"Betting on the House: Subjective Expectations and Home Sales"

by Nicolas Bottan and Ricardo Perez-Truglia (June 2020)

Discussed by Linh T. Tô, Boston University

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Summary

Important topic

Housing bubbles: Home prices seem overvalued again

Source: Bloomberg, 14 November 2020

Important question

What is the role house price expectations?

- “The first half of the 2000s saw not only the largest housing boom in postwar U.S. history, but also new research that introduced an explicit role for housing in macroeconomics. [...] As a result, housing now routinely receives special attention in macroeconomic discussions.” (Piazzesi and Schneider 2016)

- “A major outstanding puzzle is the volatility of house prices—including but not only over the recent boom-bust episode. Rational expectations models to date cannot account for house price volatility. [...] A promising agenda for research is to develop models of expectation formation that can be matched to data on both market outcomes and survey expectations.” (Piazzesi and Schneider 2016)

Simple and direct methodology

Randomized control trial to capture causal effects instead of relying on modeling assumptions: Can a (randomly assigned) shock to house-price beliefs change home-sale behavior?

Armona, Fuster, Zafar 2019

- *Methodology:* RCT manipulating home-price beliefs, only in the lab
- *Outcomes:* (1) How home-price expectations are updated: extrapolation or mean reversion? and (2) Behavioral elasticity: How reported expectations translate into housing investment decisions?

This paper

- *Methodology:* RCT in the lab, and also RCT in the field for home-sellers with active listings on the market in 36 counties (as of May 2019)
- *Outcomes:* (1) Whether being shown a higher indicator of growth leads to a longer duration of the home on the market? and (2) Behavioral elasticity: dividing the ITT by average expectation change in the lab

Simple and direct methodology

Randomized control trial to capture causal effects instead of relying on modeling assumptions: Can a (randomly assigned) shock to house-price beliefs change home-sale behavior?

Armona, Fuster, Zafar 2019

- *Methodology:* Provide subjects recent home-price growth information, elicit expectations and incentivized portfolio investment choices
- *Outcomes:* (1) On average, 1 pp underestimation of past growth leads to 0.20 pp increase in expectation, with substantial heterogeneity and (2) 1 pp increase in one-year growth expectation leads to 3.1 pp increase in housing share in portfolio

This paper

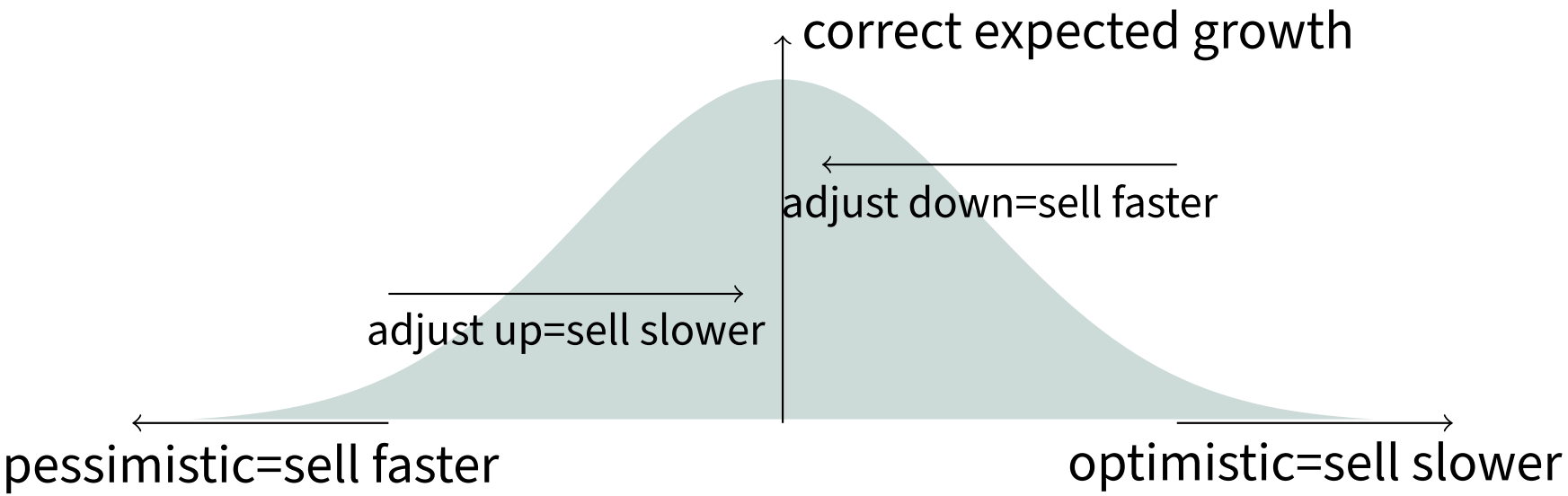
- *Methodology:* Mail active home-sellers some (publicly available) info about their market: past 1- or 2-year growth rate, or one of 3 forecasts
- *Outcomes:* (1) 1 pp higher growth measure causes a 0.33 pp drop in the probability that the property is sold within 6 months and (2) Behavioral elasticity: 1 pp increase in one-year growth expectation caused selling within 6 mo to decrease by 2.45 pp

Unpacking the behavioral elasticity

Intent-to-treat

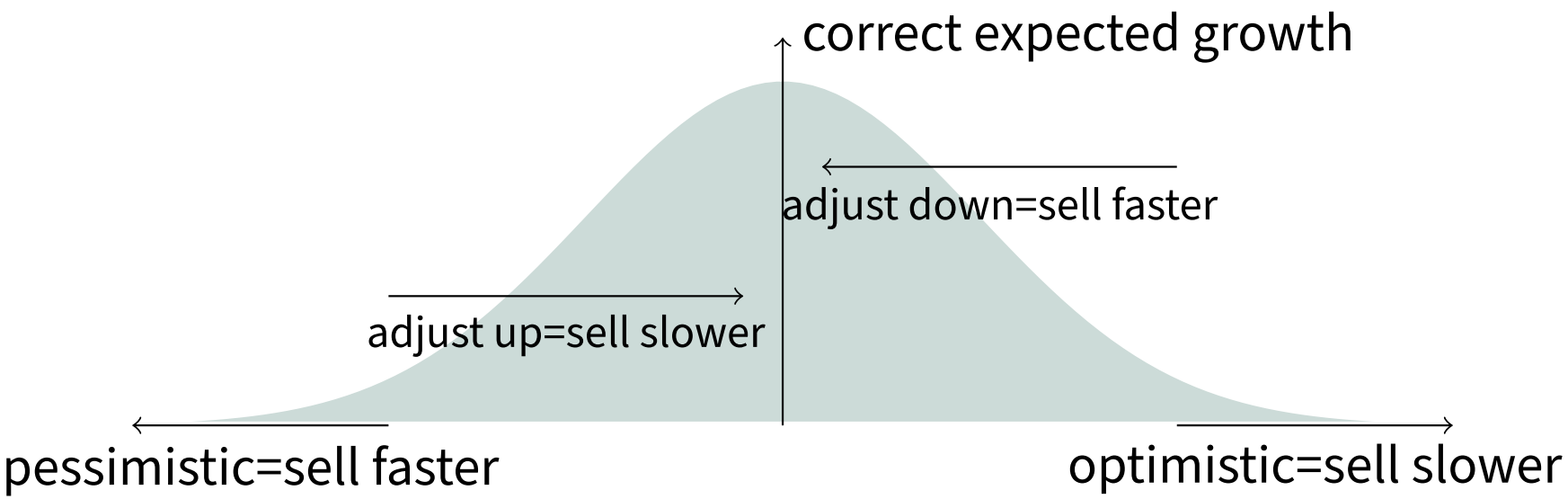
Are home-sellers pessimistic about the market?

- If sellers are correct on average about expected growth, then the average impact of (objective) information should be 0
- Information leading to an increase in the average duration to sale implies that sellers on average are **more pessimistic** about the market compared to the objective growth measures that are shown to them



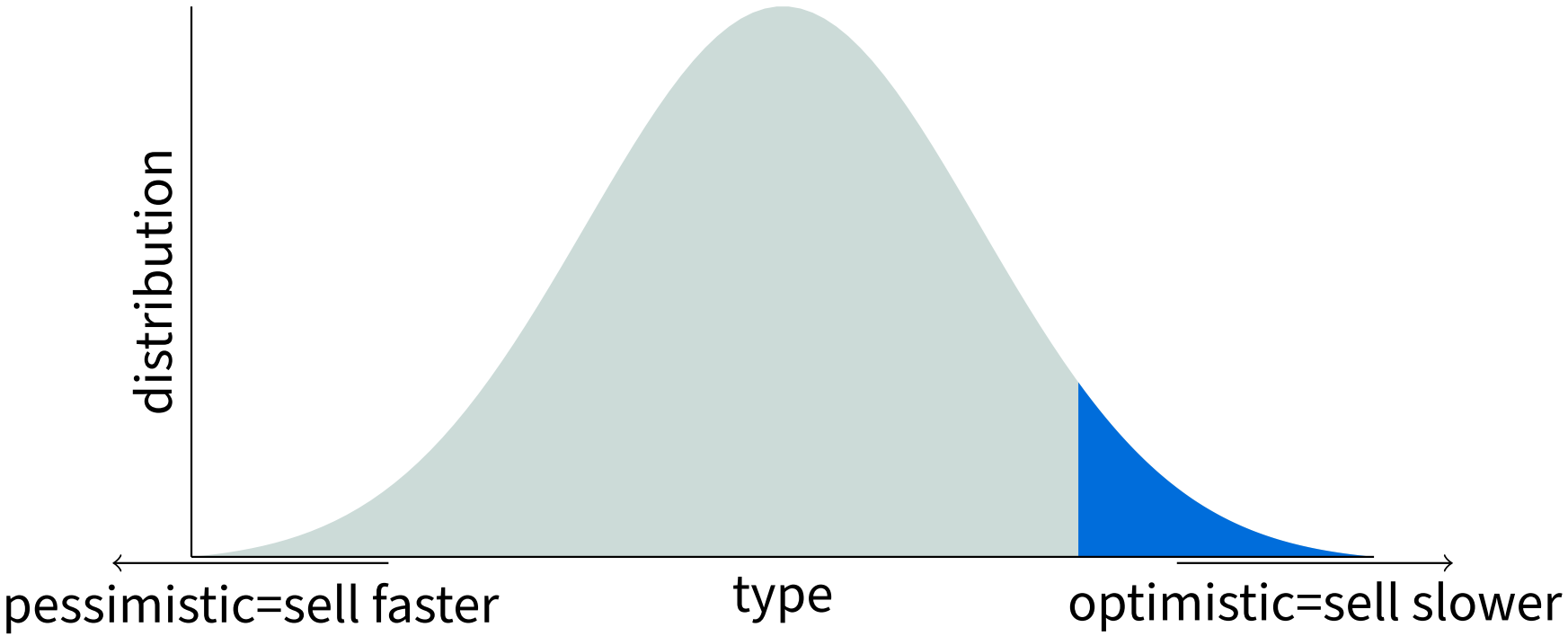
Are home-sellers pessimistic about the market?

- Pessimistic on average: Consistent with Armona et al. 2019—stated prior $<$ true past growths
- Pessimistic sellers: **Undersold result!** Very interesting to see this for the sample of home-sellers: They are selling because they think the market is more optimistic than they are.



Accounting for attrition—Intent-to-Treat

Control group:



- Selling faster if more pessimistic about the market (get out quickly)
- Optimistic types do not want to sell this year and would rather drop out of the market to avoid costs or be inferred as a “lemon”

Accounting for attrition—Intent-to-Treat

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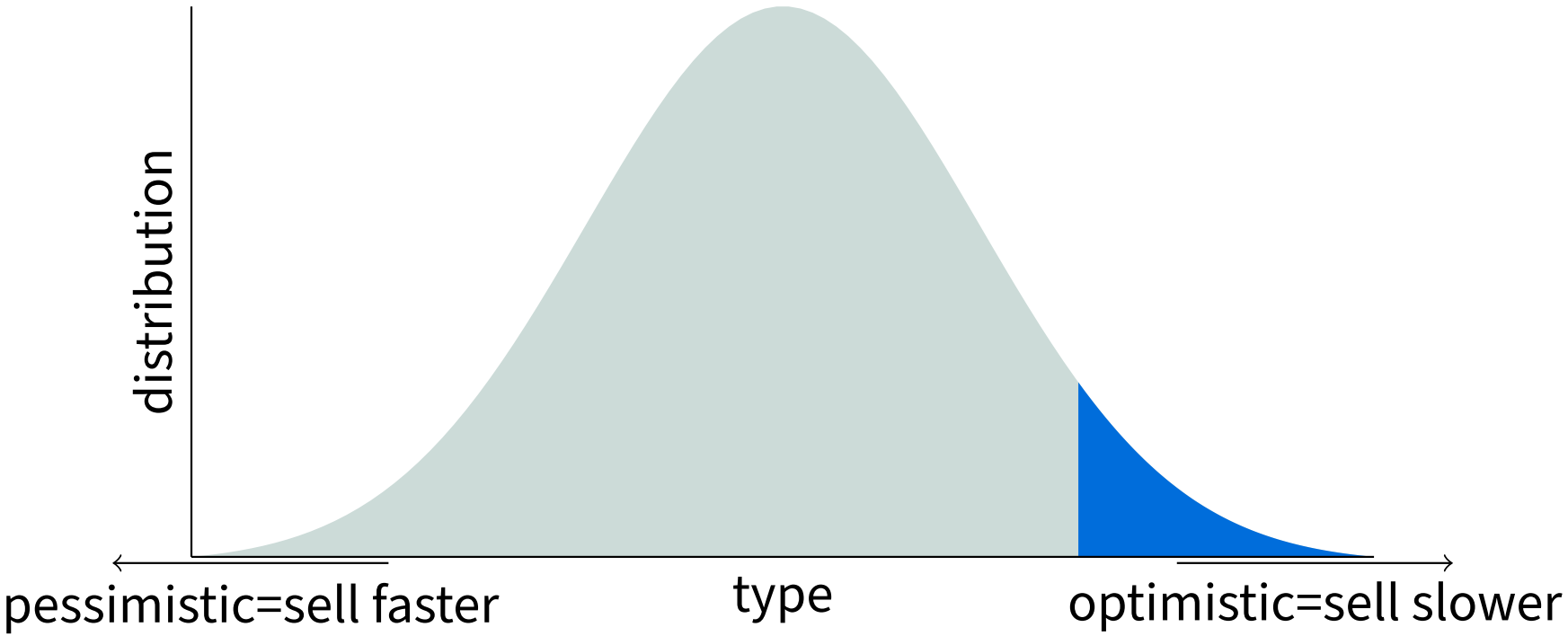

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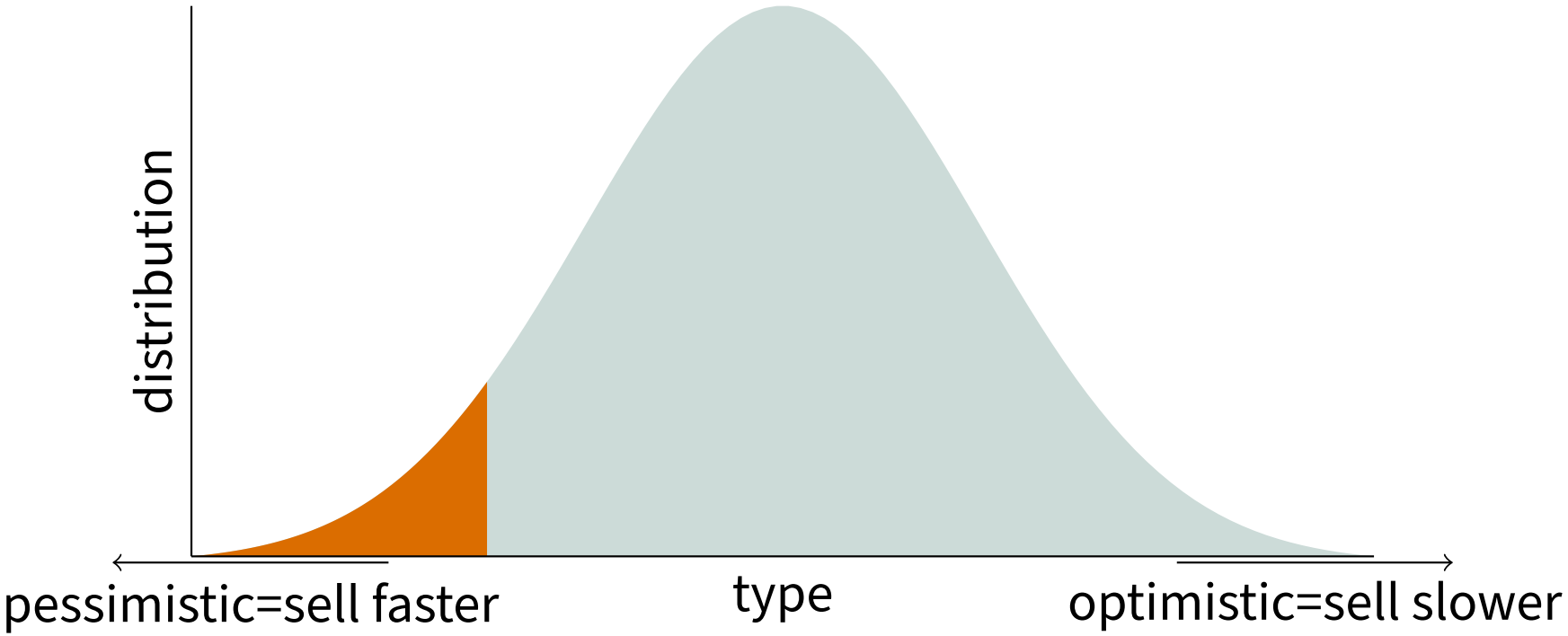
Accounting for attrition—Intent-to-Treat

Treatment group:



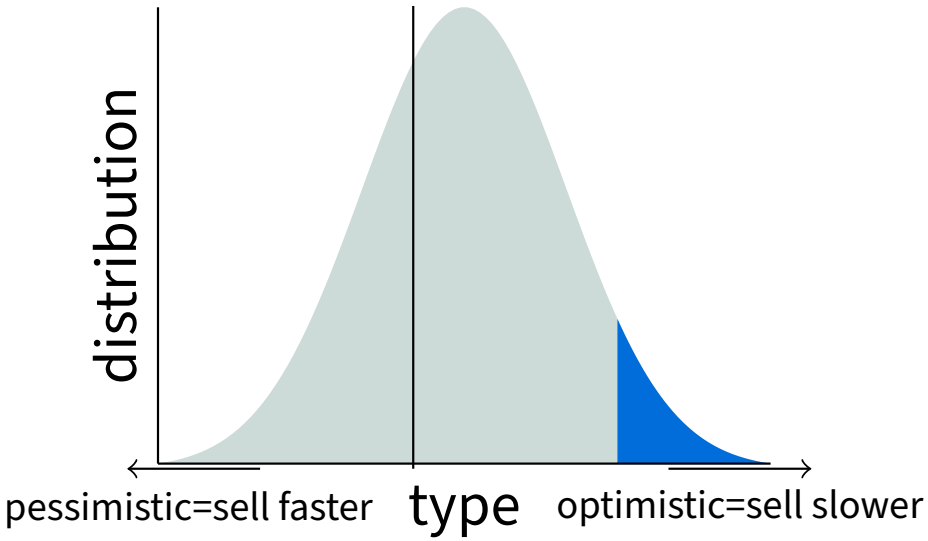
- Optimistic type revise expectations downwards and stay in market
- Pessimistic types was going to sell quickly, but revise expectations upwards the most (Armona et al. 2019), now dropping out of the market

Accounting for attrition—Intent-to-Treat

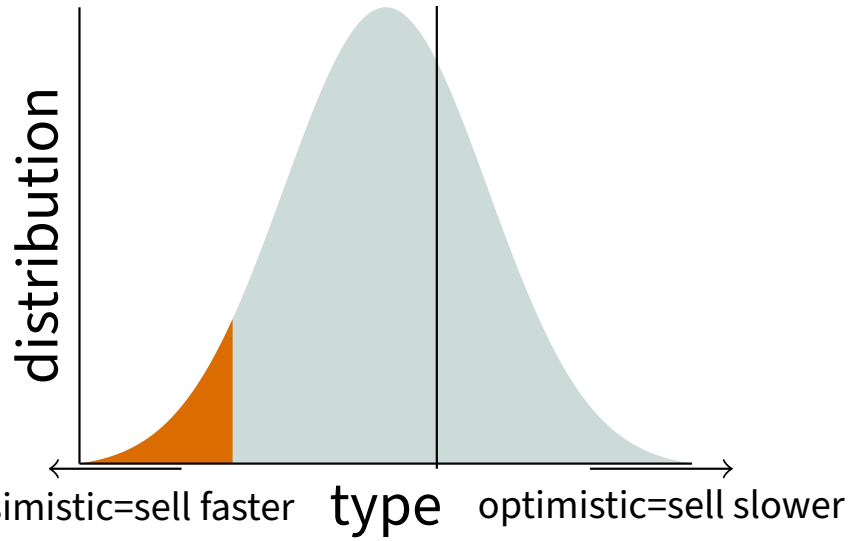
Even if the rate of attrition is the same across groups:

- Treatment can increase the observed average sale duration by changing the composition of attriters

Control group:



Treatment group:

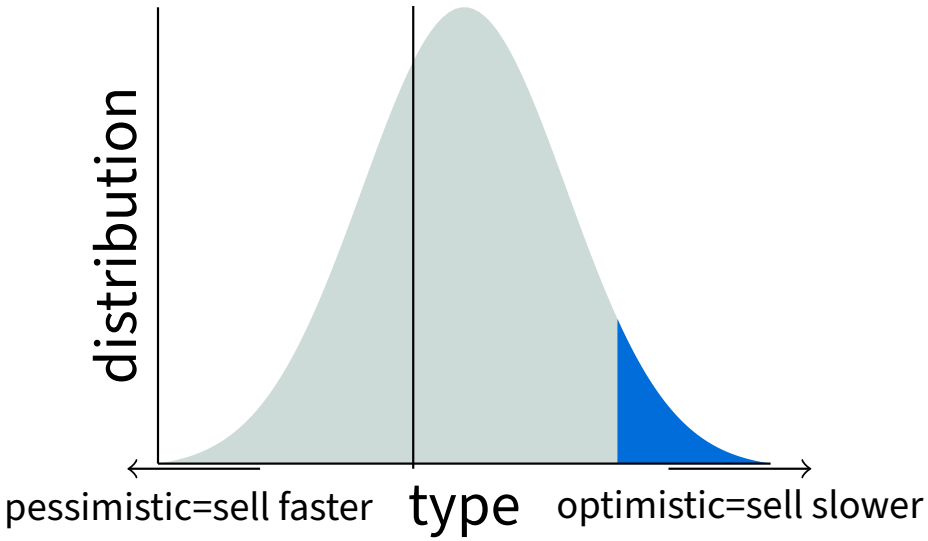


Accounting for attrition—Intent-to-Treat

Even if the rate of attrition is the same across groups:

- The behavioral response could be entirely on the extensive margin (the decision to stay in the market or not)

Control group:



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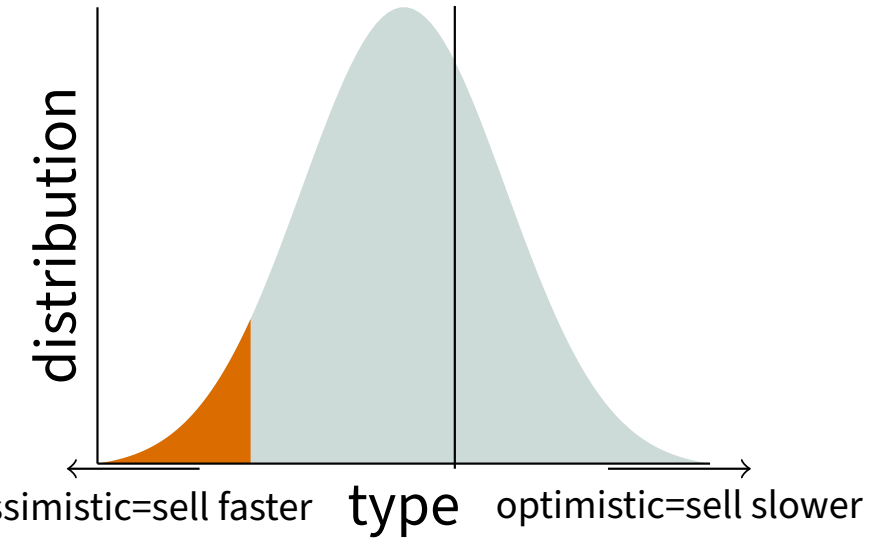
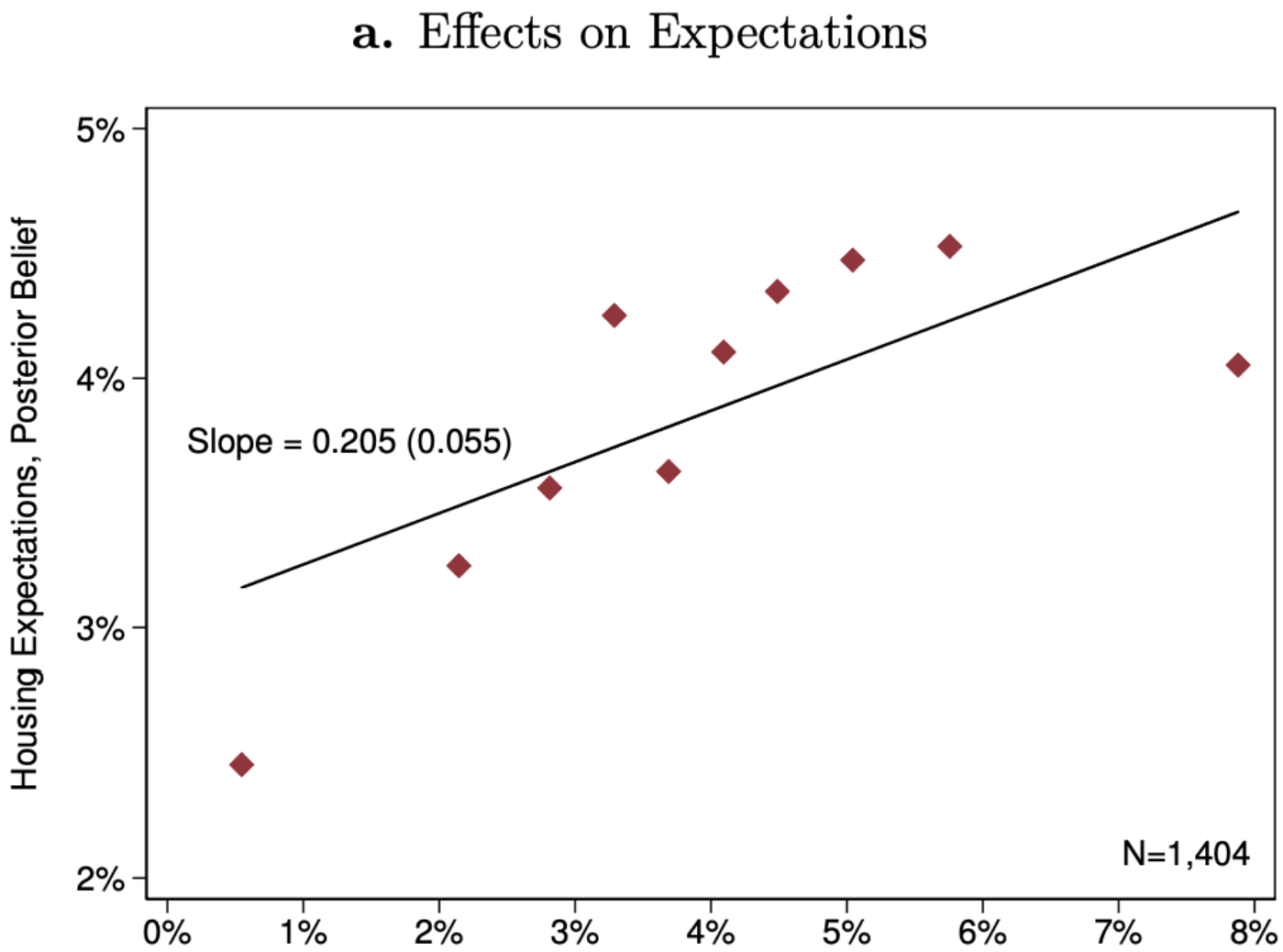


Unpacking the behavioral elasticity

Expectation adjustment response

A higher signal can result in a lower posterior?



Source: Figure 6.a. by the authors

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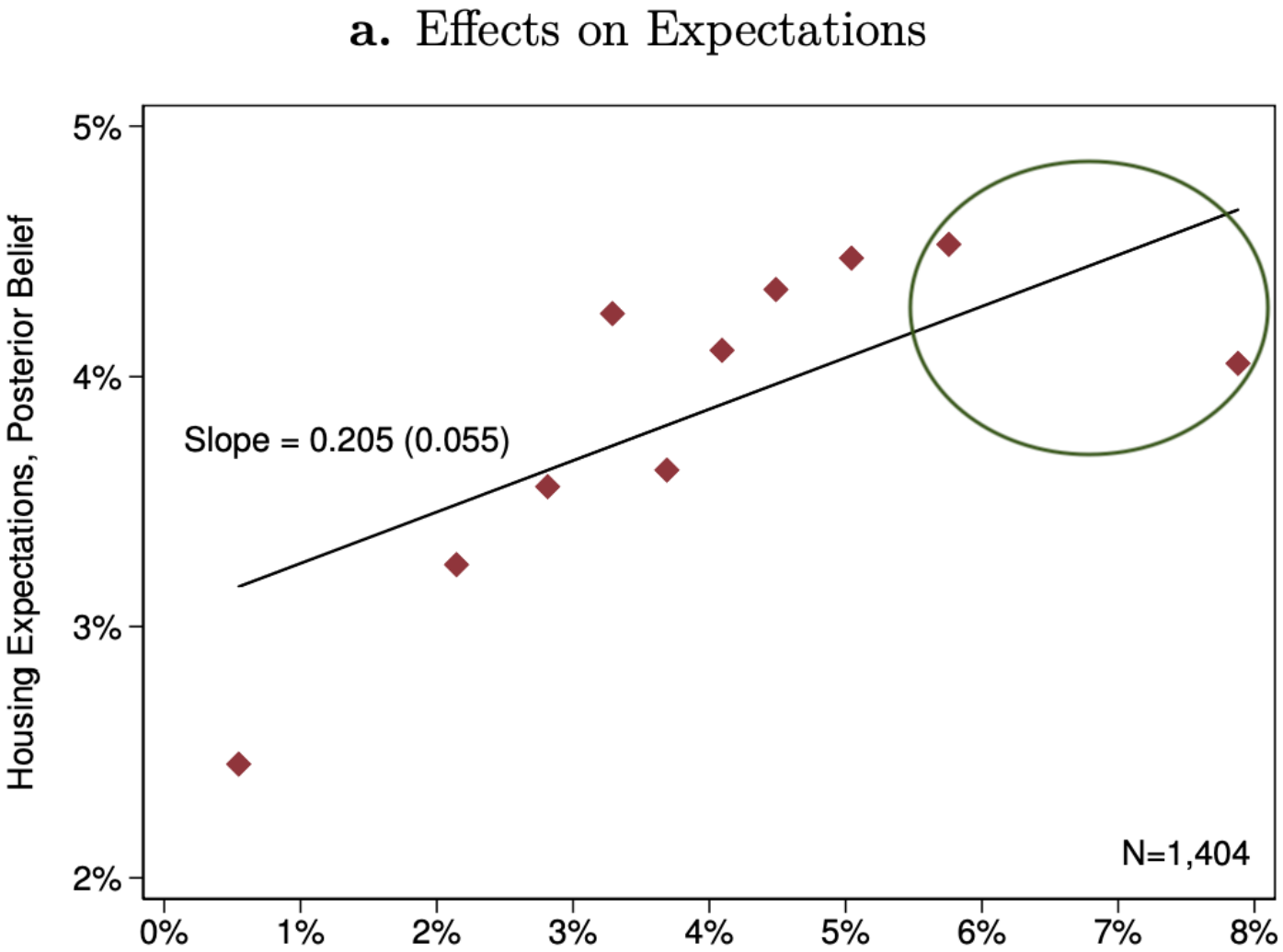

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Non-monotonicity in the first stage

- On average, seeing a higher growth measure is associated higher home-price expectations, but consistent with Armano et al. 2019, there can be a wide range of heterogeneity:
  - A large fraction with “extrapolative” updating, consistent with the average result
  - But also a sizable fraction with “mean-reversion” updating

Non-monotonicity in the first stage

- On average, seeing a higher growth measure is associated higher home-price expectations, but consistent with Armano et al. 2019, there can be a wide range of heterogeneity:
  - A large fraction with “extrapolative” updating, consistent with the average result
  - But also a sizable fraction with “mean-reversion” updating
- Translating into the IV framework, there is non-monotonicity in the first stage: expectations *could go down* when exposed to a higher growth measure
  - Scaling by the first stage will not result in the desired LATE (treatment effect for the compliers) when there are defiers
  - Could potentially avoid the issue if using variations only from the forecasts (can check that there is no mean reversion using the lab data)

Conclusion and other suggestions

Conclusion and other suggestions

- Other suggestions:
  - Heterogeneity by hot vs. cold markets, high vs. low variation in signals (Which areas drive the results? What are their characteristics?)
  - Report change in sale duration if given *any* information vs. control
  - Would be great to see updated information between December 2019 until now for all obtainable outcomes (sale prices, list price adjustments, etc.)
- Very nice to see home-price expectation in action in the real world with one of the most high-stake financial decisions!
  - Information $\rightarrow$ home-price expectation $\rightarrow$ home-selling behavior
- Quantitatively:
  - The intent-to-treat measure could be driven only by changes in who stay on the market, not changes in days to sale
  - To scale by the first stage, should focus on the 3 forecasts to avoid mean-reversion updating