The Numbers Game: Effects of Listing Pricing Format in Housing Bargaining

[1]Haaris Mateen, [2]Franklin Qian, [3]Ye Zhang, [4]Tianxiang Zheng

[1]University of Houston (Bauer), [2]UNC Kenan-Flagler, [3]Stockholm School of Economics, [4]University College London

Abstract

This study examines how listing price formats affect bargaining outcomes for home sellers and buyers in the U.S. housing market.

- Precise prices (e.g., $351,432) reflect informed sellers and yield higher final prices.
- Charm prices (e.g., $349,900) are cheap-talk signals: sell faster but at slightly lower prices.
- Round prices (e.g., $350,000) signal inexperienced or uninformed sellers, attract more aggressive counteroffers.

Key contributions:

- First national-scale, data-driven analysis of effects of pricing formats on bargaining outcomes in the U.S. housing market over 20 years.
- A model to explain why sellers use different pricing formats and provide supporting evidence.

Data

- **Multiple Listing Service (MLS)**: US nationwide sample, 76,757,691 property listings between 2000 and 2022.
- **Deeds**: US nationwide records of property ownership transfers, 460,479,115 deed records
- **Redfin**: confidential data from Redfin, 314,829 counteroffers from US home buyers

Rightmost Digits of Prices are Unevenly Distributed

(a) Seller's Listing Price

(b) Share of Special Prices
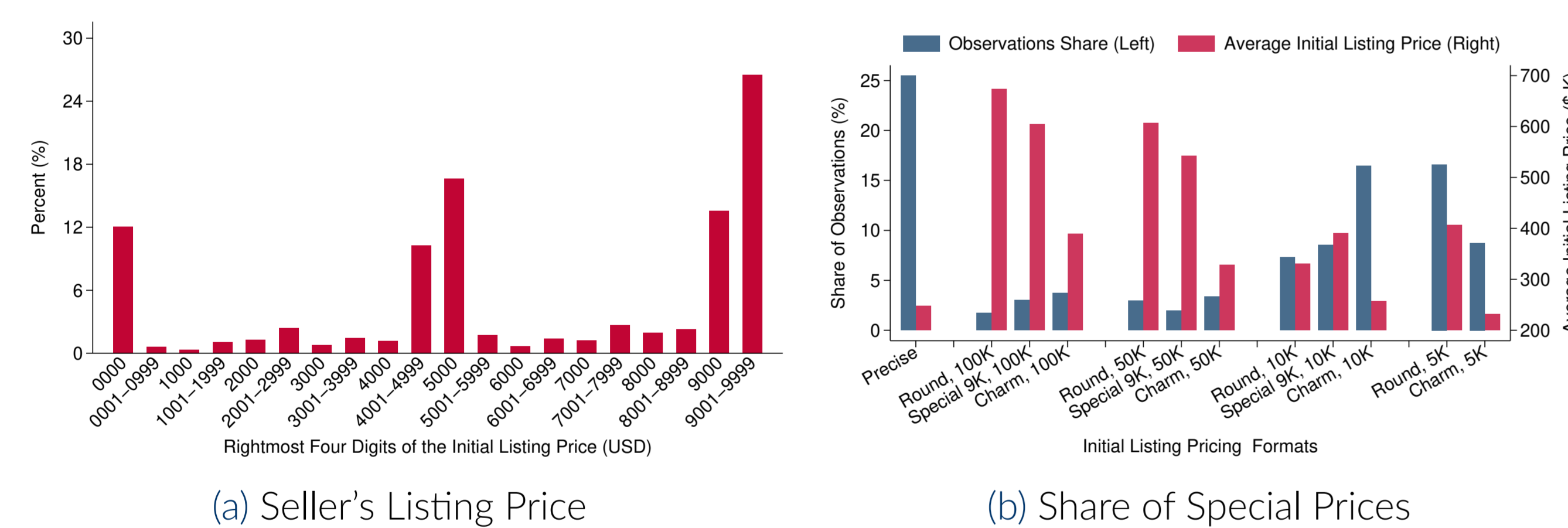
Mutually Exclusive Pricing Formats: Data-Driven Definitions

	100K	50K	10K	5K
Round	400,000	450,000	440,000	455,000
Special 9K	399,000	449,000	439,000	N/A
Charm	399,900-399,999	449,900-449,999	439,900-439,999	454,900-454,999
Precise	All other prices, e.g., $451,320			

Theoretical Framework

We develop a model to examine why home sellers adopt different listing pricing formats and how they impact bargaining outcomes. Listing prices convey price level p_l and a signal s about the seller's type. There are three types of signals (1) signals from normal sellers (type 1), (2) signals from impatient sellers (type 2), and (3) signals from uninformed sellers (type 3). With different price listing formats,

- Type 1 sellers signal (s_1) that p_l is at their reservation value.
- Type 2 sellers signal (s_2) a willingness to accept lower prices for quicker sales (i.e., s_2 the cheap talk hypothesis)
- Type 3 sellers signal (s_3) their lack of information, indicating a need for price discovery by buyers.

Theoretical Framework

Under mild conditions, a truth-telling equilibrium exists with the following predictions: a. (Prices) type 1 > 2 > 3. b. (DOM) type 1 > 2,3 c. (Information/Sophistication) Greater information reduces the use of Type 3 signals.
Empirically, type 1 → precise price, type 2 → charm price, special 9K, type 3 → round price.

Empirical Design

Determinants of Price Formats

$$PF_{i,t} = D_{i,t}\beta + g(p_{i,t}) + X_{i,t}\gamma + \tau_{l(i),t} + \alpha_i + \varepsilon_{i,t}$$

Consequences of Price Formats

$$Y_{i,t} = PF_{i,t}\theta + g(p_{i,t}) + X_{i,t}\gamma + \tau_{l(i),t} + \alpha_i + \varepsilon_{i,t}$$

- $Y_{i,t}$: Outcome of listing i initially listed on date t
- $PF_{i,t}$: Vector of price format dummies
- $D_{i,t}$: Determinants of pricing formats
- $g(p_{i,t})$: Spline of initial listing price
- $X_{i,t}$: Time-varying property characteristics controls
- $\tau_{l(i),t}$: Location-time FE
- α_i: Property FE

Empirical Results

a. Why do sellers use charm prices? Cheap Talk hypothesis.

- Adopting charm price aligns with the **Cheap Talk** hypothesis: it speeds up the transaction at the cost of a lower final sales price
- A charm price at 100K level is associated with a 0.11 p.p. lower sales price ($223 less) but a 2.16-day faster transaction.

(a) Log Sales Price (Ctrl Mean = $223,894)

(b) Days on Market (Ctrl Mean = 60.82)
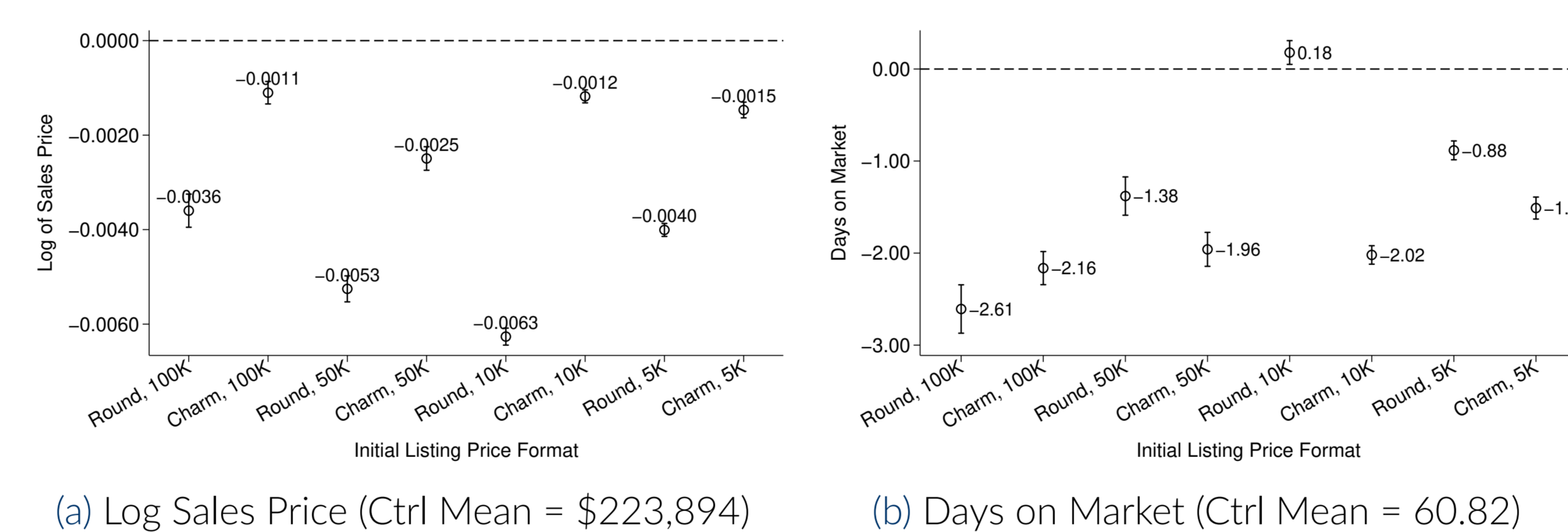
b. Why do sellers use round prices? Lack of Information Hypothesis.

- Sophisticated/experienced sellers are less likely to use round listing prices.

	Precise Listing	Round Listing	Charm Listing
	(1)	(2)	(3)
Short-Term Investor Seller	0.0890***	-0.1162***	0.0479***
	(0.0003)	(0.0003)	(0.0003)
Long-Term Investor Seller	-0.0011	-0.0282***	0.0362***
	(0.0010)	(0.0011)	(0.0011)
Obs.	38,768,866	38,768,866	38,768,866
Control Mean	0.23	0.31	0.32
Zipcode-Year-Month FE	✓	✓	✓
Adjusted R^2	0.13	0.11	0.10

Note: Results are similar when defining a seller's experience as either the number of properties sold in the past or the number of days since their most recent transaction as a seller.

Empirical Results

- Sellers tend to use round listing prices when market-level information is less available.

	Precise Listing	Charm Listing	Round Listing
	(1)	(2)	(3)
Standardized Log of Sales Volume (in the previous month)	0.0089***	0.0071***	-0.0136***
	(0.0002)	(0.0002)	(0.0002)
Obs.	56,561,619	56,561,619	56,561,619
Mean Outcome	0.249	0.327	0.286
Zipcode FE + Year-Month FE + Property FE	✓	✓	✓
Adjusted R^2	0.173	0.170	0.180

Note: The monthly sales volume at the zip-code level measures market-level information. When the level of information increases from p25 to p75, the share of sellers using round prices decreases by 2 p.p., ≈ 7% of the share using round prices

- Additional Evidence from Buyers' Responses

Buyers' responses to round listing prices reflect their interpretation of the signal. Rational, informed buyers may exploit uninformed sellers. Using counteroffer-level data from Redfin, we find that

1. Experienced buyers are more likely to match with properties listed at round prices.
2. Buyers make more aggressive counteroffers for round listing prices, perceiving them as *weaker anchors*.

Conclusion & Future Plan

We provide a novel and comprehensive picture of listing price formats in the U.S. housing market and a theoretical framework explaining their usage.

- Explore heterogeneous effects of pricing formats across varying market conditions.
- Refine market-level information measures to incorporate sales comparables.

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Contact Information

1. Haaris Mateen: C.T. Bauer College of Business, University of Houston. Email: hmateen@bauer.uh.edu
2. Franklin Qian: Kenan-Flagler Business School, The University of North Carolina at Chapel Hill. Email: franklin_qian@kenan-flagler.unc.edu
3. Ye Zhang: Finance Department, Stockholm School of Economics. Email: Ye.Zhang@hhs.se
4. Tianxiang Zheng: Department of Economics, University College London. Email: Tianxiang.zheng.22@ucl.ac.uk