**Online Appendix for "Valuing Long-Term Property Rights with Anticipated Political Regime Shifts"**

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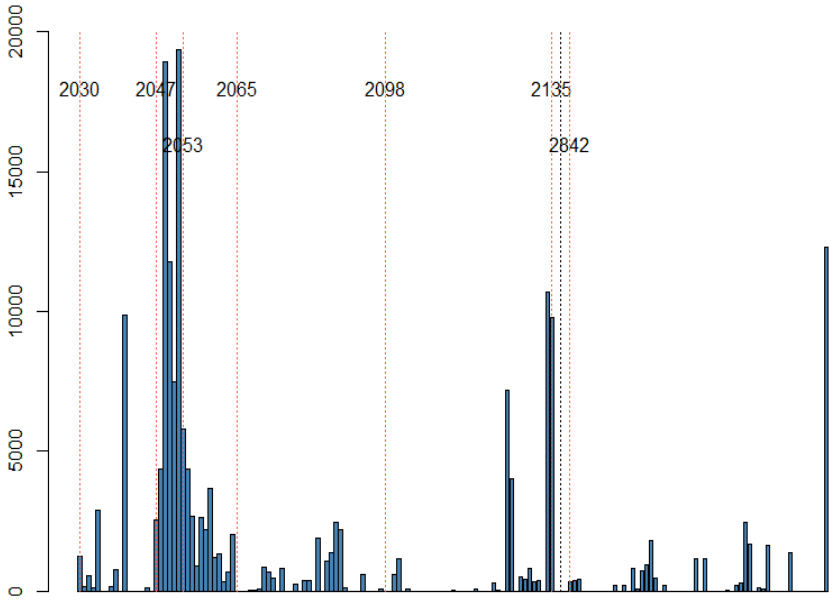
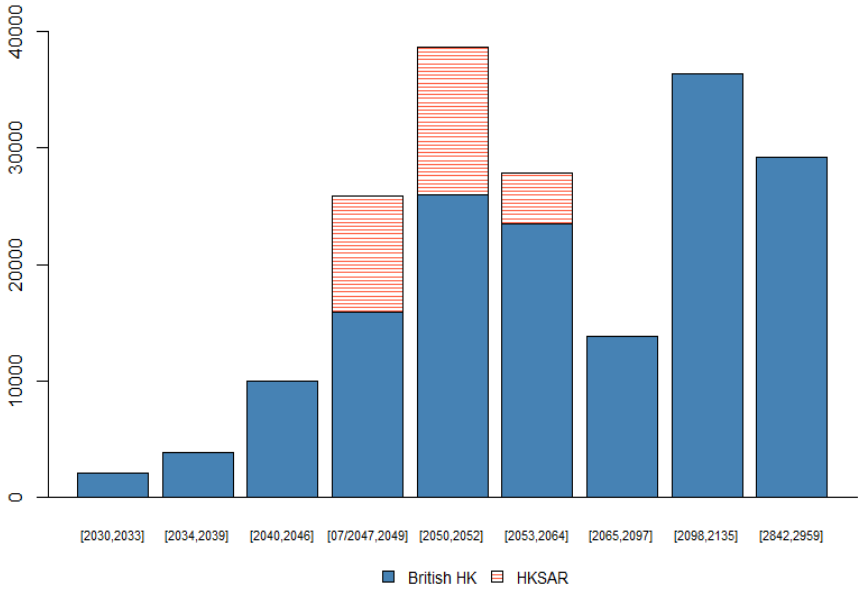
Figure OA.1: Distribution of Transactions by Lease Groups

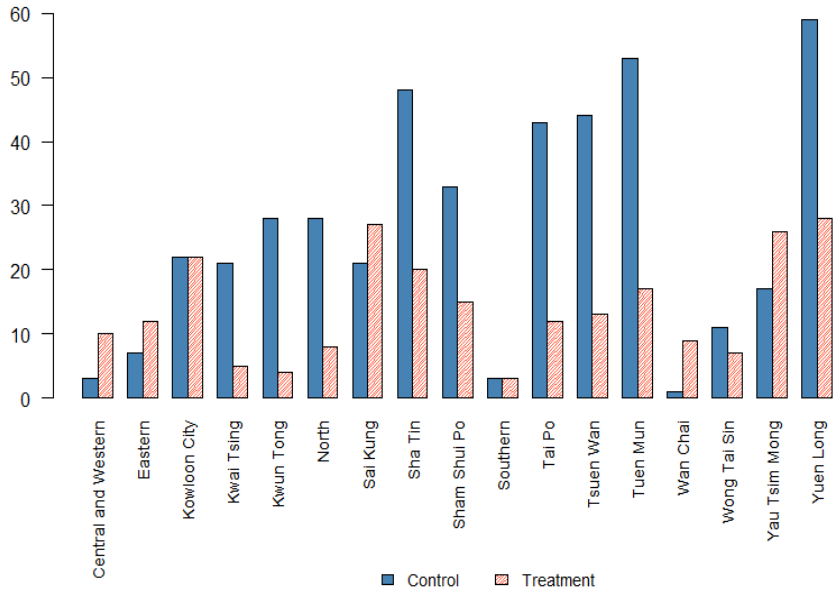
*Panel A: Number of Transactions By Expiration Year*




*Panel B: Number of Transactions by Lease Group*



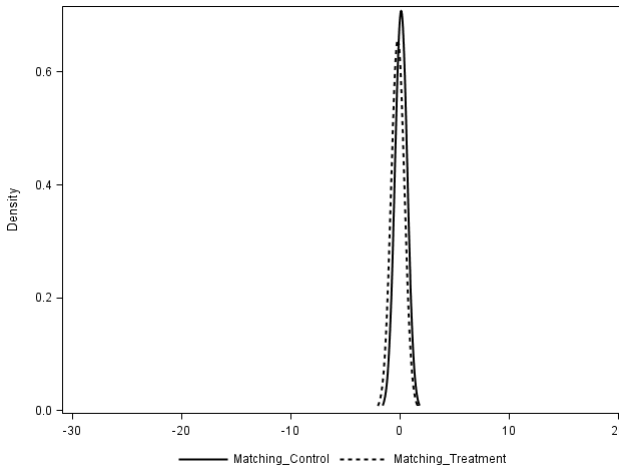
*Panel C: Number of Leases by District*



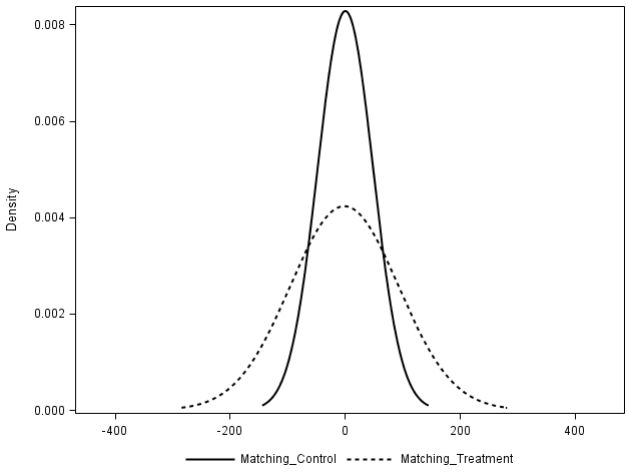

Panel A plots the number of transactions by lease expiration year from 2030 to 2135 and from 2842 to 2959. Panel B plots the number of transactions by lease groups and lease types (colonial British leases or HKSAR leases). Panel C plots the number of leases for the control group and main treatment group by each district.

Figure OA.2: Distribution of Residuals

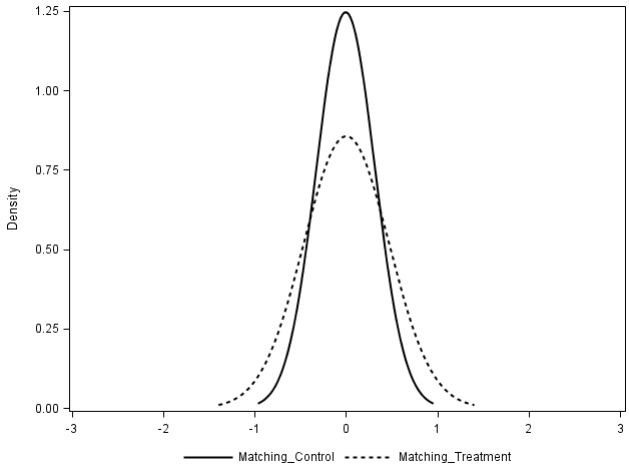
*(A) Building Age*



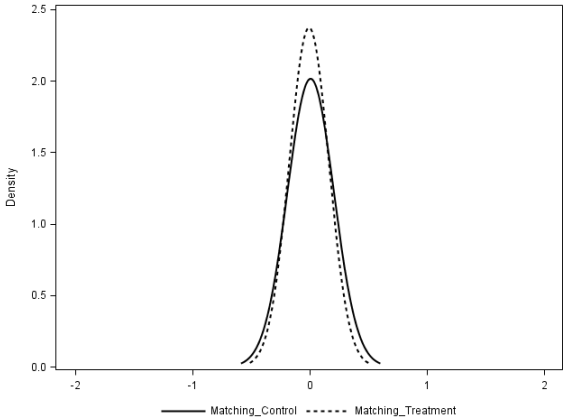

*(B) Net Living Area*



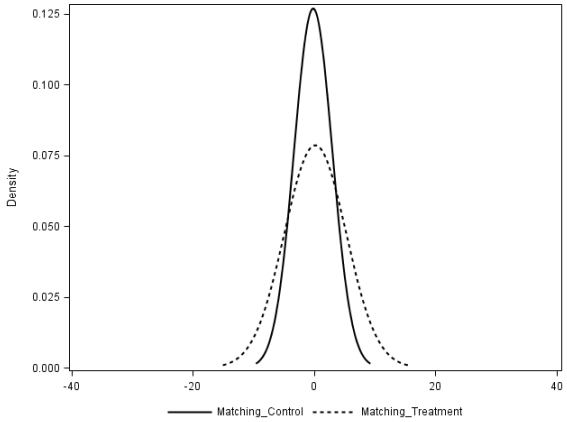

*(C) No of Bedrooms*



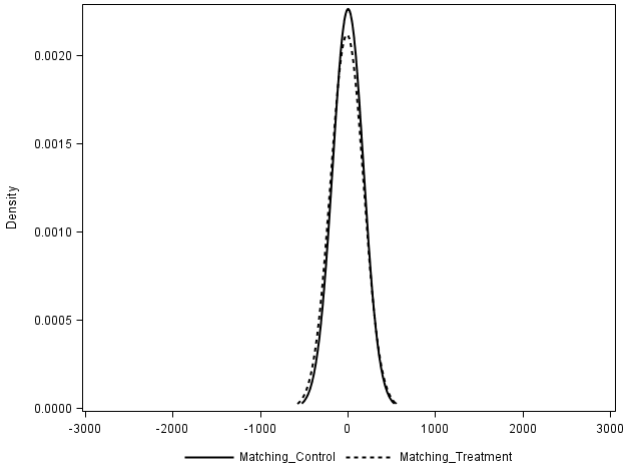

*(D) No of Living Rooms*



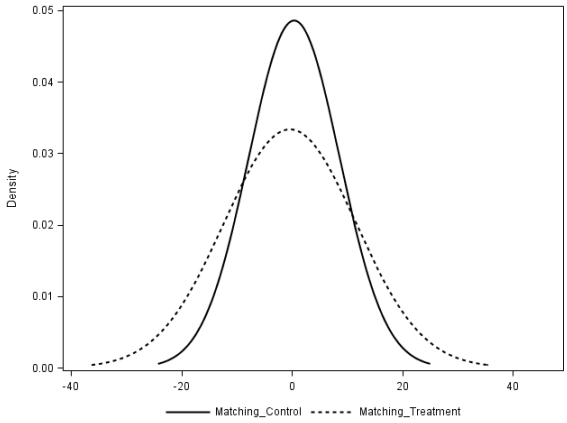

*(E) Bay Window Size*



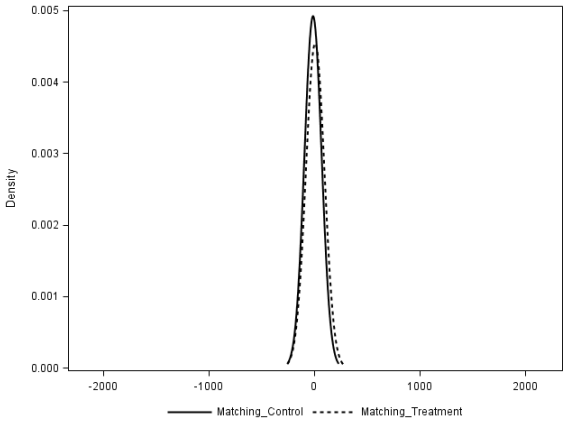

*(F) Turnover*



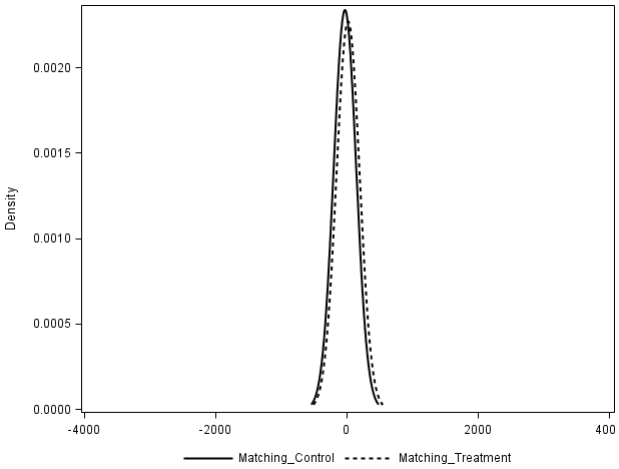
*(G) Distance to MRT stations*



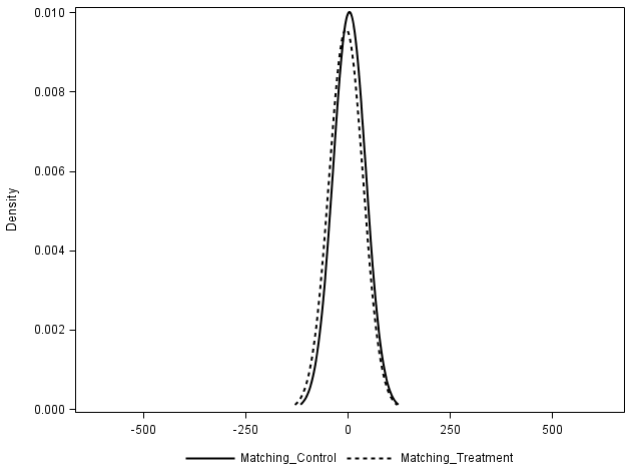

*(H) Distance to Bus Stops*



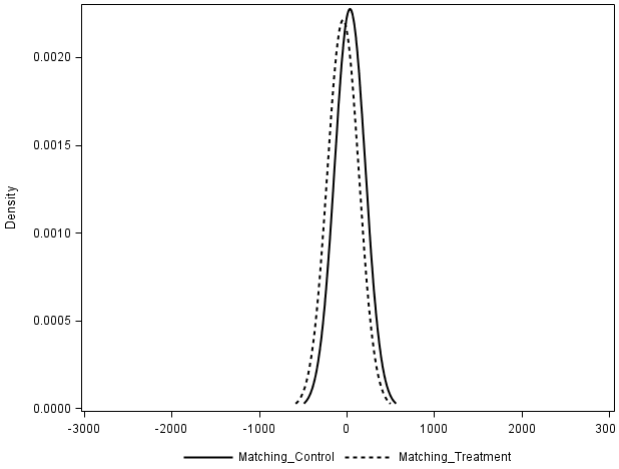

*(I) Distance to School*



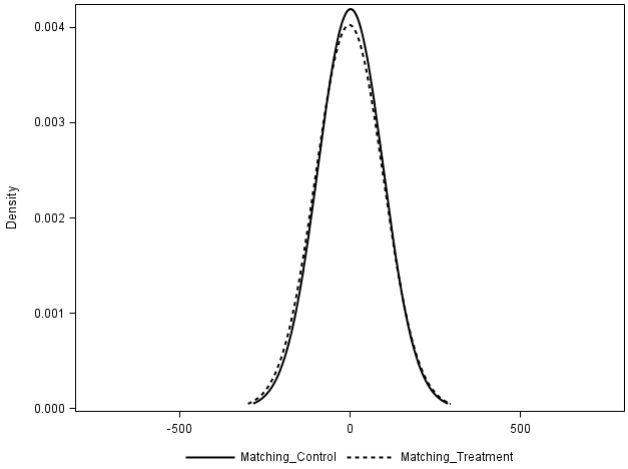

*(J) Distance to University*




*(K) Distance to Coastal Line*



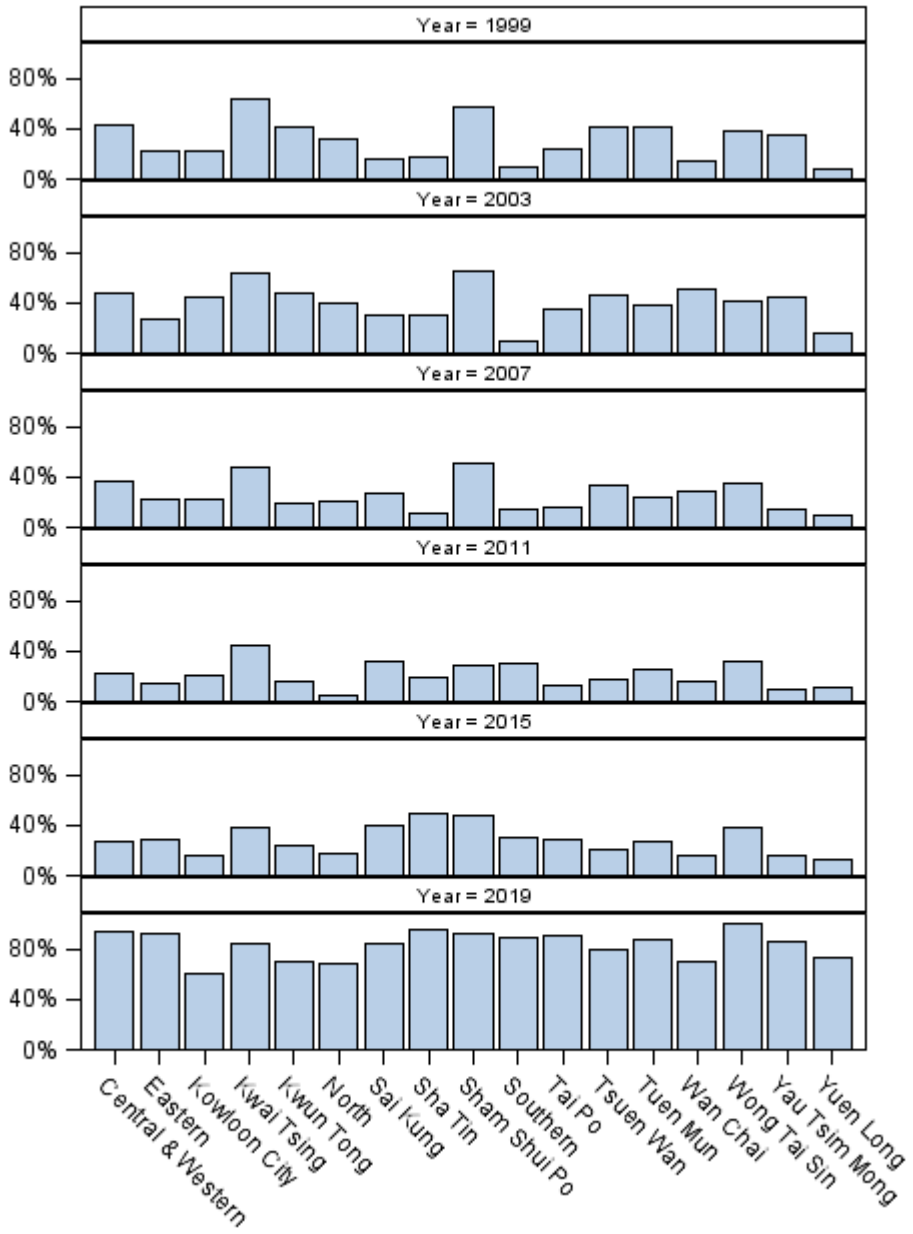

*(L) Distance to Hospital*



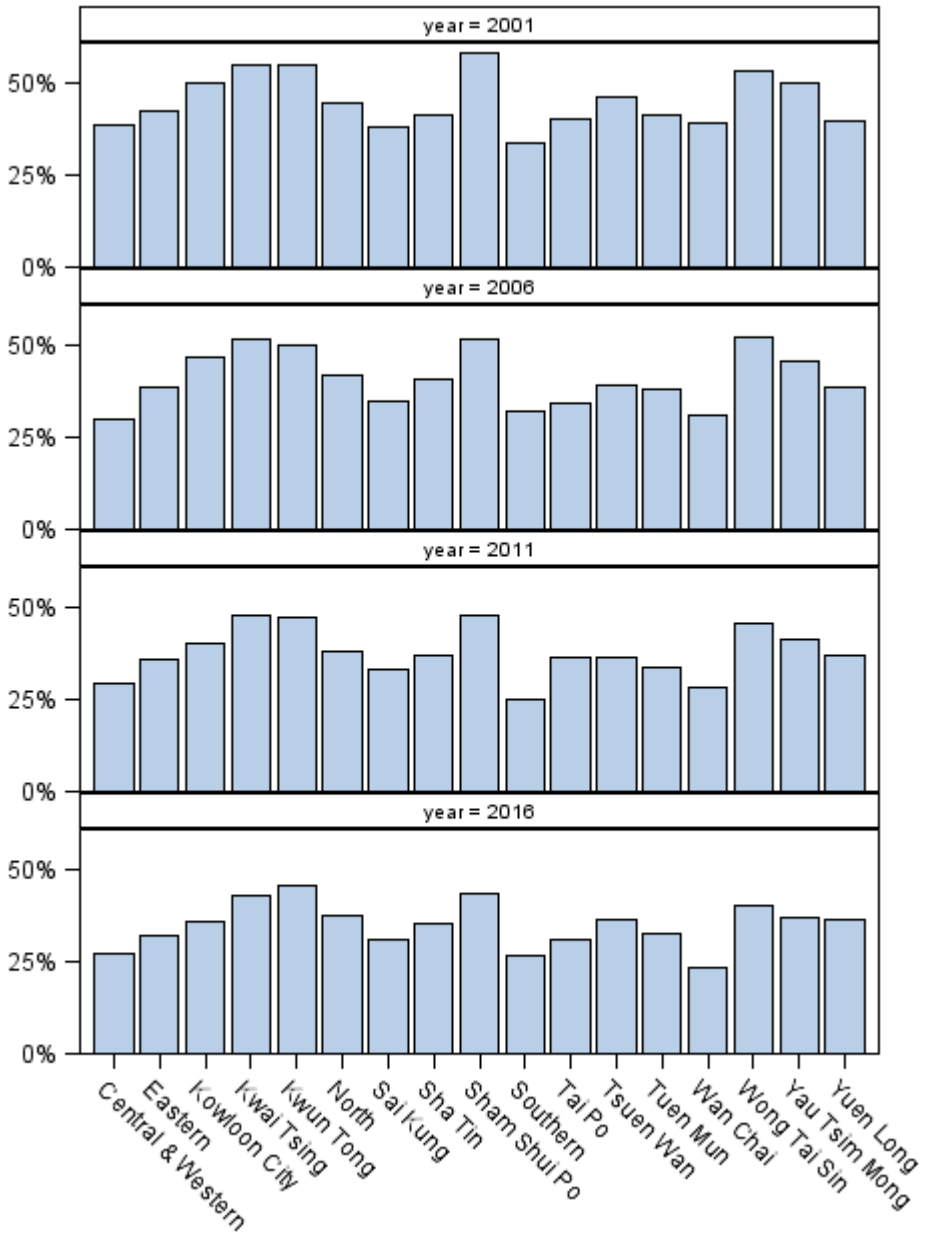

Using the matched sample, this figure plots the density of residuals from regressing each property characteristic on the fixed effects of the interaction between estate pair and transaction month, for our control group and main treatment group, respectively. The range of the $x$-axis is decided by the residual from regressing each property characteristic on the fixed effects of the interaction between district and transaction month, using the baseline regression sample.

Figure OA.3: District Characteristics Over Time

*Panel A: % of Pro-Democracy Seats*



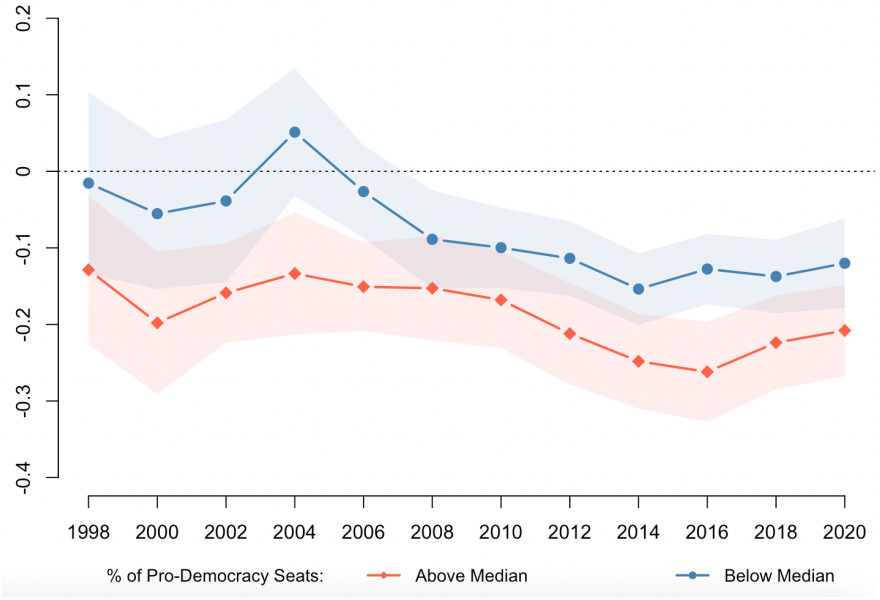
*Panel B: % of Mainland Migrants*



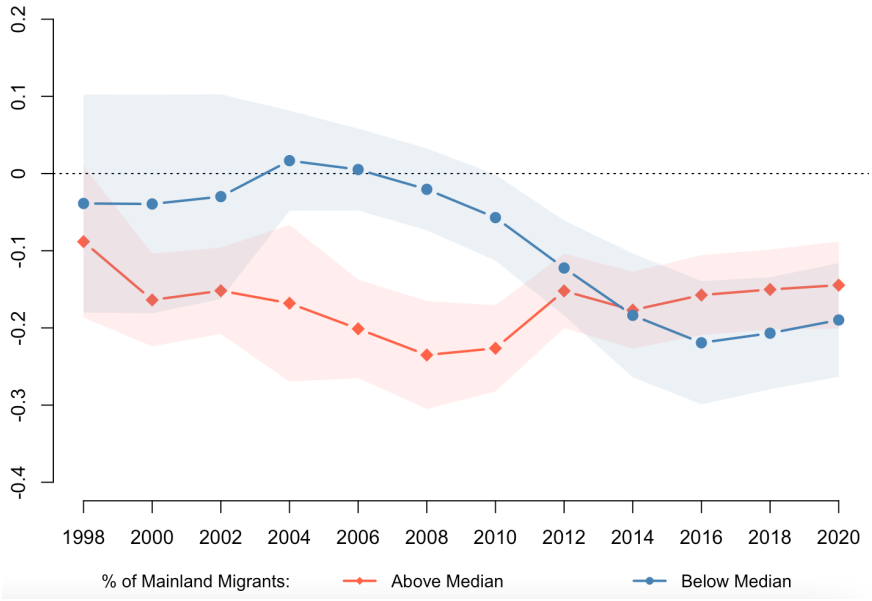

Panel A plots % of pro-democracy seats by voting year and districts. Panel B plots % of mainland migrants by census year and districts.

Figure OA.4: Estimates over Time

*Panel A: Districts with High Versus Low % of Pro-Democracy Seats*




*Panel B: Districts with High Versus Low % of Mainland Migrants*




Panel A plots the estimated price discounts over time for the main treatment group with percentage of pro-democracy seats above (below) median in blue (red). Panel B plots the estimated price discounts over time for the main treatment group which have the percentage of mainland migrants above (below) median in blue (red). All regressions control for the full set of property characteristics with district by transaction month fixed effects as in Eq. (9).

Table OA.1: Distributions by Lease Group and Year

| | Sale Year | | | | All |
|---|---|---|---|---|---|
| Lease Group | 1998-2005 | 2006-2010 | 2011-2015 | 2016-Feb 2020 | Years |
| Panel A: Number of Transactions | | | | | |
| 2030 to 2033 | 678 | 960 | 315 | 157 | 2,110 |
| 2034 to 2039 | 1,621 | 1,404 | 631 | 222 | 3,878 |
| 2040 to 2046 | 4,569 | 3,131 | 1,502 | 805 | 10,007 |
| 6/30/2047 | 120,869 | 134,766 | 72,002 | 36,286 | 363,923 |
| 7/1/2047 to 2049 | 1,746 | 7,573 | 4,094 | 2,489 | 15,902 |
| 2050 to 2052 | 1,120 | 9,886 | 9,457 | 5,577 | 26,040 |
| 2053 to 2064 | 3,550 | 4,975 | 6,997 | 7,963 | 23,485 |
| 2065 to 2097 | 4,177 | 5,465 | 2,825 | 1,354 | 13,821 |
| 2098 to 2135 | 15,368 | 12,251 | 5,800 | 3,019 | 36,438 |
| 2842 to 2959 | 12,656 | 10,458 | 4,443 | 1,649 | 29,206 |
| HKSAR Leases | 1,534 | 12,098 | 7,925 | 5,423 | 26,980 |
| Panel B: Number of Estates | | | | | |
| 2030 to 2033 | 4 | 4 | 5 | 6 | 6 |
| 2034 to 2039 | 4 | 4 | 4 | 2 | 4 |
| 2040 to 2046 | 3 | 3 | 2 | 2 | 3 |
| 6/30/2047 | 353 | 353 | 342 | 328 | 376 |
| 7/1/2047 to 2049 | 18 | 24 | 24 | 22 | 26 |
| 2050 to 2052 | 14 | 37 | 36 | 33 | 38 |
| 2053 to 2064 | 22 | 30 | 48 | 61 | 71 |
| 2065 to 2097 | 40 | 34 | 28 | 23 | 43 |
| 2098 to 2135 | 43 | 41 | 33 | 28 | 46 |
| 2842 to 2959 | 64 | 59 | 55 | 44 | 66 |
| HKSAR Leases | 18 | 40 | 54 | 79 | 84 |
| Panel C: Number of Districts | | | | | |
| 2030 to 2033 | 3 | 3 | 3 | 3 | 3 |
| 2034 to 2039 | 3 | 3 | 3 | 2 | 3 |
| 2040 to 2046 | 3 | 3 | 2 | 2 | 3 |
| 6/30/2047 | 17 | 17 | 17 | 16 | 17 |
| 7/1/2047 to 2049 | 8 | 12 | 12 | 12 | 12 |
| 2050 to 2052 | 9 | 16 | 16 | 16 | 16 |
| 2053 to 2064 | 6 | 13 | 16 | 15 | 16 |
| 2065 to 2097 | 5 | 6 | 6 | 5 | 6 |
| 2098 to 2135 | 5 | 5 | 5 | 5 | 5 |
| 2842 to 2959 | 6 | 6 | 6 | 6 | 6 |
| HKSAR Leases | 10 | 11 | 14 | 15 | 15 |

This table presents number of transactions (Panel A), number of estates (Panel B), and number of districts (Panel C) by these lease subgroups and sale year groups.

Table OA.2: A More Exogenous Control Group

| Dep Var | Log(Unit Price) | |
|---|---|---|
| | (1) | (2) |
| I(2023 ≤ Lease ≤ 2033) | −0.035 | −0.025 |
| | (0.048) | (0.049) |
| I(2034 ≤ Lease ≤ 2039) | −0.018 | 0.026 |
| | (0.043) | (0.041) |
| I(2040 ≤ Lease ≤ 2046) | 0.005 | 0.024 |
| | (0.063) | (0.061) |
| I(Lease=6/30/2047 & After JD) | 0.028 | 0.029 |
| | (0.019) | (0.019) |
| I(Lease=6/30/2047 & Before JD and in HKL+KIL) | 0.023 | 0.032 |
| | (0.033) | (0.032) |
| I(7/1/2047 ≤ Lease ≤ 2049) | −0.128*** | −0.108*** |
| | (0.032) | (0.029) |
| I(2050 ≤ Lease ≤ 2052) | −0.114*** | −0.106*** |
| | (0.030) | (0.028) |
| I(2053 ≤ Lease ≤ 2064) | −0.114*** | −0.073** |
| | (0.036) | (0.032) |
| I(2065 ≤ Lease ≤ 2097) | −0.089** | −0.070* |
| | (0.040) | (0.037) |
| I(2098 ≤ Lease ≤ 2135) | −0.005 | 0.008 |
| | (0.043) | (0.039) |
| I(2842 ≤ Lease ≤ 2959) | −0.036 | −0.014 |
| | (0.040) | (0.039) |
| Property Attributes | Yes | |
| Property Attributes × Year | | Yes |
| District × Month FE | Yes | Yes |
| $N$ | 551,790 | 551,790 |
| Adjusted $R^2$ | 0.929 | 0.941 |

This table presents the hedonic regression results using the baseline sample. We separate the control group into three subgroups: the first set is denoted by indicator I(lease = 6/30/2047 & After JD); the second set is denoted by indicator I(lease = 6/30/2047 & Before JD and in (HKL, KIL)); the last set, granted before the JD and located in New Kowloon and New Territories, is used as the control group. Both regressions control for district by transaction year-month fixed effects. Additionally, column (1) controls for property attributes while column (2) controls for property attributes interacted with transaction year. Standard errors are two-way clustered by estate and year-month. Significance levels are denoted by ***= 1%, **= 5%, *= 10%.

Table OA.3: Price Discount before and after 2005

| Dep Var | Log(Unit Price) | | |
|---|---|---|---|
| Sample | ±1 Year | ±2 Years | ±3 Years |
| | (1) | (2) | (3) |
| I(Main Treatment Group) | −0.073*** | −0.061** | −0.066*** |
| | (0.022) | (0.023) | (0.023) |
| × I(Year > 2005) | −0.010 | −0.040** | −0.045** |
| | (0.010) | (0.017) | (0.019) |
| Property Attributes | Yes | Yes | Yes |
| District × Month FE | Yes | Yes | Yes |
| $N$ | 56,741 | 128,690 | 174,553 |
| Adjusted $R^2$ | 0.837 | 0.849 | 0.863 |

This table reports the pricing effect of the main treatment group and whether there is a change before and after 2005. Each regression is based on transactions sold within a time window centered around December 31, 2005, as indicated by the column title (e.g., ±1 year). All regressions control for the full set of property characteristics and include district by transaction month fixed effects, as specified in Eq. (9). Standard errors are two-way clustered by estate and year-month. Significance levels are denoted by ***= 1%, **= 5%, *= 10%.

## Table OA.4: Local Political Sentiments and Price Discount

Panel A: Summary Statistics

| Variable | N | Mean | SD | Min | 1st | 5th | Median | 95th | 99th | Max |
|---|---|---|---|---|---|---|---|---|---|---|
| % of Pro-Democracy Seats | 551,790 | 0.30 | 0.18 | 0.04 | 0.04 | 0.10 | 0.26 | 0.70 | 0.92 | 1.00 |
| % of Mainland Migrants | 551,790 | 0.39 | 0.06 | 0.24 | 0.25 | 0.31 | 0.37 | 0.50 | 0.55 | 0.58 |
| Median Age | 551,790 | 40.42 | 2.59 | 34 | 34 | 35 | 41 | 44 | 45 | 45 |
| Median Income | 551,790 | 12,422 | 2,111 | 9,000 | 9,200 | 10,000 | 12,500 | 16,300 | 16,500 | 16,800 |
| % of College or Above | 551,790 | 0.17 | 0.06 | 0.05 | 0.06 | 0.08 | 0.16 | 0.26 | 0.32 | 0.38 |
| % of Home Owners | 551,790 | 0.51 | 0.08 | 0.29 | 0.29 | 0.32 | 0.54 | 0.61 | 0.62 | 0.62 |

Panel B: Correlation

| | % of Pro-Democracy Seats | % of Mainland Migrants | Median Age | Median Income | % of College or Above | % of Home Owners |
|---|---|---|---|---|---|---|
| % of Pro-Democracy Seats | 1.00 | | | | | |
| % of Mainland Migrants | 0.31 | 1.00 | | | | |
| Median Age | 0.33 | 0.14 | 1.00 | | | |
| Median Income | 0.01 | −0.53 | 0.09 | 1.00 | | |
| % of College or Above | 0.00 | −0.43 | 0.26 | 0.84 | 1.00 | |
| % of Home Owners | −0.28 | −0.70 | −0.24 | 0.64 | 0.51 | 1.00 |

Panel C: Adding Interaction with HKSAR Leases

| Dep Var | Log(Unit Price) | | | | | |
|---|---|---|---|---|---|---|
| Sample | All Sales | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| I(Main Treatment Group) | −0.153*** | −0.155*** | −0.146*** | −0.148*** | −0.114*** | −0.114*** |
| | (0.022) | (0.021) | (0.021) | (0.021) | (0.024) | (0.028) |
| × % of Pro-Democracy Seats | | −0.056*** | | −0.054*** | | |
| | | (0.013) | | (0.013) | | |
| × % of Mainland Migrants | | | −0.063*** | −0.057*** | | |
| | | | (0.021) | (0.021) | | |
| × I(High % Pro-Democracy Seats) | | | | | −0.091*** | |
| | | | | | (0.026) | |
| × I(High % Mainland Migrants) | | | | | | −0.072** |
| | | | | | | (0.028) |
| × HKSAR Leases | 0.082*** | 0.076*** | 0.080*** | 0.075*** | 0.076*** | 0.103*** |
| | (0.026) | (0.024) | (0.026) | (0.024) | (0.026) | (0.035) |
| × % of Pro-Democracy Seats | | −0.000 | | 0.002 | | |
| | | (0.018) | | (0.019) | | |
| × % of Mainland Migrants | | | −0.008 | −0.008 | | |
| | | | (0.033) | (0.032) | | |
| × I(High % Pro-Democracy Seats) | | | | | 0.000 | |
| | | | | | (0.036) | |
| × I(High % Mainland Migrants) | | | | | | -0.039 |
| | | | | | | (0.042) |
| Property Attributes | Yes | Yes | Yes | Yes | Yes | Yes |
| District × Month FE | Yes | Yes | Yes | Yes | Yes | Yes |
| $N$ | 551,790 | 551,790 | 551,790 | 551,790 | 551,790 | 551,790 |
| Adjusted $R^2$ | 0.929 | 0.930 | 0.930 | 0.931 | 0.930 | 0.930 |

This table presents the district-level variation of price discounts for our main treatment group. Panel A reports the summary statistics of raw values. Panel B reports the correlations of standardized values. Panel C presents similar analysis as Table 8 with additional interaction terms of the HKSAR leases dummy with the four district-level variables. Standard errors are two-way clustered by estate and year-month. Significance levels are denoted by ***= 1%, **= 5%, *= 10%.

Table OA.5: Mainlander Transactions and Price Discount

| Dep Var | Log(Unit Price) | | |
|---|---|---|---|
| Sample | All Sales | | |
| | (1) | (2) | (3) |
| I(Main Treatment Group) | −0.133*** | −0.125*** | −0.086*** |
| | (0.021) | (0.020) | (0.025) |
| × I(Mainland Buyer) × I(Local Seller) | 0.013* | 0.012* | 0.011 |
| | (0.007) | (0.007) | (0.009) |
| × I(Mainland Buyer) × I(Mainland Seller) | −0.000 | −0.003 | −0.036* |
| | (0.012) | (0.012) | (0.018) |
| × I(Local Buyer) × I(Mainland Seller) | −0.017** | −0.018** | −0.048*** |
| | (0.008) | (0.008) | (0.017) |
| × % of Mainland Migrants | | −0.069*** | |
| | | (0.020) | |
| × I(Mainland Buyer) × I(Local Seller) | | 0.007 | |
| | | (0.007) | |
| × I(Mainland Buyer) × I(Mainland Seller) | | 0.052*** | |
| | | (0.015) | |
| × I(Local Buyer) × I(Mainland Seller) | | 0.047*** | |
| | | (0.012) | |
| × I(High % of Mainland Migrants) | | | −0.086*** |
| | | | (0.025) |
| × I(Mainland Buyer) × I(Local Seller) | | | 0.007 |
| | | | (0.011) |
| × I(Mainland Buyer) × I(Mainland Seller) | | | 0.064*** |
| | | | (0.021) |
| × I(Local Buyer) × I(Mainland Seller) | | | 0.060*** |
| | | | (0.021) |
| I(Mainland Buyer) × I(Local Seller) | 0.011*** | 0.011*** | 0.010*** |
| | (0.003) | (0.003) | (0.003) |
| I(Mainland Buyer) × I(Mainland Seller) | −0.020** | −0.019** | −0.021*** |
| | (0.008) | (0.008) | (0.008) |
| I(Local Buyer) × I(Mainland Seller) | 0.001 | 0.000 | −0.001 |
| | (0.003) | (0.003) | (0.003) |
| Property Attributes | Yes | Yes | Yes |
| District × Month FE | Yes | Yes | Yes |
| $N$ | 551,790 | 551,790 | 551,790 |
| Adjusted $R^2$ | 0.929 | 0.930 | 0.929 |

This table presents the pricing effect of buyer-seller type classified by their identity as mainland or local. Columns (2) and (3) display the effect of the interaction between buyer-seller type and district-level population identity, measured by the percentage of mainland migrants or the dummy variable I(high % of mainland migrants), which equals 1 when the percentage of mainland migrants is larger than the cross-section median. All regressions control for property characteristics and district by year-month fixed effects, as in the baseline regression. They also include additional controls such as the interaction term of the main treatment indicator with median age, median income, % of college above, and % of homeowners. Standard errors are two-way clustered by estate and year-month. Significance levels are denoted by ***= 1%, **= 5%, *= 10%.

# A The Matching Procedure

We perform the matching process in the following steps:

- We identify each unique estate in the main treatment group and matched it to all estates in the control group that are located in the same district and within 1.5 kilometer. Each pair of matched estates is assigned an estate pair identification number.
- We examine all transactions in the matched estates and only include pairs of transactions that meet the following restrictions: 1) a difference in the building completion year of less than 2 years; 2) a difference in building age at the time of transaction within 25% of that of the treated unit; 3) a difference in net living area of less than 30% of that of the treated unit; 4) a difference in floor number within 20% of that of the treated unit; 5) a difference in the estimated PSM score of less than 0.1.[1]
- We further select the control group transactions with the nearest PSM score to each transaction in the main treatment group to achieve a matching ratio. This final step allows us to create matched pairs with similar observable characteristics in both groups, yielding a more accurate estimate of the causal effect of the expected regime change on property prices.

# B Valuing British Leases with Nominal Ground Rent

In Subsection 3.1 the net cash flow $R_s = e^{gs}$ at any time $s$ is considered under the setting of current baseline ground rent, which is 3% of rateable, i.e., annual rent reevaluated every year. To take the nominal rent into account, we show that Eq. (10) needs to be modified as:

$$P(L;\tau,Brit) = \mathbb{E}\left[\int_0^{L\wedge\mathcal{T}} (C_1 e^{-\kappa s} - C_2)ds + e^{-\kappa(L\wedge\mathcal{T})}\cdot(1-\delta^{pre}\mathbf{1}_{s<\tau}-\delta^{post}\mathbf{1}_{s\geq\tau})\cdot P(L\wedge\mathcal{T}+50;HK)\right].$$

More specifically, we adjust the net cash flow before $L\wedge\mathcal{T}$ using $C_1$ and $C_2$, where $C_1 = \frac{1-\omega+0.03}{1-\omega}$, and $C_2 = \frac{0.03\times e^{gT_B}}{1-\omega}$, where $\omega$ is the percentage of repairing costs and taxes in the gross rent, and $T_B$ is the auctioned date for a lease that has never been extended or the most recent extension date for a lease that has been extended before. Essentially, these leases pay a ground rent as 3% of annual rent evaluated at $T_B$, instead of 3% of the rateable.

[1] The PSM score represents the predicted probability of being treated, which was estimated using a logistic regression of a dummy variable that equals 1 for transactions in the main treatment group and 0 for those in the control group. In our regression, we included all housing characteristics, time, and location fixed effects as explanatory variables.

# C GMM Estimation

In the estimation, we have $N = 12$ moments for each treatment leasehold group $n \in \{1, 2, ..., N\}$. For leasehold group $n$, its corresponding sample moment is

$$\frac{1}{\sum_{i=1}^{I} D_{i\in n}} \sum_{i=1}^{I} \left\{ \beta_{L_i,t_i}(\Theta) - \left( \hat{\beta}_n + \hat{\varepsilon}_{i,t} \right) \right\} D_{i\in n} = 0. \tag{1}$$

Denote the set of model parameters by $\Theta \equiv \{\gamma, \lambda^{pre}, \lambda^{post}, \delta^{pre}, \delta^{post}\}$. (In Section 5.5 we also include $\kappa$ as the set of estimated parameters.) The term $\beta_{L_i,t_i}(\Theta)$ is the model-implied discount for the transaction $i$ at the transaction date $t_i$ given the lease expiration date $L_i$. Specifically, $\beta_{L_i,t_i}(\Theta) = \ln P_{t_i}(L_i; \Theta) - \ln P_{t_i}(L = \tau; \Theta)$. Next, $\hat{\beta}_n$ is the estimated discount for leasehold group $n$ in the baseline regression (9), while $\hat{\varepsilon}_{i,t}$ is the estimated residual. Finally, $D_{i\in n} = 1$ if transaction $i$ belongs to the leasehold group $n$, and equals zero otherwise. We estimate the GMM by the two-step method developed by Hansen (1982).

When conducting the GMM estimation, we take the following initial parameter values for Column 1-6 in Table 6: $\{\lambda_0^{pre} = 0.005, \lambda_0^{post} = 0.02, \delta_0^{pre} = 0.07, \delta_0^{post} = 0.2, \gamma_0 = 0.2, \delta_{HK,0}^{pre} = 0.02\}$. For Column 7 that includes $\kappa$, the initial parameter values are those estimated values from Column 1 plus the pre-set value of $\kappa = 1.44\%$.