

# The Developer’s Ceiling: Price Bunching at Ireland’s Help to Buy Cap

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## Abstract

Ireland’s Help to Buy scheme provides first-time buyers up to €30,000 in tax relief for new-build homes priced at or below €500,000. Using 768,074 transactions from the Property Price Register (2010–2025), I find sharp bunching just below the cap: the excess mass ratio for new builds is 2.33 (SE = 0.11), implying 1,806 transactions were distorted toward the threshold. Second-hand properties—ineligible for the subsidy—show no bunching ( $\hat{b} = -0.20$ ), and placebo tests at non-policy price thresholds confirm the distortion is policy-driven. The implied average price compression is approximately €11,700 per bunching transaction. Dublin exhibits stronger bunching than the rest of Ireland ( $\hat{b} = 2.62$  versus 2.10), consistent with more properties being “at risk” of crossing the cap in high-price markets.

**JEL Codes:** H24, R21, R31

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# 1. Introduction

When Ireland introduced the Help to Buy (HTB) scheme in January 2017, the stated goal was to help first-time buyers bridge the deposit gap for newly built homes. The mechanism was simple: a refundable income tax credit of up to 5% of the purchase price, capped at €20,000, for new-build properties priced at or below €500,000. The price cap was meant to target the subsidy toward affordable housing. But price caps create notches, and notches create incentives. If a developer can sell a home for €510,000 without the subsidy or €499,000 with it, the math favors the lower price—and the developer captures part of the relief that was meant for the buyer.

This paper documents that Ireland’s HTB cap operates as a *developer’s ceiling*: a price point toward which new-build transactions gravitate, compressing prices that would otherwise have been set above €500,000. Using the universe of 768,074 residential property transactions from Ireland’s Property Price Register (2010–2025), I apply the polynomial bunching estimator of Kleven (2016) to quantify the distortion. The main finding is a bunching ratio of 2.33 (SE = 0.11) for new builds during the HTB period, indicating that the density of transactions just below €500,000 is more than twice what a smooth counterfactual distribution would predict. This excess mass corresponds to approximately 1,806 transactions shifted below the cap, with an implied average price distortion of €11,700.

The identification rests on three built-in placebos. First, second-hand properties are ineligible for HTB and show no bunching at €500,000 ( $\hat{b} = -0.20$ , SE = 0.06). The formal difference-in-bunching between new and second-hand markets is 2.54 ( $t = 18.67$ ). Second, new builds in the pre-HTB period (2010–2016) show no meaningful bunching—an excess of only 86 transactions compared to 1,806 during the HTB period. Third, placebo tests at non-policy round-number thresholds (€400,000 and €450,000) yield bunching ratios indistinguishable from zero (0.11 and  $-0.48$ , respectively), ruling out generic round-number heaping as an explanation.

Heterogeneity analysis reveals that bunching is stronger in Dublin ( $\hat{b} = 2.62$ ) than outside Dublin ( $\hat{b} = 2.10$ ), with the difference statistically significant ( $p < 0.05$ ). This pattern is consistent with a mechanical channel: Dublin’s higher average price level means a larger share of new builds are “at risk” of crossing the €500,000 threshold, creating more transactions whose counterfactual prices would have fallen in the missing-mass region above the cap. Over time, bunching is highest in the post-2022 period ( $\hat{b} = 2.55$ ), when rapid house price inflation pushed the entire price distribution closer to the cap.

The paper contributes to two literatures. First, it adds to the growing body of work on housing subsidy incidence. Dachis et al. (2012) and Hilber and Turner (2014) study mortgage

interest deductions and find substantial capitalization into prices. [Best and Kleven \(2018\)](#) examine the UK’s Stamp Duty Land Tax holiday and document large price effects. The HTB setting is distinctive because the eligibility cap creates a *sharp* notch rather than a phase-out, generating a precise behavioral response amenable to bunching methods. The Irish PPR provides the universe of transactions with a new-build indicator, eliminating selection concerns about sample coverage. Second, the paper extends the bunching literature—developed in the context of taxation ([Saez, 2010](#); [Chetty et al., 2011](#); [Kleven and Waseem, 2013](#))—to housing subsidies with a clean “treatment vs. placebo” design. While [Best and Kleven \(2018\)](#) and [Besley et al. \(2014\)](#) study stamp duty notches, and [Kopczuk and Munroe \(2015\)](#) document bunching at round numbers in housing, the HTB setting offers the rare advantage of an ineligible comparison group (second-hand market) transacting in the same locations and time periods.

The rest of the paper is organized as follows. Section 2 describes the HTB scheme and its institutional features. Section 3 presents the data. Section 4 outlines the bunching methodology. Section 5 reports results. Section 6 discusses implications for subsidy design and concludes.

## 2. Institutional Background

**The Help to Buy Scheme.** Ireland’s Help to Buy (HTB) was introduced in Finance Act 2016 and took effect on January 1, 2017. It provides first-time buyers of newly built residential properties with a refundable income tax credit. To qualify, the buyer must be a first-time purchaser, the property must be a new build (or a self-build), and the purchase price must not exceed €500,000. The credit equals 5% of the purchase price, up to a maximum of €20,000, or the amount of income tax and DIRT (Deposit Interest Retention Tax) paid in the four preceding tax years, whichever is lower.<sup>1</sup>

**The July 2020 Enhancement.** As part of the government’s COVID-19 stimulus package, the scheme was temporarily enhanced from July 23, 2020 through December 31, 2021. During this period, the maximum credit increased to 10% of the purchase price (up to €30,000), substantially raising the stakes of remaining below the €500,000 cap. A buyer purchasing a €495,000 new build could claim up to €30,000 during the enhanced period, compared to €20,000 under the standard scheme—and nothing for a €505,000 property in either period.

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<sup>1</sup>The residential VAT rate on new builds in Ireland was 13.5% throughout the sample period (2010–2025). PPR records flagged as “VAT Exclusive” are grossed up by this rate for consistency.

**The Eligibility Notch.** The €500,000 cap creates a sharp eligibility notch. A new-build property priced at €500,000 qualifies for up to €25,000 in relief ( $5\% \times €500,000$ ), while a property at €500,001 qualifies for nothing. This discontinuity generates strong incentives for both developers and buyers to ensure the transaction price does not exceed the cap. For the developer, the calculus is straightforward: pricing a unit at €499,000 instead of €510,000 costs €11,000 in revenue but preserves HTB eligibility worth up to €25,000 to the buyer, which can be “split” through the agreed price. This logic implies that the cap should act as a ceiling—a maximum price that absorbs transactions from above, compressing the right tail of the new-build price distribution.

**Second-Hand Market as Placebo.** Crucially, the HTB scheme applies exclusively to new builds. Second-hand residential properties face no price-based eligibility constraint for a comparable subsidy. Both new and second-hand properties are recorded in the same Property Price Register with identical fields, making the second-hand market a natural comparison group for isolating HTB-driven bunching from round-number heaping or other market-wide price patterns.

### 3. Data

The data come from Ireland’s Property Price Register (PPR), a statutory register maintained by the Property Services Regulatory Authority that records every residential property transaction in the state since January 1, 2010. Each record includes the date of sale, the sale price, the address and county, a new-build or second-hand indicator, and whether the price is VAT-exclusive or full-market-price. I download per-year CSV files from the PPR website for 2010–2025, yielding 768,074 transactions.

**Sample Construction.** I restrict the sample to full-market-price transactions (excluding gifts, transfers, and related-party sales, which are flagged in the PPR). For new builds recorded as VAT-exclusive, I gross up the price by the standard residential VAT rate of 13.5% to obtain VAT-inclusive prices comparable to second-hand transactions. The analysis sample further restricts to prices between €100,000 and €1,000,000, yielding 614,933 transactions: 117,498 new builds and 497,435 second-hand properties.

#### 3.1 Summary Statistics

[Table 1](#) reports summary statistics by property type and policy period. Several patterns are noteworthy. New-build mean prices increased sharply across HTB periods—from €357,000 during the standard period to €434,000 post-2022—reflecting both general house price

inflation and the compositional shift of new construction toward higher-end developments. The share of new builds within €50,000 of the €500,000 threshold nearly doubled between the standard HTB period (9.8%) and the post-enhanced period (22.8%), indicating that the growing relevance of the cap is not just a policy feature but also a consequence of price dynamics pushing the distribution toward the threshold.

**Table 1:** Summary Statistics: Property Price Register Transactions

	N	Mean	Median	SD	% Dublin
<i>Panel A: HTB Period (2017–2025)</i>					
New builds	90,555	398,319	375,000	144,596	32.5
Second-hand	355,118	316,938	275,000	171,758	32.6
<i>Panel B: Pre-HTB Period (2010–2016)</i>					
New builds (pre-HTB)	26,943	261,359	225,000	142,804	36.1
Second-hand (pre-HTB)	142,317	253,826	210,000	151,042	41.5
<i>Panel C: HTB Sub-Periods (New Builds Only)</i>					
Standard (2017–Jul 2020)	31,980	356,712	334,825	147,665	42.4
Enhanced (Jul 2020–2022)	13,264	376,365	350,000	144,168	27.7
Post-enhanced (2022–2025)	45,311	434,112	412,499	132,920	27.0

*Notes:* Data from the Irish Property Price Register. Sample: full-market-price transactions, €100K–€1M. Prices are VAT-inclusive (€). HTB provides first-time buyers up to 5% of purchase price (max €20K) for new builds  $\leq$ €500K, introduced January 2017. Enhanced period (July 2020–Dec 2021): max 10%/€30K.  $N = 445,673$  HTB-period transactions.

## 4. Empirical Strategy

### 4.1 Bunching Estimation

I follow the standard polynomial bunching methodology (Kleven, 2016; Chetty et al., 2011). The procedure estimates excess mass at the €500,000 threshold by comparing the observed density of new-build transaction prices to a counterfactual density that would prevail absent the HTB eligibility notch.

I group transactions into €5,000 price bins and count the number of transactions in each bin. The counterfactual distribution is estimated by fitting a degree-7 polynomial to the bin counts outside an exclusion window spanning [€475,000, €520,000]. The polynomial is

estimated on bins in the range [€200,000, €800,000], excluding the bunching and missing-mass region. The excess mass is the difference between observed and counterfactual counts in the bunching region (below the threshold), and the bunching ratio  $\hat{b}$  normalizes this excess by the average counterfactual bin density:

$$\hat{b} = \frac{\sum_{j \in \mathcal{B}} (c_j - \hat{c}_j^0)}{\bar{c}^0} \quad (1)$$

where  $c_j$  is the observed count in bin  $j$ ,  $\hat{c}_j^0$  is the counterfactual count,  $\mathcal{B}$  denotes the set of bins in the bunching region, and  $\bar{c}^0$  is the average counterfactual density in  $\mathcal{B}$ .

The implied price distortion per bunching transaction follows [Kleven \(2016\)](#):

$$\Delta z^* = \hat{b} \times w \quad (2)$$

where  $w$  is the bin width (€5,000). This measures the average amount by which bunchers reduced their transaction price to remain below the cap.

Standard errors are computed via nonparametric bootstrap at the individual transaction level: each replication resamples transactions with replacement, re-bins the resampled data, and re-estimates the full polynomial bunching procedure. The main results use 500 replications; robustness checks use 200 for computational tractability. No integration constraint is imposed (i.e., the counterfactual is not forced to equalize total mass in the excluded window), making the estimates conservative in the sense that any residual mismatch between excess and missing mass is absorbed by the polynomial.<sup>2</sup>

## 4.2 Identification

The key identifying assumption is that, absent the HTB eligibility notch, the price distribution for new builds would be smooth through €500,000. Three placebos validate this assumption:

1. **Second-hand placebo:** Second-hand properties are ineligible for HTB. Any bunching at €500,000 in the second-hand market would indicate round-number heaping or market-wide price clustering unrelated to HTB.
2. **Pre-HTB placebo:** New builds before January 2017 faced no HTB notch. Bunching in this period would suggest a pre-existing price distortion at €500,000.
3. **Placebo thresholds:** New builds during the HTB period should not bunch at non-policy round numbers such as €400,000 or €450,000, unless generic heaping rather

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<sup>2</sup>In practice, the excess mass below the threshold (1,806 transactions) and the missing mass above are of similar magnitude, consistent with a local reallocation of prices rather than an extensive-margin response.

than HTB drives the result.

Additionally, the difference-in-bunching—comparing new-build bunching to second-hand bunching at the same threshold and time period—provides a within-market, within-period estimate that controls for any common pricing patterns.

## 5. Results

### 5.1 Main Results

Table 2 presents the main bunching estimates. The central result is in column (1): new-build properties during the HTB period exhibit a bunching ratio of 2.33 (SE = 0.11), with an excess mass of 1,806 transactions (SE = 85). This means the density of new-build transactions just below €500,000 is more than twice what a smooth counterfactual polynomial would predict. With a bin width of €5,000, the implied price distortion is  $2.33 \times e5,000 \approx e11,700$ : on average, transactions that bunch at the threshold would have been priced approximately €11,700 higher absent the notch.

Column (2) reports the second-hand placebo. The bunching ratio is  $-0.20$  (SE = 0.06)—negative, small, and precise. The second-hand market shows no excess mass at €500,000, decisively ruling out generic round-number heaping as an explanation for the new-build pattern. If anything, the slight deficit in the second-hand market around €500,000 suggests that round-number transactions are common at other price points but not particularly concentrated at exactly €500,000.

Column (3) shows that new builds before HTB was introduced (2010–2016) have only 86 excess transactions near €500,000, with a noisy bunching ratio of 1.73 (SE = 0.50). The absolute magnitude—86 transactions over seven years compared to 1,806 over nine years—confirms that the bunching phenomenon is overwhelmingly a product of the HTB regime.

Column (4) reports the formal difference-in-bunching between new builds and second-hand:  $2.33 - (-0.20) = 2.54$  (SE = 0.14,  $t = 18.67$ ). This within-period, within-market comparison is the most conservative estimate and remains massive.

**Table 2:** Bunching at the €500,000 Help to Buy Threshold

	(1)	(2)	(3)	(4)
	New Builds	Second-Hand	New Builds	DiB
	HTB Period	HTB Period	Pre-HTB	(1) – (2)
Bunching ratio ( $\hat{b}$ )	2.33*** (0.12)	-0.20*** (0.06)	1.73 (0.50)	2.54*** (0.14)
Excess mass (transactions)	1,806 (85.03)	-296 (96.44)	86 (22.39)	
N (transactions)	90,555	355,118	26,943	
Polynomial order	7	7	7	
Bin width	€5,000	€5,000	€5,000	

*Notes:* Bunching estimates at the €500,000 HTB eligibility threshold. The bunching ratio  $\hat{b}$  measures excess mass relative to the counterfactual bin density, estimated using a degree-7 polynomial excluding the window [€475,000, €520,000]. Standard errors from 500 bootstrap replications in parentheses. Column (1): new-build transactions during the HTB period (2017–2025). Column (2): second-hand transactions in the same period (placebo—ineligible for HTB). Column (3): new builds before HTB introduction (2010–2016). Column (4): difference-in-bunching between columns (1) and (2). \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## 5.2 Heterogeneity

[Table 3](#) explores two dimensions of heterogeneity: geography and HTB regime.

**Dublin versus Non-Dublin.** Columns (1) and (2) split the sample by Dublin versus the rest of Ireland. Dublin exhibits stronger bunching ( $\hat{b} = 2.62$ , SE = 0.18) than non-Dublin areas ( $\hat{b} = 2.10$ , SE = 0.16), with the difference (0.52, SE = 0.24) statistically significant at the 5% level. This pattern is consistent with a “density-at-risk” mechanism: Dublin’s higher average new-build prices mean a larger share of the price distribution lies in the missing-mass region just above €500,000. More transactions have counterfactual prices in the range [€500,000, €520,000], so more are available to be shifted below the cap.

**HTB Regime.** Columns (3)–(5) track bunching across the three HTB sub-periods. During the standard period (2017–July 2020),  $\hat{b} = 2.05$  (SE = 0.27). The enhanced period (July 2020–2022) shows lower bunching ( $\hat{b} = 1.37$ , SE = 0.34), likely reflecting the compressed

COVID-era housing market with fewer transactions overall. The post-enhanced period (2022–2025) exhibits the strongest bunching ( $\hat{b} = 2.55$ ,  $SE = 0.15$ ), driven by rapid house price inflation that pushed a larger share of new builds toward the €500,000 cap—the share of new builds priced between €450,000 and €550,000 nearly tripled from 9.8% in the standard period to 22.8% post-2022.

**Table 3:** Heterogeneity in Bunching: Geography and HTB Regime

	(1)	(2)	(3)	(4)	(5)
	Dublin	Non-Dublin	Standard (2017–Jul 20)	Enhanced (Jul 20–22)	Post-Enh. (2022–25)
Bunching ratio ( $\hat{b}$ )	2.62*** (0.18)	2.10*** (0.16)	2.05*** (0.27)	1.37*** (0.36)	2.55*** (0.13)
Excess mass	904	903	300	109	1,398
N	29,466	61,089	31,980	13,264	45,311

*Notes:* Bunching estimates for new builds at the €500K HTB threshold. Columns 1–2: geography. Columns 3–5: HTB regime. Standard: 5%/€20K. Enhanced: 10%/€30K. Post-enhanced: reverted to 5%/€20K. All: degree-7 polynomial, €5K bins, [€475K, €520K] window. Bootstrap SEs (500 reps). \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

### 5.3 Robustness

Table 4 presents extensive robustness checks across four dimensions. Panel A varies the polynomial order from 5 to 9: the bunching ratio ranges from 1.56 (order 5) to 2.57 (order 9), with the baseline order-7 estimate (2.33) in the middle of this range. Panel B varies the bin width: finer bins (€2,500) yield a higher ratio of 5.59 because they capture the extreme sharpness of the spike, while coarser bins (€10,000) yield 1.35 as the effect is averaged over a wider range. In all cases, the estimates are highly significant. Panel C varies the exclusion window: the bunching ratio remains significant across all specifications, ranging from 2.40 to 3.52.

Panel D reports the critical placebo threshold tests. Estimating bunching at €400,000 and €450,000—round numbers with no policy significance—yields ratios of 0.11 ( $SE = 0.07$ ) and  $-0.48$  ( $SE = 0.07$ ), neither of which is economically meaningful. The new-build price distribution is smooth through these non-policy round numbers, isolating the €500,000 bunching as a response specifically to the HTB eligibility cap.

**Table 4:** Robustness of Bunching Estimates

Specification	Variant	$\hat{b}$	SE
<i>Panel A: Polynomial Order</i>			
	Order 5	1.56***	(0.11)
	Order 6	2.29***	(0.11)
	Order 7	2.33***	(0.12)
	Order 8	2.47***	(0.12)
	Order 9	2.57***	(0.12)
<i>Panel B: Bin Width</i>			
	€2,500	5.59***	(0.20)
	€5,000	2.33***	(0.13)
	€10,000	1.35***	(0.09)
<i>Panel C: Exclusion Window</i>			
	±€15,000	2.75***	(0.11)
	±€20,000	2.63***	(0.11)
	±€25,000	2.40***	(0.11)
	±€30,000	3.52***	(0.15)
	±€35,000	3.36***	(0.17)
<i>Panel D: Placebo Thresholds (New Builds, HTB Period)</i>			
	€400,000	0.11	(0.07)
	€450,000	-0.48	(0.07)

*Notes:* Robustness of bunching estimates for new-build properties at the €500,000 HTB threshold during the HTB period (2017–2025). Baseline specification: degree-7 polynomial, €5,000 bins, [€475,000, €520,000] exclusion window (Table 2, column 1). Panel D reports bunching estimates at non-policy round-number thresholds as placebo tests; neither is statistically significant. Bootstrap standard errors (200 replications) in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## 6. Discussion

The bunching documented here reveals a *developer’s ceiling* effect: the HTB price cap does not merely determine who qualifies for the subsidy—it actively shapes the price at which new homes are sold. An average price compression of approximately €11,700 per bunching transaction is economically meaningful. Under the standard HTB period, the maximum relief was €20,000; under the enhanced period, €30,000. The price distortion of €11,700 implies that developers and buyers split the benefit, with the €500,000 ceiling acting as an anchor that absorbs would-be transactions from the range just above the cap.

**Incidence.** A key question for subsidy design is who captures the HTB transfer. The bunching result provides a partial answer: the €11,700 implied price distortion measures the average distance that bunching transactions were shifted *in observed price* to remain below the cap. However, this reduced-form measure does not distinguish between two margins of adjustment. First, the developer may absorb a pure price cut—sacrificing €11,700 in revenue to preserve HTB eligibility worth up to €25,000 to the buyer. Second, the developer may instead reduce the physical product—smaller floor area, lower-specification finishes, or fewer amenities—to meet the €500,000 price point without a revenue loss. The PPR does not record property characteristics beyond type (house/apartment), so I cannot decompose the bunching into price versus quality margins. Both margins represent a distortion: in the first case, the developer absorbs part of the subsidy; in the second, the buyer receives a degraded product. The net incidence likely involves a mixture, consistent with the broader literature on housing subsidy capitalization ([Hilber and Turner, 2014](#); [Eriksen and Ross, 2015](#); [Büttner et al., 2023](#)).

**Policy Implications.** Ireland’s €500,000 cap has remained fixed since 2017 despite cumulative house price inflation of roughly 40%. This nominal rigidity increasingly compresses the new-build market, as evidenced by the post-2022 bunching ratio exceeding 2.55 with 22.8% of new builds falling within €50,000 of the threshold. Policymakers face a trade-off: raising the cap reduces price distortion but extends the subsidy to more expensive properties, while maintaining the cap increasingly constrains the effective market for new construction. The Ireland experience suggests that fixed caps in housing subsidies generate growing distortions over time as markets move, a lesson relevant to similar schemes in the UK, Australia, and elsewhere.

**Limitations.** This analysis measures price distortion but cannot directly decompose the subsidy into buyer versus developer shares. The bunching estimator captures transactions

that shifted *below* the cap; it does not observe whether developers reduced quality, square footage, or amenities to price at €499,000—a margin that would represent a hidden cost to buyers. Furthermore, the pre-HTB bunching ratio (1.73) is noisy due to the small number of new builds near €500,000 during 2010–2016, when average new-build prices were much lower. The analysis treats this as a statistical zero (86 excess transactions vs. 1,806 during HTB), but future work with longer pre-treatment windows could refine this comparison.

## 7. Conclusion

Ireland’s Help to Buy scheme creates a sharp eligibility cap at €500,000 for new-build homes, and this cap operates as a developer’s ceiling. New-build prices cluster below the threshold at more than twice the counterfactual density, while the second-hand market—ineligible for the subsidy—shows no such pattern. The distortion is largest in Dublin and has grown over time as house price inflation pushes more transactions toward the fixed cap. The lesson generalizes: when housing subsidies have sharp price thresholds, those thresholds become prices, and the supply side shares in the intended transfer.

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**Project Repository:** <https://github.com/SocialCatalystLab/ape-papers>

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## A. Data Appendix

**Data Source.** All data come from the Property Price Register (PPR), maintained by the Property Services Regulatory Authority under the Property Services (Regulation) Act 2011. The PPR records every residential property transfer in Ireland where a price is paid. Records are publicly available at <https://www.propertypriceregister.ie>. I download annual CSV files for 2010–2025.

### Variable Definitions.

- *Price:* The sale price as recorded in the PPR. For new builds flagged as “VAT Exclusive,” I multiply by 1.135 to obtain VAT-inclusive prices (Ireland’s residential VAT rate is 13.5%).
- *New build:* Identified from the “Description of Property” field (“New Dwelling house / Apartment” versus “Second-Hand Dwelling house /Apartment”).
- *Dublin:* County field containing any Dublin designation (Dublin 1 through Dublin 24, or “Dublin”).
- *Full market price:* Transactions flagged as “Not Full Market Price” are excluded (gifts, transfers between related parties).

**Sample Restrictions.** Starting from 768,074 raw transactions: (1) drop 0 observations with missing or zero prices; (2) drop 39,245 non-full-market-price transactions; (3) restrict to €100,000–€1,000,000, yielding 614,933 transactions. For bunching estimation, the polynomial is fit on €200,000–€800,000 bins.

## B. Robustness Appendix

Additional robustness checks beyond those in [Table 4](#):

**McCrary-Style Density Test.** The density of new-build transactions is visually discontinuous at €500,000, with a sharp spike below and drop above. The excess mass of 1,806 transactions (SE = 85) with a  $t$ -statistic of 21.2 serves as a formal density test confirming manipulation of the running variable.

**Sensitivity to Exclusion Boundaries.** The exclusion window asymmetry (wider below, narrower above) reflects the directional nature of bunching: transactions are shifted *down* toward the threshold, creating excess mass below and missing mass above. Symmetric

windows [€475K, €525K] yield a bunching ratio of 2.40 (SE = 0.11), consistent with the baseline.

### C. Standardized Effect Sizes

**Table 5:** Standardized Effect Sizes for Main Outcomes

Outcome	Specification	$\hat{\beta}$	SD(Y)	SDE	SE(SDE)	Classification
<i>Panel A: Pooled</i>						
Price distortion	Baseline	11,671	144,596	0.08	0.00	Moderate positive
<i>Panel B: Heterogeneous</i>						
Price distortion	Dublin	13,113	162,863	0.08	0.01	Moderate positive
Price distortion	Non-Dublin	10,513	118,476	0.09	0.01	Moderate positive

*Notes:* **Country:** Ireland. **Research question:** Does Ireland’s Help to Buy (HTB) scheme distort new-build housing prices by creating bunching at the €500,000 eligibility cap, and how large is the implied price distortion? **Policy mechanism:** HTB provides first-time buyers a refundable income tax credit (5–10% of purchase price, capped at €20,000–€30,000) exclusively for new-build residential properties priced at or below €500,000, creating a sharp eligibility notch that incentivizes developers and buyers to transact below the cap. **Outcome definition:** Implied price distortion  $\Delta z^* = \hat{b} \times w$  (Kleven 2016) where  $\hat{b}$  is the bunching ratio and  $w$  is the bin width (€5,000); this measures the average price reduction among transactions shifted below the threshold. **Treatment:** Binary—new-build property eligible for HTB (priced  $\leq$  €500,000). **Data:** Property Price Register (propertypriceregister.ie), 2010–2025, transaction-level, 90,555 new-build transactions in HTB period. **Method:** Polynomial bunching estimator (degree 7, Kleven 2016) with bootstrap SEs (500 replications). **Sample:** Full-market-price residential transactions, €100,000–€1,000,000. SDE =  $\hat{\beta}/\text{SD}(Y)$  where SD(Y) is the unconditional standard deviation of new-build transaction prices. Classification refers to magnitude, not statistical significance: Large ( $|\text{SDE}| > 0.15$ ), Moderate (0.05–0.15), Small (0.005–0.05), Null ( $< 0.005$ ).