008*
	–	(0.0045)
Orientation Grade	0.010***	0.010***
	(0.002)	(0.002)
Building Area	−0.001***	−0.001***
	(0.000)	(0.000)
Observations	13219	13219
Adjusted R^2	0.96	0.96
Number of Communities	922	922
Community Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes

Notes: Standard errors are reported in parentheses. All regressions include community and year fixed effects. The dependent variable is the logarithm of unit housing prices. Private school density is defined as the number of elite private primary schools within a 4-kilometer radius of each community. Column (1) reports estimates using the full sample. Column (2) examines whether the housing price response varies with local high quality private school density. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

had previously been most salient.

7 Robustness check

7.1 Propensity Score Matching

As an additional robustness check, we complement the baseline difference-in-differences analysis with a PSM approach. Specifically, we estimate propensity scores based on a set of pre-policy covariates that are plausibly related to housing prices and residential location choices, including greening rate, floor area ratio, building age (year of completion), and distances to the nearest subway station, hospital, primary school, and middle school. These variables capture long-standing features of the residential environment and local accessibility that predate the implementation of the SEP.

Using the estimated propensity scores, we perform one-to-one nearest-neighbor matching without replacement to construct a matched sample of treated and control observations with similar observable characteristics. We then re-estimate the DID specification on this matched sample, maintaining the same set of controls and fixed effects as in the baseline analysis. The results are reported in Table 7.

The estimated coefficient on the interaction term between high-quality school assignment and the post-policy indicator remains positive and statistically significant, with a magnitude of approximately 0.050. This estimate is comparable to, and slightly larger than, the baseline DID result, indicating that the housing price premium associated with access to high-quality public schools persists after restricting attention to a more comparable set of residential communities.

Overall, the matched-sample results reinforce the robustness of the baseline findings and suggest that the estimated policy effect is not driven by differences in observable pre-policy neighborhood characteristics. Consistent with the main analysis, the PSM-DID estimates support the interpretation that the SEP is associated with a relative increase in housing prices in high-quality public school districts following the reform.

Table 7: DID Estimates Using Matched Sample

	(1)
HighQuality × Post	0.050^{***}
	(0.020)
Orientation Grade	0.009^{***}
	(0.002)
Building Area	-0.001^{***}
	(0.000)
Observations	5234
Adjusted R^2	0.96
Number of Communities	398
Community Fixed Effects	Yes
Year Fixed Effects	Yes

Notes: Standard errors in parentheses. This regression is based on the matched sample obtained via one-to-one nearest-neighbor PSM, using pre-treatment covariates including greening rate, floor area ratio, year of completion, and distances to nearby amenities. Community and year fixed effects are included to absorb time-invariant unobserved heterogeneity and macro shocks, respectively. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

7.2 The Impact of COVID-19

Since the SEP was implemented in January 2020, contemporaneously with the outbreak of the COVID-19 pandemic, an important concern is that pandemic-related shocks may confound the identification of the policy effect. To address this concern, we conduct a series of robustness checks that flexibly control for pandemic-related shocks along both observed and unobserved dimensions. First, we explicitly control for the intensity of the local pandemic by including the monthly number of newly confirmed COVID-19 cases in Guangzhou. This variable captures time-varying health risks and policy responses that may directly affect housing market activity. As reported in Column (1) of Table 8, the estimated coefficient on the interaction term $HighQuality \times Post$ remains positive and statistically significant, indicating that the baseline policy effect is not driven by contemporaneous fluctuations in infection rates. Second, to account for broader and potentially unobserved time shocks associated with the pandemic—such as shifts in work-from-home feasibility or citywide changes in housing preferences—we replace the COVID

control with quarter fixed effects. Quarter fixed effects absorb all common shocks at the quarterly frequency, including pandemic-related demand shifts that affect both treatment and control communities simultaneously. As shown in Column (2), the estimated policy effect remains highly stable in magnitude and significance. Finally, Column (3) includes both quarter fixed effects and the COVID infection control. The estimated coefficient on $HighQuality \times Post$ is virtually unchanged relative to previous specifications, providing further evidence that the observed capitalization effect is not sensitive to alternative ways of controlling for pandemic-related shocks.

Table 8: Robustness to COVID-19 Shocks

	(1)	(2)	(3)
HighQuality × Post	0.045***	0.039***	0.039***
	(0.008)	(0.012)	(0.012)
Monthly New COVID Cases	-0.000		-0.000
	(0.000)		(0.000)
Orientation Grade	0.011***	0.011***	0.011***
	(0.001)	(0.001)	(0.001)
Building Area	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)
Number of Communities	922	922	922
Observations	13219	13219	13219
Adjusted R^2	0.962	0.965	0.965
Community Fixed Effects	Yes	Yes	Yes
Quarter Fixed Effects	No	Yes	Yes

Notes: The dependent variable is the logarithm of unit transaction prices. Column (1) reports the baseline DID specification with community fixed effects and controls for city-level monthly COVID-19 infection counts. Column (2) replaces the COVID control with quarter fixed effects to absorb high-frequency pandemic-related time shocks common across communities. Column (3) includes both quarter fixed effects and the COVID control. All specifications include community fixed effects. Standard errors are clustered at the community level. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Consistent with the baseline results, the estimates imply that, following the implementation of the SEP, housing prices in high-quality public school districts increased by approximately 4 percent relative to other public school districts, with the effect concentrated in central urban areas and in neighborhoods located in close proximity to high-quality public schools.

8 Conclusion

This study investigates the causal effects of Guangzhou's 2020 SEP on the urban housing market, using detailed second-hand transaction data from 2018 to 2021. Leveraging the policy as a quasi-natural experiment, we show that the reform—by increasing uncertainty in private school admissions—intensified household competition for access to high-quality public schools, thereby increasing housing prices in desirable school districts. Our baseline estimates indicate that, following the policy, the average price per square meter in high-quality public school zones rose by approximately 4.2%, with the effects concentrated in central urban areas and neighborhoods located in close proximity to high-quality public schools.

Mechanism analysis suggests that this price premium reflects not only the formal school assignment system, but also a behavioral shift in household strategies: families respond to policy-induced uncertainty by engaging in "hedging through housing," purchasing properties near reputable public schools to secure educational access. This effect is further amplified in areas with dense clusters of private schools, where the disruption to the previous admission structure was most acute.

Robustness checks using PSM and controls for the COVID-19 shock confirm that the observed effects are not driven by selection bias or external confounders. Instead, they reflect a meaningful reallocation of household preferences in response to institutional change.

This study reveals that school admission reforms—particularly those that increase uncertainty—can generate significant spillover effects in the urban housing market. When access to high-quality public education becomes capitalized into housing prices, low-income households face heightened barriers to both education and housing, thereby exacerbating existing spatial and social inequalities. Therefore, education reforms should not only prioritize procedural fairness but also account for the behavioral responses and market consequences they may induce. Achieving the goal of educational equity requires an integrated urban governance approach that jointly considers the education and housing systems, in order to avoid a misalignment between policy intentions and actual outcomes.

To this end, more regionally targeted and differentiated governance strategies should be adopted. In central urban districts, efforts should focus on enhancing the transparency and fairness of school zoning to prevent excessive speculation in school-district housing markets. In peripheral areas, improving the quality of public schools and introducing more flexible enrollment mechanisms can help alleviate the pressure on core districts and mitigate spatial imbalances in education access. Additionally, in regions with a high density of private schools, it is advisable to establish more stable and transparent private school admission procedures. Enhancing the predictability of admission pathways can reduce "hedging behavior through housing" driven by uncertainty, thereby curbing volatility in the housing market. Overall, future education reforms should be grounded in regional disparities and household behavioral logic, promoting coordinated governance of education and housing systems to foster a more equitable and sustainable urban development trajectory.

Acknowledgements

The authors are grateful to Bai Yu, Chen Fengming, Akira Hibiki, Li Yanjun, and Hiroshi Yoshida for their helpful comments and suggestions. This paper has also benefited from feedback received at the 8th Sophia Research Workshop in Economics and the 100th Annual Conference of the Western Economic Association International. Sixian SHU gratefully acknowledges financial support from JST SPRING (Grant Number JPMJSP2114).

Declaration of Interest

The authors declare no competing interests.

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Appendix

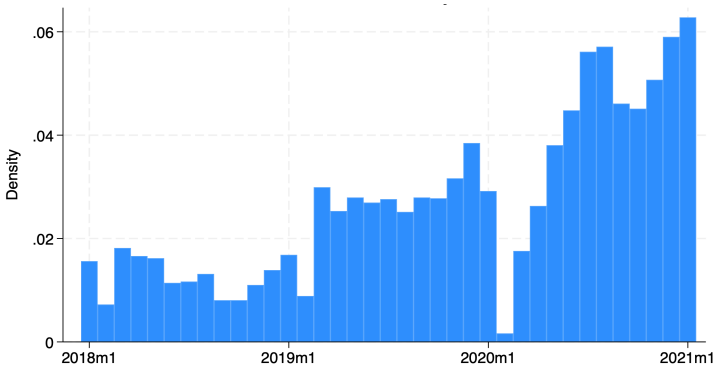

Figure A1: **Monthly Distribution of Property Transaction Density in Guangzhou (2018–2021)**. The horizontal axis indicates the year and month of each property transaction (e.g., "2018m1" refers to January 2018), while the vertical axis shows the relative density of transactions in each month over the sample period.

Table A1: Pre- and Post-Reform Admission Policies: Public vs. Private Schools

Item	**Private**		**Public**	
	Pre-2020	**Post-2020**	**Pre-2020**	**Post-2020**
Enrollment Timing	March or April, earlier than public	April, synchronized with public	June, later than private	April, synchronized with private
Admission Method	Exams and interviews	Exams/interviews abolished; lottery if oversubscribed	Assignment by school district	Assignment by school district
Admission Certainty	Higher admission chance via exams	Uncertain due to random allocation	Secured via owning property in the district	Secured via owning property in the district

Figure A2: Administrative Map of Guangzhou. This figure shows the administrative divisions of Guangzhou, a major city in southern China. It consists of 11 districts: Yuexiu, Liwan, Haizhu, Tianhe, Baiyun, Huangpu, Panyu, Huadu, Nansha, Zengcheng, and Conghua.

Source: `https://www.collidu.com/presentation-guangzhou-map`

Table A2: Spatial Distribution of Public and Private Educational Resources in Guangzhou

District	Public	Private	Total	HQ Public	HQ Private	HQ Ratio (%)
Yuexiu	52	2	54	49	2	94.4
Liwan	63	13	76	27	5	42.1
Haizhu	80	20	100	28	7	35.0
Tianhe	66	33	99	22	8	30.3
Panyu	146	38	184	32	12	23.9
Conghua	67	5	72	12	1	18.1
Huangpu	90	8	98	13	4	17.3
Baiyun	132	68	200	21	11	16.0
Nansha	74	8	82	10	2	14.6
Huadu	113	34	147	16	4	13.6
Zengcheng	163	30	193	6	5	5.7
Total	**1046**	**259**	**1305**	**236**	**61**	**22.8**

Notes: "Public" and "Private" refer to the number of public and private primary schools located in each district. "Total" is the sum of public and private schools. "HQ Public" and "HQ Private" indicate the number of well-regarded public and private primary schools, respectively. "HQ Ratio (%)" is calculated as (HQ Public + HQ Private) $\div$ Total $\times$ 100. Data on school numbers are from the Guangzhou Education Bureau. The classification of high-quality private schools is compiled by the author based on Baidu Baike entries and publicly available news sources.

Table A3: Comparison of Specifications with and without Community Fixed Effects

Variable	**(1)**	**(2)**
HighQuality × Post		0.0516***
		(0.006)
Orientation Grade	0.011***	-0.061***
	(0.00)	(0.01)
Building Area	-0.001***	-0.001
	(0.00)	(0.00)
Observations	13,219	13,392
Adjusted R^2	0.96	0.17
F Statistic	48.94	55.96
Number of Communities	922	1,095
Community Fixed Effects	Yes	No
Year Fixed Effects	Yes	Yes

Notes: This table compares alternative model specifications to illustrate the role of community fixed effects in explaining housing price variation. Column (1) includes community and year fixed effects but excludes the interaction term between high-quality school designation and the post-reform period. Column (2) omits community fixed effects while retaining the interaction term and other housing characteristics. Standard errors are reported in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.