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JEL Classification: D31, E21, G18, G21, R21

Keywords: Home ownership, Credit constraints, Housing wealth

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Credit Constraints and the Redistribution of Housing Wealth

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September 2025

Abstract

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1 Introduction

Over the past two decades, housing affordability has emerged as a central concern in many advanced economies. Stagnating real incomes, rising house prices, and tighter lending standards have made homeownership increasingly difficult to attain, particularly for young and lower-income households. This has led to growing reliance on intergenerational transfers as a means of accessing homeownership: surveys suggest that up to 40 percent of first-time buyers (FTBs) receive financial assistance from parents or other family members (Santander, 2019).[1] Because homeownership is a primary vehicle for wealth accumulation, the growing reliance on parental support raises concerns about deepening inequalities—where access increasingly depends on family resources. These developments pose a natural question: can public policy help lower the down payment barrier and broaden access to homeownership?

We study this question in the context of the UK Help-to-Buy (HTB) program, launched in 2013 to support households who could afford mortgage payments but lacked sufficient savings for the down payment. The program re-opened the 95 percent loan-to-value segment (henceforth "95 LTV") and enabled purchases with a 5 percent down payment instead of the 10 percent required at the time. We show that expanding access to high-LTV credit increased FTB activity and shifted the composition of entrants toward households without outside financial support, likely reflecting reduced dependence on family transfers. Because unsupported households tend to have higher incomes, the income distribution of new buyers shifted to the right.

Our empirical strategy exploits differences across districts in their ex ante exposure to HTB. Following Tracey and Van Horen (2021), we measure exposure using the share of low–down payment mortgages originated between 2005 and 2007, a period when such mortgages were widely available.[2] This measure captures cross-district differences in pre-crisis reliance on high-LTV mortgages. As this measure is based on pre-policy borrowing patterns, it is plausibly exogenous to HTB and reflects latent credit constraints at the time the policy restored access to high-LTV loans.

We estimate difference-in-differences models over 2009–2018, comparing trends in FTB purchases across districts with high and low exposure before and after HTB. The key assumption is that, absent HTB, these districts would have followed parallel trends. To strengthen identification, we include district and region–year fixed effects and interact pre-

[1] Brandsaas (2021) estimates that parental transfers account for 31 percent of homeownership rates of young adults in the US.

[2] Low–down payment mortgages are loans with down payments below 10 percent. These mortgages are also referred to "5 percent down payment" or "95 LTV" mortgages, since UK mortgage pricing causes down payments to cluster at 5 percent (see Section 2).

policy housing-market and socioeconomic characteristics with time dummies. We also estimate models with district–year fixed effects, check for parallel pre-trends, and confirm that the timing of the effects aligns with the policy's introduction. In addition, we show that results hold in a propensity-score matched sample.

Our analysis uses administrative mortgage-level data from the FCA's Product Sales Database (PSD), which covers the universe of regulated UK mortgage originations. PSD records include loan characteristics (amount, down payment, date, property location), as well as borrower characteristics (age, income, employment status, and whether the borrower is a FTB or mover). These data allow us to track mortgaged FTB purchases over time and across space, construct our exposure measure, and develop a novel loan-level proxy for whether buyers relied on external funds to meet their down payment.

A key challenge in studying how credit constraints affect who buys is that data on transfers from family or other external sources are not observed. To address this, we use the mortgage records and compare a household's *actual* down payment with an estimate of their *potential* savings, based on age, income, and a conservative savings rate. If the observed down payment exceeds this benchmark, we classify the household as "financially supported". This measure is similar to that outlined by Rostom (2023) in a blog post that examines the importance of the "Bank of Mum and Dad" in the UK mortgage market.

This proxy offers a tractable way to identify buyers unlikely to have financed their down payment from their own savings. In our data, FTBs with lower incomes and those taking out lower-LTV mortgages are more likely to have received support. These patterns align with survey evidence that transfers are more common among households with lower current income (Engelhardt and Mayer, 1996; Cox, 1990), and with evidence that children whose parents extract housing equity tend to take out lower-LTV loans (Benetton et al., 2022). Although the measure cannot pinpoint the precise source of external funds, it provides a useful basis for testing whether easing down payment constraints shifted entry toward buyers who appear less reliant on transfers.

We document two main results. First, HTB generated a marked increase in FTB activity in more exposed districts. In areas with average exposure, FTB purchases rose by roughly 37 percent relative to 2012, consistent with down-payment constraints being a key barrier to entry (Ortalo-Magne and Rady, 2006). Before HTB, purchase trends were similar across high- and low-exposure districts; the divergence appears only after the policy was introduced. Using within-district variation, we show that the effect is concentrated in mortgages with 5 percent down payment, confirming that the response reflects the reopening of the 95 LTV market. The results are robust to excluding London, using a propensity-score matched sample and controlling for the LTI cap introduced in 2014.

Second, the composition of new buyers shifted. In high-exposure districts, unsupported buyers—those unlikely to have received financial help—increased sharply, while supported buyers showed no significant response. In areas with average exposure, mortgage originations by unsupported FTBs rose by 47 percent relative to 2012. The number of supported FTBs fell by roughly 11 percent, but this decline is statistically insignificant. Because unsupported buyers tend to have higher incomes, this shift also moved the overall income distribution of new entrants to the right, reflecting the entry of households that were income-rich but liquidity-constrained.

These findings underscore the importance of down payment requirements in shaping who is able to buy a first home. High down payment thresholds disproportionately exclude households without access to outside funds. By reopening the 95 LTV segment, HTB lowered this barrier and enabled households with sufficient income but limited liquid assets to enter homeownership. Our proxy cannot identify the precise source of external funds and should be interpreted broadly as reliance on resources beyond a buyer's own savings. In practice, however, parental transfers (the "Bank of Mum and Dad") are the dominant source of support for UK FTBs. The shift we document therefore most likely reflects a reduced role of family wealth in determining access to homeownership.

Our study relates to the literature on borrowing constraints and homeownership. Early studies document that limited wealth reduces the likelihood of becoming an owner even when households can afford mortgage payments (Linneman and Wachter, 1989; Haurin et al., 1997). More recent survey evidence confirms that liquidity, rather than income, is the binding hurdle for FTBs (Fuster and Zafar, 2016, 2021).

When households cannot meet down payment requirements from their own savings, intergenerational transfers can provide the margin that enables purchase. Prior work shows that access to parental wealth influences not only the likelihood of becoming a homeowner but also the type of home acquired, raising concerns that homeownership increasingly depends on family background rather than individual resources (Engelhardt and Mayer, 1996; Cox, 1990; Charles and Hurst, 2002; Blanden and Machin, 2017; Benetton et al., 2022; Brandsaas, 2021; Blickle and Brown, 2019; Bond and Eriksen, 2021). Our contribution is to show that this channel itself responds to policy: when down payment requirements are eased, the importance of transfers in facilitating entry declines.

This links our paper to the small but growing literature on how macroprudential policy affects homeownership. Recent studies find that tighter credit limits reduce entry, particularly among younger and lower-income households, and push borrowers toward cheaper homes in less desirable locations (Acharya et al., 2022; Peydro et al., 2024; Carozzi, 2020; Van Bekkum et al., 2025; Tzur-Ilan, 2023). Closest to us, Bolliger et al. (2025) study Switzerland's 2012

macroprudential package, which reduced the prevalence of high-LTV lending, and using Bern tax records show modest declines in transitions into ownership alongside greater reliance on bequests. We instead analyze a large-scale expansionary intervention that explicitly re-opened the 95 LTV market. Exploiting geographic variation in exposure and introducing a proxy that makes transfer reliance observable in administrative mortgage data, we show that HTB not only produced a quantitatively large increase in entry, but also that it re-allocated homeownership away from supported buyers toward unsupported, higher-income households.

The remainder of the paper is structured as follows. The next section discusses the policy background. Section 3 describes the data. Section 4 outlines the empirical strategy and discusses our measure of financial support. Section 5 reports the results. Section 6 concludes.

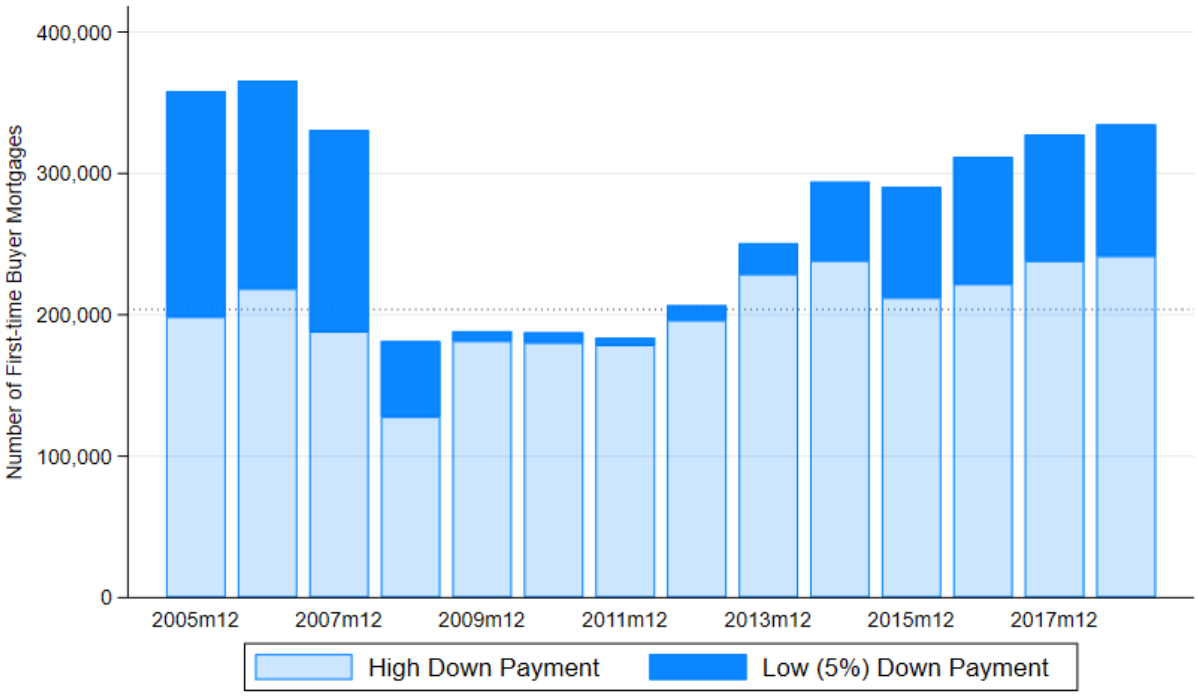
2 The UK Help-to-Buy Program

Help-to-Buy (HTB) was first announced in March 2013 as part of the UK budget. Its key feature was to re-open the 95 LTV segment of the mortgage market, enabling households to purchase a home with only a 5 percent down payment. At the time, lenders were highly reluctant to issue loans below the 10 percent threshold, effectively shutting out many households who could afford mortgage repayments but lacked sufficient savings for the down payment. The policy was explicitly targeted at these liquidity-constrained households, with the Chancellor stating that it was designed for "anyone who can afford a mortgage but can't afford a big down payment" (Chancellor of the Exchequer, 2013).

HTB included two schemes that shared a 5 percent down payment requirement but differed in design and scope. The Equity Loan (EL) scheme, offered from 1 April 2013 to 31 December 2020, was available for both FTBs and home movers (but excluded buy-to-let or second home mortgages) and applied to new-build properties priced below £600,000 (£300,000 in Wales). Borrowers contributed a minimum 5 percent down payment, while the UK government provided an equity loan of up to 20 percent of the property value (40 percent in London from 2016). The remaining share was financed by a conventional mortgage. The equity loan was interest-free for the first five years. Eligible HTB mortgages had to be capital repayment loans (not interest-only or offset), and could not exceed a loan-to-income (LTI) ratio of 4.5.[3]

[3]The EL scheme also loosened the income constraint, since the equity loan did not count toward the LTI ratio, allowing buyers to purchase more expensive homes (Benetton et al., 2021; Finlay et al., 2016). However, Finlay et al. (2016) document that the down payment - not income - was the binding constraint for most prospective buyers. In line with this, Tracey and Van Horen (2021) show that average incomes of

Figure 1: Number of Low- and High-Down Payment Mortgages



Notes: The figure shows the number of low- and high-down payment mortgages before and after HTB was introduced.

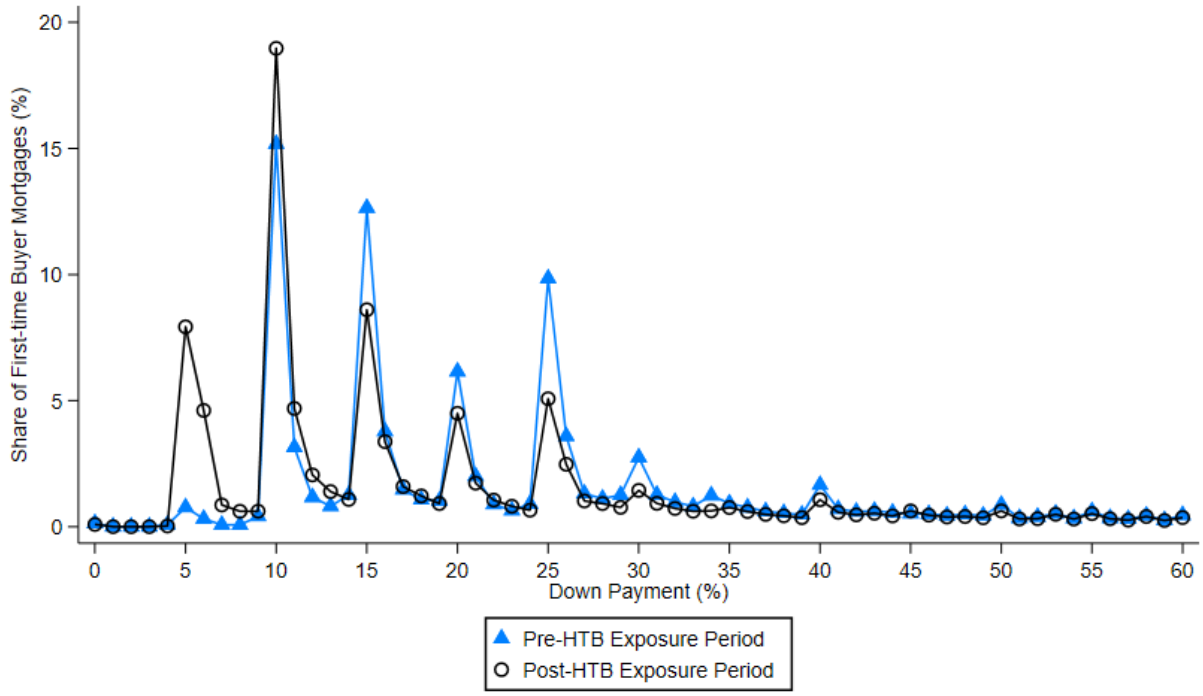
The Mortgage Guarantee (MG) scheme, available from 1 October 2013 to 31 December 2016, applied to all properties priced under £600,000 and was not restricted to new builds. Under MG, the government provided lenders with a guarantee covering up to 20 percent of the property's value in exchange for a fee, so that from the lender's perspective the loan carried the risk of a 75 percent LTV mortgage. Participation by lenders was voluntary, but virtually all major banks joined. A full summary of the two schemes and their requirements is provided in Table A.1 in the Internet Appendix.

The design of both schemes addressed the main constraint facing FTBs: the need to accumulate a large down payment. Prior work has shown that down payment requirements are typically the binding constraint for these households, rather than their ability to service monthly payments (Linneman and Wachter, 1989; Fuster and Zafar, 2021). By reducing the minimum required down payment from 10 to 5 percent, the policy change implied a substantial rise in affordability: with the same amount of savings, buyers could now afford homes of twice the value.

The importance of this product segment for FTBs is evident in the aggregate data. Before the financial crisis, mortgages with a 5 percent down payment accounted for about

EL and MG borrowers were similar.

Figure 2: Down Payment Distribution Among FTB Mortgages



Notes: The figure shows the share of first-time buyer mortgages by down payment size in the pre-HTB (2009-2012) and post-HTB (2013-2018) exposure periods.

45 percent of all FTB loans. When lenders withdrew from the 95 LTV market after 2008, total FTB activity dropped sharply, despite relative stable volumes in higher-down payment mortgages. HTB's reintroduction of 95 LTV loans in 2013 triggered a sharp rebound in both 5 percent mortgages and overall FTB purchases. As shown in Figure 1, movements in FTB transactions track closely the availability of 5 percent down payment mortgages. Indeed, variation in this segment alone explains roughly two-thirds of the variation in FTB mortgages between 2005 and 2018.

Evidence that HTB primarily enabled liquidity-constrained buyers comes from the distribution of down payments before and after the program. UK mortgage rates notch sharply at discrete thresholds (5, 10, 15 ... 40 percent; Appendix Figure A.1), creating strong incentives for borrowers to bunch at these cutoffs (e.g., Best et al., 2020; Robles-Garcia, 2019). Prior to HTB, there was virtually no lending at 95 LTV. After the program's introduction, a pronounced spike emerged (Figure 2). Since borrowing costs rise steeply above 90 LTV, households able to contribute a 10 percent down payment had little incentive to select a 95 LTV mortgage. The new bunching at 95 LTV is therefore most plausibly attributable to liquidity-constrained households, either those previously excluded altogether or those unable to buy their preferred property without the lower down payment.

These aggregate patterns suggest that HTB was successful in opening up the mortgage market for liquidity-constrained FTBs. To examine whether and how the policy changed the composition of new entrants and altered the role of transfers in entry, we introduce a novel proxy for financial support and construct a counterfactual by focusing on geographic differences in exposure to HTB. The next section describes the data underlying our analysis, before turning to the empirical methodology in Section 4.

3 Data

For our analysis we rely on rich administrative mortgage data from the FCA's Product Sales Database (PSD). The PSD provides comprehensive coverage of all regulated mortgages since 2005 and contains detailed borrower and loan characteristics, making it well-suited to our analysis.

We use the PSD to construct a district-year panel of mortgaged home purchases by FTBs. The unit of observation is the local authority district (LAD), referred to as "district." The sample comprises 379 districts in England, Wales, and Scotland; Northern Ireland is excluded due to data limitations. These districts account for 97 percent of the UK population and 98 percent of mortgage originations. Apart from Greater London, districts reflect distinct housing and labor markets, comparable to US core-based statistical areas (CBSAs). We also group districts into 12 major UK regions — referred to as "regions" — using the highest level of the Nomenclature of Territorial Units for Statistics classification (NUTS 1).

The PSD provides detailed information on each mortgage, including the lender, issuance date, loan size, property value, and postcode, alongside borrower characteristics such as buyer type (FTB or home mover), age, income, and employment status. We map postcodes to districts using the National Statistics Postcode Lookup (November 2018 version). All analyses are restricted to owner-occupied FTB mortgages; buy-to-let mortgages are excluded.[4]

We define low–down payment mortgages as those with a down payment below 10 percent. These are often referred to as 95 LTV or 5 percent down payment mortgages, since most cluster near that threshold due to product pricing (Section 2). This category includes nearly all MG mortgages and a subset of EL mortgages, since some EL borrowers opted for higher down payments. We identify low–down payment EL mortgages by matching PSD records with data from the UK Department for Levelling Up, Housing and Communities, following Benetton et al. (2021).[5]

[4]In the UK, most homes are bought with a mortgage: in 2012 about 84 percent of all sales, and an even higher share for FTBs.

[5]We thank the authors for sharing their programs and data with us, with the permission of the UK Ministry of Housing, Communities and Local Government.

To construct the financial support indicator, we use borrower income and age from the PSD. Income is measured at the time of purchase (i.e., the income on which the lender based its decision to provide a mortgage) and deflated to 2016 values using the Consumer Prices Index including owner-occupiers' housing costs (CPIH). Age is recorded at origination; for joint mortgages we take the age of the primary mortgage holder.

To account for pre-existing differences across districts, we construct a set of pre-policy controls measured at year-end 2009, including (log of) median income, the unemployment rate, average house prices, and average loan-to-income (LTI) ratio. House prices are drawn from the Land Registry Price Paid Dataset; LTI ratios from the PSD and the remaining controls are from the Office for National Statistics. All nominal controls are deflated to 2016 values using CPIH. Variable definitions and sources can be found in Appendix Table A.2.

4 Empirical Strategy

To assess how easing borrowing constraints affects FTBs' ability to purchase a home, we follow Tracey and Van Horen (2021) and exploit geographic variation in *ex ante* HTB exposure. The approach is akin to strategies used in related policy evaluations, such as Mian and Sufi (2012), Berger et al. (2020), and Agarwal et al. (2017), where cross–regional differences in exposure to the policy provide a counterfactual for what would have happened absent the intervention. To examine whether the policy reduced reliance on external financial sources, we also construct a novel measure of financial support.

4.1 Measuring Exposure to Help-to-Buy

Tracey and Van Horen (2021) exploit the idea that although HTB was implemented nationally, its impact varied across districts due to pre-existing differences in local housing markets. The policy primarily benefited liquidity-constrained households, typically younger households or FTBs without sufficient savings. These households are not evenly spread across the UK, but cluster in areas with more affordable housing, suitable property types, and attractive local amenities.

Because local housing market characteristics evolve slowly, the historical reliance on low–down payment mortgages provides a good proxy for the pool of potential buyers when HTB was introduced. Districts with few such households serve as a natural control group, as FTBs there were unlikely to respond. Comparing outcomes across high- and low-exposure districts therefore isolates the marginal effect of easing borrowing constraints. This interpretation assumes no spillovers from treated to control districts through migration. Tracey

and Van Horen (2021) show that such moves unlikely explain the results.

Following Tracey and Van Horen (2021) we measure "*Exposure*" as the share of low-down payment mortgages issued in a district between 2005 and 2007. We use the pre-crisis period because low-down payment mortgages were widely available at the time, and households who wanted one could typically obtain it. As this measure is based on pre-policy borrowing patterns, it is plausibly exogenous to HTB and reflects latent credit constraints at the time the policy restored access to high-LTV loans.

The validity of this measure is illustrated in the Appendix, where we replicate key figures from Tracey and Van Horen (2021). Figure A.2 shows substantial cross-district variation: exposure ranges from 8.7 to 42.1 percent, with a mean of 22.6 percent. Crucially, exposure is not spatially clustered: all major UK regions contain both high- and low-exposure districts. This allows us to use region-time fixed effects to absorb regional shocks and identify the policy's impact from within-region variation in HTB exposure. Figure A.3 documents a strong positive correlation between *ex ante* exposure and the *ex post* share of low–down payment mortgages during 2013–2018. Pre-crisis low-down payment shares explain 53 percent of the cross-sectional variation in post-2013 shares. Evidence on the timing of this response and the absence of pre-trends in presented in Section 5.

4.2 Estimating financial support

A central innovation of our paper is the development of a proxy that can be applied to administrative mortgage data to infer whether buyers relied on transfers. Since such transfers are not directly observed in loan-level records, prior work has been unable to examine their role in large-scale administrative datasets. Our measure makes this possible by classifying as "supported" those buyers whose observed down payment exceeds what they could plausibly have accumulated from their own resources under deliberately stringent assumptions. Formally, we estimate each mortgagor's "*potential down payment savings*" as:

$$Potential\,down\,payment\,savings = income \times savings\,rate \times (age - 20) \tag{1}$$

where income and age are measured at mortgage origination. The savings rate is set at 23.9 percent, the peak observed during the Covid-19 lockdown in 2020 and the highest on record, on the premise that liquidity-constrained households preparing to buy would cut back sharply on non-essential spending. This benchmark assumes that households begin saving at age 20, earn the same income throughout, remain continuously employed, and save at the maximum observed rate every year. It also abstracts from expenditure shocks, borrowing or dissaving, and any financial returns on savings.

These assumptions deliberately exaggerate households' saving capacity, so that the benchmark provides an upper bound on what could plausibly be self-financed. We assign the indicator *Support* a value of one when the observed down payment exceeds this upper bound. By construction, anyone classified as *supported* almost certainly relied on transfers, whereas some buyers labeled *unsupported* may still have received some help. Our estimates therefore represent a lower bound on the true prevalence of support. Robustness tests confirm that the results are unchanged under less stringent assumptions.

Our proxy has clear advantages for studying the distributional effects of mortgage-market policy. It provides a tractable way to approximate reliance on transfers in administrative data, where such information is otherwise unobserved. Unlike survey evidence—typically small-scale and available only at a point in time—our measure can be applied to the full universe of UK mortgage transactions. This scale allows us to examine geographic and temporal variation in reliance on transfers, and thereby test directly whether HTB altered the composition of entrants into homeownership.

The measure also has natural limitations. It detects when down payments are implausibly large relative to age and income but cannot establish the precise source of funds. External contributions could come from parents, other relatives, friends, inheritances, investments or windfalls. The indicator should therefore be interpreted broadly as capturing reliance on resources beyond the buyer's own earnings. In practice, however, parental transfers are by far the most common form of financial support to UK FTBs, making it highly likely that our proxy predominantly reflects the "Bank of Mum and Dad."

4.3 Baseline specification and identification

Our empirical approach is a difference-in-differences design that exploits cross-district variation in *ex ante* HTB exposure. To estimate whether easing borrowing constraints helped FTBs onto the property ladder, we use the following specification:

$$FTB_{d,t} = \sum_{s \neq 2012} \mathbb{I}_{t=s} \times \text{Exposure}_d \times \beta_s + \boldsymbol{\gamma} \text{District}_{d,t} + \delta_d + \theta_{r,t} + u_{d,t} \tag{2}$$

where $FTB_{d,t}$ denotes the number of FTB home purchases in district d and year t and Exposure_d is the district's pre-crisis HTB exposure. $\mathbf{District}_{d,t}$ is a vector of pre-policy district characteristics (income, unemployment, house prices, and LTI, measured in 2009) interacted with year dummies. Measuring these variables prior to the introduction of HTB in 2013 ensures that they are unaffected by the policy. The model includes district fixed effects (δ_d) and region-time fixed effects ($\theta_{r,t}$). Standard errors are clustered at both the district and region-time level. We estimate the model for 2009–2018, using 2012 as the base

year.

To test whether HTB operated through the intended relaxation of the down-payment constraint and shifted the composition of entrants from supported to unsupported buyers, we extend this specification to a triple-difference design:

$$\begin{aligned} FTB_{d,t,p} = \quad & \beta_1 \text{Pre}_t \times \text{Exposure}_d + \beta_2 \text{Post}_t \times \text{Exposure}_d \\ & + \beta_3 \text{Post}_t \times \text{Exposure}_d \times \text{Type}_p \\ & + \beta_4 \text{Post}_t \times \text{Type}_p + \beta_5 \text{Exposure}_d \times \text{Type}_p \\ & + \gamma \text{District}_{d,t} + \delta_d + \theta_{r,t} + u_{d,t,p} \end{aligned} \tag{3}$$

where Type_p denotes either mortgage-type (low- vs. high-down payment) or buyer-type (supported vs unsupported). Pre_t is an indicator for 2009–2011 and Post_t for 2013–2018.

Identification rests on the assumption that, absent HTB, FTB activity would have followed similar trends across high- and low-exposure districts within the same region, conditional on controls. A potential concern is that high-exposure districts differ systematically. Tracey and Van Horen (2021) show that exposure is positively correlated with unemployment, median income, and loan-to-income ratios in 2012, and negatively correlated with average house prices in 2012 and income growth over 2008–2011. While such correlations do not necessarily imply bias, they motivate a careful set of controls. Accordingly, all specifications include district fixed effects, region-year fixed effects, and pre-policy controls. We further assess the plausibility of the identifying assumption by testing for and confirming parallel pre-trends, and documenting that the timing of observed changes aligns with the introduction of HTB.

As robustness, we also estimate specifications with district-year fixed effects, which absorb all local shocks varying over time within districts. In addition, we re-estimate all specifications on a propensity-score matched sample that balances observables between high- and low-exposure districts, using as matching covariates the significant correlates noted above. This procedure matches 91 high-exposure districts (above-median exposure) to 91 low-exposure counterparts (below-median exposure) and yields results consistent with our main findings.

Before turning to the results, it is useful to note a few patterns from the summary statistics in Table 1. Average FTB sales rose sharply in the post-HTB period, consistent with the aggregate recovery in entry that motivates our analysis. The share of buyers classified as supported fell from 25 to 18 percent, indicating reduced reliance on transfers following the reopening of the 95 LTV segment. Average income increased modestly, in line with the compositional shifts documented below. Taken together, these descriptive statistics suggest that HTB not only expanded overall entry but also altered the characteristics of new buyers, patterns that we explore more formally in the next section.

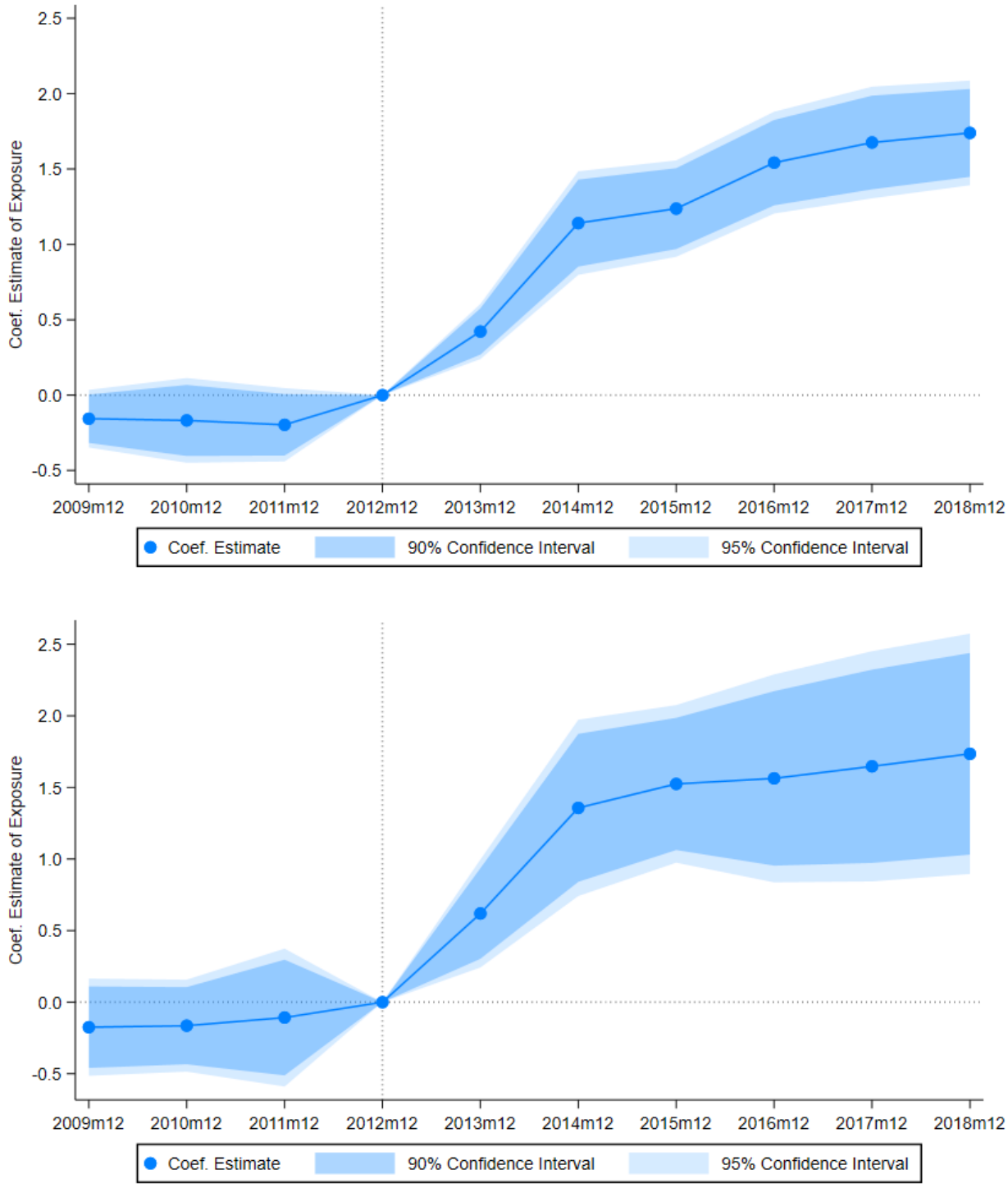
5 Results

5.1 The Effect on Homeownership

Having outlined our empirical design, we now turn to the estimates from Equation 2. The coefficients β_s capture how FTB purchases evolved across districts with differing levels of HTB exposure. Figure 3 plots these dynamics: the top panel reports estimates without pre-policy controls, the bottom panel includes them. In both cases, coefficients in the pre-HTB period are close to zero and statistically insignificant, consistent with parallel trends across districts. Beginning in 2013, purchases increase more strongly in high-exposure districts, with the divergence becoming pronounced in 2014 as both HTB schemes took full effect. The gap persists through 2018, leveling off from 2016 as the market for 95 LTV mortgages recovered (Carney 2016). The relatively modest effect in 2013 likely reflects the lag between purchase initiation and completion, as well as the late rollout of the MG scheme that year. The pattern is consistent with Tracey and Van Horen (2021), who document similar dynamics for both FTBs and movers. Overall, the results indicate that HTB successfully enabled more FTBs to purchase a home.

The effect is economically meaningful. In 2013, FTB purchases in a district with average HTB exposure were about 16 percent higher than in a district with the minimum exposure, relative to their 2012 levels. By 2018, this gap had widened to 47 percent, consistent with the easing of borrowing constraints allowing some households to bring purchases forward and others to enter the market who would otherwise have remained excluded. Our estimates do not capture intensive-margin adjustments, such as upgrading to larger or better-located homes, since these leave the number of transactions unchanged.

Figure 3: The Effect of HTB on First-time Buyer Home Purchases



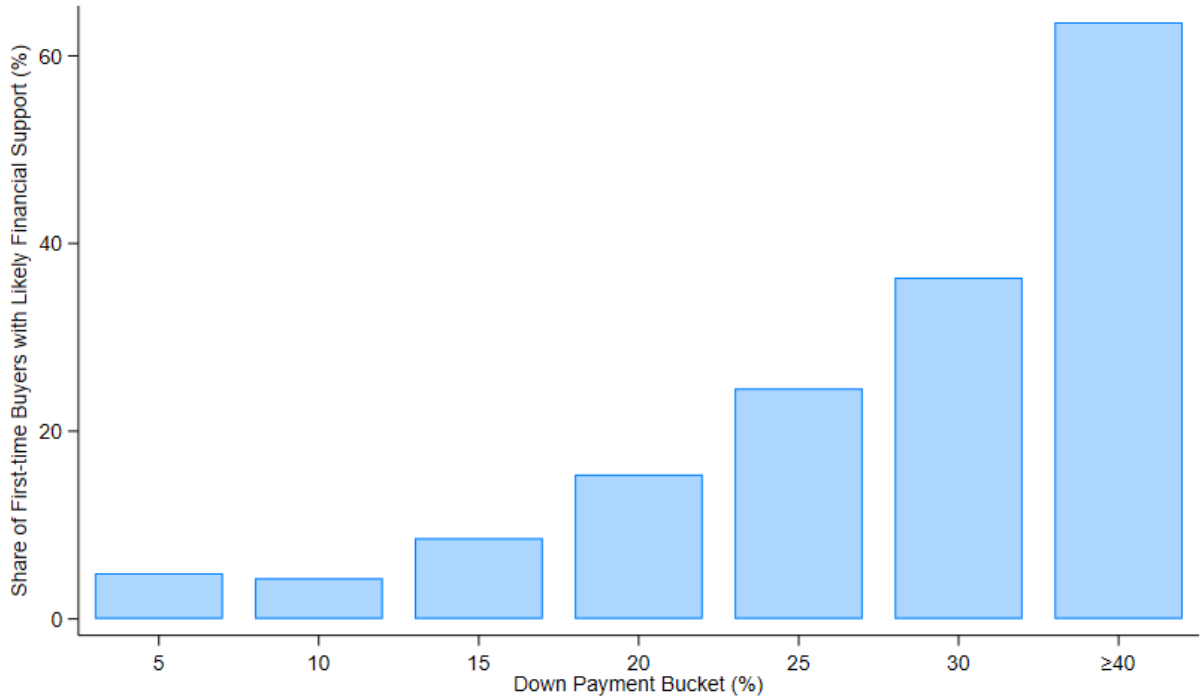
Notes: The figure presents estimates of β_t from Equation 2, where the outcome variable $\text{FTB}_{d,t}$ equals the number of FTB home purchases in a given district and year. The base year is 2012. The top panel shows estimates without pre-policy controls; the bottom panel includes them. Standard errors, clustered at the district and region-time level.

Column 1 shows the baseline results, allowing the impact of HTB to vary by down payment category where ≥ 15 percent down payments is the base category. The triple interaction for mortgages with a 5 percent down payment is by far the largest and highly significant, showing that the increase in FTBs is primarily driven by households entering with the minimum down payment. The 10 percent category also shows a positive and significant coefficient, but the magnitude is much smaller. This is consistent with the fact that the EL scheme also permitted higher down payments, and about 25 percent of households contributed more than the 5 percent minimum (Benetton et al., 2021). Importantly, the double interaction term is insignificant, indicating no effect on FTB mortgages with higher down payment sizes.

Columns 2 through 4 show that the results are robust across a range of alternative specifications. Column 2 adds district–time fixed effects, with stable estimates suggesting that the increase in FTB sales was not driven by unobserved district-level trends. Column 3 excludes London, where housing market dynamics differ markedly due to international and buy-to-let investors; the results remain robust and even somewhat larger. Column 4 re-estimates the model on the propensity-score matched sample of high- and low-exposure districts, again yielding statistically significant effects for 5 percent down payments. Column 5 accounts for the cap on high-LTI lending introduced in 2014, which may reduced credit supply in districts more exposed to constrained lenders. Using the exposure measure of Peydro et al. (2024), adapted to the district level, we find that controlling for this channel leaves the results unchanged, consistent with most low-down-payment mortgages falling below the LTI threshold. Taken together, these results validate that the aggregate increase in homeownership documented in Figure 3 stems almost entirely from the reopening of the 95 LTV segment.

To gauge the aggregate implications, we use the estimates from Equation 2 to compute the number of additional households able to enter homeownership during the HTB period. Following the approach of Berger et al. (2020) and Mian and Sufi (2012), we compare each district's exposure with that of the least-exposed district and sum the implied excess purchases across all districts. We estimate that approximately 460,000 additional households became homeowners between 2013 and 2018, equivalent to 26 percent of all FTB transactions during this period. Put differently, the policy raised annual FTB transactions by about 37 percent relative to their 2012 level. These numbers should not be interpreted as aggregate general-equilibrium effects, since our empirical design does not capture economy-wide spillovers of the intervention (Nakamura and Steinsson, 2014).

Figure 4: Financial Support and Down Payment Size for First-time Buyers



Notes: The figure plots the share of FTBs classified as having likely financial support by down-payment size. *Support* equals one when the buyer's observed down payment exceeds what the buyer could plausibly have saved independently based on their age and income.

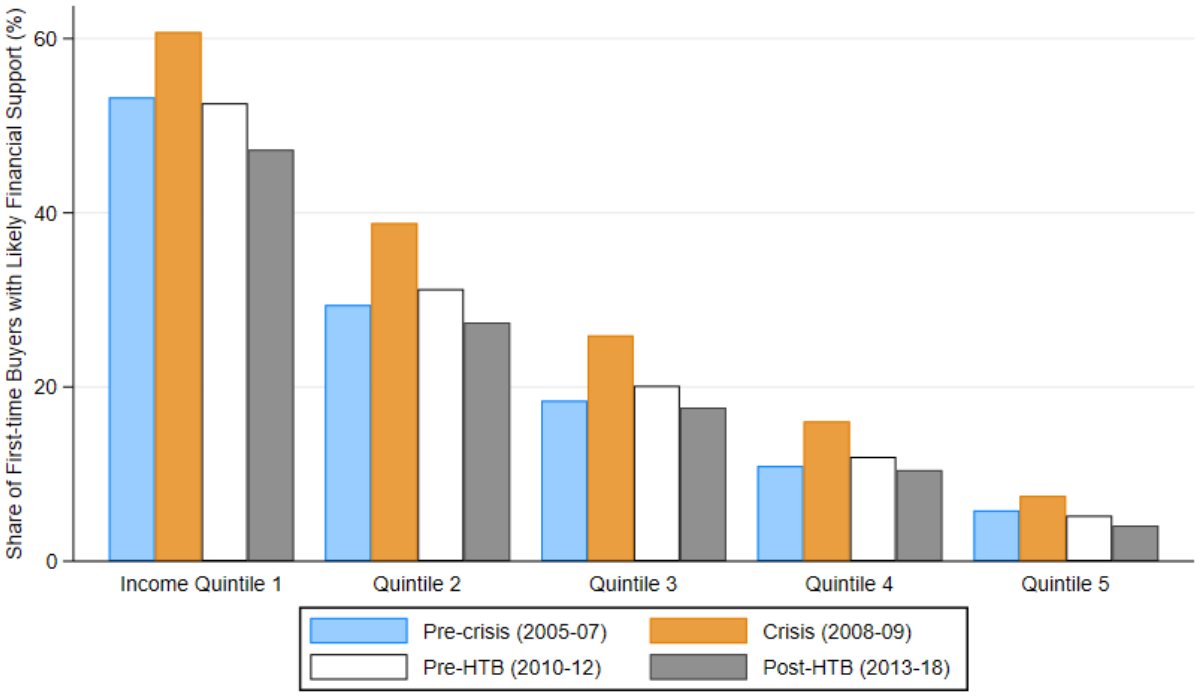
5.2 Distributional Effects: Supported vs Unsupported Buyers

Building on the evidence in the previous section that HTB raised FTB purchases by reopening the market for low–down payment mortgages, we now ask whether this easing reduced the role of external financial support in enabling entry into homeownership. When down payment requirements bind, liquidity shortfalls must typically be bridged by transfers from parents, other relatives, or friends, or from windfalls such as inheritances or investment gains. Lowering the required down payment should therefore lessen reliance on such funds and allow more households without support to buy a home. Using the financial-support proxy introduced in Section 4.2, we can test this prediction directly.

5.2.1 Stylized Facts

Before turning to the regression analysis, it is useful to examine how reliance on financial support varied before HTB. Using our conservative proxy, we estimate that in the years prior to the policy 25 percent of FTBs required outside funds to meet the down payment. After the introduction of HTB, the share dropped to 18 percent. Beyond these averages,

Figure 5: Financial Support by Income Quintile and Time for First-time Buyers



Notes: The figure shows how the proportion of first-time buyers with likely financial support varies by time period and by the income quintile. *Support* equals one when the buyer's observed down payment exceeds what the buyer could plausibly have saved independently based on their age and income. Income quintiles are calculated at the district level using 2012 data.

two patterns emerge.

First, the incidence of financial support is tightly linked to down payment size. Figure 4 shows that at low down payments (5–10 percent) only a small fraction of FTBs relied on outside funds. The share then rises steadily with down payment size, reaching about one-quarter for 15–25 percent down payments and exceeding 50 percent once down payments surpass 40 percent. In other words, households without access to financial support disproportionally rely on low-down payment mortgages. Consistent with this pattern, Benetton et al. (2022) document that children whose parents withdraw housing equity at the time of purchase tend to take out lower-LTV loans.

Second, reliance on financial support declines systematically with income. Figure 5 shows that before HTB, more than half of FTBs in the lowest income quintile relied on outside funds to purchase a home, compared with only about 5 percent in the highest quintile. This gradient reflects the limited ability of lower-income households to accumulate sufficient savings on their own and is consistent with US survey evidence that interfamily transfers are more common among households with lower current income (Engelhardt and Mayer

1996; Cox 1990). Put differently, lower-income households that did purchase a home were especially likely to rely on transfers. After HTB's introduction, the share of supported buyers declined across all quintiles, consistent with the reduced need for transfers once down-payment requirements were eased.

Taken together, these patterns indicate that reopening the 95 LTV market under HTB relaxed down-payment constraints in a way that disproportionately benefited households without access to financial support. By lowering the required down payment, the policy reduced reliance on transfers and opened the door to buyers who otherwise would have been excluded from homeownership. The natural implication is a sharp prediction: the surge in FTB purchases should be driven by unsupported households. In the next subsection, we test this prediction formally.

5.2.2 Regression Evidence

We use the triple-difference-in-differences framework outlined in Section 4.3 and re-estimate Equation 3 with Type_p defined by the financial-support indicator. The dependent variable $FTB_{d,t,p}$ thus equals the number of mortgaged home purchases in district d and year t by FTBs classified as supported or unsupported. Table 3 reports the results.

Column 1 shows a clear pattern: the double interaction is positive and significant, while the triple interaction is negative, significant and of similar magnitude. This implies that the overall increase in FTB purchases under HTB was driven almost entirely by households without financial support. In aggregate, unsupported buyers experienced a 47 percent rise in mortgage originations relative to 2012, whereas supported buyers show no meaningful response. Point estimates suggest an 11 percent decline for supported households, but this effect is not statistically different from zero. This muted response is consistent with the fact that supported buyers typically make larger down payments and are less dependent on high-LTV mortgages.

Columns 2–5 confirm the robustness of our findings. The estimates remain stable when we add district–year fixed effects, adopt a less stringent definition of support (setting the savings rate equal to twice the 2012 average of 8.3 percent), exclude London, or restrict the sample to propensity-score matched high- and low-exposure districts. Taken together, the evidence shows that HTB primarily expanded access for households who could not rely on external support to fund their down payment.

This shift in composition naturally raises the question whether the income distribution of new entrants changed. As documented in Section 5.2.1, reliance on financial support declines systematically with income. If unsupported buyers were the main beneficiaries of HTB, then the policy should also have shifted the income distribution of new entrants to the right.

To test this, we re-estimate Equation 3, replacing the financial-support indicator with income quintiles as the source of heterogeneity. The dependent variable $FTB_{d,t,p}$ is the number of FTB mortgages in district d, year t and income group p. Quintiles are defined at the district level using 2012 data to reflect local, rather than national, income distributions. Table 4 presents the results.

Column 1 shows that all income groups benefited from HTB, with positive and significant coefficients throughout. The pattern is non-monotonic: effects for the second and third quintiles are roughly twice as large as for the first and nearly identical to each other. The effect then increases further for the fourth quintile and peaks for the top quintile. In aggregate terms, HTB enabled about 15 percent more households in the bottom quintile to buy, compared with 30 percent in the second and third, 40 percent in the fourth, and 68 percent in the fifth. Thus, while the policy supported entry across the distribution, higher-income households responded much more strongly.

Columns 2–4 confirm the robustness of these results when we replace district and region–year fixed effects with district–year fixed effects, exclude London, or use propensity-score matched districts. Coefficients vary somewhat in magnitude across specifications, but the overall conclusion, that higher-income groups were the main beneficiaries, remains unchanged.

Table 5 combines income and financial support. Across all quintiles, the double interaction is positive and significant, while the triple interaction is negative and significant, indicating that the policy's impact was concentrated among unsupported buyers. The largest effect emerges in the top quintile, where unsupported buyers are disproportionately represented. These patterns explain the rightward shift in the income distribution of new entrants: reopening the 95 LTV market enabled income-rich but liquidity-constrained buyers who lacked external support to access homeownership.

Our proxy does not reveal the exact source of outside funds and should be read broadly as reliance on resources beyond buyers' own savings. Since parental transfers (the "Bank of Mom and Dad") are the dominant form of assistance for UK FTBs, the proxy is likely to capture these in particular. The results therefore suggest that easing borrowing constraints through HTB diminished the role of family wealth in determining access to homeownership.

6 Conclusions

This paper studies how easing mortgage borrowing constraints affects who is able to become a homeowner. We analyze the UK Help-to-Buy program, which reopened the 95 LTV market by lowering the effective minimum down payment from 10 to 5 percent, and introduce a new

proxy for financial support that can be applied to administrative mortgage data. This allows us to distinguish between buyers who likely relied on transfers and those who financed their purchase independently, providing a new way to study the distributional consequences of mortgage market interventions.

Our results show that the gains from HTB were concentrated among unsupported households. Mortgage originations by these buyers rose by nearly 50 percent, while supported buyers showed no meaningful response. Because unsupported entrants typically have higher incomes, this also produced a rightward shift in the income distribution of new homeowners. While our proxy cannot identify the precise source of external funds, financial assistance to UK FTBs most often comes from parents—the "Bank of Mom and Dad." The results are therefore best interpreted as evidence that easing borrowing constraints weakened the role of family wealth in shaping access to homeownership.

These findings carry clear policy implications. Lowering the down payment requirement can reduce wealth-based barriers to homeownership, but it also raises the share of high-LTV loans and may increase vulnerabilities in a downturn, highlighting a familiar trade-off between broadening access and containing leverage-related risks. Evidence from related interventions suggests these risks need not materialize mechanically though. For example, FTBs induced by the US First-Time Homebuyer Credit were no more likely to default than adjacent cohorts (Berger et al., 2020). More broadly, our results show that mortgage market interventions not only expand the number of homeowners but also reshape who enters, shifting the composition of new buyers along wealth and income lines. Recognizing this distributional channel is essential for understanding how credit policies alter access to homeownership and, with it, households' opportunities to build housing wealth.

References

Acharya, Viral V., Katharina Bergant, Matteo Crosignani, Tim Eisert, and Fergal Mccann, "The Anatomy of the Transmission of Macroprudential Policies," *Journal of Finance*, 2022, *77* (5), 2533–2575.

Agarwal, Sumit, Gene Amromin, Itzhak Ben-David, Souphala Chomsisengphet, Tomasz Piskorski, and Amit Seru, "Policy Intervention in Debt Renegotiation: Evidence from the Home Affordable Modification Program," *Journal of Political Economy*, 2017, *125* (3), 654–712.

Bekkum, Sjoerd Van, Marc Gabarro, Rustom M. Irani, and Jose-Luis Peydro, "The Real Effects of Borrower-Based Macroprudential Policy: Evidence from Administrative Household-level Data," *Journal of Monetary Economics*, 2025, *Forthcoming.*

Benetton, Matteo, Marianna Kudlyak, and John Mondragon, "Dynastic Home Equity," CEPR Discussion Papers 17464, Center for European Policy Research 2022.

_ , Philippe Bracke, Joao F. Cocco, and Nicola Garbarino, "Housing Consumption and Investment: Evidence from Shared Equity Mortgages," *The Review of Financial Studies*, 11 2021.

Berger, David, Nicholas Turner, and Eric Zwick, "Stimulating Housing Markets," *Journal of Finance*, 2020, *75* (1), 277–321.

Best, Michael Carlos, James S Cloyne, Ethan Ilzetzki, and Henrik J Kleven, "Estimating the Elasticity of Intertemporal Substitution Using Mortgage Notches," *Review of Economic Studies*, 2020, *87* (2), 656–690.

Blanden, Jo and Stephen Machin, "Home Ownership and Social Mobility," CentrePiece - The magazine for economic performance 508, Centre for Economic Performance, LSE July 2017.

Blickle, Kristian and Martin Brown, "Borrowing constraints, home ownership and housing choice: evidence from intra-family wealth transfers," *Journal of Money, Credit and Banking*, 2019, *51* (2-3), 539–580.

Bolliger, Elio, Adrian Bruhin, Andreas Fuster, and Maja Ganarin, "The effect of macroprudential policies on homeownership: Evidence from Switzerland," *Journal of Urban Economics*, 2025, *146*, 103749.

Bond, Shaun A and Michael D Eriksen, "The role of parents on the home ownership experience of their children: Evidence from the health and retirement study," *Real Estate Economics*, 2021, *49* (2), 433–458.

Brandsaas, Eirik Eylands, "Illiquid Homeownership and the Bank of Mom and Dad," Working Paper, UW Madison 2021.

Carney, Mark, "Letter from the Governor to the Chancellor regarding the Help to Buy: Mortgage Guarantee scheme," 2016. Letter from the Governor to the Chancellor regarding the Help to Buy: Mortgage Guarantee scheme.

Carozzi, Felipe, "Credit constraints and the composition of housing sales. Farewell to first-time buyers," *Journal of the European Economic Association*, June 2020, *18* (3), 1196–1237.

Chancellor of the Exchequer, "Oral statement to Parliament of the Budget 2013," Houses of Parliament. London, United Kindom 2013.

Charles, Kerwin Kofi and Erik Hurst, "The Transition to Home Ownership and the Black-White Wealth Gap," *Review of Economics and Statistics*, 2002, *84* (2), 281–297.

Cox, Donald, "Intergenerational Transfers and Liquidity Constraints," *Quarterly Journal of Economics*, 1990, *105* (1), 187–217.

Engelhardt, Gary and Christopher Mayer, "Gifts, Down Payments and Housing Affordability," *Journal of Housing Research*, 1996, *7* (1), 59–77.

Finlay, Stephen, Peter Williams, and Christine Whitehead, "Evaluation of the Help to Buy Equity Loan Scheme," Technical Report, Department for Communities and Local Government 2016.

Fuster, Andreas and Basit Zafar, "To buy or not to buy: Consumer constraints in the housing market," *American Economic Review*, 2016, *106* (5), 636–640.

_ **and** _ , "The sensitivity of housing demand to financing conditions: evidence from a survey," *American Economic Journal: Economic Policy*, 2021, *13* (1), 231–265.

Haurin, Donald R, Patric H Hendershott, and Susan M Wachter, "Borrowing Constraints and the Tenure Choice of Young Households," *Journal of Housing Research*, 1997, pp. 137–154.

Linneman, Peter and Susan Wachter, "The Impacts of Borrowing Constraints on Homeownership," *Real Estate Economics*, 1989, *17* (4), 389–402.

Mian, Atif and Amir Sufi, "The effects of fiscal stimulus: evidence from the 2009 Cash for Clunkers program," *The Quarterly Journal of Economics*, 2012, *127* (3), 1107–1142.

Nakamura, Emi and Jón Steinsson, "Fiscal stimulus in a monetary union: Evidence from US regions," *American Economic Review*, 2014, *104* (3), 753–792.

Ortalo-Magne, Francois and Sven Rady, "Housing Market Dynamics: On the Contribution of Income Shocks and Credit Constraints," *Review of Economic Studies*, 2006, *73* (2), 459–485.

Peydro, Jose-Luis, Francesc Rodriguez-Tous, Jagdish Tripathy, and Arzu Uluc, "Macroprudential Policy, Mortgage Cycles, and Distributional Effects: Evidence from the United Kingdom," *The Review of Financial Studies*, None 2024, *37* (3), 727–760.

Robles-Garcia, Claudia, "Competition and Incentives in Mortgage Markets: The Role of Brokers," Stanford University Working Paper 3796 2019.

Rostom, May, "Bomadland: How the Bank of Mum and Dad helps kids buy homes," 2023. Bank Underground blog; Blog post published 25 July 2023; accessed 29 August 2025.

Santander, "First-time Buyer Study," Technical Report accessed on 4 February 2022 at https://www.santander.co.uk/assets/s3fs-public/documents/santander-first-time-buyer-study.pdf 2019.

Tracey, Belinda and Neeltje Van Horen, "Mortage Borrowing Constraints and the Local Consumption Multiplier," Bank of England working papers 919, Bank of England May 2021.

Tzur-Ilan, Nitzan, "Adjusting to Macroprudential Policies: Loan-to-Value Limites and Housing Choice," *Review of Financial Studies*, 2023, *36* (10), 3999–4044.

Table 1: Summary Statistics

	Pre Help-to-Buy			Post Help-to-Buy		
Variable Name (Unit)	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.
Panel A: District-level Variables						
HTB exposure (%)	22.68	22.01	6.61	22.68	22.01	6.61
First-time buyer sales	490	363	387	762	584	537
Sales with Financial Support	119	88	103	136	102	119
Sales without Financial Support	371	273	296	626	480	444
Panel B: Loan-level Variables						
Financial Support (%)	24.64	0.00	43.09	17.80	0.00	38.25
Household Income (£)	44,709	36,967	35,398	47,060	39,542	34,558
Age	30.76	29.00	7.81	31.28	30.00	7.38

Notes: The table presents summary statistics for the key variables used in our analyses. Summary statistics are reported for the pre-HTB period (2009–2012) and the post-HTB period (2013–2018). There are 379 UK districts included in our sample. In the pre-HTB period, there are 1,508 district-level observations and 766,690 loan-level observations. In the post HTB period, there are 2,262 district-level observations and 1,809,381 loan-level observations. Household income is deflated to 2016 values.

Table 2: The Effect of HTB on First-time Buyer Home Purchases by Down Payment

	All Districts	All Districts	Excl. London	Propensity Score	All Districts
	(1)	(2)	(3)	(4)	(5)
$\text{Pre}_t \times \text{Exposure}_d$	-0.032				
	(0.063)				
$\text{Post}_t \times \text{Exposure}_d$	0.056				
	(0.131)				
$\text{Post}_t \times \text{Exposure}_d \times \text{Down Payment}_{10\%}$	0.322***	0.322***	0.455***	0.169	0.486**
	(0.104)	(0.080)	(0.055)	(0.171)	(0.220)
$\text{Post}_t \times \text{Exposure}_d \times \text{Down Payment}_{5\%}$	0.841***	0.847***	0.978***	0.930***	0.980***
	(0.136)	(0.110)	(0.098)	(0.250)	(0.259)
$\text{Post}_t \times \text{LTI Exposure}_d \times \text{Down Payment}_{10\%}$					-0.116
					(0.420)
$\text{Post}_t \times \text{LTI Exposure}_d \times \text{Down Payment}_{5\%}$					0.261
					(0.482)
Model Statistics					
N	11303	11303	10373	5457	11350
R^2	0.708	0.961	0.960	0.960	0.7700
Control Variables					
$\text{Post}_t \times \text{Down Payment}_i$	Yes	No	No	No	No
$\text{Exposure}_d \times \text{Down Payment}_i$	Yes	No	No	No	No
Pre-policy Controls × Time Fixed Effects	Yes	n/a	n/a	n/a	n/a
Fixed Effects					
District	Yes	No	No	No	No
Region × Time	Yes	No	No	No	No
Down Payment	Yes	No	No	No	No
District × Time	No	Yes	Yes	Yes	Yes
District × Down Payment	No	Yes	Yes	Yes	Yes
Time × Down Payment	No	Yes	Yes	Yes	Yes

Notes: The table presents coefficient estimates for Equation 3 for 2009–2018, showing the effect of HTB on FTB home purchases by down payment size. *Pre* equals 1 for 2009–2011, *Post* for 2013–2018, with 2012 as the base year. *Exposure* is the district share of low-down payment mortgages in 2005–2007. Column 3 excludes London districts, Column 4 uses the propensity-score matched sample and Column 5 accounts for the cap on high-LTI lending introduced in 2014. Standard errors, clustered at the district and region-time level, are shown in parentheses. ***, **, and * indicate statistical significance at the 1 percent, 5 percent and 10 percent confidence level, respectively.

Table 3: The Effect of HTB on First-time Buyer Home Purchases by Financial Support

	All Districts	All Districts	Alt. Support	Excl. London	PSM
	(1)	(2)	(3)	(4)	(5)
$\text{Pre}_t \times \text{Exposure}_d$	-0.074				
	(0.069)				
$\text{Post}_t \times \text{Exposure}_d$	1.390***				
	(0.180)				
$\text{Post}_t \times \text{Exposure}_d \times \text{Support}$	-1.360***	-1.360***	-1.318***	-1.387***	-1.442***
	(0.160)	(0.143)	(0.140)	(0.149)	(0.293)
N	7540	7540	7540	6920	3600
R^2	0.824	0.949	0.941	0.955	0.947
Control Variables					
$\text{Post}_t \times \text{Support}$	Yes	No	No	No	No
$\text{Exposure}_d \times \text{Support}$	Yes	No	No	No	No
Pre-policy Controls × Time Fixed Effects	Yes	n/a	n/a	n/a	n/a
Fixed Effects					
District	Yes	No	No	No	No
Support	Yes	No	No	No	No
Region × Time	Yes	No	No	No	No
District × Time	No	Yes	Yes	Yes	Yes
District × Support	No	Yes	Yes	Yes	Yes
Time × Support	No	Yes	Yes	Yes	Yes

Notes: The table presents coefficient estimates for Equation 3 for 2009–2018, showing the effect of HTB on FTB home purchases by financial support status. *Pre* equals 1 for 2009–2011, *Post* for 2013–2018, with 2012 as the base year. *Exposure* is the district share of low-down payment mortgages in 2005–2007. *Support* equals 1 when the buyer's down payment exceeds what could plausibly have been accumulated from own resources based on age and income. Column 3 uses a less stringent definition of financial support, Column 4 excludes London districts, and Column 5 uses the propensity-score matched sample. Standard errors, clustered at the district and region-time level, are shown in parentheses. ***, **, and * indicate statistical significance at the 1 percent, 5 percent and 10 percent confidence level, respectively.

Table 4: The Effect of HTB on First-time Buyer Home Purchases by Income Group

	All Districts	All Districts	Excl. London	PSM
	(1)	(2)	(3)	(4)
$\text{Pre}_t \times \text{Exposure}_d$	-0.030			
	(0.028)			
$\text{Post}_t \times \text{Exposure}_d$	0.110*			
	(0.060)			
$\text{Post}_t \times \text{Exposure}_d \times$ Income Quintile 2	0.111***	0.065***	0.070***	0.136***
	(0.023)	(0.020)	(0.020)	(0.037)
$\text{Post}_t \times \text{Exposure}_d \times$ Income Quintile 3	0.112***	0.056**	0.065**	0.178***
	(0.033)	(0.027)	(0.027)	(0.056)
$\text{Post}_t \times \text{Exposure}_d \times$ Income Quintile 4	0.192***	0.130***	0.127***	0.368***
	(0.056)	(0.047)	(0.044)	(0.088)
$\text{Post}_t \times \text{Exposure}_d \times$ Income Quintile 5	0.425***	0.342***	0.281***	0.699***
	(0.089)	(0.083)	(0.068)	(0.163)
N	18850	18850	17300	9000
R^2	0.853	0.933	0.948	0.932
Control Variables				
$\text{Post}_t \times \text{Income Quintile}_i$	Yes	No	No	No
$\text{Exposure}_d \times \text{Income Quintile}_i$	Yes	No	No	No
Pre-policy Controls × Time Fixed Effects	Yes	n/a	n/a	n/a
Fixed Effects				
District	Yes	No	No	No
Income Quintile	Yes	No	No	No
Region × Time	Yes	No	No	No
District × Time	No	Yes	Yes	Yes
District × Income Quintile	No	Yes	Yes	Yes
Time × Income Quintile	No	Yes	Yes	Yes

Notes: The table presents coefficient estimates for Equation 3 for 2009–2018, showing the effect of HTB on FTB home purchases by buyer income quintile. *Pre* equals 1 for 2009–2011, *Post* for 2013–2018, with 2012 as the base year. *Exposure* is the district share of low-down payment mortgages in 2005–2007. *Income Quintile*$_i$ is a dummy variable equal to 1 for FTBs in quintile i, based on the district-level income distribution in 2012. Column 3 excludes London districts and Column 4 uses the propensity-score matched sample. Standard errors, clustered at the district and region-time level, are shown in parentheses. ***, **, and * indicate statistical significance at the 1 percent, 5 percent and 10 percent confidence level, respectively.

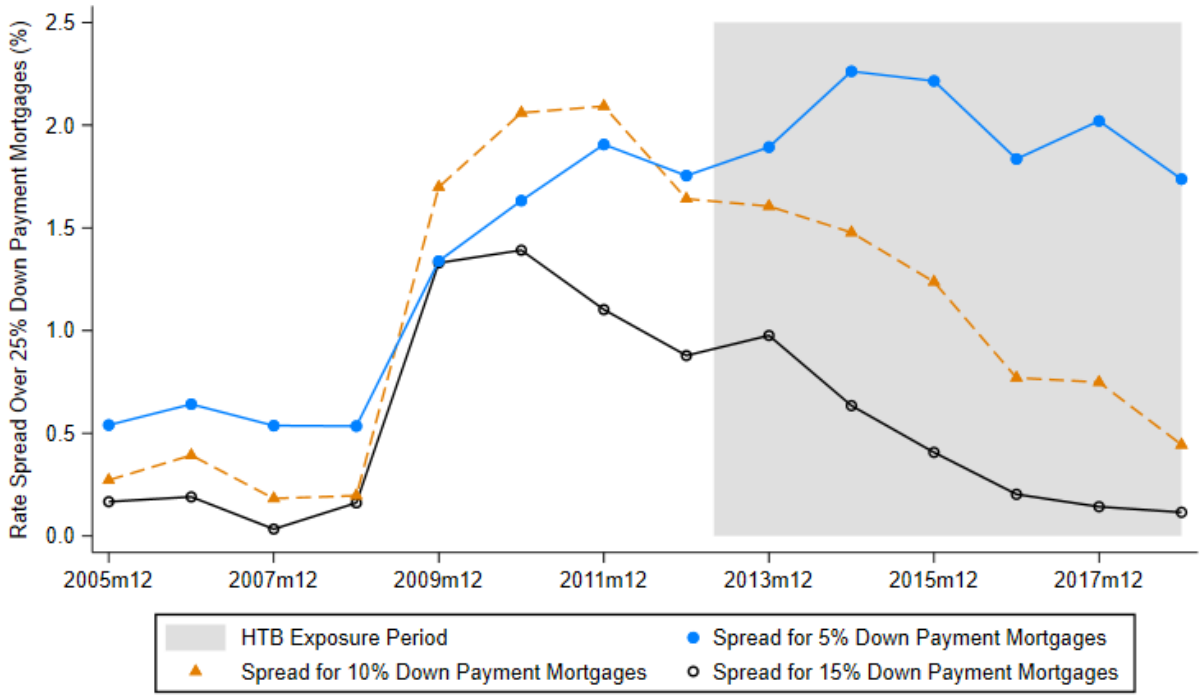
Table 5: The Effect of HTB on First-time Buyer Home Purchases by Financial Support and Income Group

	Income Quintile 1		Income Quintile 2		Income Quintile 3		Income Quintile 4		Income Quintile 5	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$\text{Pre}_t \times \text{Exposure}_d$	-0.025		0.003		-0.018		-0.004		-0.004	
	(0.028)		(0.027)		(0.023)		(0.033)		(0.038)	
$\text{Post}_t \times \text{Exposure}_d$	0.099***		0.209***		0.215***		0.311***		0.467***	
	(0.030)		(0.038)		(0.044)		(0.060)		(0.072)	
$\text{Post}_t \times \text{Exposure}_d \times \text{Support}$	-0.168***	-0.169***	-0.251***	-0.251***	-0.250***	-0.251***	-0.246***	-0.245***	-0.356***	-0.347***
	(0.034)	(0.027)	(0.037)	(0.035)	(0.037)	(0.035)	(0.044)	(0.035)	(0.052)	(0.049)
N	7528	7528	7540	7540	7526	7526	7472	7472	7142	7142
R^2	0.772	0.889	0.784	0.854	0.779	0.893	0.784	0.934	0.786	0.938
Control Variables										
$\text{Post}_t \times \text{Support}$	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
$\text{Exposure}_d \times \text{Support}$	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Pre-policy Controls × Time	Yes	n/a	Yes	n/a	Yes	n/a	Yes	n/a	Yes	n/a
Fixed Effects										
District	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Support	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region × Time	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
District × Time	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
District × Support	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Time × Support	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Notes: The table presents coefficient estimates for Equation 3 for 2009–2018, showing the effect of HTB on FTB home purchases by financial support across income quintiles. *Pre* equals 1 for 2009–2011, *Post* for 2013–2018, with 2012 as the base year. *Exposure* is the district share of low-down payment mortgages in 2005–2007. *Support* equals 1 when the buyer's down payment exceeds what could plausibly have been accumulated from own resources based on age and income. Columns 1–2, 3–4, 5–6, 7–8, and 9–10 report estimates for income quintiles 1–5, based on the district-level income distribution in 2012. Standard errors, clustered at the district and region-time level, are shown in parentheses. ***, **, and * indicate statistical significance at the 1 percent, 5 percent and 10 percent confidence level, respectively.

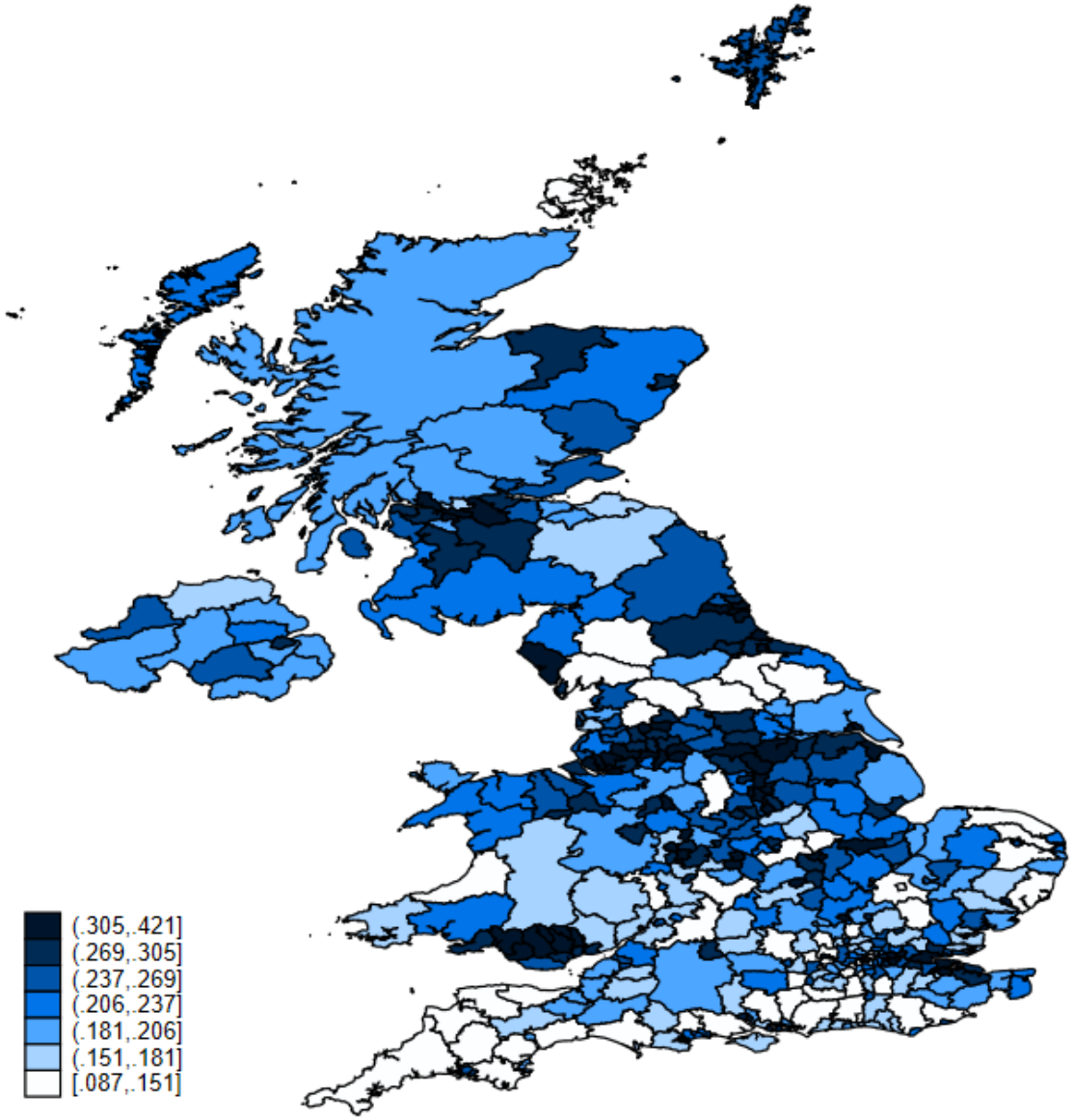
A Additional Figures and Tables

Figure A.1: Interest Rate Spread for Low-Down Payment Mortgages



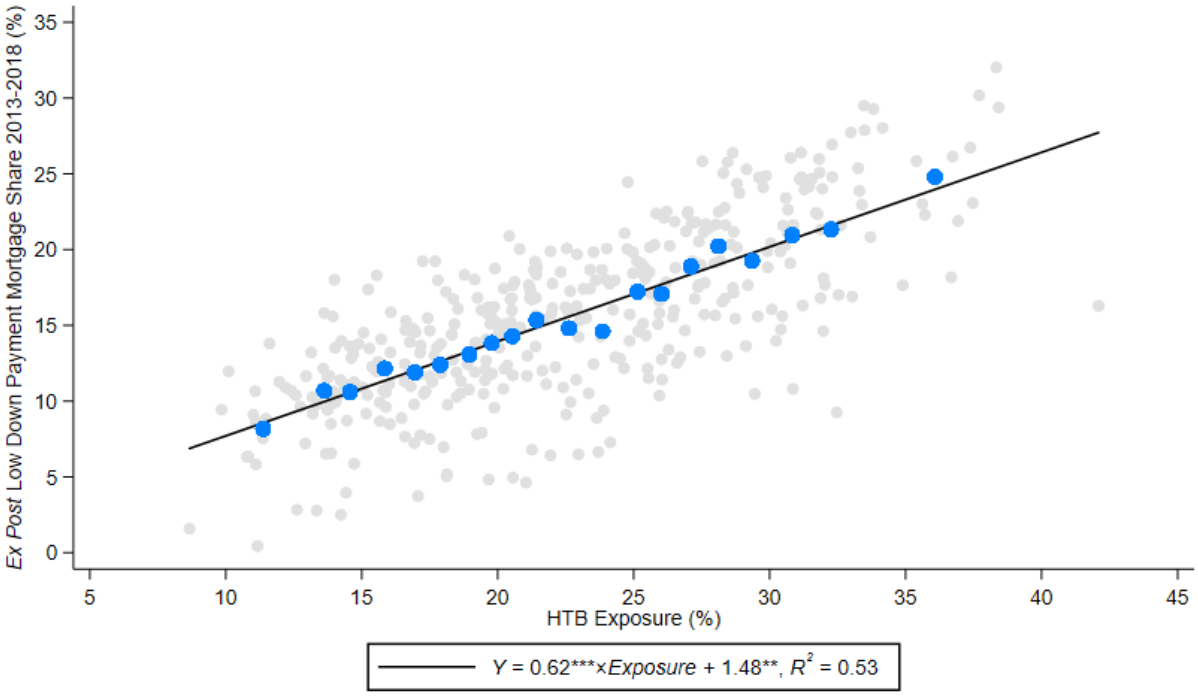
Notes: The figure plots the average interest rate spread of low (5 percent), 10 percent and 15 percent mortgages, relative to 25 percent down payment mortgages.The shaded area indicates the period that HTB is in effect.

Figure A.2: HTB Exposure across the UK



Notes: The figure shows the geographic distribution of HTB exposure across UK districts; darker shading indicates higher exposure. *Source*: Tracey and Van Horen (2021).

Figure A.3: HTB Exposure and Ex Post Low-Down Payment Mortgages



Notes: The figure plots the relationship between HTB exposure and the share of low–down payment mortgages in 2013–2018 at the district level. Blue dots show a binscatter, where districts are grouped into 20 equal-sized bins based on HTB exposure and the mean of each variable is plotted for each bin; grey dots depict individual districts. The dashed line shows the fitted regression line. *Source*: Tracey and Van Horen (2021).

Table A.1: The Help-to-Buy Program Requirements

Requirements	Equity Loan (EL)	Mortgage Guarantee (MG)
Period	Q2 2013 - Q4 2020	Q4 2013 - Q4 2016
Minimum 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 in Wales)	Any property Value $<$ £600k
Qualifying Borrowers	First-time buyers and home movers	First-time buyers, home movers and remortgagors
Qualifying Loan	LTI ratio $<$ 4.5 Ratio excludes EL component	LTI ratio $<$ 4.5 Ratio includes MG component

Notes: The table describes the requirements for the two main Help-to-Buy program schemes: the Equity Loan (EL) scheme and the Mortgage Guarantee (MG) scheme. The requirements apply to the property, loan features and buyer-types. *Source*: Tracey and Van Horen (2021).

Table A.2: Variable Descriptions and Sources

Variable Name	Variable Description	Data Source
Loan-level Variables		
Low Down Payment	Takes the value 1 if down payment 5 percent or less and 0 otherwise	Product Sales Database, UK DLUHC
Likely Financial Support	Takes the value 1 when the buyer's down payment exceeds what could plausibly have been accumulated from own resources based on age and income	Product Sales Database
Income Quintiles	Determined by district-level income distribution in 2012	Product Sales Database
Household Income	Gross household income, including main and second borrower	Product Sales Database
Age	Age of main borrower	Product Sales Database
District-level Variables		
Exposure	Share of low-down payment mortgages issued between 2005 to 2007	Product Sales Database
LIT Exposure	Share of mortgages issued by LTI-constrained lenders in 2012, i.e. lenders issuing more than 15% of mortgages with LTI $\geq$ 4.5 in 2012.	Product Sales Database
First-time Buyer Sales	Total number of mortgaged first-time buyer sales	Product Sales Database
Unemployment Rate	Model-based estimates of unemployment rate in 2009	Office for National Statistics
Median Weekly Income	Median gross weekly pay for all workers in 2009	Office for National Statistics
Average House Price	Average house price for all house transactions in 2009	Land Registry House Price Index Data
Average Loan-to-Income Ratio	Average loan-to-income ratio across all home-buyers in 2009	Product Sales Database