More Tax, Less Refi?

The Mortgage Interest Deduction and Monetary Policy Pass-Through

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Motivation

- Monetary policy stimulates consumption via the refinancing channel
- Frictions to this transmission channel are important for monetary policy, financial stability, and borrower welfare
  - Agarwal et al (2017), DeFusco & Mondragon (2020), Beraja et al (2019)
- We document a previously unstudied friction to refinancing channel: $\rightarrow$ *the mortgage interest deduction (MID)*

Why would the MID affect monetary pass-through?

- Households can deduct mortgage interest from their taxes ("itemize")
- For portion of mortgage above standard deduction:
  1. Reduces mortgage rate from r to $r * (1 - t)$
  2. Refinancing yields $(1 - t) * (r_0 - r_t)$ rather than $(r_0 - r_t)$
- By reducing benefits from refinance, MID may reduce sensitivity of *refinancing* to mortgage rates

What we do

- Quantify the effect of the MID on refinance probabilities
- **Issue: Endogeneity.** Observable and unobservable factors may drive both tax and refinance probabilities
- **Solution: Exploit Tax Cuts and Jobs Act of 2017 (TCJA)**
  - TCJA changed MID uptake and value by doubling standard deduction
  - Diff-in-diff: Compare borrowers with different effective pre-TCJA MID subsidies before and after TCJA

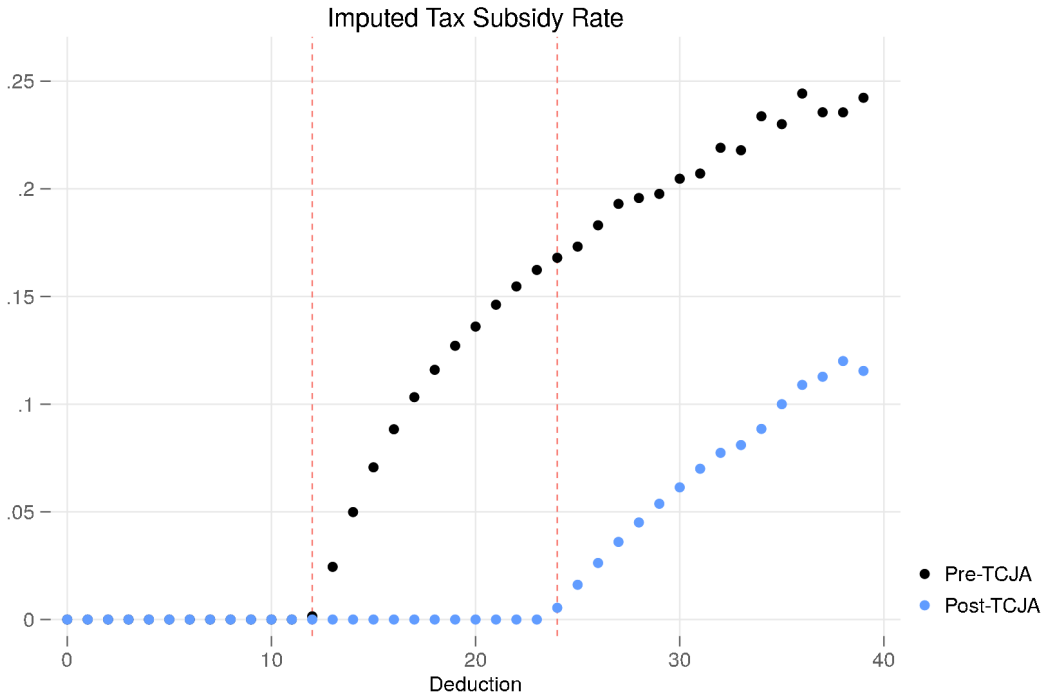
What we find

- Refinancing increases following the TCJA: for most affected borrowers, **19 bps** subsidy loss $\rightarrow$ 0.5 ppt $\uparrow$ in refi (**25%** increase)
- Magnitude of the effect is increasing in size of subsidy loss
- Effect concentrated among borrowers most sensitive to rates
- Gap in refinancing appears only post-TCJA and not before
- *Mortgage interest deduction meaningfully dampens the refinancing channel of monetary policy pass through*
  - Repeal of the MID likely contributed to recent **rate-lock**

Data

- Two challenges: guess itemization and predict refinance incentive
- Predict itemization status from 3 biggest components of deductions: mortgage interest, property tax, state income tax.
- Predict available rate using recent originations in Optimal Blue.
- 10% sample from Hmda-McDash-CRISM data (2016-2020)
  - Calculate state and federal tax rates on TAXSIM
  - Proxy property tax using escrow payments
  - Pull interest payments/rate from McDash
  - Distinguish between prepay types using CRISM

Structure of MID rate subsidy

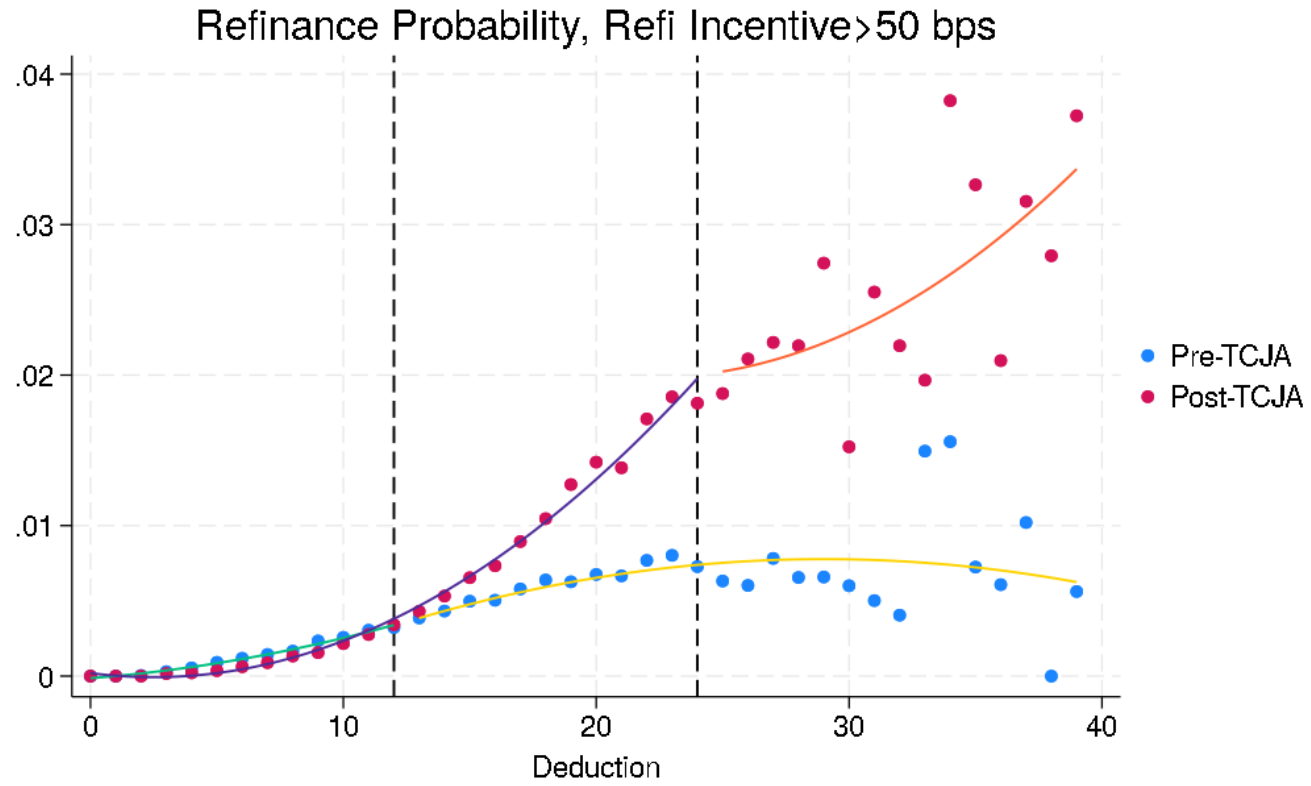


p=fraction of mortgage interest above standard deduction

$$Subsidyrate = \begin{cases} 0 & \text{if deduction} < \text{standard deduction} \\ tp & \text{if deduction} > \text{standard deduction} \end{cases}$$

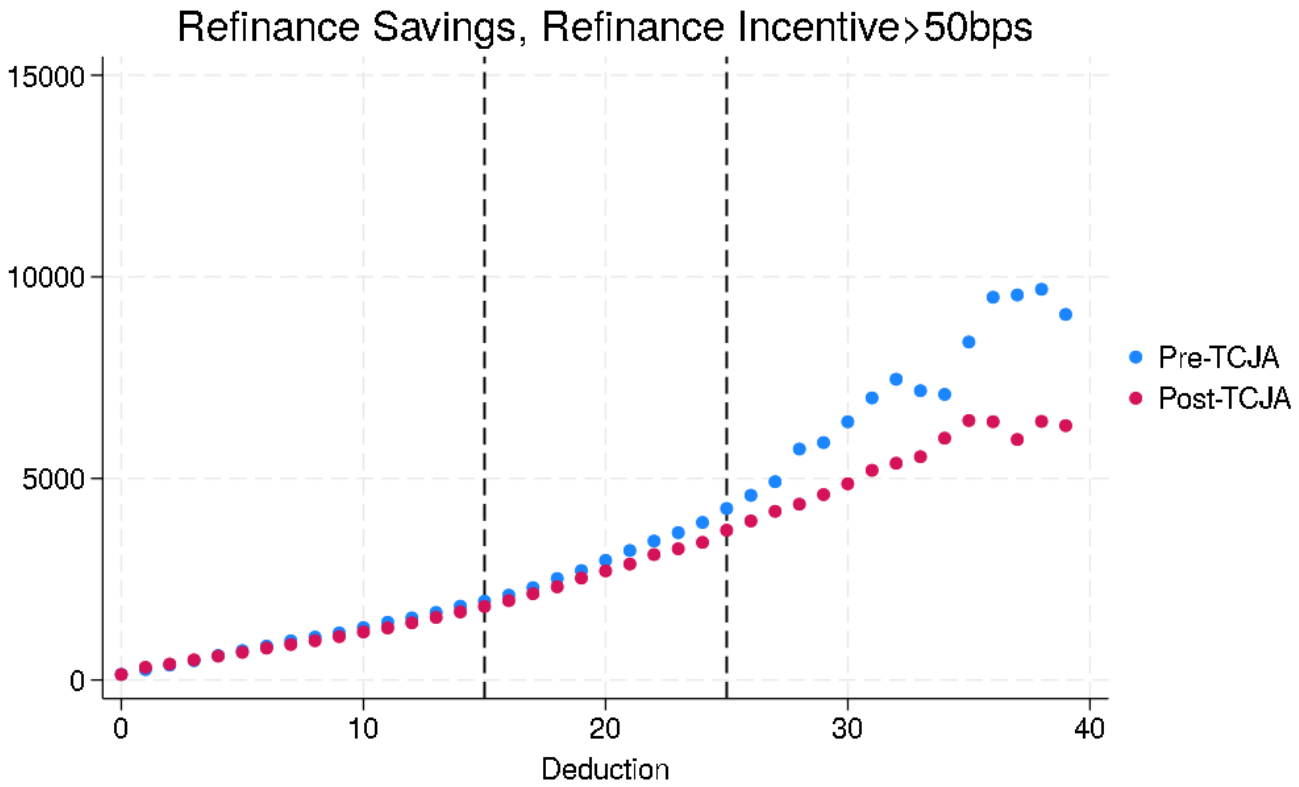
$$\text{after-tax mortgage rate} = r * (1 - subsidyrate)$$

Motivating empirical patterns



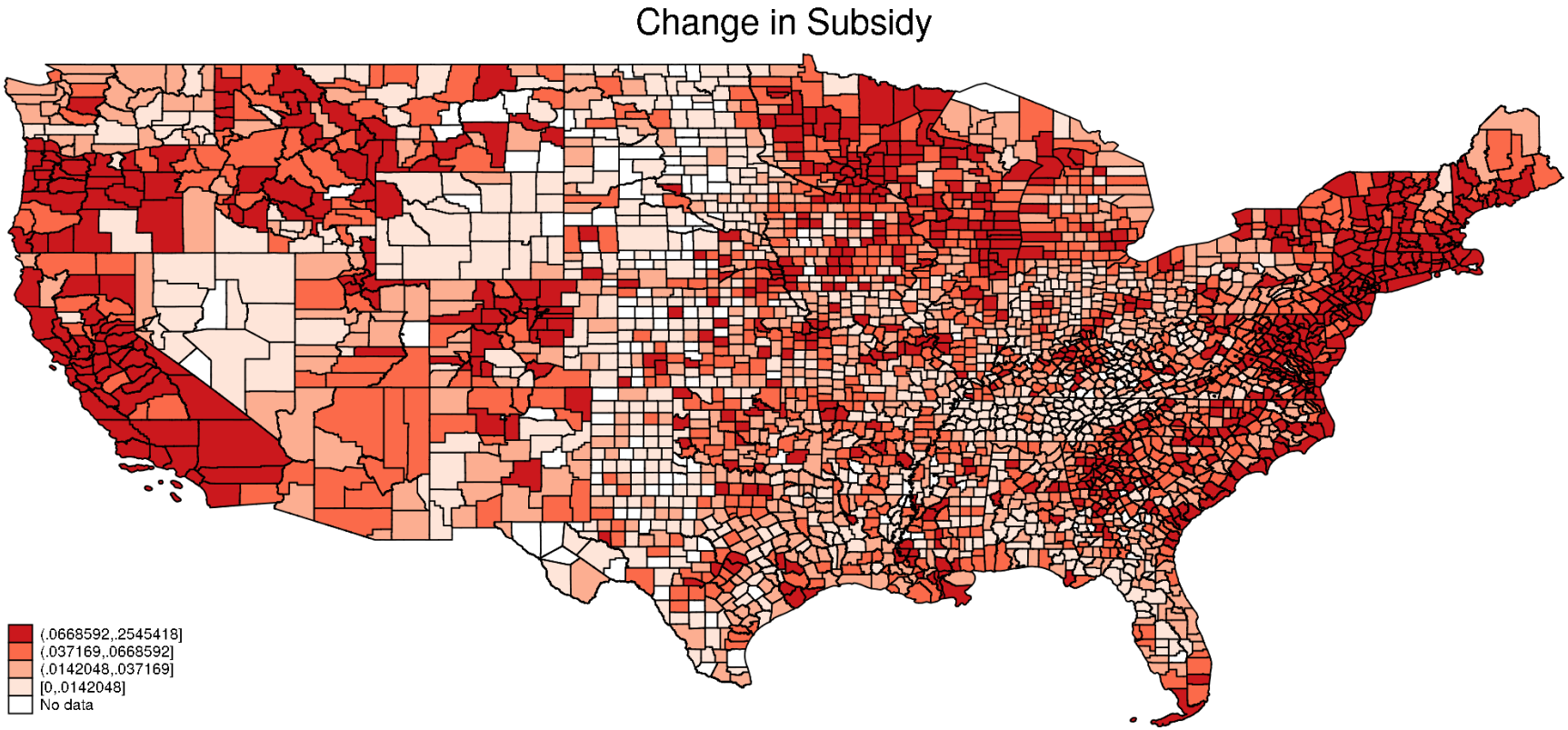
- After TCJA, refi slope steepens for those who lose the interest subsidy
- Refinances increase the most for those with biggest change in subsidy

Potential savings from refinancing unchanged



- After TCJA, potential savings from refinancing (rate gap * UPB) among in-the-money borrowers unchanged.

Change in subsidy value by geography



- Subsidy change varies with house prices, local incomes, and composition of state and local government revenues

Empirical strategy

$$Pr(Refi_{i,t}) = \beta_1 * Post_t * SubsidyChange_i * RefiIncentive_{i,t} + \rho X_{i,t} + \psi_{i,t} + \varepsilon_{i,t}$$

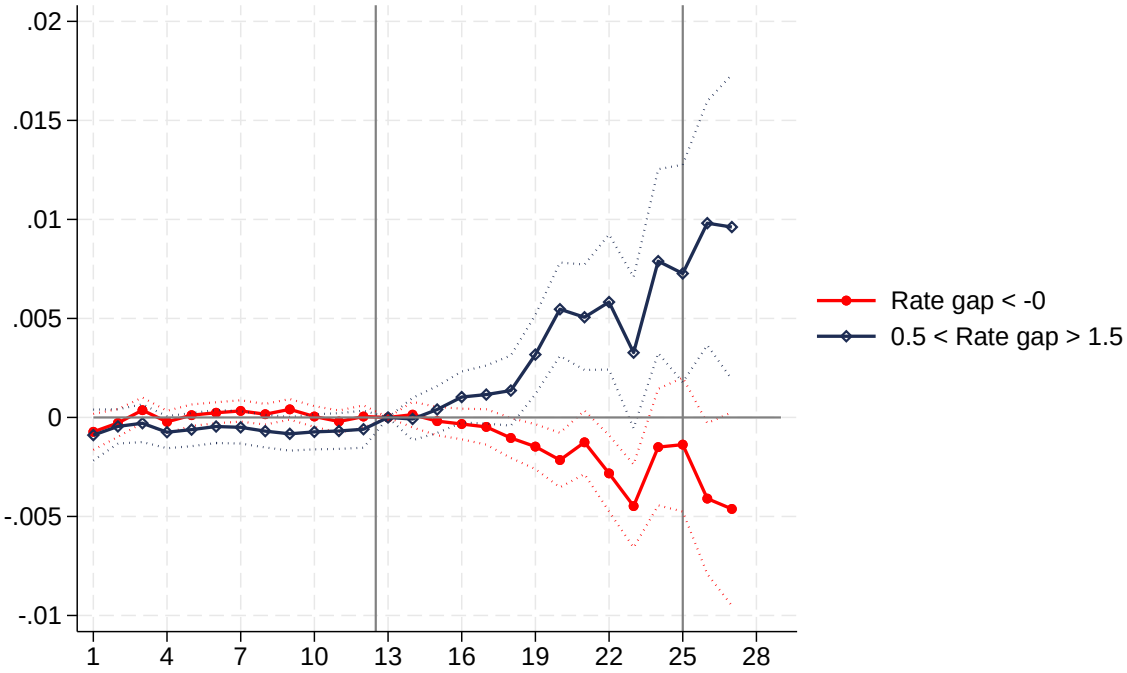
- $Post_t$: dummy for following TCJA (December 2017)
- $X_{i,t}$ controls for loan characteristics: e.g. ltv, dti, credit score, age
- $\psi_{i,t}$ nonparametric controls for determinants of subsidy loss interacted with quarter FE; zipcode x time FE
- Linear probability model, cluster by zipcode.

Three takes on **difference-in-difference**:

- Cross-sectional by **deduction bin**
- Cross-sectional by **rate gap**
- **Time-series**, comparing affected and unaffected mortgage borrowers

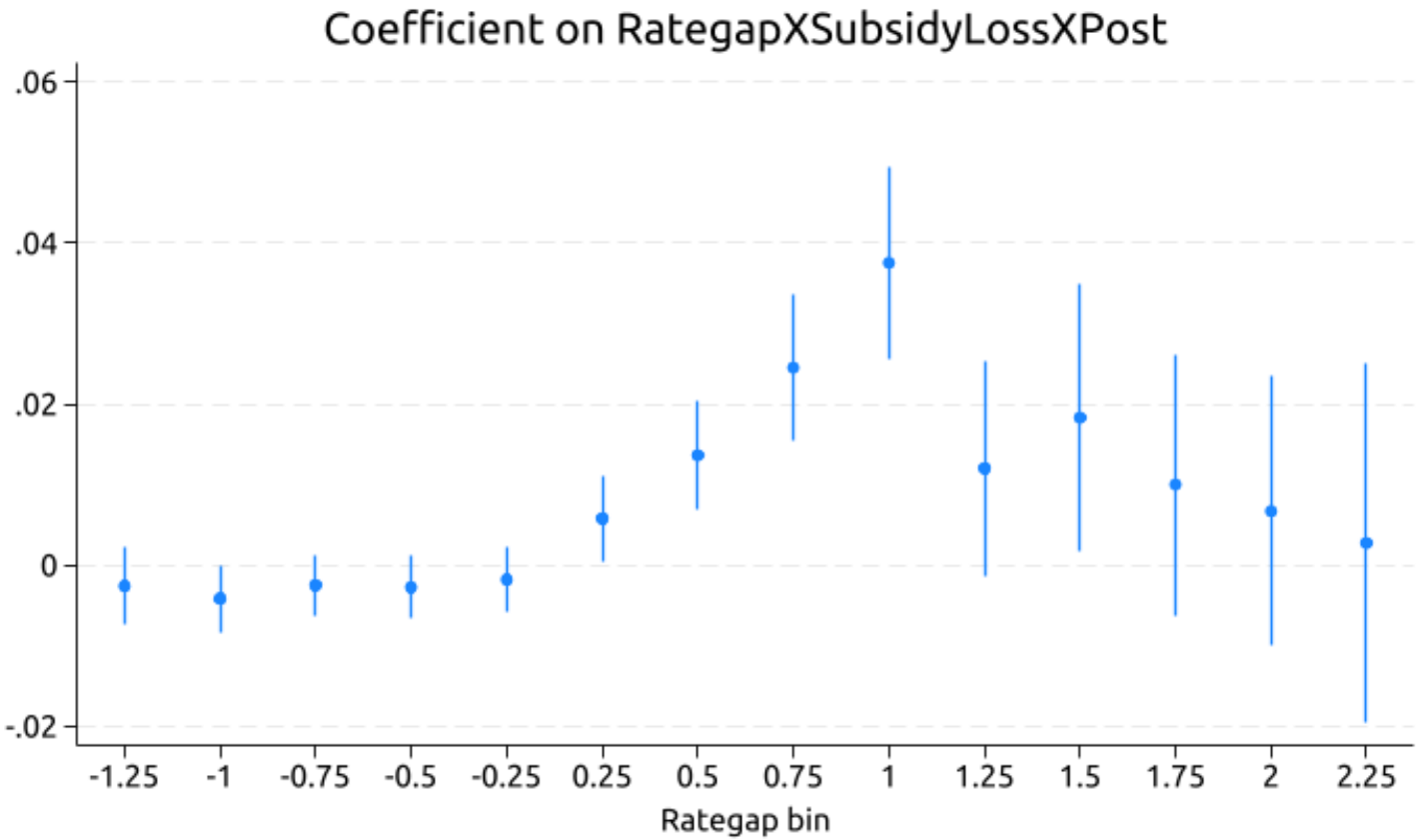
Approach 1: Change in refinancing by deduction bin

coefficient on post x deduct bin x in-the-money



- Refis increase post-TCJA with size of subsidy loss
- For bins 22-26, **19 bps** subsidy loss $\rightarrow$ 0.5 ppt $\uparrow$ in refi propensity (**25%** increase)

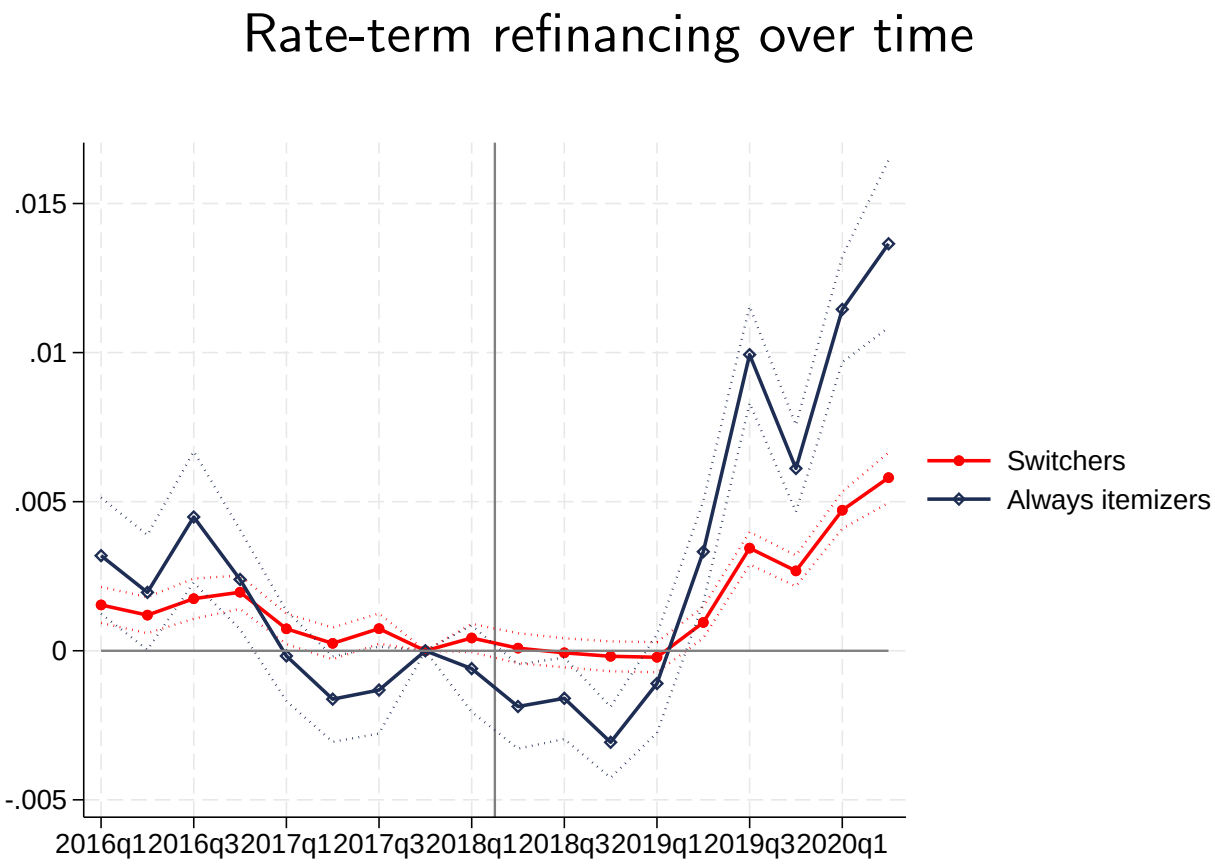
Approach 2: Change in refi by rate gap x subsidy loss



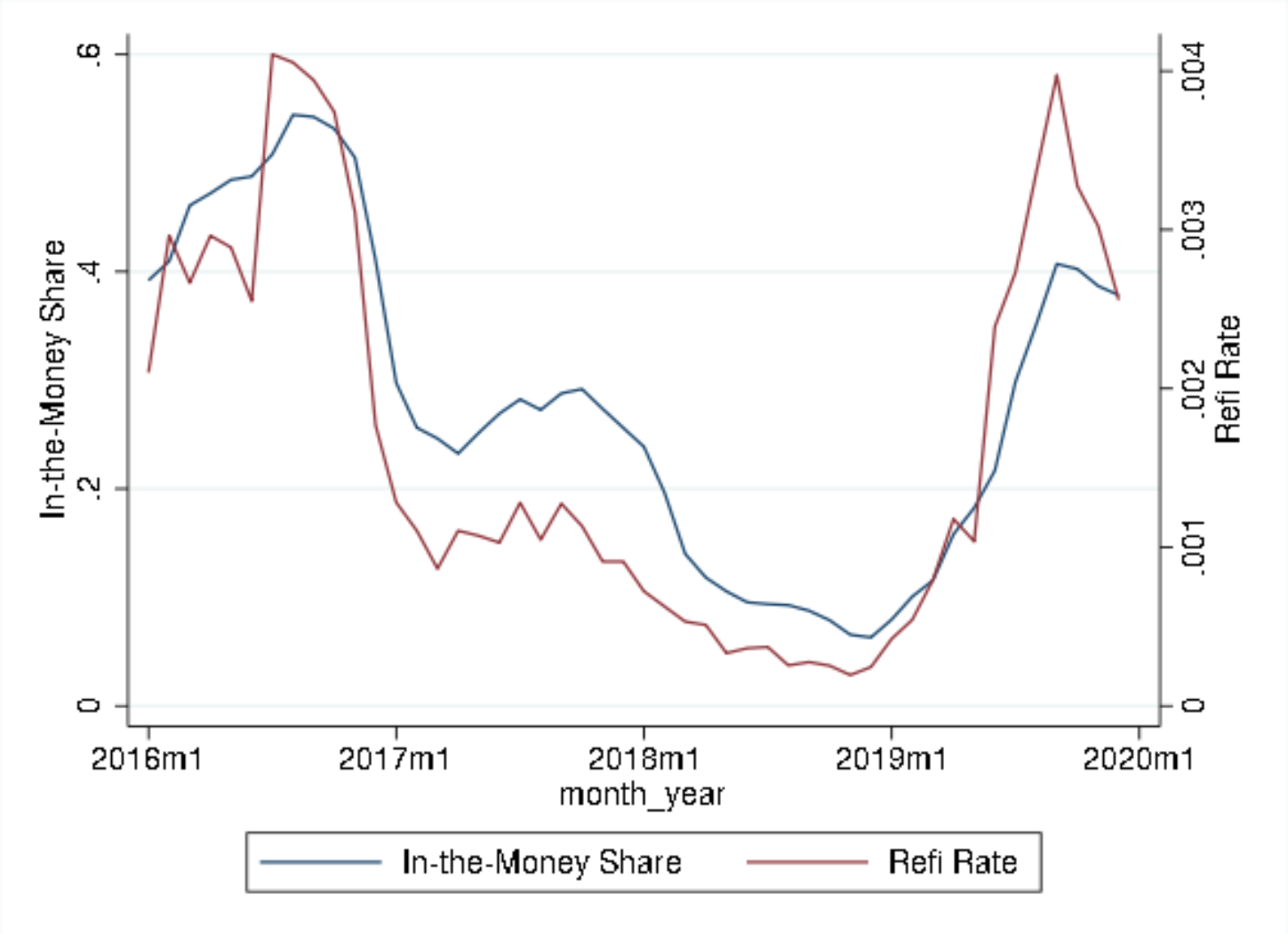
- Refi increase strongest for rate gaps 0.5-1.5, most rate sensitive

Approach 3: Parallel trends before TCJA

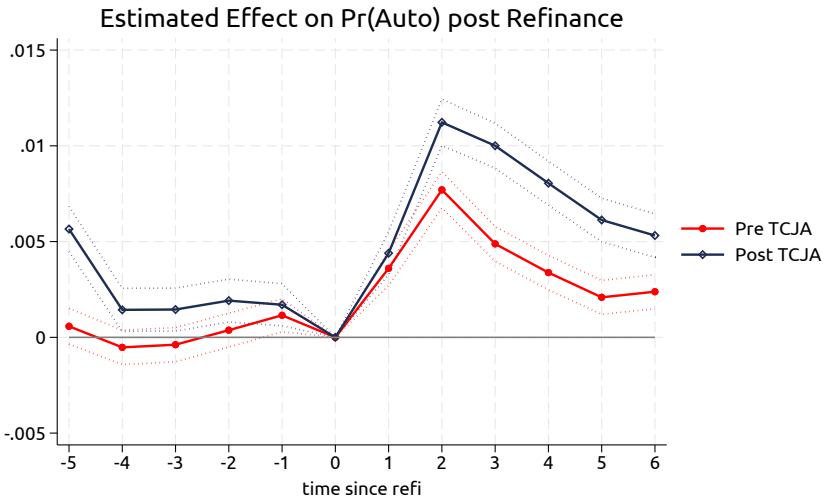
$$Pr(Refi_{i,t}) = \sum_{\tau} \delta_t * \beta_\tau ItemizerType_{i,t} * InTheMoneyCat_{i,t} + \rho X_{i,t} + \psi_{i,t} + \varepsilon_{i,t}$$

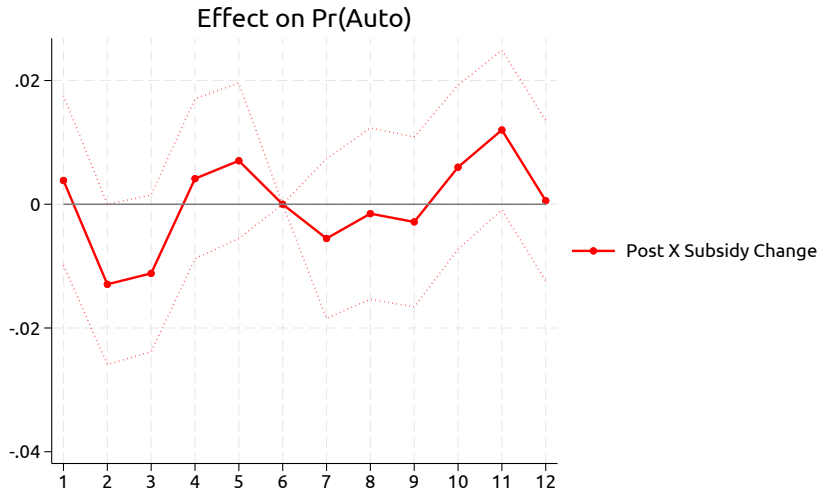


Refinancing rates high given in-the-money share



Consumption out of interest savings little changed





- The probability of buying a car post-refinance **increases** following the TCJA
- Increase in car-buying probability post-TCJA is **unrelated** to subsidy change
- TCJA consumption response proportionate to **extensive margin** response

Conclusion

- Loss of the MID due to TCJA increased sensitivity of refi to rates
  - For most affected borrowers, **19 bps** subsidy loss $\rightarrow$ 0.5 ppt $\uparrow$ in refi propensity (**25%** increase)
  - Effect is strongest for households who see the largest reduction in MID
  - Increase in refinancing driven by borrowers on the margin of being in-the-money (rate gap of 0.5-1.5 ppt), typically the most rate-responsive group.
  - Gap in refinancing appears only post-TCJA and not before

MID dampens the pass-through of monetary policy via refinancing channel