

Valuation of Long-Term Property Rights under Political Uncertainty

Zhiguo He,¹ Maggie Hu,² Zhenping Wang,³ and Vincent Yao⁴

¹University of Chicago and NBER

²Chinese University of Hong Kong

³University of Chicago

⁴Georgia State University

June 2021

Motivation

- Political uncertainty affects asset valuations as well as economic activity (Pástor and Veronesi, 2013; Baker et al., 2016; Hassan et al., 2019).
 - Developed economies with stable established political system
- We fill the gap: study Hong Kong's property market & identify a causal link between political uncertainty and housing prices.
 - A political battleground, unprecedented political experiment "One Country, Two Systems"
 - Well-functioning financial market allowing us to study valuations
 - Land granted by the government for a fixed term, but subject to renewal by another different government
 - Hong Kong is also known for its notoriously expensive housing market
 - Focus on the first moment: expected change or "directional"

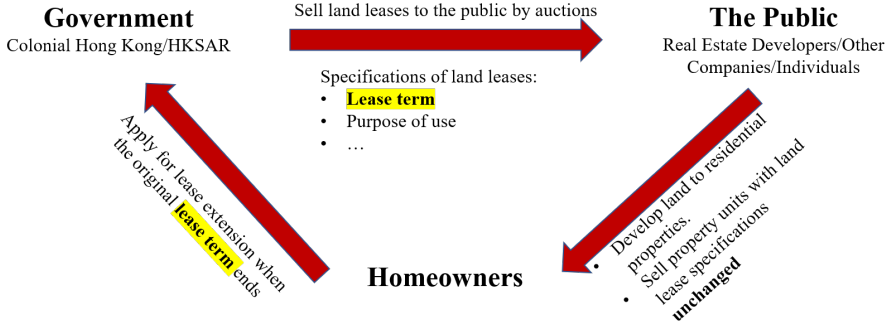
Main Identification

- Empirical challenge: isolating variation in the political uncertainty from fundamentals.
- The impending uncertainty of Hong Kong's political outlook is centered around a predetermined future date (July 1st, 2047).
- We exploit the heterogeneity among land lease extension protections that are linked to the expiry of the HKSAR in 2047.
 - The historical arrangements (the Basic Law and "One Country, Two Systems") are set to expire in July 1st, 2047.
 - Land leases expiring on June 30th, 2047 (right before the expiry of HKSAR) have been promised a 50-year extension protection; those expiring immediately after that date are left unprotected largely.
 - How are these long-term promises (on land policies) perceived by the market?

Outline

- ① Motivation and Institutional Background
- ② Main Analysis
 - Model Framework and Assumption
 - Data and Baseline Analysis
 - Reneging Risk (HKSAR vs British HK)
 - Estimated Model and Economic Magnitude
- ③ Political Uncertainty: District-Level Evidence
- ④ Conclusions

Land Leases in Hong Kong

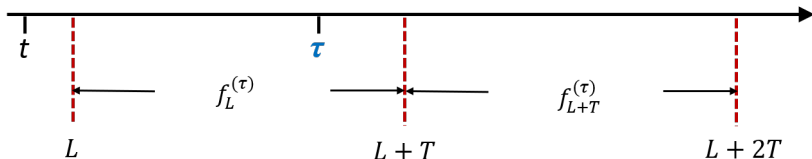


Land Leases in Hong Kong

- A house generates a “natural” cash-flow \hat{R}_t growing at g , $\hat{R}_t = \frac{e^{gt}}{1-\omega}$.
 - ω is the percentage of repairing costs and tax, including 3% current baseline *ground rent* (like **tax**), so the current effective cash-flow $R_t = e^{gt}$.
 - But, possible *extra ground rent* $f_s^{(\tau)}$ imposed by the government on the **renewal** date, e.g.

$$f_s^{(\tau)} = \gamma \mathbf{1}_{\{s \geq \tau\}}, \text{ with } \tau = 7/1/2047.$$

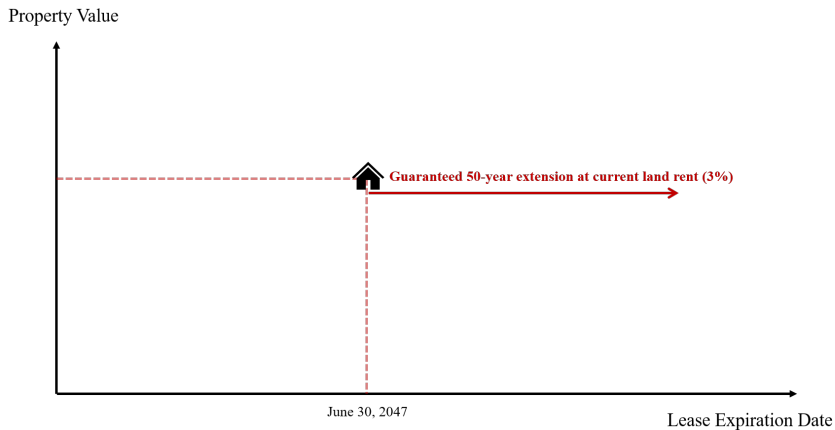
- Renewal date L , lease extension term $T = 50$ (T exogenous).



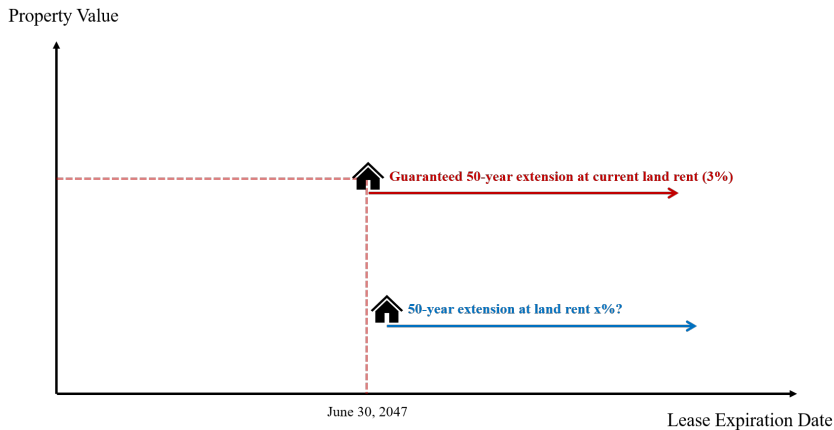
Government Renewal Decisions

- Regrant or extend non-renewable leases upon their expiry;
- So far, the HKSAR has kept offering extension with a ground rent of 3%;
 - Unless the land is needed for public purposes
- The ground rent *can* be increased, and the lessee is subject to pay additional premium (a lump sum payment) at extension;
- Neither clarity nor guarantee to leases expiring after June 30th, 2047
 - Ground rent could be raised to 25% for leases expiring on Jan. 1st, 2050

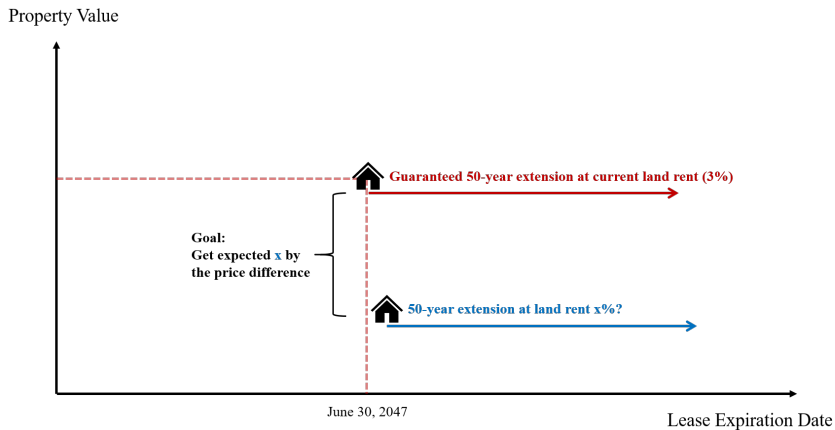
Model: Illustrating Examples of House Price



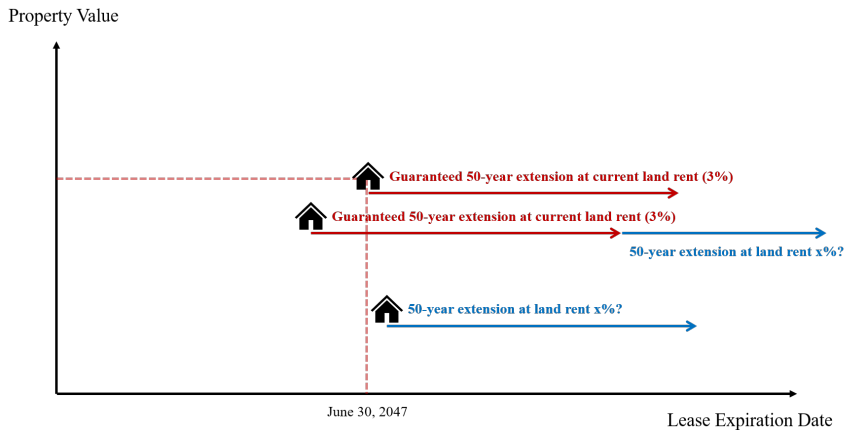
Model: Illustrating Examples of House Price



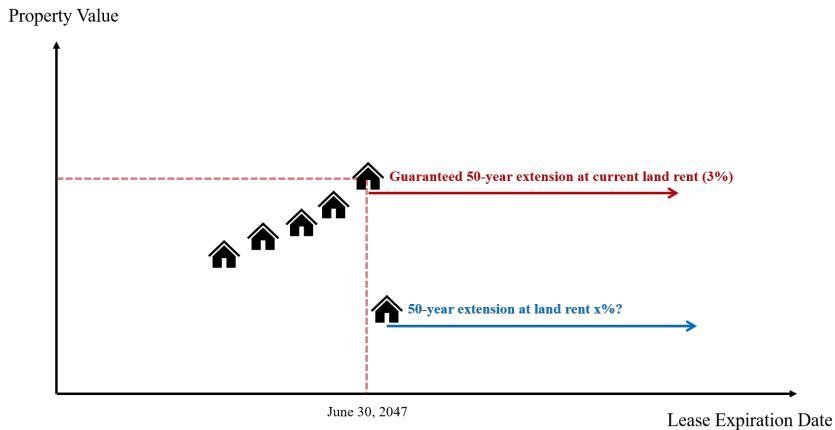
Model: Illustrating Examples of House Price



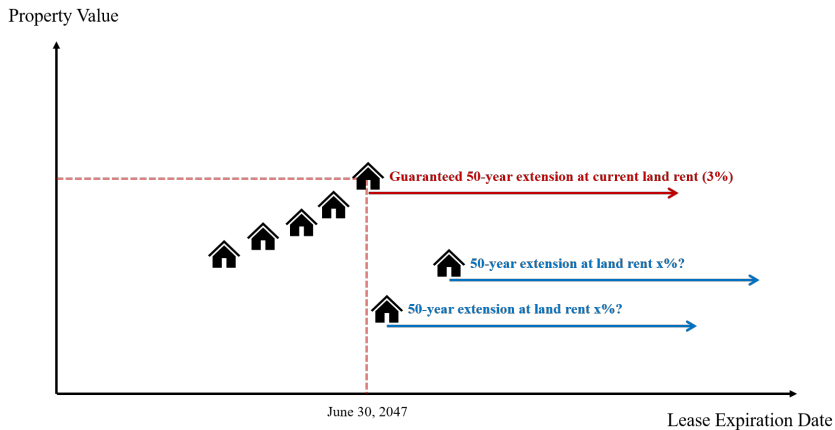
Model: Illustrating Examples of House Price



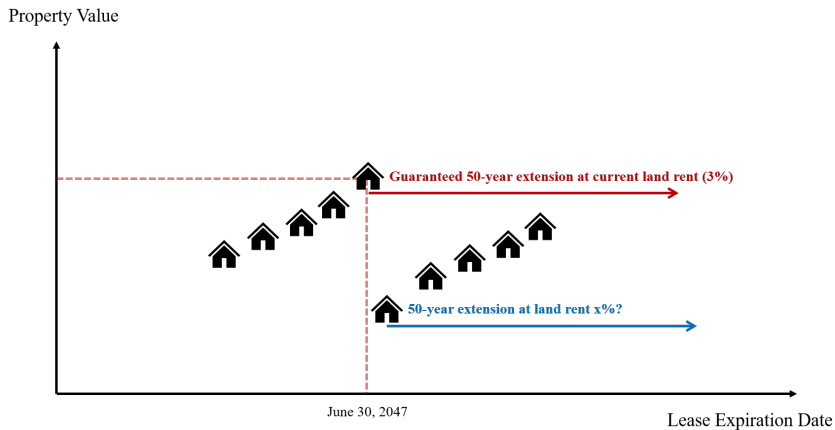
Model: Illustrating Examples of House Price



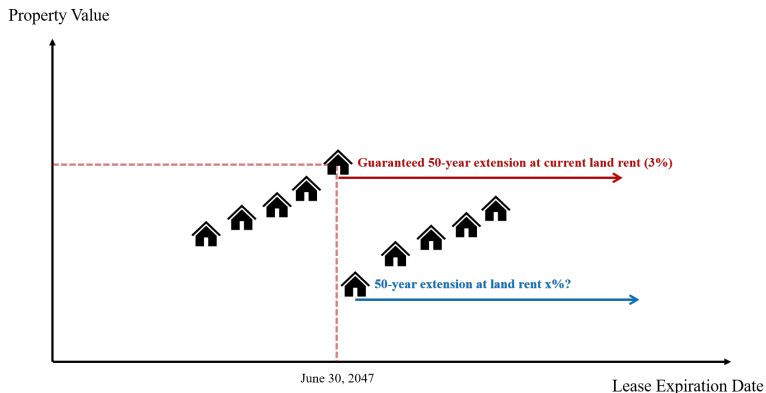
Model: Illustrating Examples of House Price



Model: Illustrating Examples of House Price

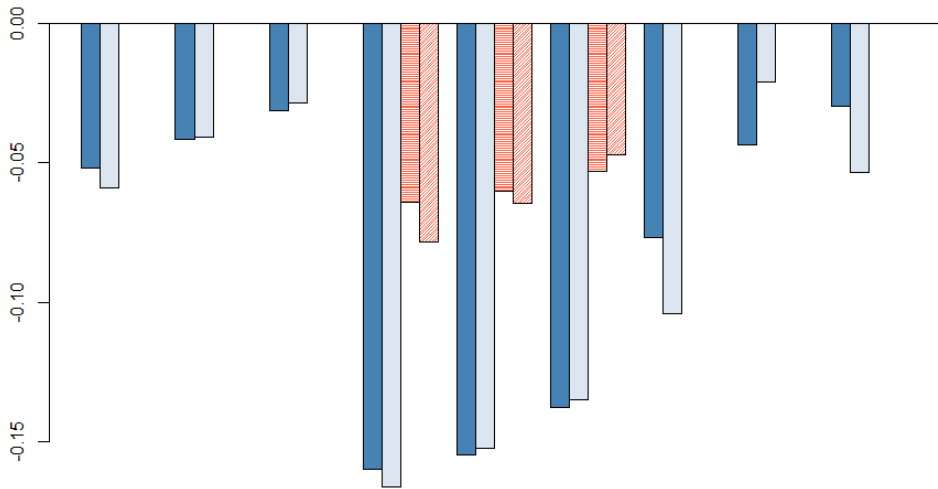


Model: Illustrating Examples of House Price

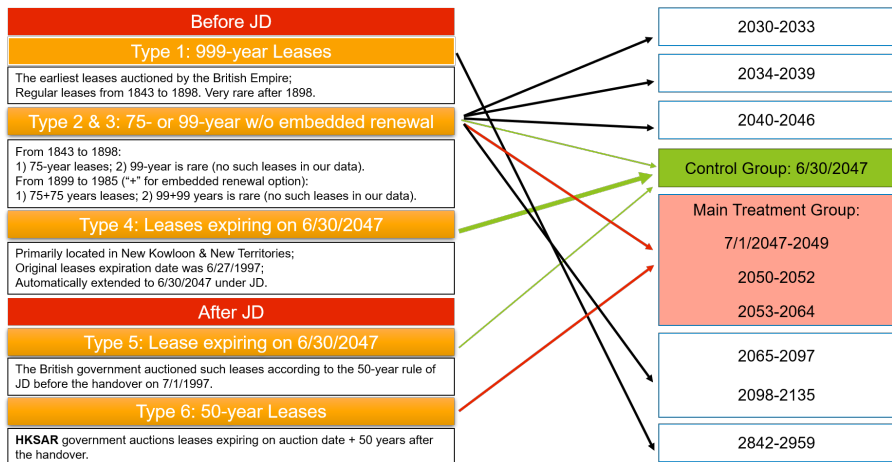


- **Key premise:** the 50-year renewal commitment made by HKSAR before 2047—but in effect beyond 2047—will be (more likely) honored by the new post-2047 HK government
 - “Policy continuity” in previous negotiations b/w UK, China, and HK

Results Preview: Data and Model



Empirical Identification



Empirical Specification

Baseline: hedonic regression (Rosen, 1974), relative price discounts of all other leasehold groups compared to main control lease group:

$$\ln(P_{i,t}) = \sum_{n=1}^{n=9} \beta_n \cdot Lease_n + \eta \cdot X_{i,t} + \alpha_{d \times m(t)} + \varepsilon_{i,t},$$

- * $X_{i,t}$ is a full set of housing characteristics.
 - Indicators for bay window, swimming pool and club house. Category dummies for number of bedrooms, number of living rooms, direction, floor group. Group dummies of 10 equally sized categories for bay window size, net size, building age, building completion year, distance to MRT/Bus Stop/Hospital/School/University/Coastal Line
- * $\alpha_{d \times m(t)}$ represents the district \times year-month fixed effects
- * Standard errors are two-way clustered by estate and year-month

Baseline Estimates

Dep Var	Log (Unit Price)		Log (Total Price)	
I(2030 ≤ Lease ≤ 2033)	-0.057 [0.043]	-0.054 [0.045]	-0.043 [0.046]	-0.043 [0.046]
I(2034 ≤ Lease ≤ 2039)	-0.038 [0.039]	0.002 [0.038]	-0.042 [0.042]	0.001 [0.041]
I(2040 ≤ Lease ≤ 2046)	-0.024 [0.057]	-0.009 [0.056]	-0.013 [0.060]	0.001 [0.058]
I(7/1/2047 ≤ Lease ≤ 2049)	-0.141*** [0.028]	-0.124*** [0.026]	-0.149*** [0.029]	-0.128*** [0.027]
I(2050 ≤ Lease ≤ 2052)	-0.127*** [0.028]	-0.121*** [0.027]	-0.127*** [0.030]	-0.120*** [0.028]
I(2053 ≤ Lease ≤ 2064)	-0.127*** [0.032]	-0.090*** [0.028]	-0.130*** [0.033]	-0.090*** [0.029]
I(2065 ≤ Lease ≤ 2097)	-0.105*** [0.035]	-0.090*** [0.033]	-0.107** [0.043]	-0.091** [0.040]
I(2098 ≤ Lease ≤ 2135)	-0.022 [0.039]	-0.014 [0.035]	-0.029 [0.040]	-0.019 [0.036]
I(2842 ≤ Lease ≤ 2959)	-0.052 [0.035]	-0.034 [0.034]	-0.054 [0.038]	-0.034 [0.036]
Property Attributes	Yes	No	Yes	No
Property Attributes × Year	No	Yes	No	Yes
District × Month FE	Yes	Yes	Yes	Yes
Adj R^2	0.9288	0.9405	0.9421	0.9509
N	551,790	551,790	551,790	551,790

Placebo Test: Rental Value

- Rental data from Centaline Property website: from Nov. 2018 to Feb. 2020

Dep Var	Log (Unit Rent)	Log (Total Rent)	Log (Unit Price)	Log (Total Price)
I(2030 ≤ Lease ≤ 2046)	-0.052* [0.029]	-0.042 [0.030]	-0.050 [0.042]	-0.044 [0.044]
I(7/1/2047 ≤ Lease ≤ 2049)	-0.009 [0.022]	0.000 [0.025]	-0.184*** [0.030]	-0.186*** [0.031]
I(2050 ≤ Lease ≤ 2052)	-0.017 [0.018]	-0.009 [0.020]	-0.184*** [0.033]	-0.181*** [0.033]
I(2053 ≤ Lease ≤ 2064)	0.018 [0.023]	0.031 [0.024]	-0.100** [0.036]	-0.102** [0.037]
I(2065 ≤ Lease ≤ 2135)	-0.041* [0.022]	-0.055* [0.026]	-0.008 [0.038]	-0.010 [0.038]
I(2842 ≤ Lease ≤ 2959)	-0.023 [0.030]	-0.057* [0.031]	0.028 [0.042]	0.029 [0.043]
Property Attributes	Yes	Yes	Yes	Yes
District × Month FE	Yes	Yes	Yes	Yes
<i>N</i>	9,171	9,171	18,029	18,029
Adj <i>R</i> ²	0.8042	0.9170	0.7217	0.8678

Reneging Risk: Empirical Motivation

Dependent Variable	Log (Unit Price)		Log (Total Price)	
			
I(7/1/2047 ≤ Lease ≤ 2049)	-0.168*** [0.029]	-0.148*** [0.026]	-0.176*** [0.030]	-0.152*** [0.027]
I(2050 ≤ Lease ≤ 2052)	-0.150*** [0.030]	-0.141*** [0.028]	-0.151*** [0.032]	-0.141*** [0.029]
I(2053 ≤ Lease ≤ 2064)	-0.135*** [0.032]	-0.097*** [0.027]	-0.138*** [0.033]	-0.097*** [0.028]
I(7/1/2047 ≤ Lease ≤ 2064) × I (HKSAR leases)	0.085*** [0.027]	0.074*** [0.025]	0.088*** [0.028]	0.075*** [0.026]
			
Property Attributes	Yes	No	Yes	No
Property Attributes × Year	No	Yes	No	Yes
District × Month FE	Yes	Yes	Yes	Yes
Adj R ²	0.9294	0.9409	0.9425	0.9511
N	551,790	551,790	551,790	551,790

- A premium of 8.5% of HKSAR leases relative to British HK leases (half of base effect).

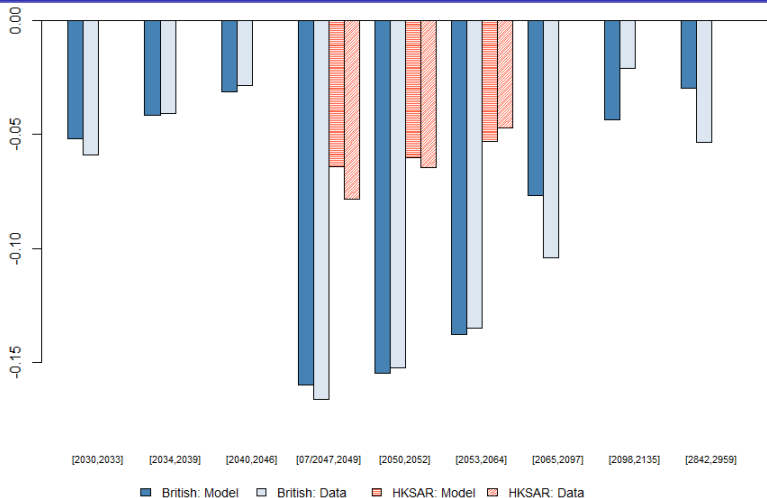
Reneging Risk: Model Extension

- No official arrangements beyond 2047 regarding colonial leases
 - e.g., those 999-year ones
 - Land Resumption Ordinance: land requisition for public purposes
- Reneging shock is i.i.d. across all properties with **colonial British** leases:
 - Reneging intensity: $\lambda^{pre} \mathbf{1}_{s < \tau} + \lambda^{post} \mathbf{1}_{s \geq \tau}$
 - Extra land premium charge: $\delta^{pre} \mathbf{1}_{s < \tau} + \delta^{post} \mathbf{1}_{s \geq \tau}$
 - We later consider the possibility of reneging on HKSAR leases
- House value with a British land leases ($\kappa = r - g$):

$$P(L; \tau, Brit) = \mathbb{E} \left[\int_0^{L \wedge \mathcal{T}} e^{-\kappa s} ds + e^{-\kappa(L \wedge \mathcal{T})} \cdot (1 - \delta^{pre} \mathbf{1}_{s < \tau} - \delta^{post} \mathbf{1}_{s \geq \tau}) \cdot P(L \wedge \mathcal{T} + 50; HK) \right]$$

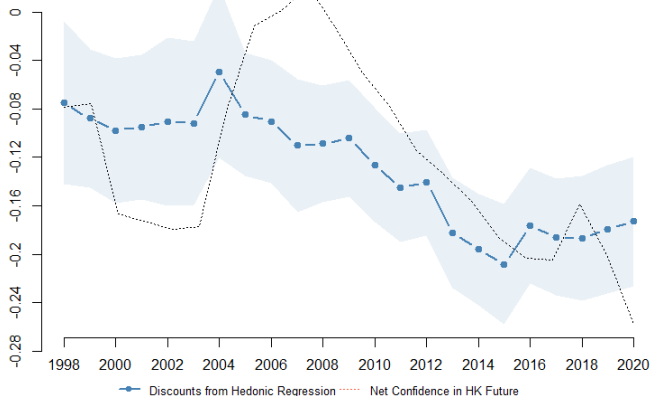
- Reneging event \mathcal{T} (Poisson arrival) with intensity $\lambda^{pre} \mathbf{1}_{s < \tau} + \lambda^{post} \mathbf{1}_{s \geq \tau}$;
- $P(L \wedge \mathcal{T} + 50; HK)$: value of a standard 50-year HKSAR leases standing at $L \wedge \mathcal{T} \equiv \min(L, \mathcal{T})$

Estimation: Data and Model



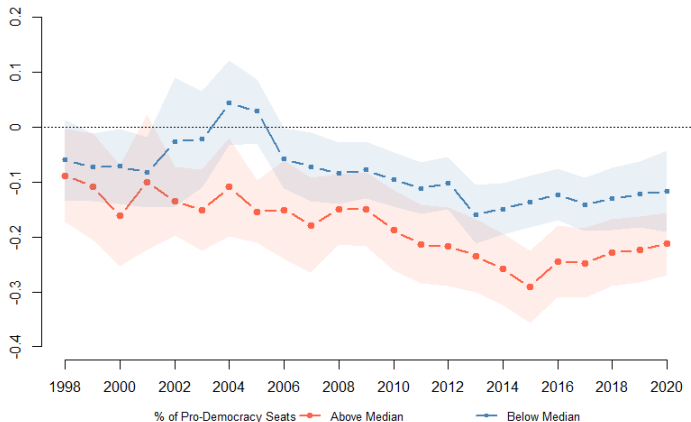
- Calibrate $\kappa = r - g = (1 - \text{Expense Ratio}) \times \text{Gross Rental Yield} = 72\% \times 2\%$, estimate $\{\gamma = 22\%, \lambda^{pre}, \lambda^{post}, \delta^{pre}, \delta^{post}\}$ that minimize the difference between model & data

Citywide Sentiments and the Price Discounts



- As confidence in Hong Kong's future declines, the political uncertainty discount in the housing market climbs.

Local Sentiment: Cross-sectional versus Time Variation



- In districts with greater local sentiment we observe a significant price discount even before 2005, different from the overall results as well as those for other districts.

Conclusion

- Study long-term property rights under political uncertainty, as the housing value depends on the continuity of land ownership in the far future.
- A reduced-form regression guided by a pricing model of housing assets with future political uncertainty.
 - Extended to incorporate a reneging risk to colonial land contracts
 - Implies a price discount of 9.9% from today's viewpoint in a hypothetical 50-year British Hong Kong lease standing at Jan 1st, 2021
- Citywide and district-level political uncertainty measures, further empirical support to our mechanism.
 - No significant difference b/w rentals across control and treatment groups
 - Mainland buyers (sellers) more optimistic (pessimistic) than local