

NOVEMBER 14, 2022

Conference on Diversity, Equity and Inclusion in Economics, Finance, and Central Banking

Does Monetary Policy Narrow or Widen the Racial Gap in the
U.S.? Evidence From the Housing Market

Qi Li (Penn State University), Xu Zhang (BoC)

DISCLAIMER: THE VIEWS EXPRESSED IN THIS PAPER ARE THOSE OF
THE AUTHORS AND DO NOT NECESSARILY REPRESENT
THOSE OF THE BANK OF CANADA.



Research question

Existing literature : Minority borrowers are more likely to receive high-cost mortgages

Research question

Existing literature : Minority borrowers are more likely to receive high-cost mortgages

This paper: **How monetary policy shocks** affect minority borrowers' experience relative to white borrowers? And **why**?

Research question

Existing literature : Minority borrowers are more likely to receive high-cost mortgages

This paper: **How monetary policy shocks** affect minority borrowers' experience relative to white borrowers? And **why**?

We find after tightening MP shocks, minority borrowers relative to white borrowers

- ▶ lower origination mortgage rate
- ▶ have higher transaction housing price
- ▶ higher foreclosure rate

Micro data

- ▶ Home Mortgage Disclosure Act (HMDA)
 - ▶ application record level: race, ethnicity, gender, loan type, loan purpose, the property location (census tract), lender, loan amount, applicant income, with coborrower or not, etc.
- ▶ Corelogic
 - ▶ property information and housing transaction data
 - ▶ mortgage interest rate information for a subset of mortgage record

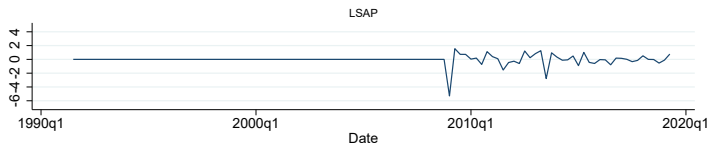
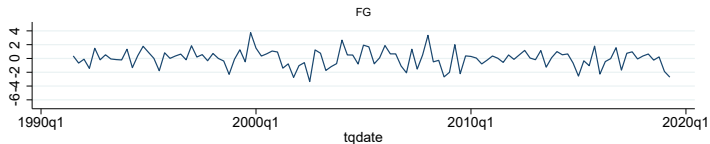
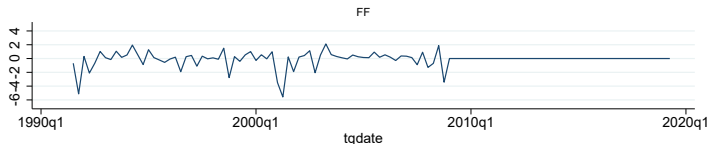
Summary statistics of matched HMDA-Corelogic data: 1993-2017

	Non-Hispanic White	Non-Hispanic Black	Hispanic
Mortgage Rate (pp.)	5.60	6.60	6.26
Foreclosure (%)	5.05%	14.3%	11.4%
Log House Price (in 1000s)	5.31	5.07	5.21
Log Land sq ft	9.47	8.97	8.94
Log Building sq ft	7.55	7.44	7.35
Female (Yes/No)	0.26	0.46	0.28
Co-borrower (Yes/No)	0.57	0.30	0.43
Log Loan Amount (in 1000s)	4.95	4.79	4.91
Log Income (in 1000s)	4.39	4.11	4.12

Monetary policy shocks at quarterly frequency from Swanson (2021)

1 standard deviation tightening FF, FG, LSAP shocks

⇒ increases 10-year Treasury yields by 1.1, 3.9 and 5.4 bps, respectively.



How monetary policy shocks affect the borrowers?

$$\text{Outcome}_{i,t} = \beta_{Black*MP}^{(h)} \text{Black}_i * \text{MP}_{t-h,t-1} + \beta_{Hispanic*MP}^{(h)} \text{Hispanic}_i * \text{MP}_{t-h,t-1} \\ + \text{controls}_{it} + \text{error}_{it}^{(h)}$$

$\text{Outcome}_{i,t}$ is borrower i at month t 's

- ▶ mortgage origination rate
- ▶ log(housing price)
- ▶ foreclosure status

$\text{MP}_{t-h,t-1}$: cumulative FF, FG, LSAP shock from month $t - h$ to $t - 1$.

controls: race and ethnicity of the homewoner, an indicator of whether co-borrower exists, log of loan amount, log of income, an indicator of whether the loan is a subordinate loan, an indicator or whether the loan is jumbo, lender fixed effects, loan-to-income and loan-to-value bins, and census tract \times month fixed effects.

Tightening monetary policy narrows the mortgage origination rate gap

MP Lags	h=3	h=6
Black*FF	0.008 (0.006)	-0.003 (0.004)
Black*FG	-0.010*** (0.003)	-0.014*** (0.002)
Black*LSAP	-0.003 (0.012)	-0.002 (0.010)
Hispanic*FF	-0.006 (0.005)	-0.016*** (0.003)
Hispanic*FG	-0.009*** (0.002)	-0.016*** (0.002)
Hispanic*LSAP	0.007 (0.010)	-0.004 (0.009)
Observations	1,893,654	1,893,654
R-squared	0.757	0.757

Interpretation:

FF increases by 1 sd in the past 6 mths,
Hispanic - white gap drops by 1.6 bps

Tightening monetary policy narrows the housing transaction price gap

MP Lag	h=3	h=6
Black*FF	0.001* (0.000)	0.001*** (0.000)
Black*FG	0.000 (0.000)	0.000 (0.000)
Black*LSAP	-0.002** (0.001)	-0.001** (0.001)
Hispanic*FF	0.002*** (0.000)	0.002*** (0.000)
Hispanic*FG	0.001*** (0.000)	0.001*** (0.000)
Hispanic*LSAP	0.002*** (0.000)	0.001 (0.000)
Observations	13,214,979	13,214,979
R-squared	0.908	0.908

Interpretation:

FF increases by 1 sd in the past 6 mths,
Hispanic - white gap drops by 0.2%

Tightening monetary policy widens the foreclosure gap

MP Lags	h=3	h=6
Black*FF	0.002*** (0.001)	0.003*** (0.000)
Black*FG	0.003*** (0.000)	0.003*** (0.000)
Black*LSAP	0.002*** (0.001)	0.002*** (0.001)
Hispanic*FF	0.003*** (0.000)	0.004*** (0.000)
Hispanic*FG	0.004*** (0.000)	0.004*** (0.000)
Hispanic*LSAP	0.001*** (0.000)	0.001* (0.000)
Observations	11,201,066	11,201,066
R-squared	0.417	0.417

Interpretation:

FF increases by 1 sd in the past 6 mths,
Hispanic-white gap increases by 0.4 %

Recap and possible explanation

Mixed effects of monetary tightening:

- ▶ disproportionately increases the foreclosure rate for minority groups, exacerbating racial inequality;
- ▶ labor market effect of monetary policy, e.g., Bergman et al. 2022

Recap and possible explanation

Mixed effects of monetary tightening:

- ▶ disproportionately increases the foreclosure rate for minority groups, exacerbating racial inequality;
 - ▶ labor market effect of monetary policy, e.g., Bergman et al. 2022
- ▶ reduces the mortgage interest rate and increases the home price of minority households relative to white households, reducing racial inequality.

Recap and possible explanation

Mixed effects of monetary tightening:

- ▶ disproportionately increases the foreclosure rate for minority groups, exacerbating racial inequality;
 - ▶ labor market effect of monetary policy, e.g., Bergman et al. 2022
- ▶ reduces the mortgage interest rate and increases the home price of minority households relative to white households, reducing racial inequality.
 - ▶ credit risks cannot explain
 - ▶ preference-based discrimination might not comove with MP shocks
 - ▶ selection effect:
minority (with low income/wealth) less likely to apply for home purchase mortgage
 - ▶ prepayment risks:
minority less likely to prepay \Rightarrow lower interest rate during tightening

Purchase/refinance propensity – data

Purchase and refinance mortgage application and originations for top 500 counties.

- ▶ based on 1994–2016 confidential HMDA data (Neil Bhutta's website)

Controls:

- ▶ county by quarter unemployment rate, county by year nominal income per capita
- ▶ county by year lender concentration
- ▶ forecasts of macro variables from Survey of Professional Forecasters

Refinance propensity – regression

We estimate the following specification using local projections:

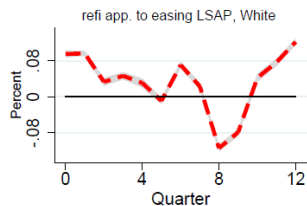
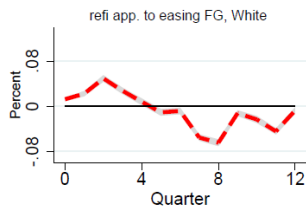
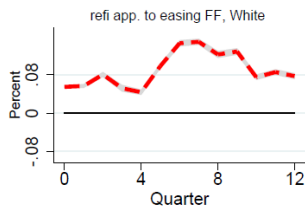
$$\begin{aligned} \log(\text{Refi_app})_{i,t+h} - \log(\text{Refi_app})_{i,t-1} = & \sum_{j \in \{\text{White}, \text{Black}, \text{Hispanic}\}} \beta_{j*MP}^{(h)} \text{Pop}_{i,j,t-1} * \text{MP}_t \\ & + \text{controls}_{it} + \text{error}_{it}^{(h)} \end{aligned}$$

$\text{Pop}_{i,j,t-1}$: population share of race group j in county i at time $t-1$.

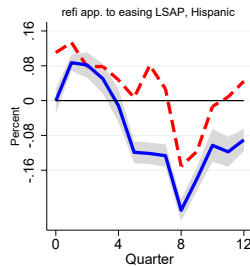
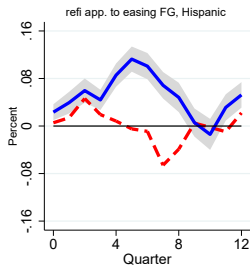
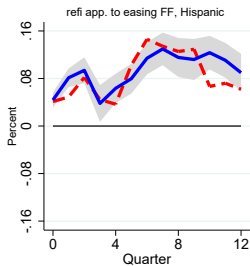
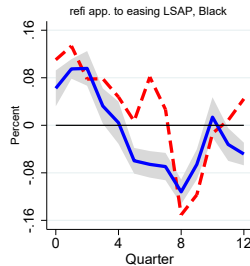
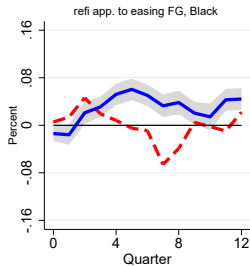
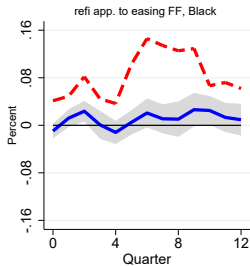
$-\beta_{j*MP}^{(h)}$: effects for a county of 100% race group j , MP easing by 1 standard deviation.

controls: FF_t , FG_t , and LSAP_t , the race/ethnicity population ratio $\text{Pop}_{i,j,t-1}$, 4 lags of the following variables – first difference of the Outcome variable, county level unemployment rates, county level nominal per capita income and county level lender competitiveness, the average forecast of GDP, inflation and unemployment rate from the SPF, and the one and two-years ahead CPI inflation rate, one lag for each monetary policy shock and one lag for each of their interaction terms, county fixed effects.

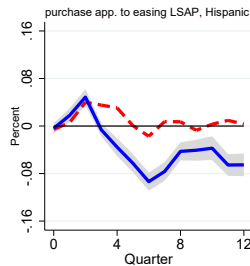
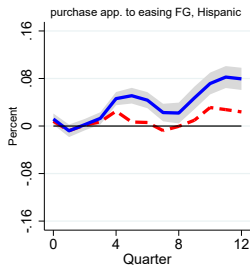
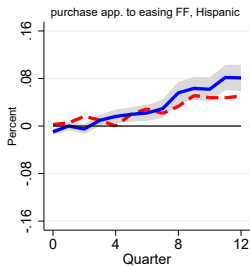
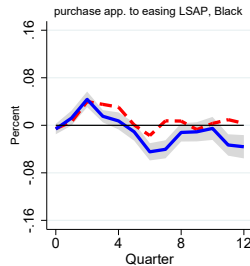
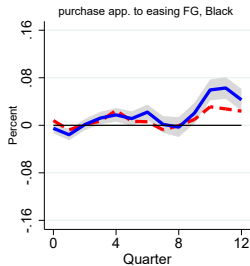
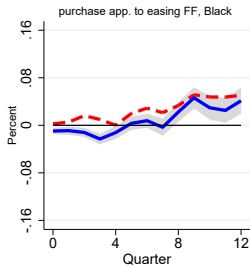
Easing MP, white hhs apply for refinance mortgage



Easing MP, minority hhs less likely to apply for refinance mortgage



Not through home purchase mortgage application



Further discussion

Why minority group are less likely to refinance after easing MP shocks?

We look at

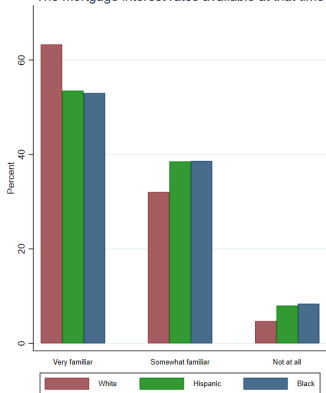
- ▶ mortgage related knowledge – National Survey of Mortgage Originations
- ▶ mortgage rate perception – New York Fed survey of consumer expectations

Survey evidence: minority less familiar with mortgage markets

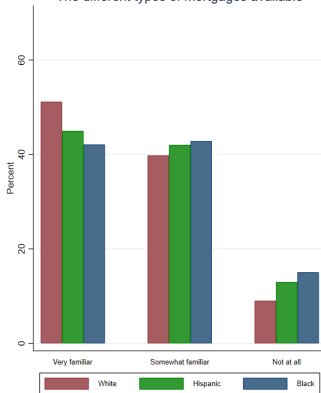
“When you began the process of getting this mortgage, how familiar were you (and any co-signers) with each of the following?”

– “very familiar”, “somewhat familiar”, or “not at all”

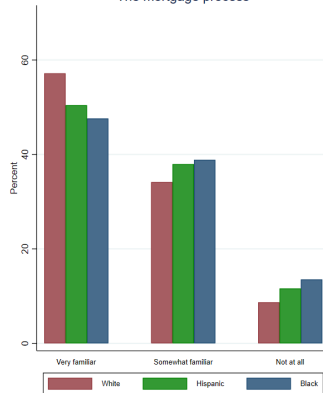
The mortgage interest rates available at that time



The different types of mortgages available



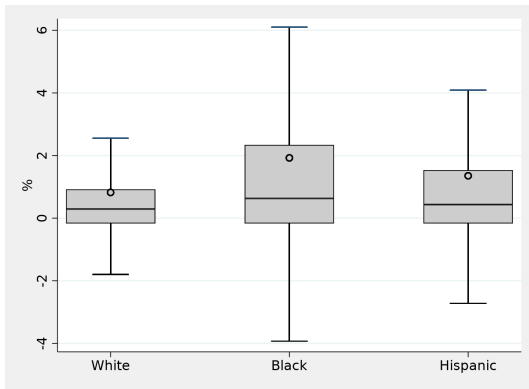
The mortgage process



Survey evidence: minority has wider and larger mortgage rate perception

“What do you think is the average interest rate (for all borrowers) on a new 30-year fixed-rate mortgage as of today?”

perception error = perceived mortgage rate – 30-year fixed rate from Freddie Mac



Conclusion

Mixed effects of monetary tightening:

- ▶ disproportionately increases the foreclosure rate for minority groups, exacerbating racial inequality;
- ▶ reduces the mortgage interest rate and increases the home price of minority households relative to white households, reducing racial inequality.

Conclusion

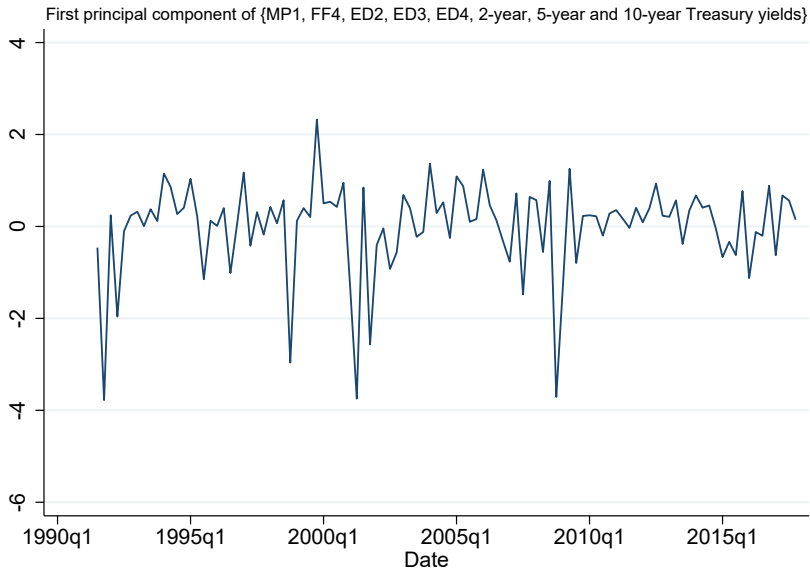
Mixed effects of monetary tightening:

- ▶ disproportionately increases the foreclosure rate for minority groups, exacerbating racial inequality;
- ▶ reduces the mortgage interest rate and increases the home price of minority households relative to white households, reducing racial inequality.
 - ▶ Minority hhs have relative low refinance propensity in response to future easing
 - ▶ Minority hhs have lower prepayment risk during tightening

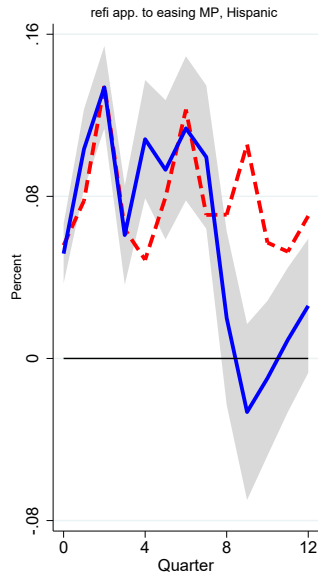
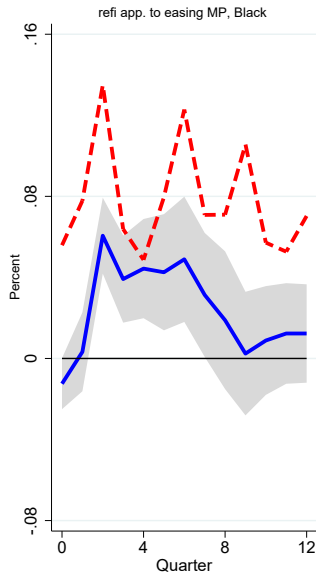
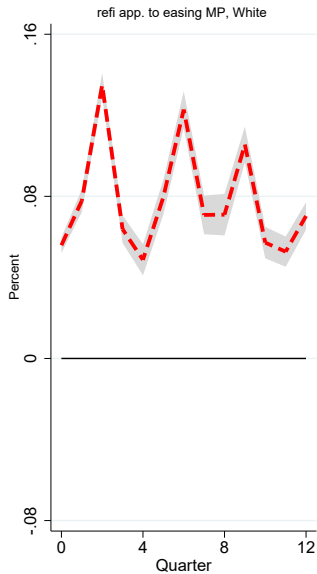
Mortgage market literacy:

- ▶ Minority hhs tend to overestimate the prevailing average interest rate;
- ▶ Minority hhs are less familiar with mortgage markets

Alternative monetary policy shocks



Results using alternative monetary policy shocks



Results using alternative MP shocks as IV for mortgage rate change

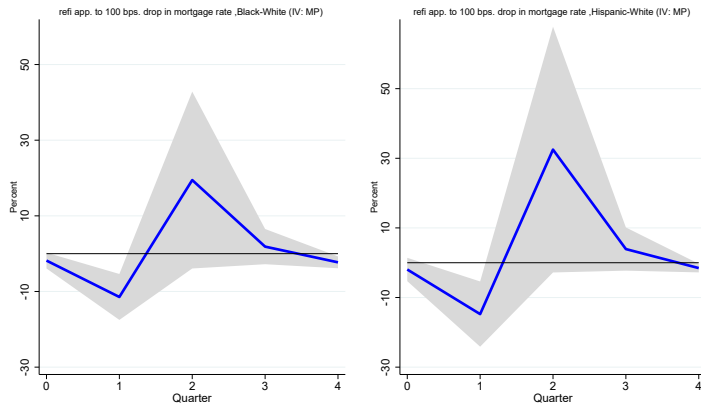


Figure: Total refinance mortgage application responses to a MP shock that lowers the PMMS 30-year fixed rate by 100 basis points, using the alternative monetary policy shock as an IV