Housing Transfer Taxes and Household Mobility: *Distortion on the Housing or Labour Market?*

Land and buildings (on full consideration paid)			
Rate	**Residential property**		**Non-residential**
	Disadvantaged areas	Other	
	£	£	£
Nil	0 - 150,000	0 - 125,000	0 - 150,000
1%	150,001 - 250,000	125,001 - 250,000	150,001 - 250,000
3%	250,001 - 500,000	250,001 - 500,000	250,001 - 500,000
4%	Over 500,000	Over 500,000	Over 500,000

Shares and securities - rate 0.5%.

Christian Hilber
and
Teemu Lyytikäinen

LSE THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE

SERC Spatial Economics Research Centre

Overview

- **Look at long-term effect of UK stamp duty – a tax on real estate transfers payable by buyer – on actual household mobility**
  - Does tax induced increase in relocation costs reduce mobility? By how much?
  - Does stamp duty affect housing- and job-related mobility differentially?
- **How?**
  - Use UK micro-data
  - Exploit discontinuous jump in the tax rate from 1 to 3% at the cut-off house value of £250k
  - Use this discontinuity to identify effect of stamp duty on mobility

Contents

1. **Motivation**
2. **UK stamp duty system & theoretical predictions**
3. **Empirical strategy** (RD)
4. **Data**
5. **Evidence and Robustness** (including analysis of bunching)
6. **Conclusions**

Contents

Why should we care?

1. **Taxes on real estate transactions are economically important**
   - UK: 0 – 7% of HVs (generating £8 billion in 08/09)
   - Not just UK – Most European countries have very substantive tax rates (e.g. Spain: 7%)
   - US: 0 – 2.2% + local taxes
2. **If stamp duty indeed reduces mobility, this can cause wasteful mismatch in housing and labor markets…**

Mirrlees Review '*Tax by Design*' (2011):

"By discouraging mutually beneficial transactions, stamp duty ensures that properties are not held by the people who value them most. ***It creates a disincentive for people to move house****, thereby leading to potential* ***inflexibilities in the labour market*** *and encouraging people to* ***live […] in properties of a size and in a location*** *that they may well not otherwise have chosen."*

Two open questions

- **How big is adverse effect of UK stamp duty on actual household mobility?**

- **Are distortions mainly confined to labour or housing markets?**

What do we know so far? Little previous empirical work…

- **Van Ommeren and van Leuvensteijn (2005)**
  - Provide **indirect evidence on mobility effects** for the NLs using theoretical model to infer effect of transaction costs
  - **1 percentage point** increase in transaction costs **reduces** mobility **by at least 8%**
- **Dachis, Duranton and Turner (2012)**
  - Look at **short-term effect** of a transfer tax in Toronto
  - Estimate effect on **housing transaction volume and prices** using Diff-in-Diff
  - **1.1% tax** on HVs led to a **15% decrease** in transactions in first eight months after introduction
- Our study: on **UK**, on **long-term (equilibrium) effects**, on **actual HH mobility, distinguishing b/w labour and housing related moves** and using **RD-type design**

Basic idea: Exploit discontinuity in UK stamp duty tax rate…

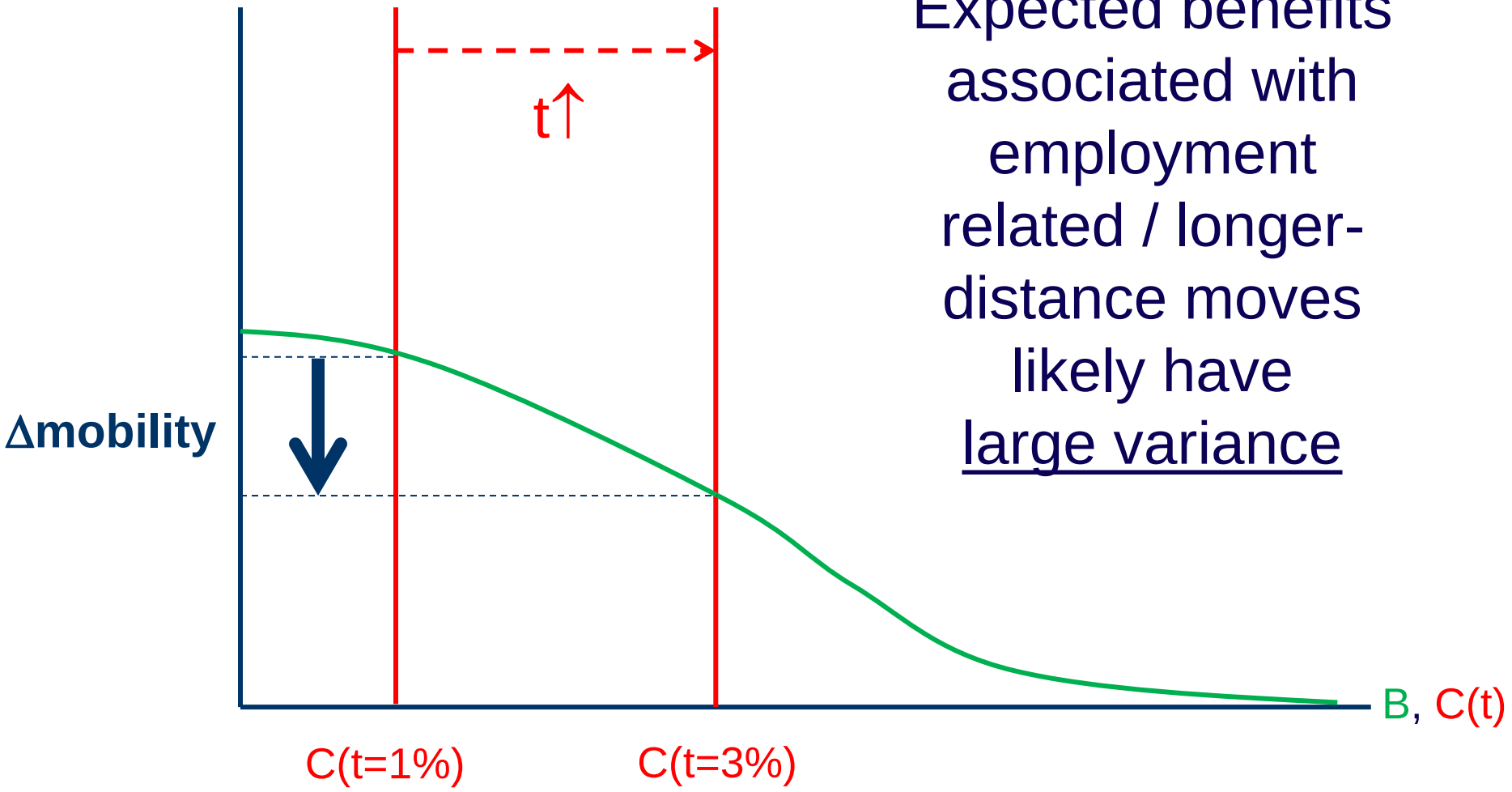
Purchase price	**UK Stamp duty rate** (during our sample period)
Up to £125,000	0%
£125,001 to **£250,000**	**1%**
£250,001 to £500,000	**3%**
Over £500,000 to £1 million	4%
Over £1 million	5%

- **Our focus is on <u>£250k cut-off</u> for three reasons:**
  1. **Tax jump is big: from £2500 to £7500!**
  2. **Data reasonably dense around it**
  3. **Hasn't been affected by regional exemptions**

Expected effects of stamp duty increase?

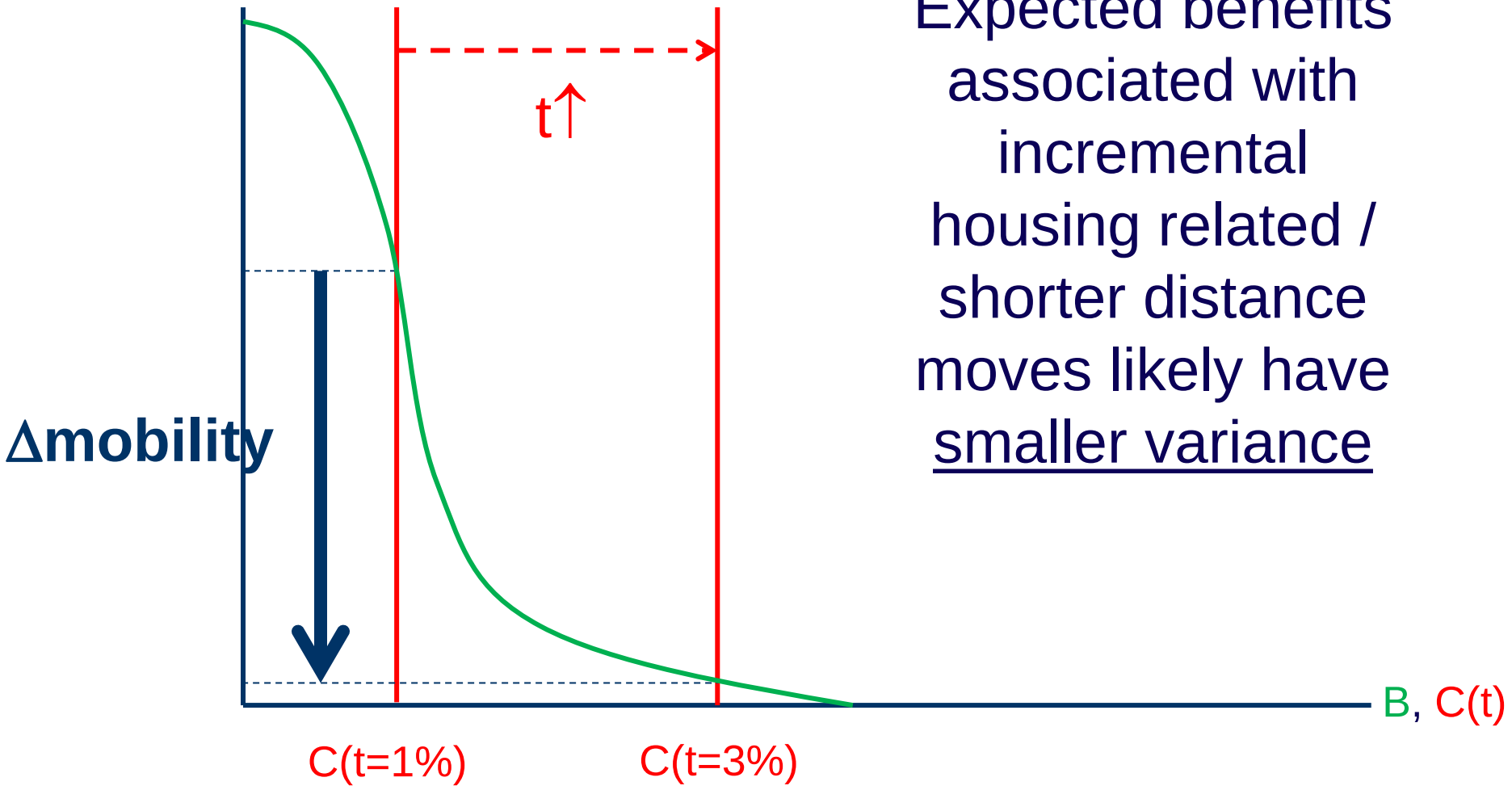
- **Stamp duty drives wedge b/w price obtained by seller and price paid by buyer**
  - Transaction costs reduce housing transactions
  - But transaction ≠ move!
  - Could in theory move without selling, but…
    - Most sellers need down-payment for new home
    - Few people want to be landlord and rent out old home
  - Drop in mobility likely similar to drop in transaction volume
- **Propensity of move affected by**
  - Expected costs (stamp duty)
  - Expected benefits of move (employment shocks vs. incremental housing related motives)

Job related moves



Expected benefits associated with employment related / longer-distance moves likely have <u>large variance</u>

Housing related moves



Expected benefits associated with incremental housing related / shorter distance moves likely have <u>smaller variance</u>

Theoretical Predictions

1. **Stamp duty increase reduces housing transaction volume**

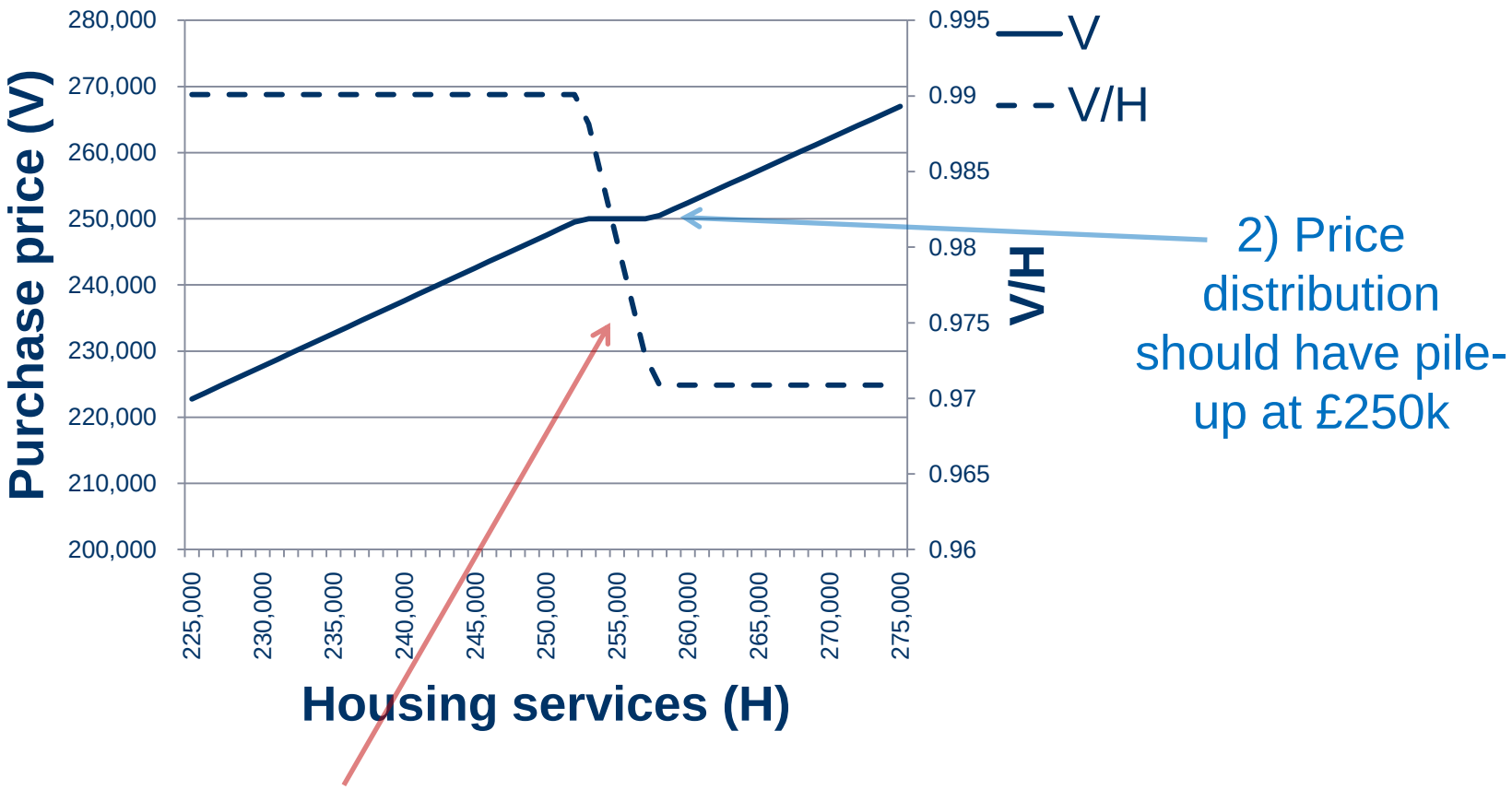
2. **Stamp duty increase reduces household mobility (by a similar fraction)**

3. **Adverse effect on** (incremental, shorter-distance) **housing related moves is greater than corresponding adverse effect on** (longer-distance, shock-driven) **job related moves**

What exactly happens at cut-off?

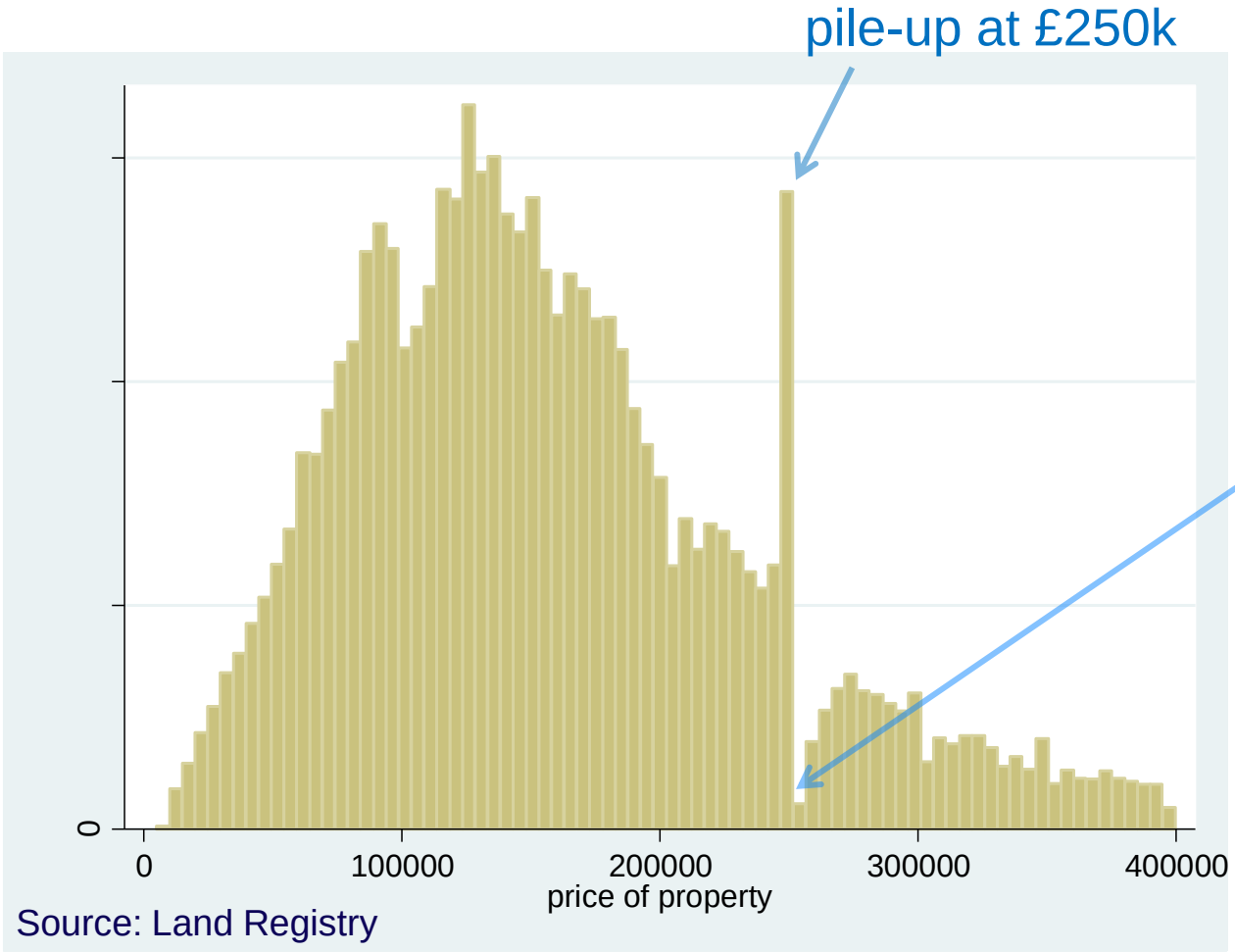
- Consider setting
  - Dwellings produce housing services ***H***
  - Buyer's willingness to pay for one unit of ***H*** is ***P***
  - For simplicity ***P=1***
  - Stamp duty ***t*** is capitalized into house price ***V***: ***V=PH/(1+t)=H/(1+t)***
- Owner's incentive to sell and move depends on ***V/H*** *=1/(1+t)*
  - An increase in stamp duty ***t*** decreases ***V/H***

Implications for empirical work



1) Price per unit of *H* obtained by seller decreases sharply at the £250k cut-off from 0.99 to 0.97 → Above cut-off sellers will tolerate larger disequilibrium before moving (so will be less likely to move)

Distribution of housing transaction prices (in 2005)



… But note: we do not use transaction prices (in core analysis) but rather self-assessed HVs…

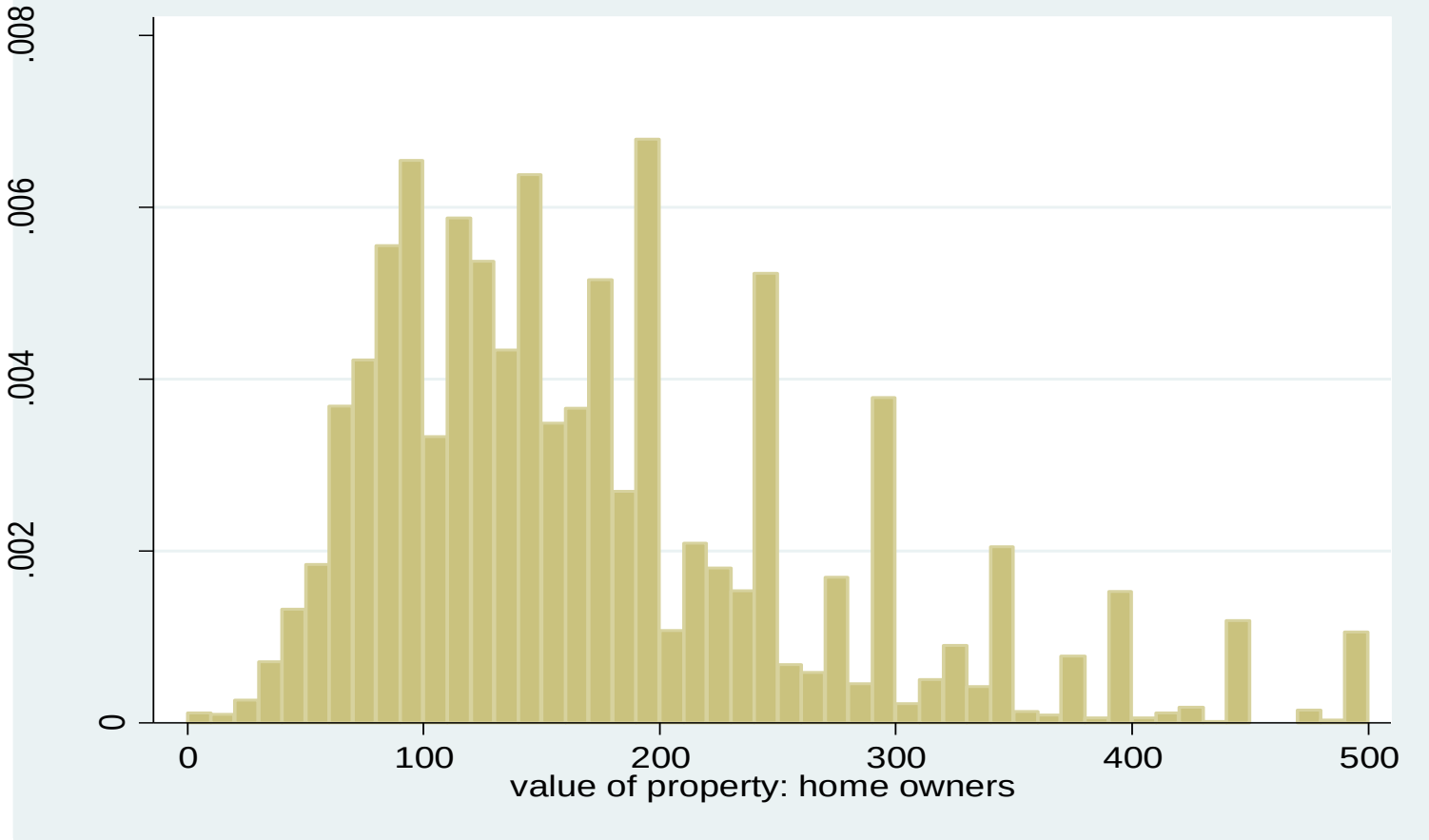
Our treatment variable

- **Treatment= 1 if <u>self-assessed</u> house value > £250k**
  - Pr(affected by the 3% rate) increases sharply at £250k
  - But we can't identify those who really took treatment
  - Compliers on either side of cut-off ⇨ downward bias

⇨ **We estimate the *reduced form* of a *fuzzy* Regression Discontinuity IV regression**

  - **Fuzzy** because can't be sure all HH above cut-off are indeed affected
  - **Reduced form** because we don't observe actual treatment so have to use likelihood of obtaining treatment directly, not as instrument

Self assessed house values (in 2005)



- **People tend to report rounded values but no abnormal pile-up at £250k (unlike in transaction price distribution)**

⇨ **Supports validity of RD design (no precise manipulation of assignment variable)**

Empirical model

- **We estimate using 20 to 40% bands around house value of £250k by OLS:**

$$\mathbf{Move_{it} = \beta_t + \beta_1 Treat_{it-1} + f(House\ value_{it-1}) + u_{it}}$$

  - Treat = 1 if self-reported house value > £250k
  - f(House value$_{it-1}$) is 1st-4th order polynomial

- **<u>Identifying assumption</u>: all other factors that determine mobility evolve smoothly w.r.t. house values**

Two concerns & proposed remedies

1. **HHs who intend to stay may not follow market as closely and may be more likely to give "rounded" estimates of their HV (including £250k)**
   - Include dummy for round values (in multiples of £50k)
2. **Recent movers are problematic**
   - They have just "precisely manipulated" the assignment variable
     - Sorting on unobservables possible
   - Exclude those who moved in t-1 ⇨ slightly stronger results

Data

- **British Household Panel Survey (BHPS)**
  - Roughly 10,000 HHs annually
  - Sample period: 2003 to 2008 (2003 = First year with new stamp duty system with stricter control on tax evasion)
- **Key variables**
  - Mover indicator (1/0): 1 if household moved between interviews in t-1 and t
  - Self-assessed house values
    - Arguably, this is relevant HV measure for mobility decisions
- **Controls**
  - Age, kids, HH income, region dummies, GCE A-levels or higher, bachelor degree or higher, year dummies, dummy for round HVs

Main Results I

Dependent variable: household moved (0/1)						
Band around £250k cut-off	**Order of polynomial of house value**					
	NO	1st	2nd	3rd	4th	N
20 %	-0.001	-0.02	-0.037**	-0.055**	*-0.044*	6665
	[0.007]	[0.018]	[0.018]	[0.027]	*[0.028]*	
30 %	0.006	*-0.025****	-0.027***	*-0.022***	-0.029**	14151
	[0.004]	*[0.008]*	[0.010]	*[0.010]*	[0.014]	
40 %	0.003	*-0.011*	*-0.015**	-0.029***	-0.024**	17997
	[0.004]	*[0.007]*	*[0.008]*	[0.009]	[0.011]	

Notes: Additional control variables: year dummies, dummy for round house value. Standard errors clustered at household level brackets. * p<0.1, ** p<0.05, *** p<0.01. Preferred specification in row according to AIC score indicated by *italics*.

Preferred specification: band wide enough for reasonably precise estimation; higher than 3rd order polynomial increases AIC score.

Main results II: Differential effects by distance of move and reason of move

	Dependent variable: household moved (0/1)					
	3rd order polynomial of house value					
	Distance of move			Reason for move		
Band around £250k cut-off	<10km	10-30km	>30km	Housing	Employm.	Other
20 %	-0.057***	0.013	-0.001	-0.027	0.01	-0.032*
	[0.018]	[0.011]	[0.014]	[0.019]	[0.007]	[0.019]
30 %	-0.025***	0.002	0.007	-0.019***	0.005	-0.004
	[0.006]	[0.005]	[0.005]	[0.007]	[0.003]	[0.007]
40 %	-0.026***	-0.001	0.003	-0.020***	0.002	-0.001
	[0.005]	[0.004]	[0.005]	[0.006]	[0.003]	[0.006]

Notes: Additional control variables: year dummies, dummy for round house value. Standard errors clustered at household level brackets. * p<0.1, ** p<0.05, *** p<0.01.

⇨ Adverse effects largely confined to housing related short-distance moves

‘Countless’ validity & robustness checks…

1. **Balance of covariance tests**
2. **Add demographic and location specific controls**
3. **Allow slope of polynomials to differ on the two sides of cut-off**
4. **Placebo tests w artificial cut-offs:** Check results are not driven by ‘round value’ phenomenon
5. **Drop HHs who self-report value of 250k**
6. **Limit sample only to HHs who say they are likely to move**
7. **Two-way cluster at HV group level and HH level**
8. **Show ‘aggregate effect’ on transaction volume of similar magnitude** (using transaction price data)

‘Aggregate effect’ on transaction volume

- **Idea: Use universe of housing transaction price data (from Land Registry) to provide estimate of aggregate effect of stamp duty on volume of transactions**
- **Does not allow us to identify impact on (job- vs. housing related) mobility BUT…**
  - Use of alternative dataset & approach provides a cross-validation check of magnitude of adverse effect
  - Gives more precise estimate of overall effect on transaction volume since observe treatment and results based on much larger sample size
  - One might be worried about manipulation of timing of move, but this spec controls for such timing behaviour…

Empirical model (following literature on 'bunching')

- **Basic idea:** **Control for bunching behaviour**
- **How?** **Limit sample to transaction prices b/w £150k and £350k, create £5k wide bins & include controls for bunching**

$$\ln(N_{it}) = \beta_t + \beta_1 Treat_{jt} + f_t(Price_{jt}) + \lambda_1 Bin_{240} + \ldots + \lambda_6 Bin_{265} + \delta_1 Round50_j + \delta_2 AfterRound50_j + u_{jt}$$

- N_{jt} … Number of transactions in bin j in year t
- Treat = 1 if value of bin > £250k
- f($Price_{jt}$) is polynomial of upper bound of bin (shape of polynomial allowed to vary by year)
- Control for (i) bins close to cut-off where bunching occurs, (ii) bins with round values, and (iii) bins immediately after round values

Results: Effects on transaction volume

Dependent variable: ln(number of transactions in bin)					
	Order of polynomial of house value				
	3rd	4th	5th	6th	7th
Price>£250k	-0.142***	-0.142***	-0.287***	-0.287***	*-0.315****
	[0.044]	[0.045]	[0.070]	[0.071]	*[0.109]*
6 bin dummies	Yes	Yes	Yes	Yes	Yes
Price>£250k	-0.097	-0.097*	-0.282***	-0.282***	*-0.331***
	[0.063]	[0.055]	[0.094]	[0.092]	*[0.164]*
8 bin dummies	Yes	Yes	Yes	Yes	Yes

Notes: N=240 (6 years × 40 bins). * p<0.1, ** p<0.05, *** p<0.01. Preferred specification in row according to AIC score indicated by *italics*.

Preferred specifications: 5th to 7th order polynomials

Conclusions

- **The UK stamp duty has strong negative effect on actual household mobility**
  - 2%-point increase in stamp duty reduces annual rate of mobility by 2-3 percentage points (~ 40% reduction in propensity to move)
  - Also find similar adverse effect on transaction volume (~ 30% reduction)
  - Naïve estimates fail to identify this effect
- **Effect confined to short-distance and non-job related moves**

⇨ **Implies potentially important welfare losses due to misallocation of housing** (rather than labour market mismatch)

Q & A

Thank you!

Paper downloadable from:
http://www.cemmap.ac.uk/forms/Housing%20Conference/hilber_housingtransfertaxes.pdf