

Help to Spend? The Housing Market and Consumption Response to Relaxing the Down Payment Constraint

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Motivation

- Policymakers often intervene in mortgage market
 - Current mortgage holders
 - Expand/limit access to mortgage credit
- Impact *housing market*: fairly well
- Impact *real economy*: very little
- Important
 - Link macroeconomic dynamics
 - Trade-offs policymakers

This paper

- Focus: policy *expands access* to mortgage credit
- Relaxing down payment constraint
 - Housing market
 - Consumption
- Quasi-natural experiment: UK Help-to-Buy program

Down payment constraint and housing market

- Down payment constraint critical for access mortgage market
 - Non-linear impact housing affordability (leverage effect)
 - Binding constraint young and FTB
(Linneman and Wachter, 1989; Fuster and Zafar, 2021)
- **Expected effects:**
 - Rise housing market activity
 - Driven by young and FTB

Down payment constraint and consumption

- Direct: Consumption new home buyers
 - Home-related expenditure (+)
(Best Kleven 2017, Benmelech et al 2017)
 - Increase discretionary income (+)
 - Pay down debt (-)
(Sodini et al 2016)

- Indirect: local demand effects
 - Increase regional economic activity (+)
 - Wealth effects (house prices) (+)
(e.g. Campbell and Cocco, 2007; Mian and Sufi, 2011; Mian et al, 2013; Guren et al, 2020)

- **Expected effects**: Unclear

Main findings

- **Housing market**

- Increase home sales
- Driven by young and FTB

- **Household consumption**

- Increase consumption
 - Non-durable, home-related, (loan-financed) car-sales
- Beyond housing wealth channel
- (Partly) driven by local demand effects
 - NT employment, income, construction

Policies affecting access to mortgage credit can have important local macroeconomic spillover effects

Main findings

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Literature

- **Consumption response to interventions in mortgage market**

e.g. Agarwal et al, 2015; Agarwal et al., 2017; Agarwal et al, 2021

- **Developments housing market and consumption**

e.g. Cocco Campbell 2007; Mian Sufi, 2011; Mian Rao Sufi, 2013; Guren et al, 2020; Best Kleven 2017, Benmelech et al 2017; Engelhardt 1996; Sodini et al., 2016)

- **Housing market response to interventions in mortgage market**

e.g Defusco et al, 2020; Bekkum et al., 2019; Carozzi, 2020; Acharya et al., 2021; Best and Kleven, 2017; Berger et al, 2020; Peydro et al., 2020; Mabilie, 2020; Tzur-Ilan, 2020

- **HTB program**

e.g. Benetton et al, 2018; Benetton et al, 2021; Carozzi Hilber Yu, 2020

Measuring impact relaxing down payment constraint

- Meaningful shock
- Counterfactual
- Control for confounding factors

This paper: [UK Help-to-Buy program](#)

Shock: Help-to-Buy program

- Biggest intervention in UK mortgage market (April 2013)
- Objective: increase housing affordability buyers limited savings
- Home purchases with 5% DP
 - Two schemes: Mortgage Guarantee and Equity Loan

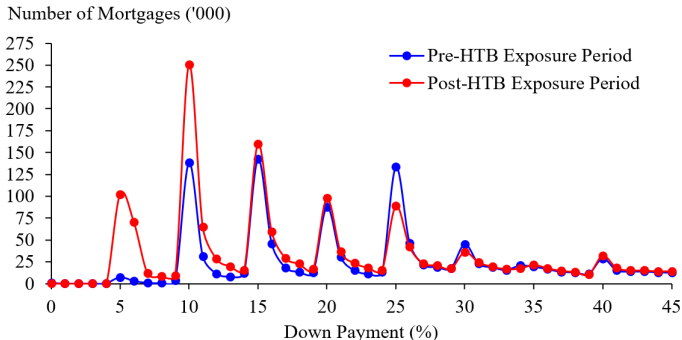
Help-to-Buy Program Schemes

	Equity Loan (EL)	Mortgage Guarantee (MG)
Period	Q2 2013 - Q4 2020	Q4 2013 - Q4 2016
Down payment	5%	5%
Government participation	Government equity loan of 20% (40% in London from 2016)	Government guarantees 20% of mortgage made by lender
Qualifying property	New builds Value < £600k (£300k Wales)	Any property Value < £600k
Qualifying borrowers	FTB and home-movers	FTB and home-movers
Qualifying loan	LTI ratio < 4.5 Ratio excludes EL component	LTI ratio < 4.5 Ratio includes MG component

Shock: Help-to-Buy program

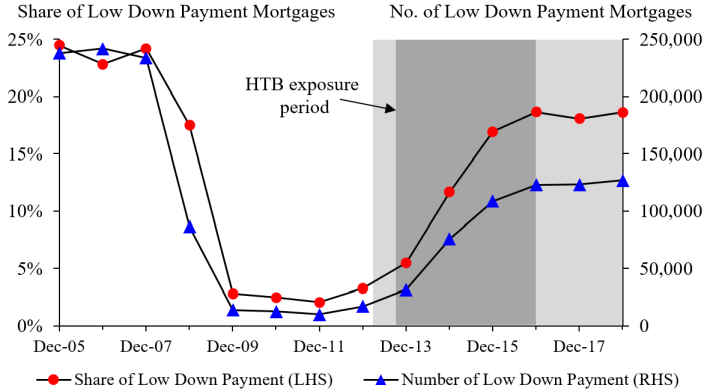
- Sudden and significant relaxation down payment constraint
- UK notched mortgage interest schedules
 - DP 5 vs 9.9% = same interest rate
 - DP 9.9 vs 10% = significantly lower interest rate
- Bunching DP at 5, 10, 15 %
(Best et al., 2020; Robles-Garcia, 2019)

Shock: Help-to-Buy program



- Before HTB banks only offering 10%+ mortgages
- HTB lowered minimum DP from 10 to 5%

Help-to-Buy and low-down payment mortgages



- HTB + banks offering outside program

Empirical strategy

- **Geographic variation HTB exposure**
(e.g. Mian and Sufi, 2012; Berger et al, 2020)
 - National relaxation down payment constraint
 - Exposure depended on local housing market

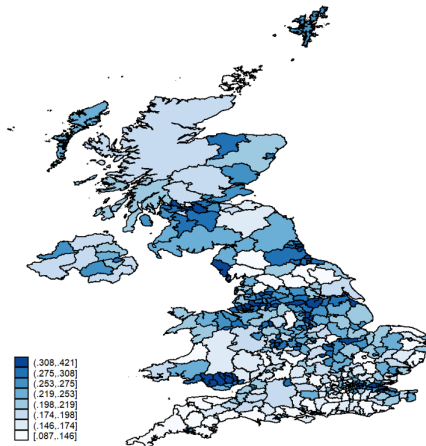
Exploit geographic variation HTB exposure

- Affected home buyers not randomly spread
- Concentrated in specific areas
 - Housing supply better suited
 - Better amenities
- Local characteristics change slowly
- *Historical* attractiveness \approx *Potential* low-DP buyers

Measure Help-to-Buy exposure

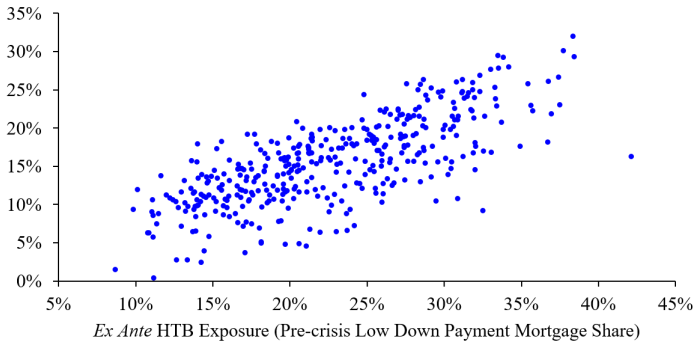
- $Exposure_d$ = Share low-DP mortgages in district d
 - Measured 2005-2007
 - 379 districts (\approx CBSA)
- Data: UK FCA regulatory database (Product Sales Database)
 - All regulated mortgages (2005-present)
 - House price, loan value, postcode, FTB, age, income

Large variation in HTB exposure across UK

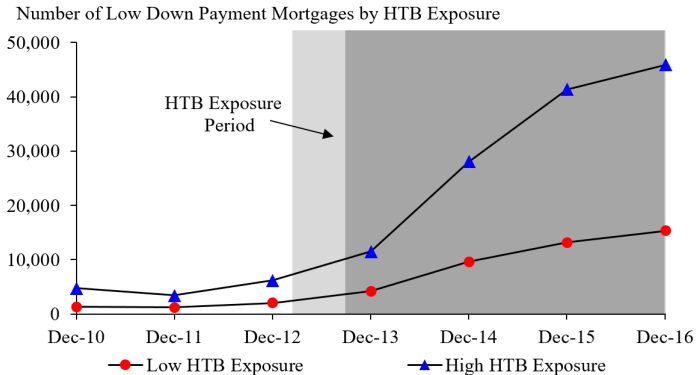


Correlation HTB exposure and low-DP mortgages

Ex Post Low Down Payment Mortgage Share, 2014-2016



Accurately predicts time variation



Regression mortgage market

Methodology: Diff-in-Diff

- Compare districts *few* vs *many* potential low-DP buyers
 - Areas few → control group
 - Buyers unlikely react to HTB
- Sample period: 2010-2016
 - Post=2013-2016

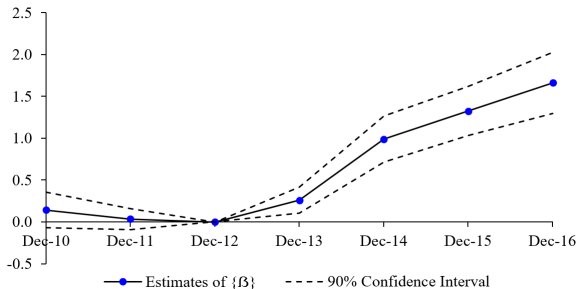
Identification challenge

- HTB exposure correlated with district characteristics
 - + : Unemployment and population
 - - : Income, rent and house prices
- Approach:
 - District/time fe + time-varying macro and housing market controls (district level)
 - District-time fe
 - Parallel pre-trends

HOUSING MARKET

Housing market response

$$\text{Homesales}_{d,t} = \sum_{s \neq 2012} \mathbb{I}_{t=s} \times \text{Exposure}_d \times \beta_s + \gamma \text{District}_{d,t-1} + \theta_t + \delta_d + u_{d,t}$$



- Increase home sales in high exposure areas
- Aggregate: 217,000 additional homes purchased (9.8% increase)

Drivers housing market response

- Houses purchased with 5% DP
- FTB (78%) and young buyers (91%)
- Not exclusively London phenomenon
- No evidence endogenous moves

Migration

House price response

$$\text{HousePrices}_{d,t} = \beta_1 \text{Pre}_t \times \text{Exposure}_d + \beta_2 \text{Post}_t \times \text{Exposure}_d + \gamma \text{District}_{d,t-1} + \delta_d + \theta_t + u_{d,t}$$

	<i>All Districts</i>	<i>Excl London</i>	<i>London Only</i>
$\text{Pre}_t \times \text{Exposure}_d$	-0.014 (0.020)	-0.018 (0.021)	0.023 (0.076)
$\text{Post}_t \times \text{Exposure}_d$	0.045** (0.018)	0.035** (0.017)	0.301*** (0.069)
N	2,203	2,011	192
R^2	0.847	0.870	0.774

- Modest increase in house prices (1.4 pp)

HOUSEHOLD CONSUMPTION

Two types of consumption data

- Living Costs and Food Survey (LCFS)
 - Home-related, non-durable and durable consumption
 - Household income and demographic controls
 - Repeated cross-section - 5000 obs
 - Pseudo panel analysis with region-birth-year synthetic cohorts
- Car sales (UK Department of Transport) → New for UK
 - Key durable good
 - Universe of new car sales
 - No information buyer

Consumption response - Survey data (LFCS)

$$\text{Consumption}_{r,c,t} = \beta_1 \text{Pre}_t \times \text{Exposure}_r + \beta_2 \text{Post}_t \times \text{Exposure}_r + \gamma \text{Cohort}_{r,c,t} + \lambda \text{House Prices}_{r,t-1} + \delta_r + \theta_t + \gamma_c + u_{r,c,t}$$

	<i>Total</i>	<i>Ex London</i>	<i>Home-related</i>	<i>Non-Durable</i>	<i>Durable</i>
$\text{Pre}_t \times \text{Exposure}_r$	0.067 (0.259)	0.310 (0.236)	0.745 (0.428)	-0.022 (0.235)	0.620 (1.177)
$\text{Post}_t \times \text{Exposure}_r$	0.580*** (0.175)	0.609*** (0.168)	0.858** (0.344)	0.605*** (0.177)	1.049 (0.933)
<i>N</i>	392	385	392	392	392
<i>R</i> ²	0.826	0.828	0.691	0.823	0.656

- Increase in total consumption
 - Home-related and non-durable (esp young)
- Aggregate: 5.9% increase

Consumption response - Car sales

$$Carsales_{d,t} = \beta_1 Pre_t \times Exposure_d + \beta_2 Post_t \times Exposure_d + \gamma District_{d,t-1} + \delta_d + \theta_t + u_{d,t}$$

	<i>Car registrations (DfT)</i>		<i>Car purchases from household survey data</i>		
	<i>Total</i>	<i>Ex London</i>	<i>All</i>	<i>Loan-financed</i>	<i>Outright</i>
$Pre_t \times Exposure_{d/r}$	-0.405 (0.293)	-0.257 (0.307)	0.280 (1.170)	-0.074 (0.717)	0.402 (1.016)
$Post_t \times Exposure_{d/r}$	1.045*** (0.372)	1.091*** (0.402)	0.001 (0.994)	1.354** (0.659)	-1.332 (0.819)
N	2,581	2,357	392	392	392
R^2	0.955	0.958	0.507	0.593	0.169

- Increase in (loan-financed) car sales
- Aggregate: 220,081 additional cars purchased (5.2% increase)

Mechanism

- Consumption response = local general equilibrium effect
- Drivers:
 - Direct: Consumption new home buyers
 - Indirect: Local demand effects

Mechanism - Local demand effects

$$Y_{d,t} = \beta_1 \text{Pre}_t \times \text{Exposure}_d + \beta_2 \text{Post}_t \times \text{Exposure}_d + \gamma \text{District}_{d,t-1} + \delta_d + \theta_t + u_{d,t}$$

	<i>Employment</i>			<i>Construction</i>		<i>Income</i>
	<i>Non-trad</i>	<i>Strictly</i>	<i>Tradable</i>	<i>Constructed</i>	<i>Started</i>	<i>Gross</i>
		<i>Non-trad</i>				
$\text{Pre}_t \times \text{Exposure}_d$	0.559 (0.574)	0.714 (0.634)	0.559 (0.574)	-0.057 (0.074)	0.383 (0.137)	-0.022 (0.235)
$\text{Post}_t \times \text{Exposure}_d$	10.417*** (3.440)	1.546* (0.899)	0.431 (0.652)	0.183* (0.104)	-0.110 (0.130)	0.605*** (0.177)
<i>N</i>	2,357	2,581	2,581	2,257	2,257	392
<i>R</i> ²	0.995	0.990	0.986	0.796	0.720	0.853

- Consumption response (partly) driven by rise local demand

Conclusions

- Relaxing down payment requirement
- Stimulates housing market activity and local household consumption
- (Partially) driven by local demand effects

Conclusions

- **Interventions in the mortgage market can have important local macroeconomic spillover effects**
- Not only policies affecting *current* mortgage holders
(Agarwal et al., 2015; Agarwal et al., 2017; DiMaggio et al., 2017; Beraja et al., 2019)
- But also policies affecting *future* mortgage holders

Policy implications

- Additional benefit:
 - Positive spillover effects
 - Beyond positive externalities homeownership

- But possible (long-term) costs:
 - Increase indebtedness households
 - Rise systemic vulnerabilities (?)
(Berger et al, 2020)
 - Increase consumption volatility
(Mian et al, 2021; Garber et al, 2021)

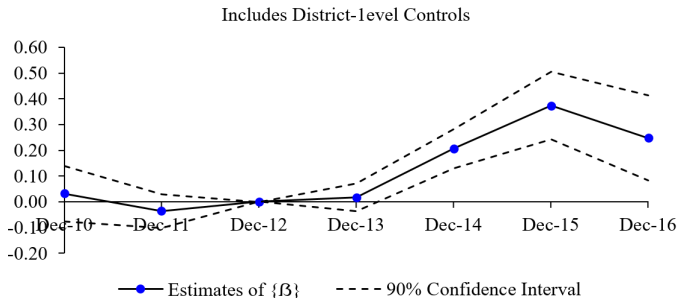
THANK YOU

HTB effect on low-down payment mortgages

$$LowDep_{b,l,d,t} = \beta_s \sum_{s \neq 2012} \mathbb{I}_{t=s} \times Exposure_d + \gamma District_{d,t-1} + \mu Loan_{b,l,d,t} + \lambda_{lt} + \delta_d + u_{b,l,d,t}$$

- $LowDep_{b,l,d,t}$: $D = 1$ if down payment 5%
- $Exposure_d$: HTB exposure
- $Loan_{b,l,d,t}$: loan and borrower controls
- $District_{d,t}$: district- time-varying controls
- λ_{lt} : lender-time fixed effects; δ_d : district fixed effects
- 2012 baseline year Return to HTB exposure

HTB effect on low-down payment mortgages



- Increase low-down payment mortgages in high-exposure areas
- No pre-event trends
- Robust no district controls + excl London

[Return to HTB exposure](#)

HTB and endogenous moves

- If households use HTB and move to high exposure areas, counterfactual ineffective
 - But vast majority moves are local
 - Longer-distance moves have employment and education motives

Return to house sales

HTB effect on internal migration

Districts →	All Districts	Excl London	London Only
	(1)	(2)	(3)
$Post_t \times Exposure_d$	0.2993	-0.4973	7.5575*
	(0.466)	(0.419)	(3.885)
District Controls	Yes	Yes	Yes
Migration Controls	Yes	Yes	Yes
District and Time FE	Yes	Yes	Yes
# observations	1,842	1,664	178
R-square	0.99	0.99	0.97

- Dependent variable: No. persons moving from a different district to district d
- No. home sales increased in high exposure areas

Return to house sales