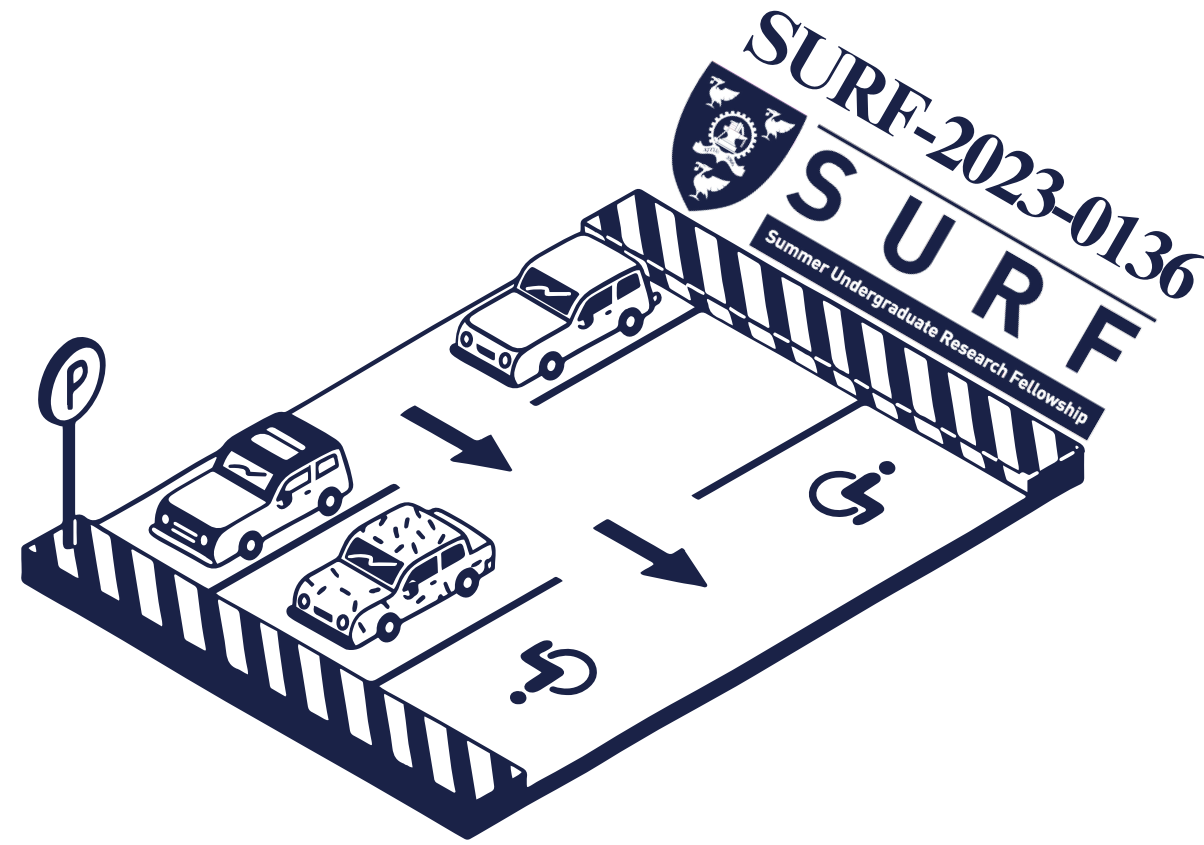
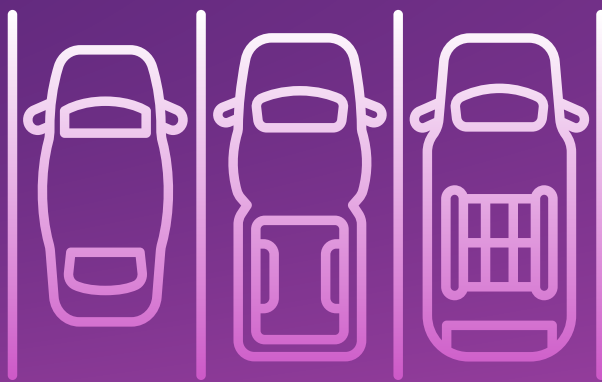




Policy Effects on Real Estate Supply Behaviors

- An Empirical Analysis Based on Suzhou



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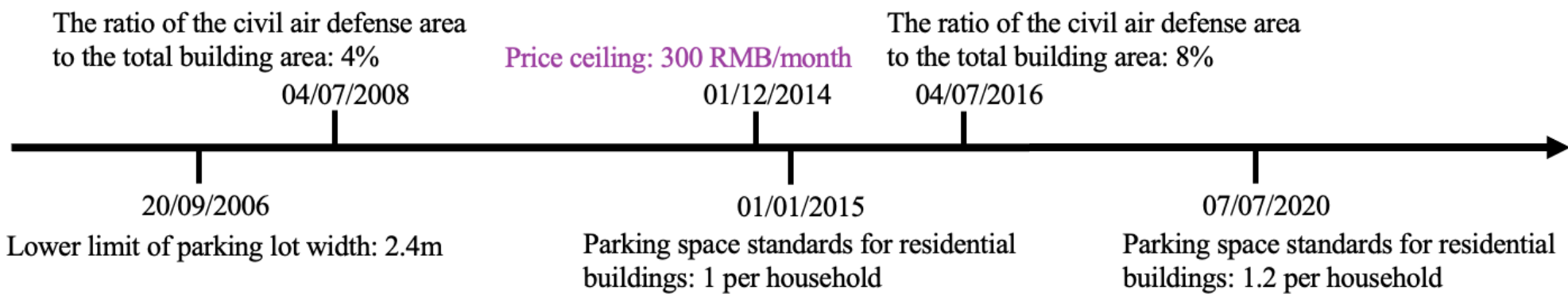
Abstract

China's real estate market has expanded rapidly, yielding high housing prices. However, as a semi-homogeneous product in the housing market, the quality of underground parking garages has yet to be investigated by current literature. To bridge this gap, we focused on underground parking lot supply to analyze how real estate suppliers reacted to the Rent Control Policy implemented in 2014. Employing the Regression Discontinuity Design model, we analyzed how supplier behaviors concerning the quality of garages were affected by the Rent Control Policy in SIP-Suzhou, finding that the column spacing in garages has significantly decreased due to this policy.

Introduction

China's real estate market has rapidly expanded in the past decades, resulting in unfavorable price surges in the housing market. Despite numerous government policies addressing this issue, only a few have proven successful (Chen et al., 2023). This ineffectiveness has generated significant interest regarding how real estate suppliers would react to such policies. However, current literature seems to underaddress the economic analysis in this respect, which further necessitates the evaluation of the effectiveness of housing market policies. One such policy was implemented by the Suzhou government in December 2014, specifying a price ceiling of 300 RMB/month for the rent of underground parking garages in communities.

Policy Timeline in Suzhou-SIP:



These policies summarized are from official government websites and are not cited in the 'Selected References'. Original referenced documents can be provided upon request.

Research Objective & Empirical Data

Objective: We aim to study how real estate suppliers reacted to the Rent Control Policy in terms of alternating the quality of the underground parking garages supplied.

Empirical Data

(a) Sampling of Communities

Considering the persistent overheating of the real estate market in recent two decades, we focused on residential communities in the Suzhou-SIP region constructed from 2000 to 2020. In addition, we restricted this sample to include only residential properties and excluded other property types, such as single-family communities, etc. A total of 101 residential communities in SIP-Suzhou satisfy our sampling criteria, and we have visited all of these communities in person through fieldwork.

(b) Data from Online Sources and Fieldwork

The data we used in this study are mainly from (1) Online sources and (2) Fieldwork. Initially, we collected basic information about each community, including but not limited to address, plot ratio, property management fee, etc., from real estate information platforms such as Beike.com and Anjuke.com. To ensure the credibility of the data, we cross-checked the same observation from different providers and made necessary corrections. Subsequently, through 3-week fieldwork, we visited these 101 communities in person and collected essential data points, such as the **Column Spacing** (Key variable, defined as the Average distances between pillars in underground parking garages. See the illustration below, the distance indicated by Red Arrows.), standard parking space length and width, etc. Our summary statistics are shown in Table 1 below. We also applied the baseline comparison to prove that there is no significant difference among control variables.



Table 1: Baseline Comparison Between Control Group and Treatment Group

Variable	Control ¹	Treatment ²	Difference	
	Mean	Mean	Mean	P-value
Green Rate	0.41 (0.02)	0.41 (0.02)	0.001 (0.2)	0.9
PMF ³	2.81 (0.30)	3.07 (0.25)	-0.27 (0.40)	0.51
School Zone ⁴	0.98 (0.02)	0.90 (0.04)	0.08 (0.05)	0.13
Capital	51168.04 (16055.8)	116538.4 (40701.37)	-65370.38 (0.28)	0.18

Notes: Stand errors in parentheses. Significance codes: *5% level, **1%level, and ***0.1%level. All errors are our own.

- Control means those communities' construction commencement years are before 2013.
- Treatment means those communities' construction commencement years are after 2013.
- PMF means Property Management Fee, 2.81 means 2.81RMB/m²/month.
- The school zone is the dummy variable. 0=no school zone, and 1=school zone.

Econometric Model

We propose to use the Regression Discontinuity Design (RDD) method introduced by Canonical, Cantanio, and Titanic (2014). Observations between 2000 and 2013 are used as the control group, while observations between 2014 and 2020 are the treatment group. The effect of the policy on the supply behaviors can be observed by comparing the differences between the control and treatment groups. Control variables are included. Below is our model specification,

$$\begin{aligned} \text{Stage1: } \gamma_{it} &= \delta_0 + \delta_1 X_{it} + \mu_{it} \\ \text{Stage2: } \mu_{it} &= \beta_0 + \beta_1(t - 2013) + \tau T_t + \beta_2(t - 2013)T_t + v_{it} \\ T_t &= 0, \text{ if } t \leq 2012, \text{ otherwise } T_t = 1 \\ \gamma_{it} &: \text{Column Spacing for each community.} \\ X_{it} &: \text{Control variables that we choose for each community.} \\ \mu_{it} &: \text{Residualized Column Spacing.} \\ \tau &: \text{The treatment effect.} \\ t &: \text{The commencement year of construction for each community.} \end{aligned}$$

Our model has two stages. In the first stage, we regress the dependent variables (column space) on the control variables to obtain the residualized dependent variable. In the second stage, we performed the RDD for the residualized dependent variable.

Results and Analysis

Our regression results are presented in Table 2 below. We had 3 model specifications. We initially hypothesized that **H1. Real estate developers would respond to the announcement of the policy**, leading us to choose 2014 as the cut-off point for our RDD estimation, Specification (1). However, results demonstrated that the policy had no significant effect on column spacing when using 2014 as the cut-off point. We then hypothesized that **H2. Some real estate developers might have obtained internal information before the official announcement of the policy**. Presuming that real estate developers with more capital reserves might be more capable of obtaining policy information, we used the Developers' Registered Capital to represent their capacity to forecast.

Table 2: Policy Effect on Column Spacing

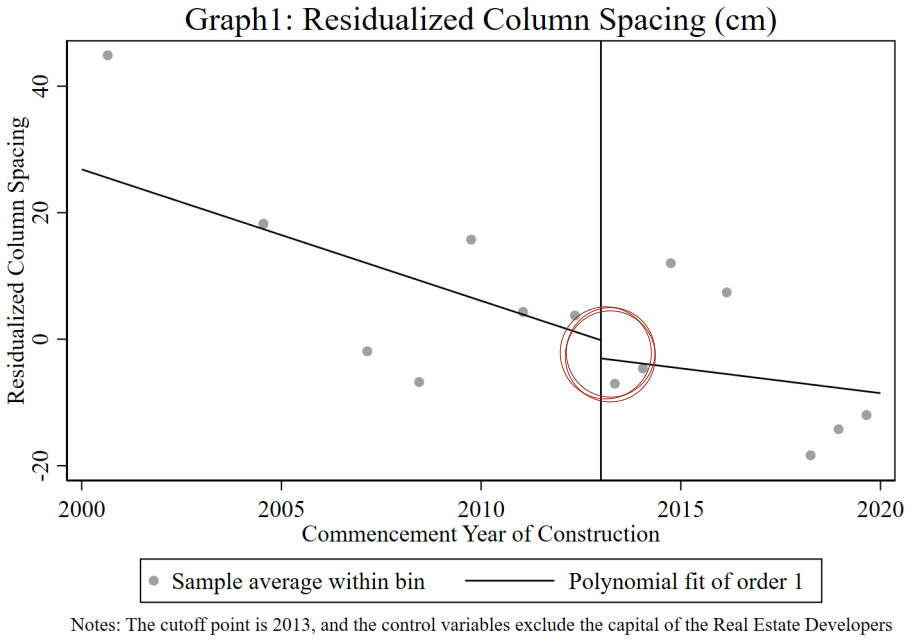
Dependent Variables	(1)	(2)	(3)
	Column Spacing		
Treatment effect	9.86 (5.84)	-10.84 (6.93)	-11.59* (5.84)
Cutoff Year	2014	2013	2013
Control	Yes	Yes	Yes
# of Obs	92	81	92

Notes: Standard errors in parentheses, significant level: * for 5%, **for 1%, *** for 0.1% Specifications (1) and (3) take Property Management Fee, School Zone, and Green Rate as control variables. Specification (2) added the Registered Capital of Real Estate Developers as another control variable.

To verify our second hypothesis, we performed another two sets of analyses using 2013 as the cut-off point.

In specification (2) above, we added registered capital as a control variable, aiming to obtain the residual that would not be affected by the developer's ability to predict the policy. Our results show that the policy had no significant effect on the column spacing.

In specification (3) above, we used the same control variable set as specification (1), i.e., excluding the reserved capital, but this time treating 2013 as the cut-off point. The result indicates that our policy of interest had a significant impact on column spacing before and after 2013. Hence, we have confirmed our second hypothesis. Indeed, real estate developers may be able to predict policies in advance through internal information. Graph 1 also demonstrates a negative jump that happened in 2013.



Notes: The cutoff point is 2013, and the control variables exclude the capital of the Real Estate Developers

Limitation

Given the limitations imposed by time constraints and challenges in accessing communities during fieldwork and online data collection, our study was confined to 101 observations/communities. Besides, it is essential to acknowledge that this market has internal information leakage, which needs further investigation.

Selected References

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