Language Frictions in Consumer Credit

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FDIC Consumer Research Symposium
March 15, 2024

This Paper

One fundamental yet often overlooked friction: language frictions

- Language barriers faced by borrowers with limited English proficiency (LEP)
- Nearly one in ten working age adults in the US is LEP

This Paper

One fundamental yet often overlooked friction: language frictions

Question: How do language frictions affect household financial decisions?

- Do language frictions affect access to credit?
- How do language frictions affect the price of credit?
- Does reducing language frictions affect the quality of credit?

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One fundamental yet often overlooked friction: language frictions

Question: How do language frictions affect household financial decisions?

Setting: the U.S. mortgage market

- Mortgage balances accounted for 68% of total household debt in 2019 (FRBNY, 20)
- Hard to understand: disclosures (11th grade) vs. reading ability (8th grade)(GAO, 06)

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One fundamental yet often overlooked friction: language frictions

Question: How do language frictions affect household financial decisions?

Setting: the U.S. mortgage market

Data challenge: who are LEP borrowers?

- Survey data: National Survey of Mortgage Originations (NSMO)
- Apply machine learning to predict LEP status

$\implies$ Document significant descriptive differences

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Data challenge: who are LEP borrowers?

Identification challenge: isolate the role of language

- Natural experiment: phased rollout of translated mortgage documents by FHFA
- Triple-difference: LEP $\times$ Hispanic $\times$ Post

$\implies$ Estimate the causal effect of language frictions

Data Sources

National Survey of Mortgage Originations (NSMO) 2013-19

- Demographic characteristics
- Perceptions and experiences in the mortgage market (survey response)
- Contract and performance variables (administrative sources)
- LEP status at the individual level

Assigning LEP Status in the Survey

13. How important were each of the following in choosing the lender/broker you used for the mortgage you took out?

	Important	Not Important
Having an established banking relationship	☐	☐
Having a local office or branch nearby	☐	☐
Used previously to get a mortgage	☑	☐
Lender/broker is a personal friend or relative	☐	☐
Lender/broker operates online	☐	☐
Recommendation from a friend/ relative/co-worker	☐	☐
Recommendation from a real estate agent/home builder	☐	☐
Reputation of the lender/broker	☐	☐
Spoke my primary language, which is not English	✓	☐

About 10% are LEP borrowers

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Home Mortgage Disclosure Act (HMDA) 2011-2019

- County-level outcomes: application denial rate, origination volume

American Community Survey (ACS) 2011-2019

- LEP share at the county level
- County-level characteristics: population, median income, racial composition

Stylized Facts about LEP Borrowers

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- Mortgage outcomes: higher interest rate, same delinquency rate
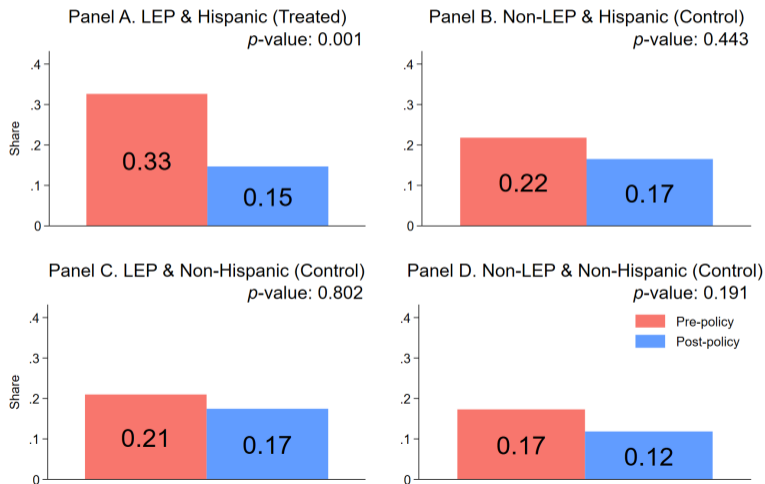 3 bps $\approx$ racial discrimination

Policy Shock: FHFA Language Access Plan

- Lenders used to face compliance risks (e.g., fair lending risks)
- FHFA provides an online centralized collection of translated mortgage documents
- Phased rollout: Spanish translations in 2018, Chinese translations in 2019
- Triple-difference: LEP $\times$ Hispanic $\times$ Post

Empirical Strategy: Triple-Difference

Dependent variable: $\mathbb{1}$(redo paperwork)　　　　H_0: the decrease is smaller than 5 pp

Panel A. LEP & Hispanic (Treated)
p-value: 0.001

Panel B. Non-LEP & Hispanic (Control)
p-value: 0.443

Panel C. LEP & Non-Hispanic (Control)
p-value: 0.802

Panel D. Non-LEP & Non-Hispanic (Control)
p-value: 0.191

Pre-policy
Post-policy

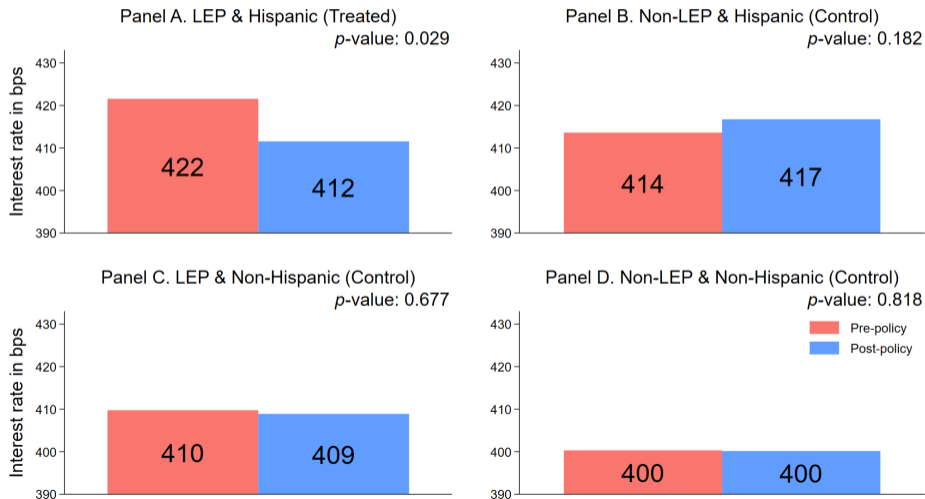# Causal Effect of Language Frictions on the Intensive Margin

Effect on access to credit (intensive)?

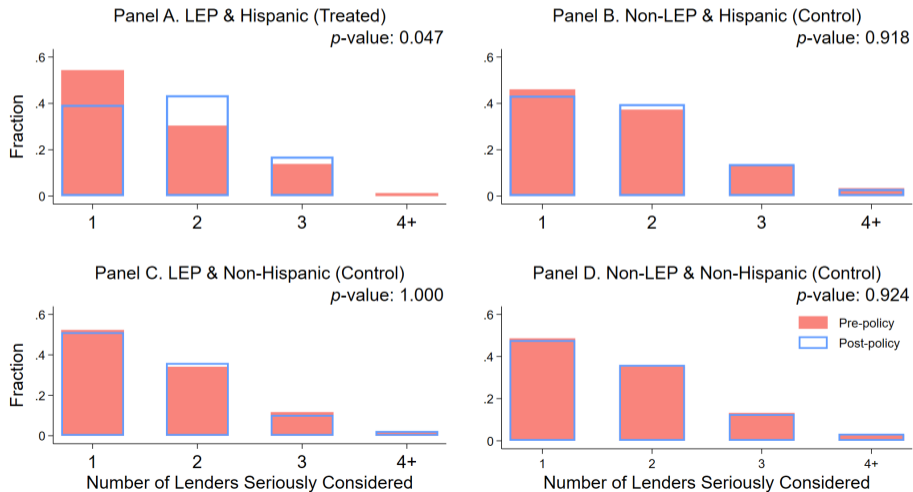- Encounter fewer problems: redo mortgage paperwork ↓ 14 pp

Effect on Mortgage Rate: Graphical Evidence

H_0: pre- and post-policy average interest rates are the same

Panel A. LEP & Hispanic (Treated)
p-value: 0.029

Panel B. Non-LEP & Hispanic (Control)
p-value: 0.182

Panel C. LEP & Non-Hispanic (Control)
p-value: 0.677

Panel D. Non-LEP & Non-Hispanic (Control)
p-value: 0.818

One Potential Mechanism of the Price Effect: Borrower Search

H_0: pre- and post-policy distributions are the same

Panel A. LEP & Hispanic (Treated)
p-value: 0.047

Panel B. Non-LEP & Hispanic (Control)
p-value: 0.918

Panel C. LEP & Non-Hispanic (Control)
p-value: 1.000

Panel D. Non-LEP & Non-Hispanic (Control)
p-value: 0.924

Pre-policy
Post-policy

Fraction

Number of Lenders Seriously Considered

Causal Effect of Language Frictions on the Intensive Margin

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- Encounter fewer problems: redo mortgage paperwork ↓ 14 pp

Effect on the price of credit?

- Lower interest rates: ↓ 15 bps, save $22 per month and $1800 after 8 years
- One possible channel: borrower search ↑ 16 pp

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Effect on the quality of credit?

- Minimal effect on mortgage delinquency rate

Additional Results on the Intensive Margin

Data limitations of the survey data

- No lender or location information
- No up-front costs (e.g., discount points)

Additional Results on the Intensive Margin

Data limitations of the survey data

1. A new loan-level data: HMDA^{+}

- Merge HMDA with Fannie Mae, Freddie Mac, and Ginnie Mae data
- Include borrower, lender, property, mortgage contract, mortgage performance information

Additional Results on the Intensive Margin

Data limitations of the survey data

1. A new loan-level data: HMDA$^+$

2. Use machine learning to predict LEP status in HMDA$^+$

- Solve a binary classification problem
- Training sample: micro-level American Community Survey
- 99% accuracy in the test sample

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2. Use machine learning to predict LEP status in HMDA$^+$

3. Run triple-difference regressions in HMDA$^+$

- Misclassification brought by ML $\implies$ Attenation bias
- Use ML performance to bound measurement error
- Recover the lower bound of the average treatment effect on the treated (ATT)

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Revisit the price effect

- Interest rate decreases by at least 5 bps
- Lower total borrowing costs (interest rate $\downarrow$ + discount points $\rightarrow$)

LEP Consumers Excluded From the Mortgage Market?

Estimate the effect on credit access on the extensive margin

- Data: county-level HMDA
- Regression: difference-in-differences

$$Y_{ct} = \alpha + \beta D_{ct} + \gamma X_{ct} + \delta_c + \delta_{st} + \epsilon_{ct}$$

▶ c, s, t: county c, state s, year t
▶

$$D_{ct} = \begin{cases} 0, & \text{if } t \leq 2017 \\ \text{Hispanic LEP share}_c, & \text{if } t = 2018 \\ \text{Hispanic LEP share}_c + \text{Chinese LEP share}_c, & \text{if } t = 2019 \end{cases}$$

Causal Effect of Language Frictions on the Extensive Margin

| Dependent variable	# Applications (10K) (1)	Share of incomplete app. (2)	Denial rate (3)	# Originations (10K) (4)
LEP share × Post	0.121**	-0.062***	-0.155***	0.089**
	(0.060)	(0.022)	(0.041)	(0.044)
Sample mean	0.090	0.117	0.175	0.067
Observations	25,225	25,225	25,225	25,225
County FEs	✓	✓	✓	✓
Year × State FEs	✓	✓	✓	✓
Additional controls	✓	✓	✓	✓

Application incomplete and denial rate ↓ by 6 pp and 16 pp

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4 pp ↑ in the local share of LEP people ⟹ + 48 applications and 36 originations

Causal Effect of Language Frictions on the Extensive Margin
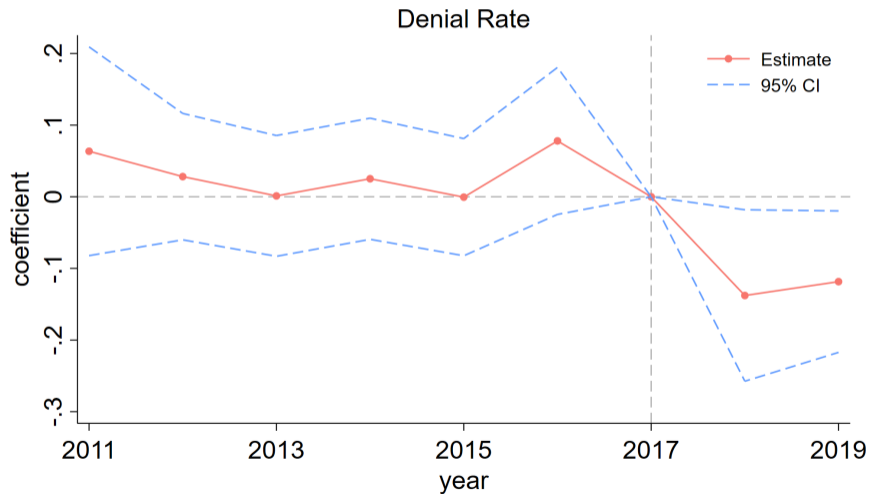
Conclusion

Main takeaway: Reducing language frictions can lead to

- increased availability of credit
- a streamlined application process
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Policy implications

- Reduce compliance risks for financial institutions
- A cost-effective policy