



HM Government

**You could own your own home
with a 5% deposit**

Government loan of up to 40% in London from early 2016



Housing Subsidies, Supply Constraints, and Housing Affordability: Evidence from Help to Buy

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(Presentation builds on Carozzi, Hilber and Yu, 2019)

Stylized Fact #1

- **Housing is increasingly unaffordable in many prosperous cities around the world**
 - ▶ Especially true for **owner-occupied housing & the young & lower incomes**
 - ▶ Housing typically deemed affordable if 'median multiple' is lower than 3.0
 - ▶ Housing is 'severely unaffordable' if multiple > 5.0
 - ▶ In **Hong Kong: 20.9 (!)**, Vancouver: 12.6, Sydney: 11.7, **London: 8.3** (& 2nd highest price per m²)
 - ▶ But there is **crisis also in many other European cities** (Dublin, Amsterdam, Paris, Barcelona, ...)

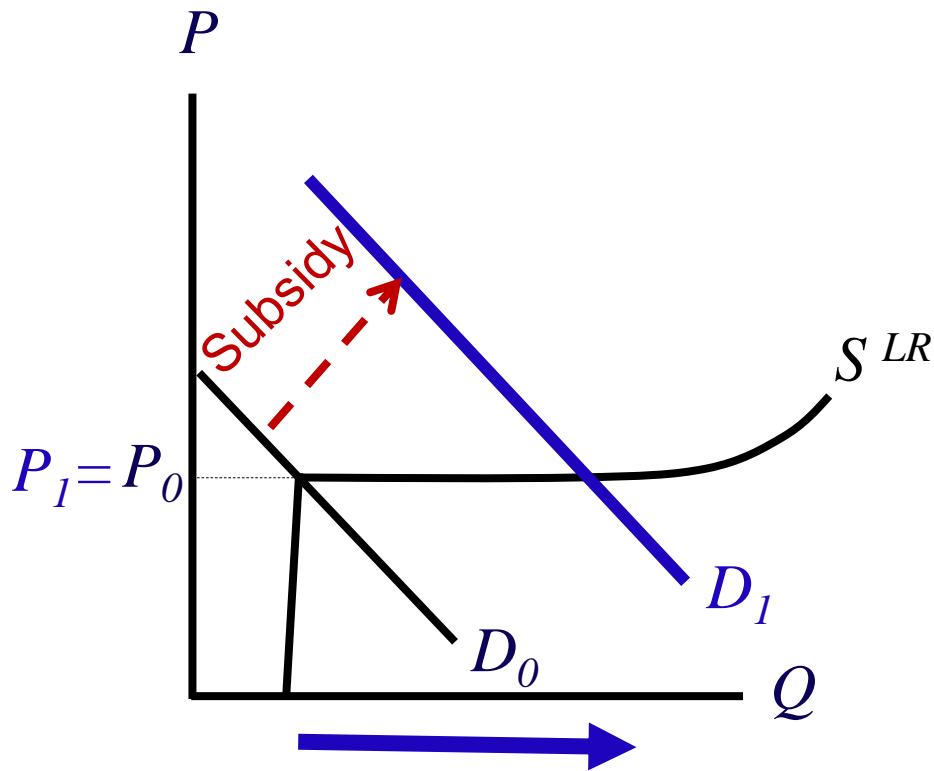
Stylized Fact #2

- **Countries increasingly respond to crisis by subsidizing owner-occupied housing**
 - ▶ Subsidies **via income tax system**: MID
 - ▶ Subsidies that aim to **lower annual mortgage payments** directly (e.g. via interest free loans)
 - ▶ Subsidies that **help borrowers overcome down-payment constraint** (e.g. via equity loans or guarantees)
 - ▶ Subsidies that aim to **stimulate housing construction** by tying subsidy to purchase of new build property
 - ▶ All these subsidies ultimately aim to make owner-occupied housing more accessible and more affordable
- ⇒ But do these policies really achieve their aims? What are the **economic effects**?

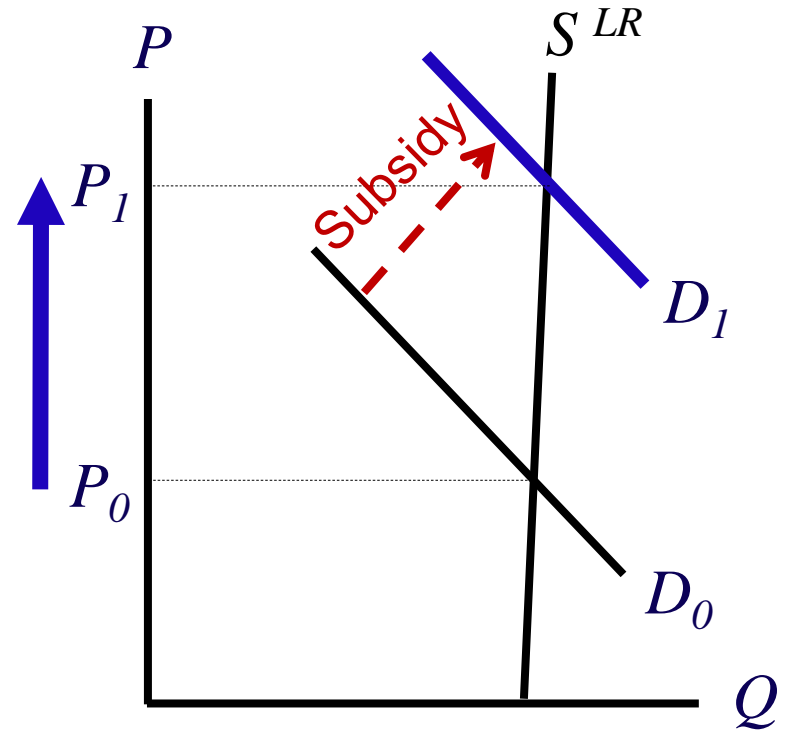
What does theory tell us?

Subsidies push up housing demand...

Housing market with elastic long-run supply (upwards)



Housing market with inelastic long-run supply (upwards)



... quite possibly even more than 'full capitalization'!


What do we already know?

- ‘Old’ literature on **capitalization of local property taxes** (flip side of subsidies)
 - ▶ Oates (1969 JPE), surveys: Chaudry-Shah (1988 JES), Ross & Yinger (1999 HURE), Hilber (2017 REE)
 - ▶ Most studies find ‘partial’ to ‘full’ capitalization & greater extent in more supply constrained locations
- Recent literature on effect of **Mortgage Interest Deduction** on homeownership, house prices & consumption
 - ▶ Hanson (2012 JHE), Hilber & Turner (2014 REStat), Sommer & Sullivan (2018 AER)

But what about policies that aim to relax down-payment constraints?

- Such policies comes in different forms & are increasingly popular across Europe (e.g., UK, NL, BEL, SWE, FRA)
- Focus of my presentation today is on the economic impacts of UK's **Help to Buy** policy...

What is Help to Buy?

- **Aim:** Help down-payment & liquidity constrained households (especially first-time buyers) to purchase a home + stimulate housing construction
 - ▶ Implemented in 2013 in response to affordability crisis 
 - ▶ Biggest government intervention in housing market since 'Right to Buy' in 1980
- Four different schemes

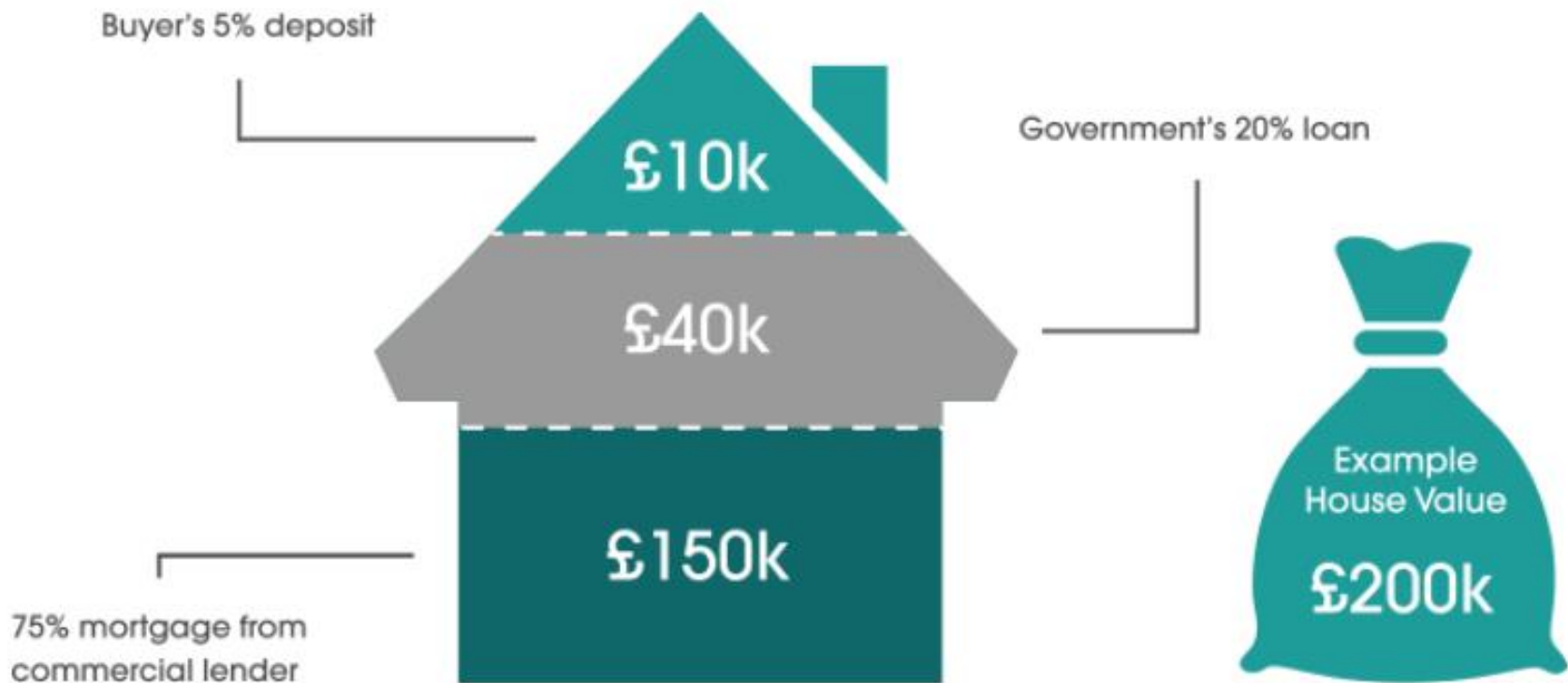
▶ **Equity Loans** (by far most salient and popular scheme – value of loans so far around £11b)

- ▶ Mortgage Guarantees
- ▶ Shared Ownership Scheme
- ▶ Individual Savings Account (ISA)


Big plus: Provides two quasi-natural experiments to identify impact of HtB...

Equity Loans Scheme

- Provides **equity loan for up to 20% of house value** (40% inside of Greater London Authority) **to buyers of new build properties** + no interest for first 5 yrs.

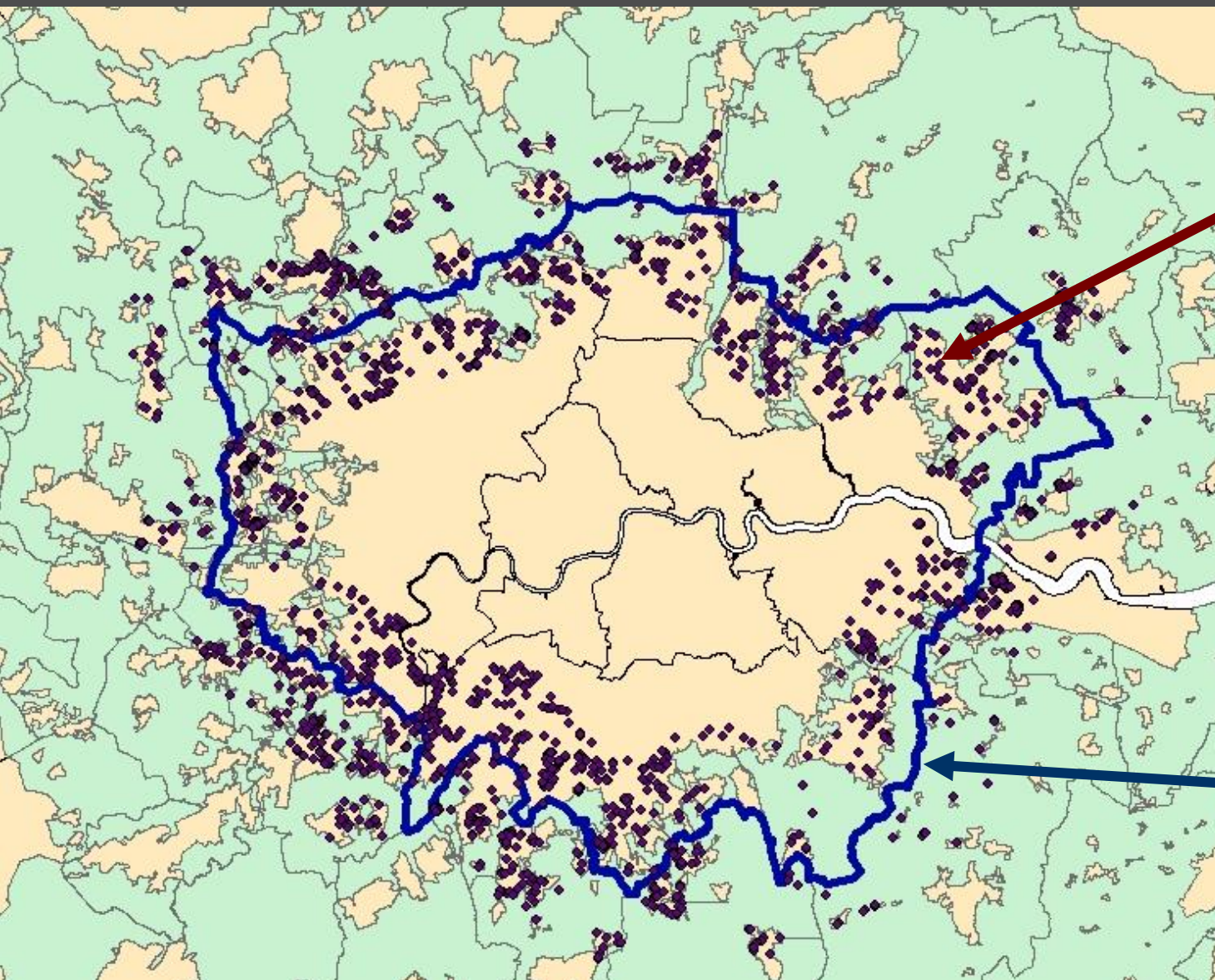


Identification strategy

- Employ a **difference-in-spatial-discontinuity design**
- **Idea:**
 - ▶ Exploit spatial discontinuities in scheme (near boundary) pre- and post implementation of scheme
 - ▶ Two main spatial discontinuities in generosity of scheme...

Region	Introduction Date	House value up to	Loan from government	Application
Wales	1/2014	£300k	Up to 20%	Only new build
England	4/2013	£600k	Up to 20%	Only new build
London	2/2016	£600k	Up to 40%	Only new build

Identification strategy *in GLA*

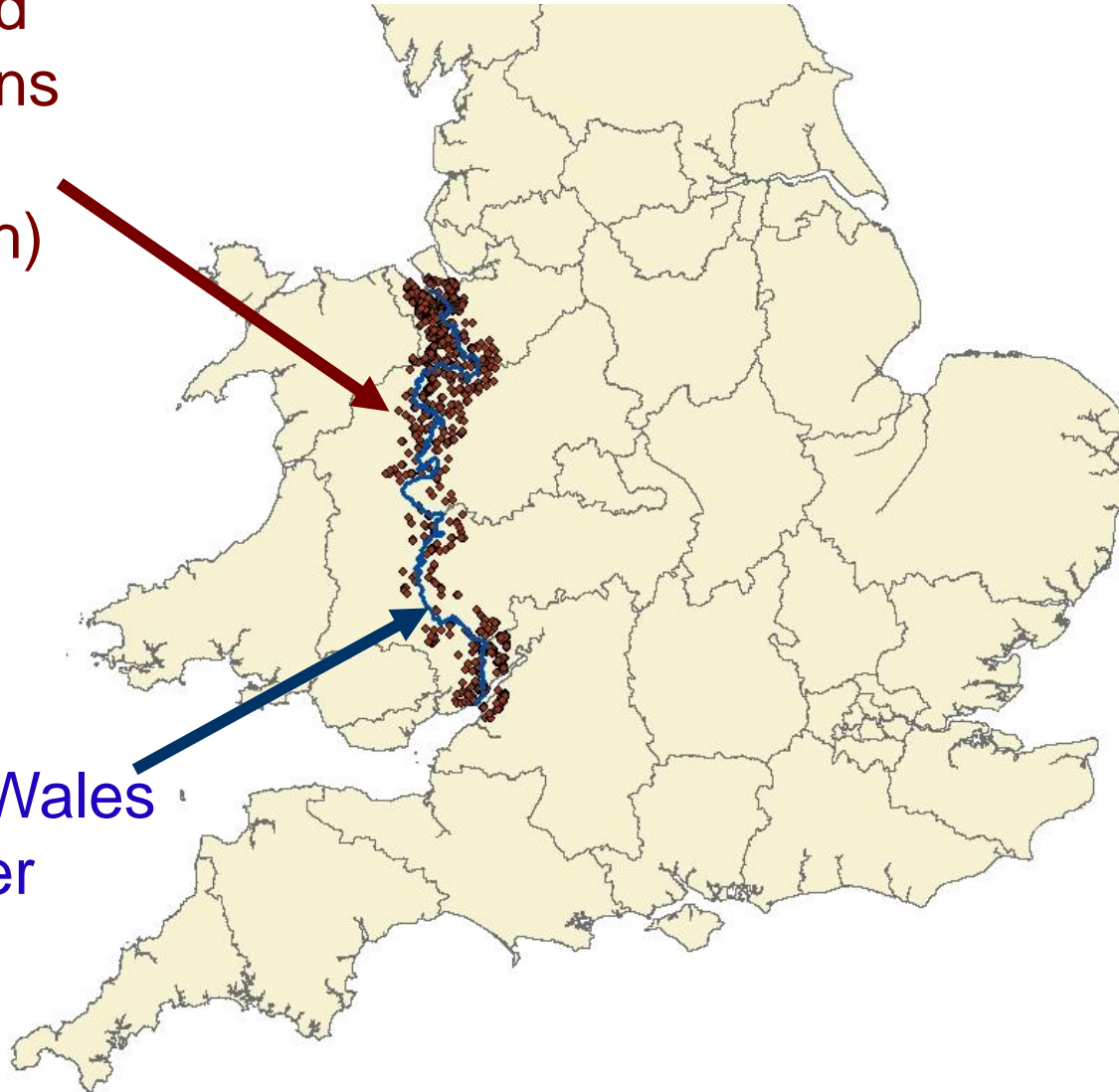


New build transactions
(5km bandwidth)

GLA
boundary

...and at *English/Welsh* border

New build
transactions
(10km
bandwidth)



England/Wales
border

Predictions for the two areas?

<i>Supply constraint:</i>	<i>Area:</i>	Local authorities crossing GLA boundary	LAs crossing English/Welsh border
Share of land in green belts		66.5%	3.8%
Average refusal rate 1979-2008		35.6%	27.2%
Average share of developed land		27.6%	6.3%
Average elevation range (m)		143.9	476.0
Implied price-earning elasticity (OLS)		0.403	0.252
Implied price-earning elasticity (IV)		0.205	0.127

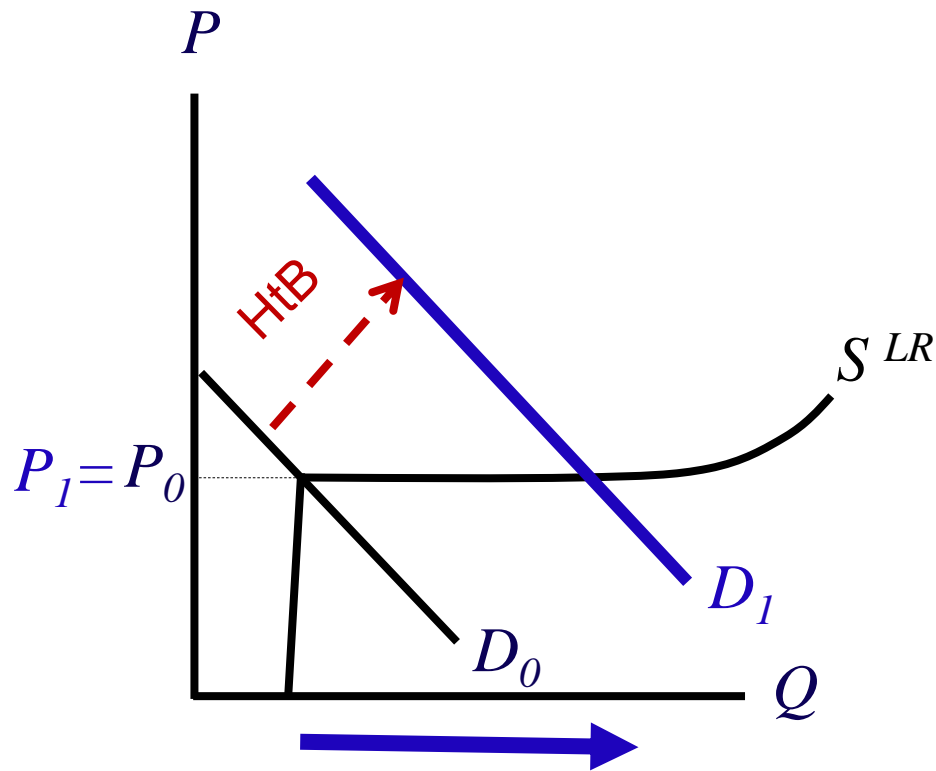
Source: *Hilber & Vermeulen (2016, EJ)*

Inelastic supply
 (H_0 : $P \uparrow \uparrow$, small effect on construction)

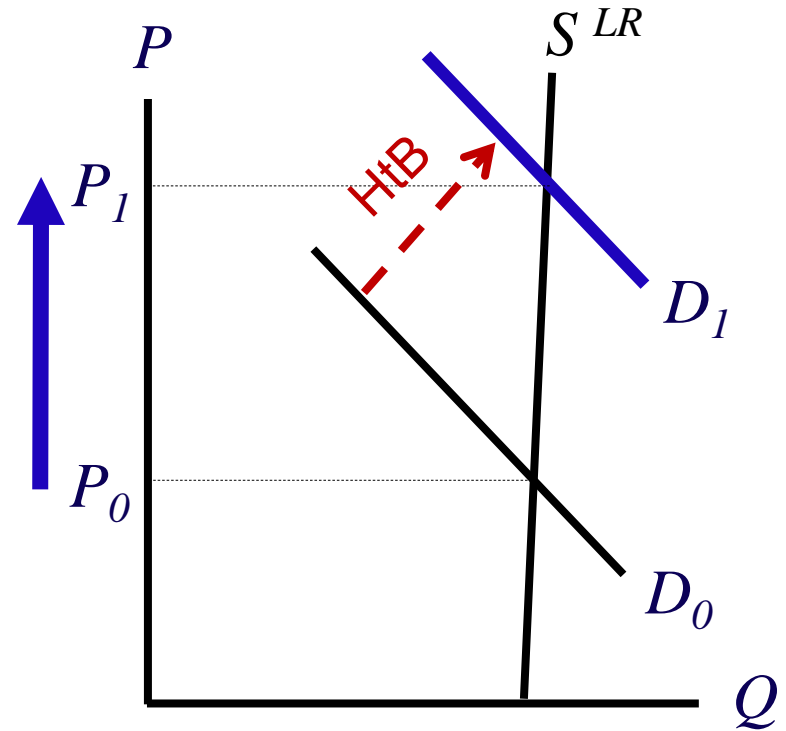
Elastic supply
 (H_0 : small price effect, construction $\uparrow \uparrow$)

Predictions from theory?

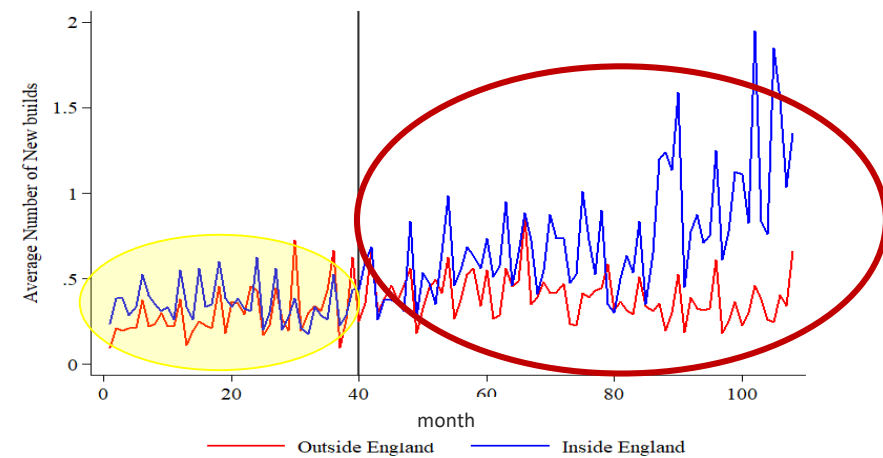
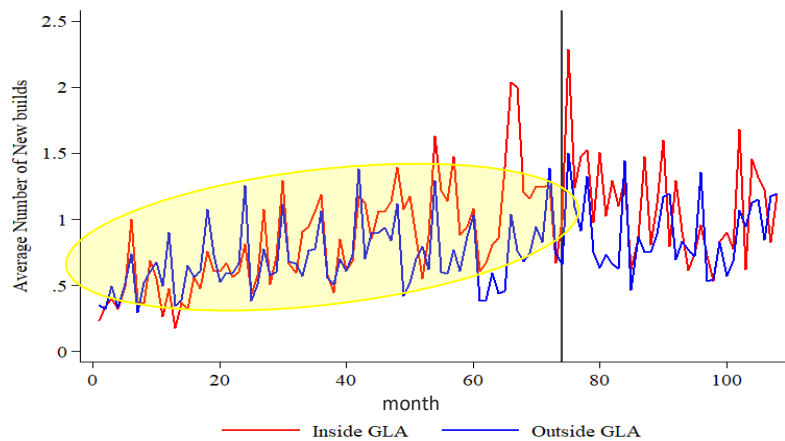
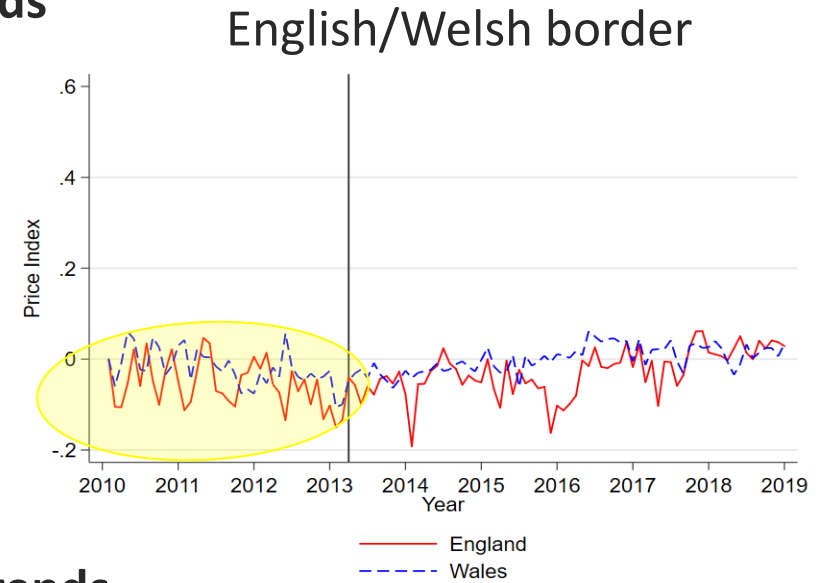
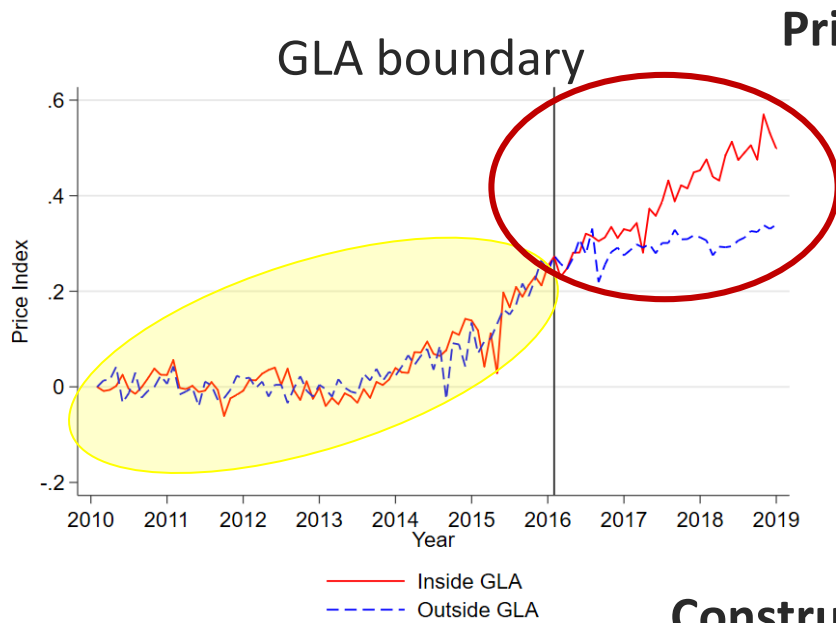
English/Welsh border



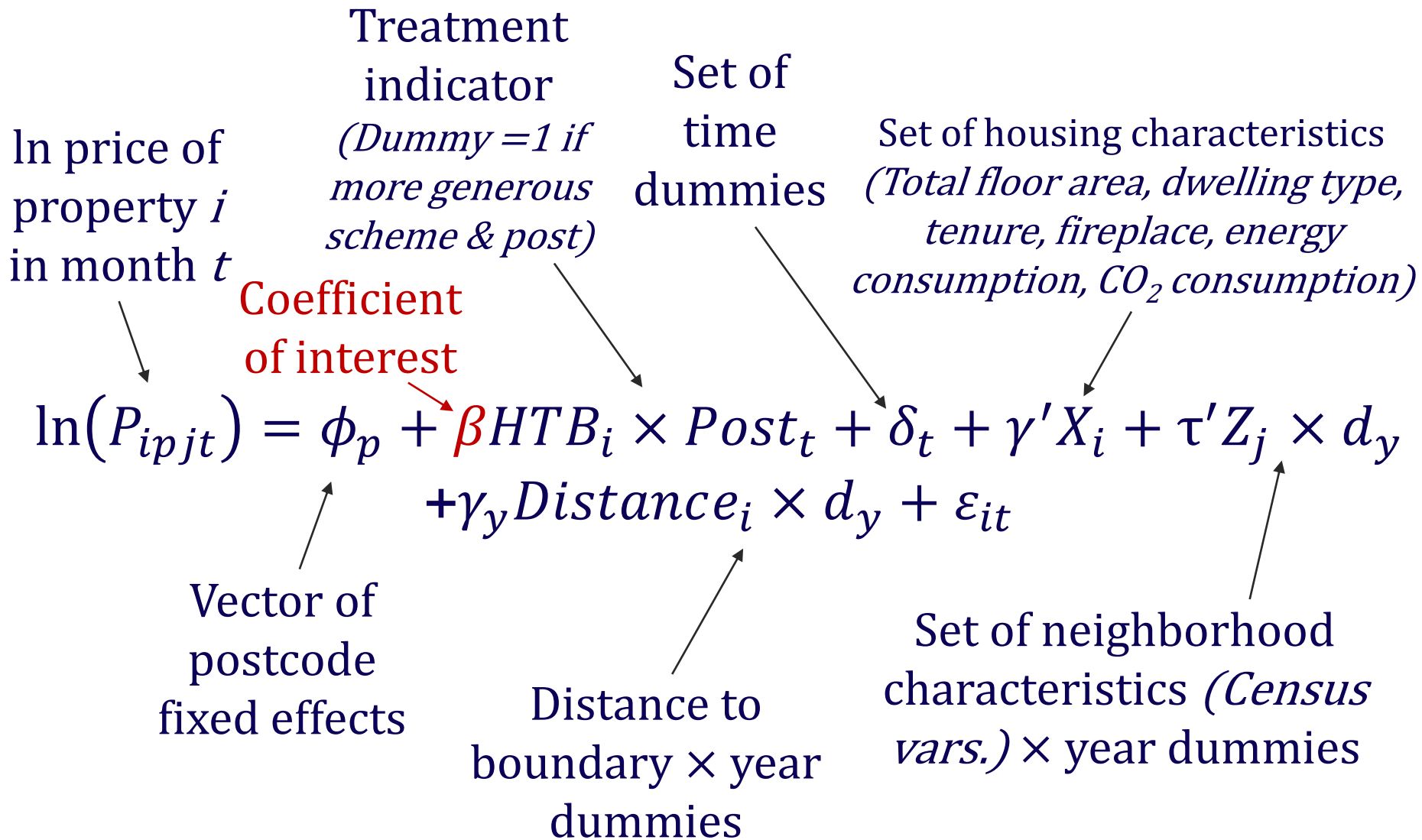
Greater London Authority



Assumption of parallel pre-trends



Base specification I: Price effect



Base specification II: Construction

Either: No. of new builds *or* dummy if new build in ward j and time t

Treatment indicator (*Dummy = 1 if more generous scheme, lagged by 12 months*)

Time dummies

Coefficient of interest

Ward* FEs

$$New\ builds_{jt} = w_j + \beta HTB_i \times Post_{t-12} + \delta_t + \tau' Z_j \times d_y + \gamma_y Distance_j \times d_y + \varepsilon_{jt}$$

Set of neighborhood characteristics (*Census vars.*) at ward level \times year dummies

Distance to boundary \times year dummies

* Mean population size of wards in 2011: 6,600



Findings in a nutshell

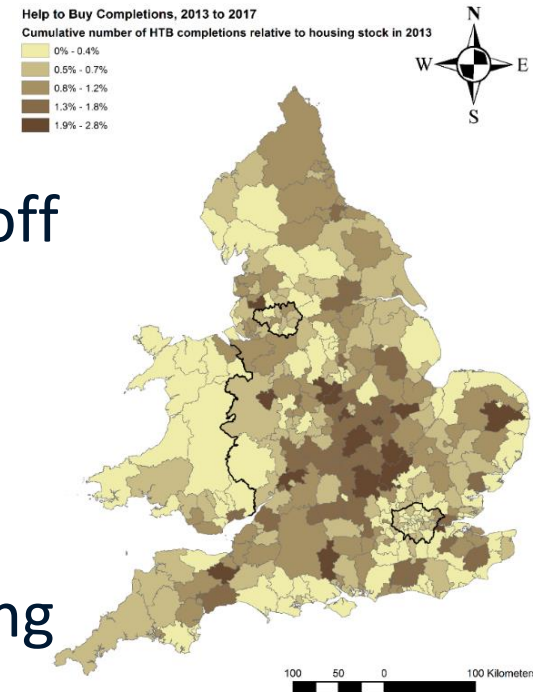
- **Greater London Authority** (inelastic supply)
 - ▶ HtB **increased house prices** of new builds by 6.2% more just inside of GLA (*this is nearly 2 x subsidy amount of 3.2%*)
 - ▶ HtB did not have significant effect on construction volume or likelihood of new construction
- **English/Welsh border** (comparably elastic supply)
 - ▶ HtB did not significantly increase house prices of new builds on English side relative to Welsh side
 - ▶ HtB did **increase # of new builds** per ward by 0.42 units & the **propensity of construction** by 7.8%
- HtB did **increase turnover, profits & salaries** of developers engaged in HtB-business

Other findings & robustness 

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Conclusions

1. **HtB is an ineffective** policy in already unaffordable areas: Increases HPs (>> subsidy!) & does not stimulate construction
2. Encourages construction in **'wrong places'** (where it is easy to build, not where productive jobs are)
3. Young struggling **first-time buyers** in unaffordable areas are likely no better off
4. Subsidy appears to end up **benefiting owners of land & senior management of developers**
5. Policy makers in UK ought to focus on **supply side reforms** rather than propping up demand...



Q & A

Thank you!

Presentation available:

Email: c.hilber@lse.ac.uk

Forthcoming as CEP Discussion Paper

Carozzi, F., C.A.L. Hilber & X. Yu (forthcoming).

‘On the Economic Impacts of Mortgage Credit Expansion Policies:
Evidence from Help to Buy’.



Additional material

The paper in a nutshell

- Explore impacts of Britain's current flagship housing policy—**Help to Buy (HtB)**—on house prices, construction volumes & other outcomes
- **Idea:** Exploit **spatial discontinuities** in HtB-scheme that emerge post-implementation of policy to learn about impact of policy
- **Key finding :** HtB is **completely ineffective policy** in 'unaffordable areas' (with inelastic S)
 - ▶ Policy increases house prices & developers' profits but does not stimulate construction

What do we know already about economic impact of Help to Buy?

- Government evaluation (Finlay *et al.* 2016)
 - ▶ Find introduction of HtB generated 43% additional new homes (but no rigorous attempt at identification)
 - Szumilo & Vanino (2018)
 - ▶ Use discontinuity design to show HtB does affect lending volumes
 - Benetton *et al.* (2019)
 - ▶ Apply DiD and find that HtB triggers households to buy more expensive properties
- ⇒ But no rigorous evidence of impact on prices and construction volumes

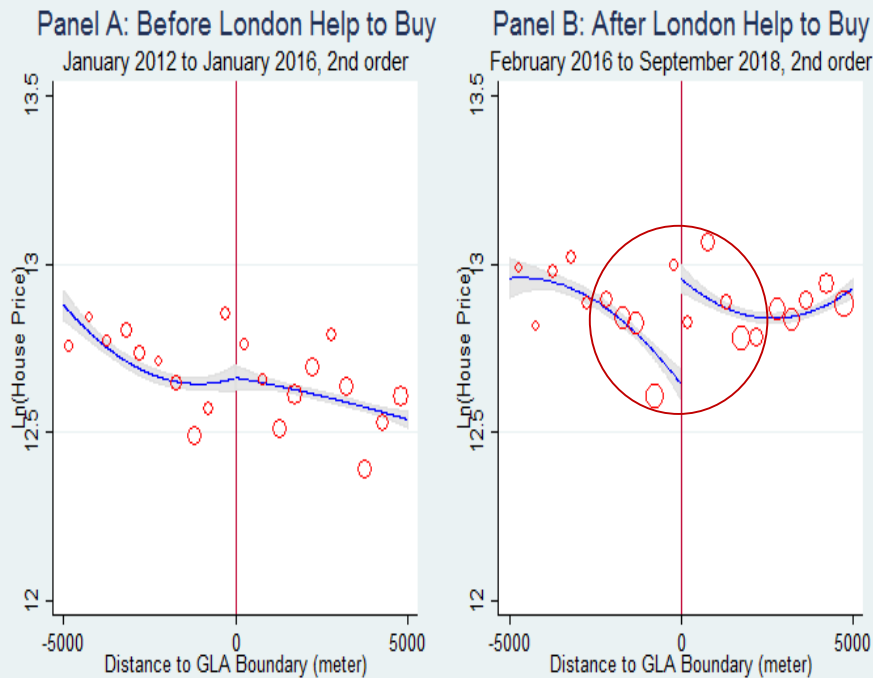
Background: Why Help to Buy? ◀

- Real HPs increased more strongly in UK b/w 1970-2015 than in any other OECD country
 - ▶ Particularly in Greater London Area & SE of England
 - ▶ Arguably due to incredibly restrictive planning system in conjunction with strong demand in GLA/SE
 - Homeownership rate decreased from nearly 70% in 2002 to 61% in 2017
 - ▶ For those in 20s: ↓ from 50% in 1993 to 20% in 2013
 - ▶ Housing = No. 1 policy issue facing Londoners (2015)
- ⇒ Unprecedented housing **affordability crisis** especially in more prosperous parts of UK

Visual evidence: Effect on house prices

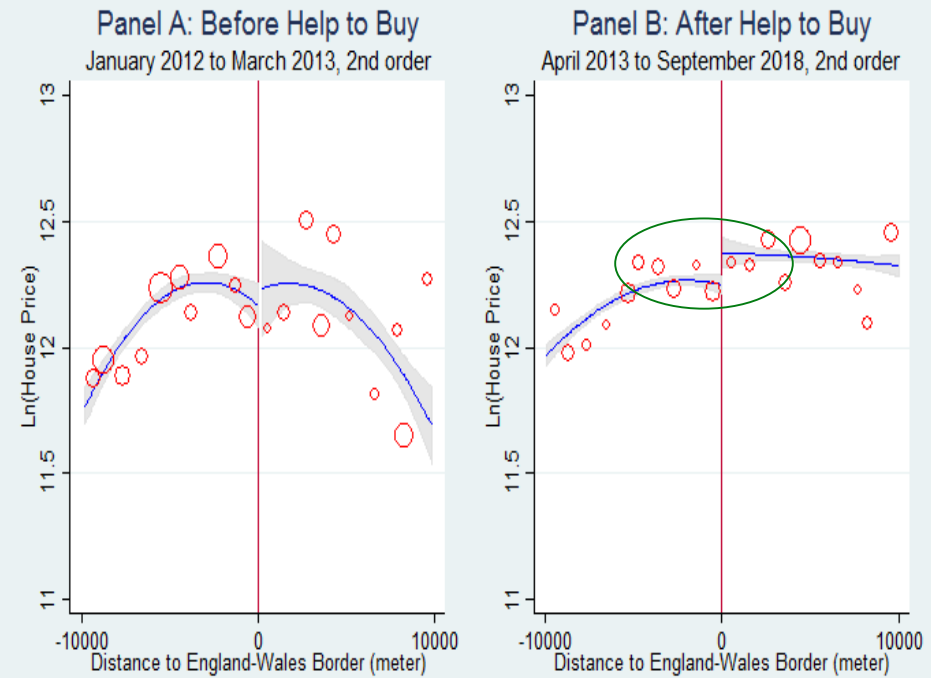


London Help to Buy and House Price New Builds



Positive distance = transactions inside GLA ; Negative distance = transactions outside GLA

Welsh Boundary House Price and Help to Buy New Builds

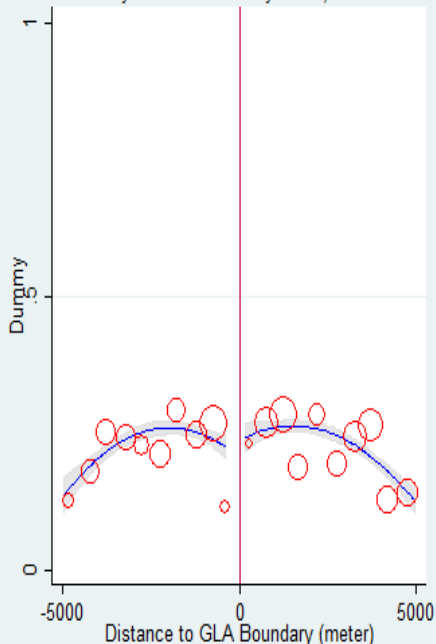


Positive distance = transactions in England ; Negative distance = transactions in Wales

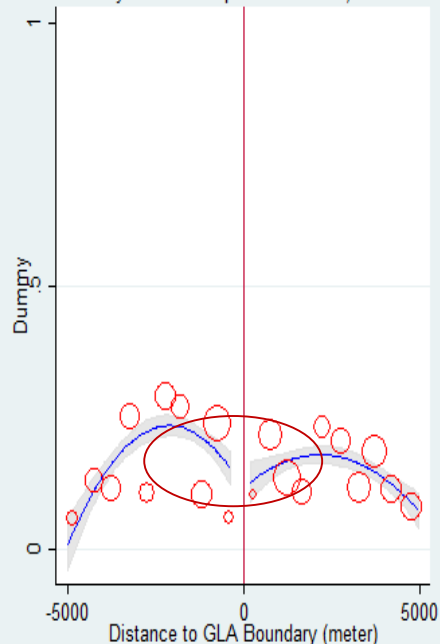
Visual evidence: Effect on construction

London Help to Buy and Housing Construction

Panel A: Before London Help to Buy
January 2012 to January 2017, 2nd order



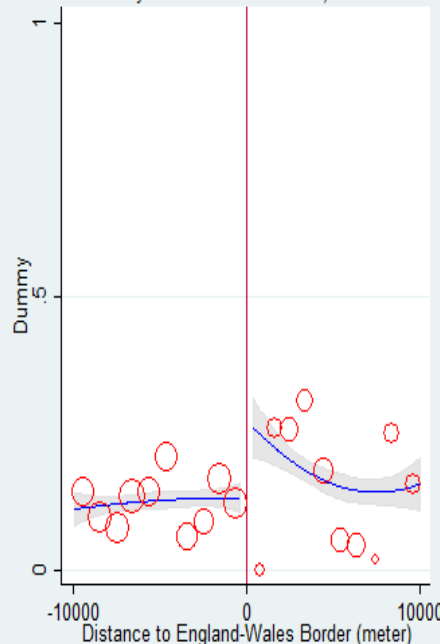
Panel B: After London Help to Buy
February 2017 to September 2018, 2nd order



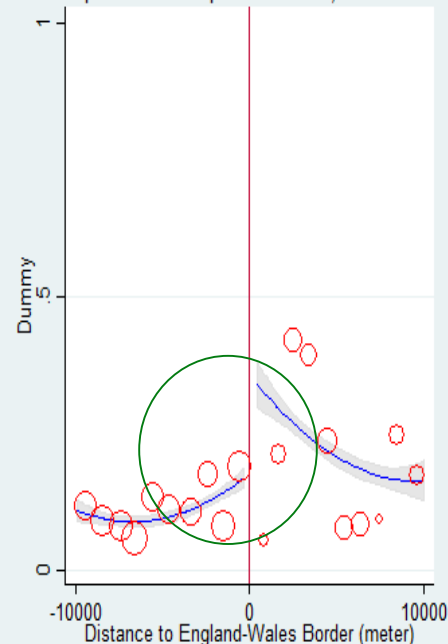
Positive distance = transactions inside GLA ; Negative distance = transactions outside GLA

Welsh Boundary Housing Construction and Help to Buy

Panel A: Before Help to Buy
January 2012 to March 2014, 2nd order



Panel B: After Help to Buy
April 2014 to September 2018, 2nd order



Positive distance = transactions in England ; Negative distance = transactions in Wales

Base specification III: Financial performance

Financial performance (turnover, profitability, gross/net profits) of developer k in year t

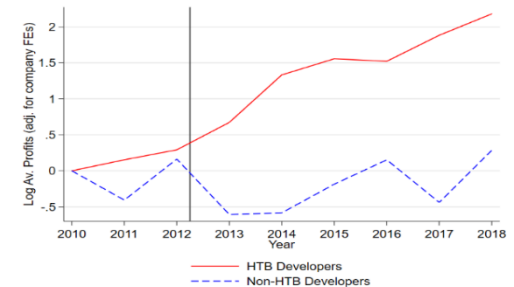
Developer k participates in HtB (or intensity)

Coefficient of interest

$$\text{Financial performance}_{kt} = \beta \text{HtB}_k \times \text{Post}_t + \alpha_k + \delta_t + \varepsilon_{jt}$$

Developer FEs

Year FEs



Note: Other specifications for size, bunching, mortgage origination

Baseline results:

Price effect at GLA boundary (N=32127)



	(1)	(2)	(3)	(4)	(5)
HtB	.16^{***}	.071^{***}	.045[*]	.064^{***}	.062^{***}
	(.042)	(.026)	(.024)	(.021)	(.021)
Year-month FEs	x	x	x	x	x
Distance to boundary	x	x			
Housing controls		x	x	x	x
Postcode FEs			x	x	x
Census vars. x year				x	x
Distance by year					x
R²	0.091	0.62	0.92	0.92	0.92

**PV of
Δ subsidy=3.2% of HV**

Baseline results:



Price effect at English/Welsh border (N=8471)

	(1)	(2)	(3)	(4)	(5)
HtB	.15*	.087	.017	.024	.025
	(.086)	(.053)	(.027)	(.029)	(.028)
Year-month FEs	x	x	x	x	x
Distance to boundary	x	x			
Housing controls		x	x	x	x
Postcode FEs			x	x	x
Census vars. x year				x	x
Distance by year					x
R ²	0.10	0.67	0.92	0.92	0.92

Baseline results:

Construction effect in GLA (N=33684)



	# New builds			Dummy new build		
	(1)	(2)	(3)	(4)	(5)	(6)
HtB	.17 (.21)	.28 (.25)	.25 (.24)	.020 (.025)	.022 (.026)	.022 (.026)
Year-month FEs	x	x	x	x	x	x
Dist. to bound.	x			x		
Ward FEs		x	x		x	x
Census vars. x year		x	x		x	x
Dist. by year			x			x
R ²	.011	.17	.18	.014	.19	.19

Baseline results:

Construction effect at E/W border (N=16380)



	# New builds			Dummy new build		
	(1)	(2)	(3)	(4)	(5)	(6)
HtB	.41*** (.14)	.39*** (.13)	.42*** (.13)	.083** (.033)	.076** (.033)	.078** (.032)
Year-month FEs	x	x	x	x	x	x
Dist. to bound.	x			x		
Ward FEs		x	x		x	x
Census vars. x year		x	x		x	x
Dist. by year			x			x
R ²	.024	.26	.26	.024	.25	.25

Baseline results:

Developer performance (N=499)

Dependent variable:	Ln(turn-over)	Ln(gross profits)	Ln(net profit before tax)	Ln(Delta gross – net profits)	Ln(cost of employ.)
HtB x Post	.49^{***} (.15)	.68^{***} (.19)	1.6^{***} (.56)	0.30^{***} (.089)	0.41^{***} (.13)
Developer FEs	X	X	X	X	X
Year FEs	X	X	X	X	X
R ²	0.98	0.97	0.89	0.95	0.99

Notes: Difference b/w gross and net profits contains salary of senior management. Identifying assumption: Difference in performance of firms that self-select vs. those that don't is fixed over time.







Also estimate with HtB-intensity measure (% of new builds that are HtB).



Other findings ◀

- Help to Buy
 - ▶ Reduced **size** of newly constructed units
 - ▶ Lead to **bunching** of properties below price threshold
 - ▶ Robust to numerous **sensitivity checks** ▶ (including **placebo** tests, 'donut' regressions)

Robustness checks

- Check no price effect at Greater Manchester boundary (**placebo**) 
- Check no size effect at English/Welsh border for units <300k (**placebo**) and units b/w 300-600k from 2008-2013 (**placebo**) 
- Use alternative distance to boundary **polynomials** 
- Use alternative **bandwidth** around boundaries 
- Use **contemporaneous** construction effects instead of one-year lagged 
- Drop units close to border (**donut approach**) 
- **Drop period** b/w English & Welsh implementation 