



# **Discussion of “Women are Left Behind: Social Norms, Math Skills and Mortgage Outcomes”**

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Yale SOM & NBER

**UNC/Duke Corporate Finance Conference**

## Collect facts

- Women pay higher mortgage interest rates (3 basis points) and rate spreads (2 basis points) than men for the same loan, controlling for location, time, and observable loan characteristics. (Table 4, cols. 3 and 6)
- These gender gaps increase by 50-80% in high-income and high-education areas. (Tables 5-6)

Variable	Gender Diff	Mean	SD
Interest Rate	2.8, 4.2, 0.8 bps	440	60
Rate Spread	1.7, 2.4, 0.6 bps	50	46
Net Loan Cost	16.6, 12.3, -0.5 bps	193	136
Total Fees	-0.9 bps	210	132
Total Credits	-0.4 bps	16	40

Controls, Part 1: LTV, Credit Score, PropType, Junior Lien, Loan Purpose. Part 2: Race, Ethnicity, Income, Loan Amount, DTI, Age, Term.

## Collect facts

- Women are 10% less likely to refinance their mortgages when rates decline, with this gap doubling in high-income areas. (Table 8, col. 4-5; Table 9)

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## Collect facts

- Over a 10-year period, these differences translate to approximately 1% higher mortgage costs for women in high-education neighborhoods versus 0.5% in low-education areas. (Table 10, cols. 8-9)
- Gender gaps in mortgage outcomes correlate with gender gaps in math skills and financial literacy, which also widen with socioeconomic status. (Tables 11-12, Tables A28-A32)

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Mortgage Costs	8bps , 0.3bps	-	-

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## Caveat to all suggestions for the paper...

Already have...

Table A32. Mortgage Prepayment, Rate Decline, Gender and Math Skills

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# Are these big? Why do we care?

- Large literature examining issues with access to credit across race and ethnicity (policy driven by ECOA)
  - Debated in literature, and has changed over time
  - Current numbers of interest rate, controlling for risk: 2.0bps for purchase, 0.7bps for refinance (relative to non-Hispanic white)
  - But, these are offset in points!
- Access to credit for women *also* changed

## Equal Credit Opportunity Act of 1974



ECOA

**Acronyms**  
(colloquial)

### Citations

**Public law**

88 Stat. 1500 [↗](#), [Pub. L. 93-495](#) [↗](#)

### Legislative history

- **Signed into law** by President [Gerald Ford](#) on October 28, 1974

**United States Supreme Court cases**

# Are these big? Why do we care?

**NYtimes in 1981:** "Eight to 10 years ago, a much smaller percentage of women were buying co-ops than today," said Stephen Raphael...

## *Single Women as Homeowners Reflect Feminist Gains*

By NAN ROBERTSON

Nedra Sims, who makes \$25,000 a year in an investment consulting concern, recently bought a condominium apartment on Chicago's South Side for \$25,000. "I bought it for investment, for a tax break and for the pleasure of owning a home," she said. "I was sick of throwing money away on rent. I had no problem getting credit."

Miss Sims and thousands of others like her are part of a notable new trend in the home-buying market. Single women, divorced, widowed or never married, are now buying one-third of all condominium apartments and one-tenth of all houses

throughout the United States, according to the National Association of Realtors. The association calls single women the fastest-growing segment in the housing market.

The trend is reflected in the buying of cooperative apartments in New York City. "Eight to 10 years ago, a much smaller percentage of women were buying co-ops than today," said Stephen Raphael, a partner in a law firm that specializes in converting rental apartments into cooperatives and condominiums.

"I would guess that in 1975, probably 90 percent of our clients were couples," he added. "Now it's down to about half. And

of the half that are single, probably 60 percent are women."

The rush of single women to own homes and their new ability to borrow mortgage money more easily have been attributed primarily to Federal laws passed in 1974 and 1975 that struck down sex discrimination in lending and home buying. A change in social attitudes, the confidence that the feminist movement inspired in women such as Miss Sims to pursue careers in many fields customarily dominated by men, and the movement of women into better-paying jobs are also

Continued on Page A18, Column 1

<https://www.nytimes.com/1981/04/23/us/single-women-as-homeowners-reflect-feminist-gains.html>



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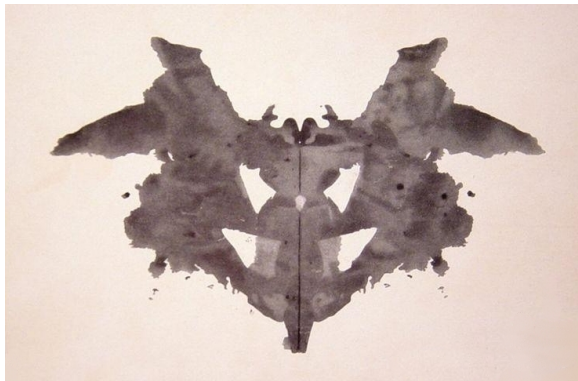
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Continued on Page A19, Column 1

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# Are these big?

- So, *are* these current effects big?  
Multidimensional contract, and hotly debated
- Authors argue that borrowers lose \$2,200 over 10 years of loan (in high-education areas)
  - Discounted, even less?
- I think the *averages* mask a more important story about search and dispersion (which is primary consumer finance concern in mortgages)



# So what's actually driving this?

- Implicit in the historical discussion is a story of lenders directly discriminating; much of policy and discussion (and research) is targeted towards this discrimination by lenders
- This paper tells a different story
- Instead, this is a story of differences in (perceived or real) financial sophistication interacting with a market with huge dispersion in rates

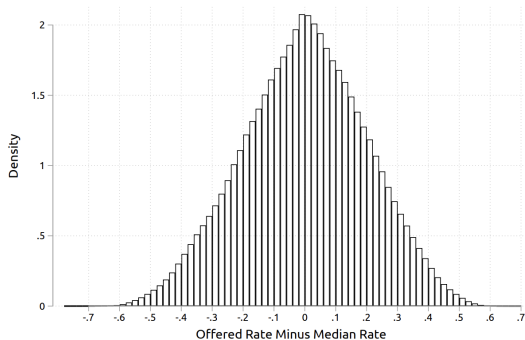
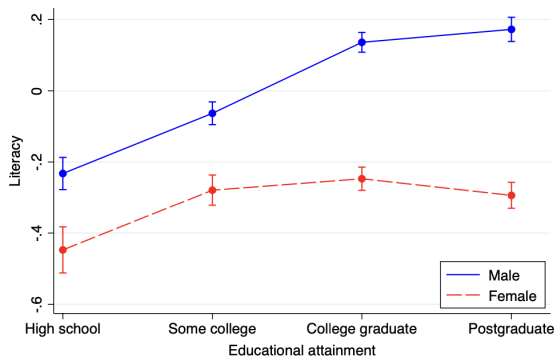


Figure 1: Offer Dispersion for Identical Mortgages

Bhutta, Fuster, Hizmo (forthcoming)

# What is financial sophistication?

- Interesting and important to think about difference between *ability* and *confidence*. Discussed in footnote of paper.
  - “While gender differences in confidence can affect the baseline estimate for the female indicator, unless the confidence difference grows with the level of education or income, we would not expect it to generate the interaction effects we observe in the data.”
  - It’s quite plausible to me that these things could grow in a way correlated by income



How well can you explain...

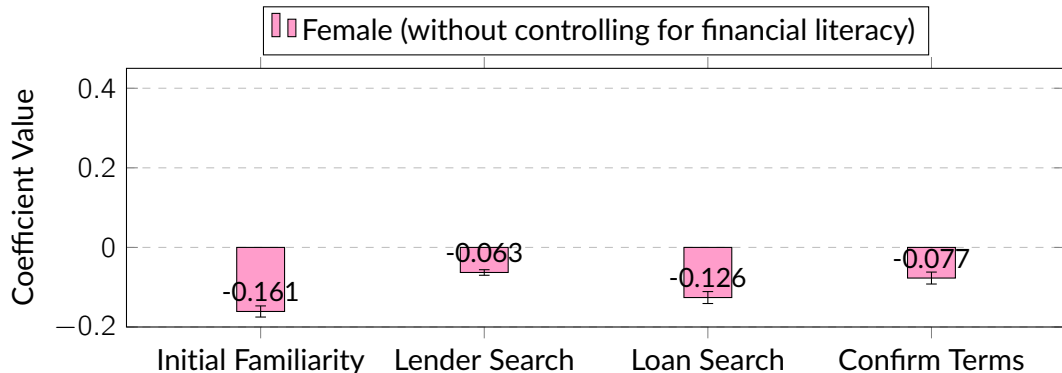
Difference between a prime and subprime loan

Difference between a mortgage's interest rate and its APR

Amortization of a loan

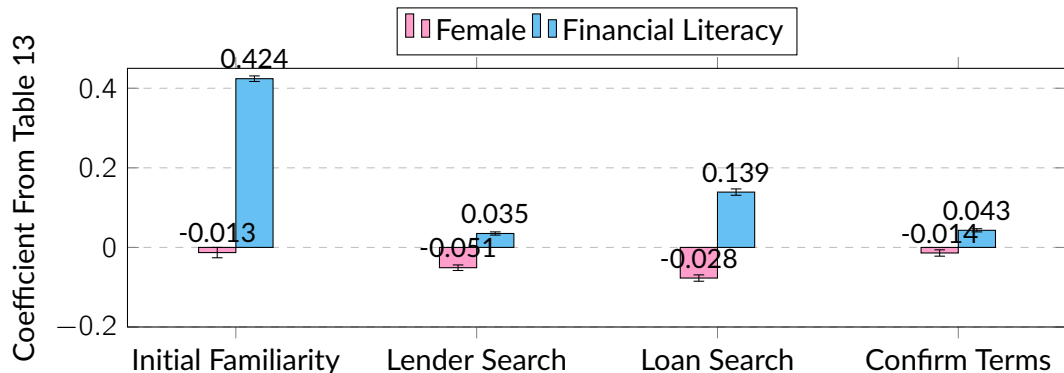
# Financial sophistication/confidence and search

- But, does it matter? E.g. any decision theory problem reflects both an estimate and your certainty. if certainty is lower, that will also affect your choices
- Can we think about this in terms of a search model? Biased search as in Berwart, Higgins, Kulkarni and Truffa (2024)!



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# How should we think about refinance timing?

- When should one refinance?



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- When should one refinance?
- Obviously a function of Lambert functions
- Should we be viewing as men doing it “better”?
- Is the prepay a sale, or a refinance? (no way to know, but makes it tough!)  
Goldsmith-Pinkham and Shue (2024) find that single men flip slightly more

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## Optimal Mortgage Refinancing: A Closed-Form Solution

We derive the first closed-form optimal refinancing rule: refinance when the current mortgage interest rate falls below the original rate by at least

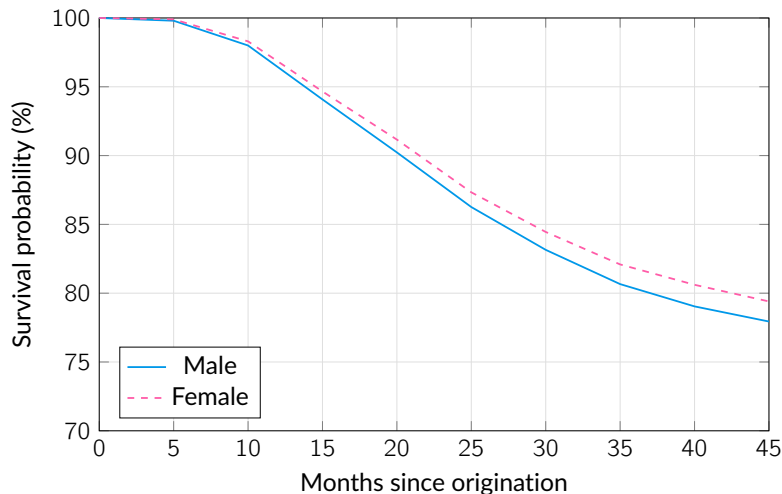
$$\frac{1}{\psi} [\phi + W(-\exp(-\phi))].$$

In this formula  $W(\cdot)$  is (the principal branch of) the Lambert  $W$ -function,

$$\psi = \frac{\sqrt{2(\rho + \lambda)}}{\sigma},$$
$$\phi = 1 + \psi(\rho + \lambda) \frac{\kappa/M}{(1 - \tau)},$$

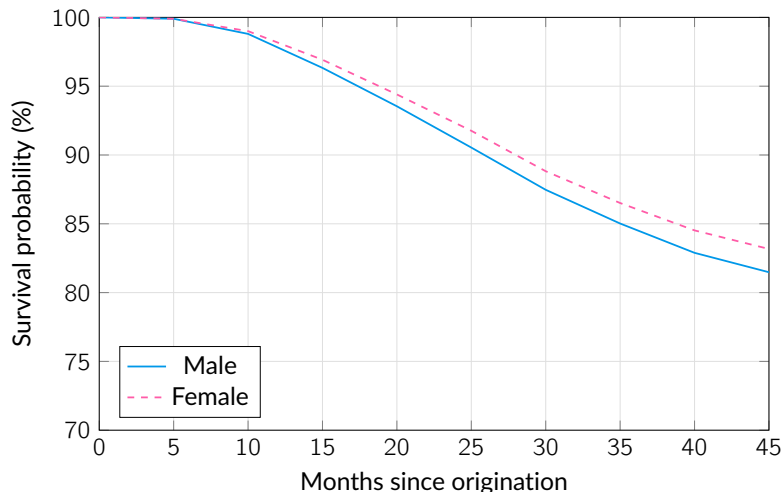
# Survival curves would be more interpretable than hazard rates

Survival curve for high income tracts



# Survival curves would be more interpretable than hazard rates

Survival curve for low income tracts



- Would suggest a frame that frames the disparate costs of financial literacy differences across gender leading to more search costs
  - Even more evidence about dispersion in rates and costs?
- Reframe differences across areas as a discussion about *dispersion* in prices (if true!), not as education vs. income differences
- Potentially use shocks to mortgage market to identify responses consistent with this:
  - Thought of three “experiments”

# 1. Shocks to mortgage market (aggregate)

- More sophisticated use of changes in interest rate (right now, just indicator variables for when market rate is below outstanding rate)
  - But it's a function of tenure, optionality, etc.
- Flex a little more here!

## 2. Jumbo vs. conforming loans?

- Sample is all conforming loans. However, refinanced loan may become jumbo due to HPA
- Markets are very different (lenders, etc)
- Do we see refinancing behavior look different if prices cross jumbo threshold?

### 3. State differences in refi effects?

- Mortgage Recording Tax - NY makes it hard to refi with a new lender (costly)
- Alabama, Florida, Kansas, Minnesota, New York, Oklahoma and Tennessee have these
- Way to get out of it is called a CEMA, but you need lender to agree
  - Makes it hard to switch lenders!

# Linking HMDA data to GSE Performance Data

- Liu (2024), Jiang, Jørring, and Xu (2021), Buchak, Chau, Jørring (2023)
- People have done this! Not sure how novel it is anymore.
- But, would be novel to post and maintain a linked dataset!