

Bunching in the Hong Kong Housing Market

Charles Ka Yui Leung, Tin Cheuk Leung, and Kwok Ping Tsang

City U of HK, CUHK, and Virginia Tech

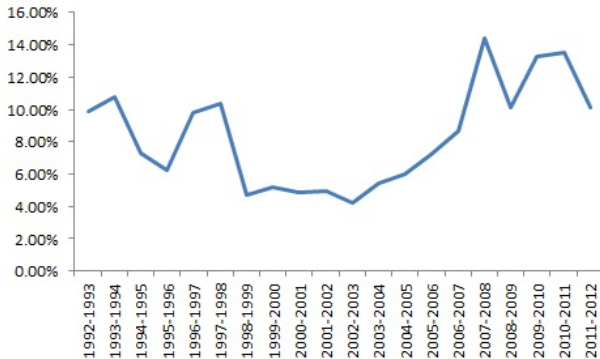
Main Question

How does a nonlinear tax schedule affect housing transactions?

Stamp Duty to Stabilize Housing Market

- Property prices has been very volatile in Singapore and Hong Kong.
- Wall Street Journal (30th Jan., 2013):
“An increased surcharge Singaporean government has assessed on most foreign buyers to try to tamp down soaring property prices...”
- Similar measures in Hong Kong in recent years.

Stamp Duty Important For HK Govt

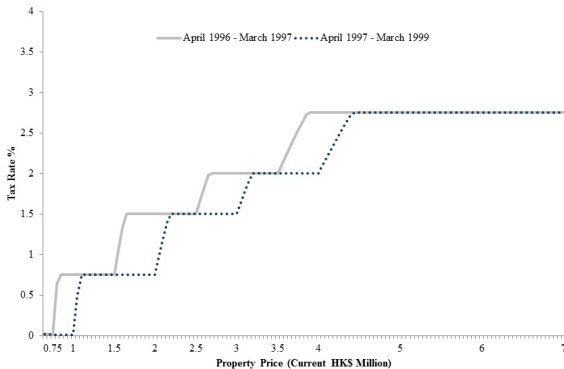


- HK govt collects stamp duty (SD) from various sources:
 - ① stock transaction;
 - ② housing transaction.
- SD one of the main sources of govt revenue.

Housing Stamp Duty in HK

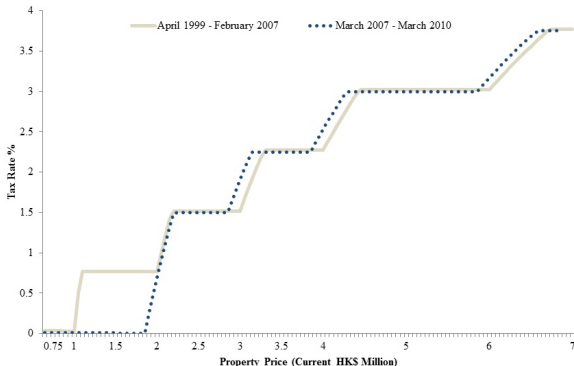
- Buyers responsible for paying SD.
- SD rates highly nonlinear:
 - SD only \$100 if house price below \$2m
 - SD jumps to \$10,100 if house price is \$2.1m
- Nonlinearity provides incentives for bunching:
 - transactions happen right at or just below cut-off prices.

Stamp Duty Schedule Modifications in 1997



- Modification announced in Budget Speech in March 12th 1997.
- Announcement not expected.
- Modification: moving up of cut-off prices.

Stamp Duty Schedule Modifications in 2007



- Modification announced in Budget Speech in February 28th 2007.
- Announcement again not expected.
- Modification: remove the \$1m cut-off and set SD=\$200 for transaction below \$2m.

Contribution to the Literature

- Huge literature on tax avoidance and tax evasion,
 - but mainly focus on labor market.
- Two studies on the effect of nonlinear housing transaction tax:
 - UK– Best and Kleven (2013);
 - US– Wojciech and Munroe (2012).
- This paper different from the two studies:
 - ① No discrete jumps in HK SD schedule
 - less incentive for bunching.
 - ② we have detailed info. on housing characteristics
 - hedonic analysis possible;
 - quantify the extent of “under-pricing” and “tax evasion”.

Road Map

- ① Data;
- ② Methodology;
- ③ Evidence of bunching;
- ④ Evidence of bunching (controlling for housing characteristics);
- ⑤ A measure of potential tax evasion.

Data

- Main source: Economic Property Research Center.
- Data period: 1996-2007.
- Covered most of the transactions in the period.
- Housing characteristics in the data:
 - prices;
 - gross and net area;
 - address;
 - floor;
 - age.

Data Selection

We drop observations/transactions

- with zero or negative age;
- that are provisional agreements;
- with only changes in some names of owners;
- with missing housing characteristics;
- with zero or negative price.

We have a total of 493,054 observations.

Methodology

- Follow Chetty *et al.* (2011) and Kleven and Waseem (2013).
- Group transactions into price bins of \$10,000.
- For each cutoff price \hat{h}_v , we estimate

$$n_i = \underbrace{\sum_{p=0}^5 \beta_p (d_i)^p}_{\text{fifth order polynomial}} + \underbrace{\sum_{r \in R} \eta_r I \left\{ \frac{\bar{h}_v + d_i}{r} \in \mathbb{N} \right\}}_{\text{round and lucky num. fixed effects}} + \underbrace{\sum_{k=\bar{h}_v-2}^{\bar{h}_v+2} \gamma_k I \{i = k\}}_{\text{cutoff price fixed effects}} + \mu$$

where

- n_i is the number of transactions at price bin i ;
- d_i is the distance of price bin i from cutoff price \bar{h}_v ;
- R is the set of round numbers and lucky numbers;

Amount of Bunching Transactions

Bunching as a proportion of counterfactual number of transaction:

$$b = \frac{\sum_{k=\bar{h}_v-2}^{\bar{h}_v} \gamma_k}{\sum_{k=\bar{h}_v-2}^{\bar{h}_v} \hat{n}_k}$$

- If $b = 1$ and $\hat{n} = 1000$, then the number of bunching transactions is 2000.
- A larger b means more bunching.

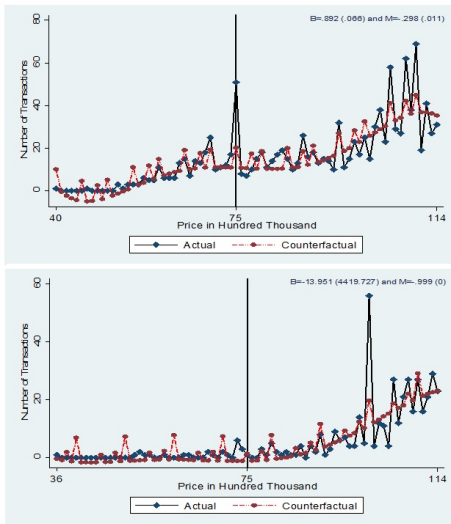
Amount of Missing Transactions

Missing as a proportion of counterfactual number of transaction:

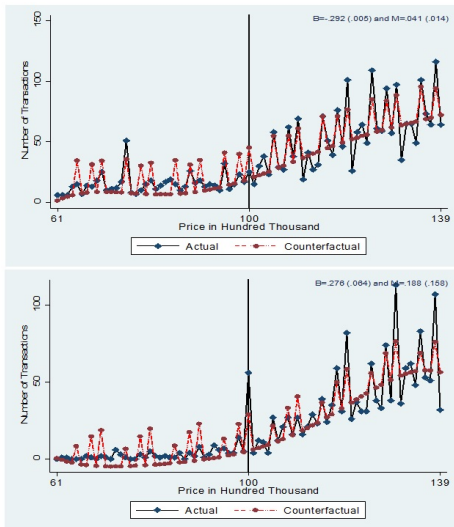
$$m = \frac{\sum_{k=\bar{h}_v+1}^{\bar{h}_v+2} \gamma_k}{\sum_{k=\bar{h}_v+1}^{\bar{h}_v+2} \hat{n}_k}$$

- Similar interpretation as b .
- But we expect m to have a negative sign.

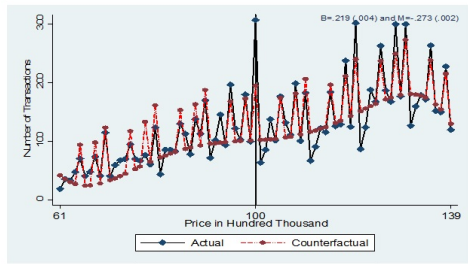
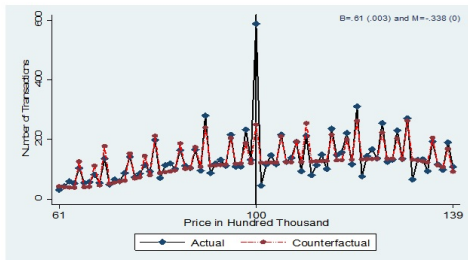
Bunching At \$0.75 Mil. Before and After 1997



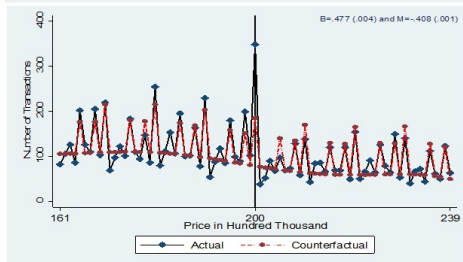
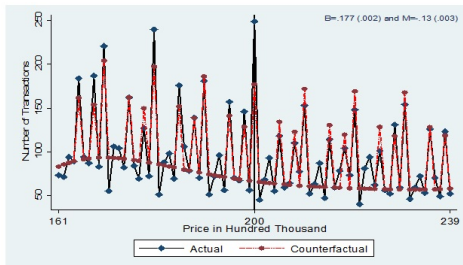
Bunching At \$1 Mil. Before and After 1997



Bunching At \$1 Mil. Before and After 2007



Bunching At \$2 Mil. Before and After 2007

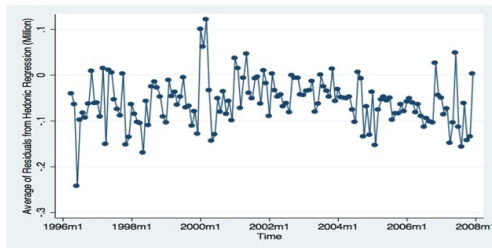
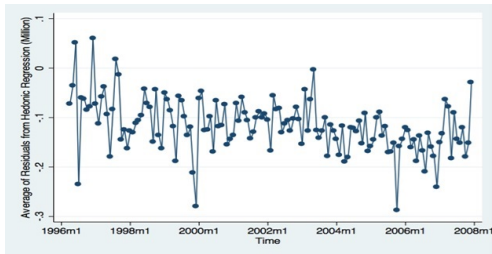


Tax Evasion Through Under-Pricing

We make use of housing characteristics to run hedonic regression:

- regress for each month;
- use real price, instead of log real price;
- sum up residuals of transactions at and up to \$20,000 below cutoff prices;
- also sum up residuals of transactions at non-cutoff prices.

Under Pricing Around Cutoff Prices and Non-Cutoff Prices



Conclusion

- Non-linear stamp duty “distorts” housing market:
 - bunching near cutoff prices;
 - underpricing and tax evasion near cutoff prices.
- Implications on optimal stamp duty schedule?