

More Tax, Less Refi?

The Mortgage Interest Deduction and Monetary Policy Pass-Through

Tess Scharlemann and Eileen van Straelen

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Disclaimer

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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 factor in the refinancing channel:
→ *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 $(r_0 - r_t)$
- MID may reduce sensitivity of *consumption* to mortgage rates, conditional on refinance (hard to measure)
- Refinancing requires (pre-tax) fixed costs (δ)
 - ▶ Not “in the money” until benefit from refinancing $> \delta$
- By reducing benefits from refinance, MID may reduce sensitivity of *refinancing* to mortgage rates (easier to measure)

What we do

- Quantify the effect of the MID on refinance probabilities.
- **Issue 1: Endogeneity.** Observable and unobservable factors may drive both tax and refinance probabilities
 - ▶ Exploit **TCJA**: changed MID uptake and value.
 - ▶ Novel approach to estimating borrower-level MID subsidy and itemization status.
 - ▶ Diff-in-diff: Compare borrowers with different effective pre-TCJA MID subsidies before and after TCJA.
- **Issue 2: Offsetting saving incentives** The MID also reduces the return to paying down mortgage debt, maybe increasing saving vs consumption (also interesting for stability reasons)
 - ▶ Use same approach to look at debt payoff.

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
- No effect of losing the interest subsidy on de-leveraging
- *Mortgage interest deduction meaningfully dampens the refinancing channel of monetary policy pass through*

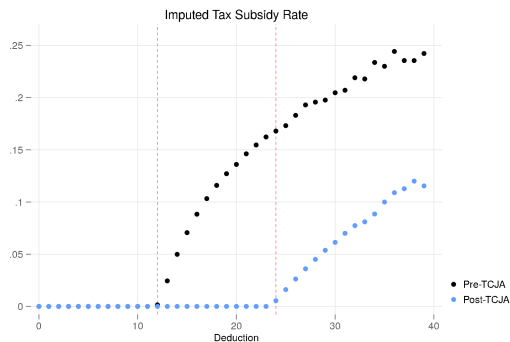
Overview of TCJA

- **Tax Cut and Jobs Act (TCJA)** changed itemizing decision.
 - ▶ **Before** the TCJA, a household could deduct:
 - ① Mortgage interest on mortgages up to \$1,000,000
 - ② State and local taxes (SALT)
 - ▶ **After** the TCJA (signed into law December 2017):
 - ① Mortgage interest deduction (new mortgages) capped at mortgage size of \$750,000
 - ② SALT deductions capped at \$10,000
 - ③ Standard deduction doubled
 - ▶ → ~ **50%** decline in itemizing

Data

- Two main challenges: guess itemization status and predict refinance incentive.
- Predict itemization status from 3 biggest components of deductions: mortgage interest, property tax, state income tax.
- Predict available refinance 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

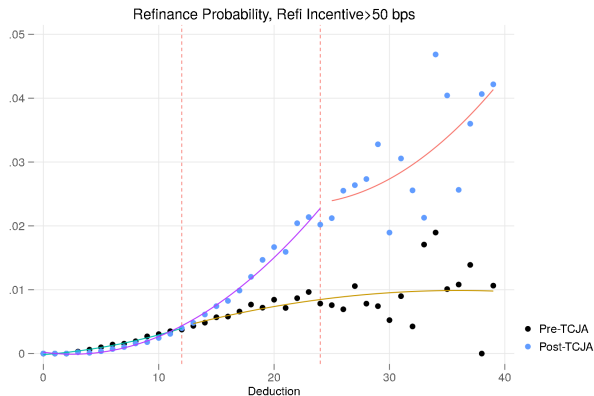


p = fraction of mortgage interest above standard deduction

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

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

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

Empirical Strategy

$$Pr(\text{Refi}_{i,t}) = \beta_1 * \text{Post}_t * \text{SubsidyChange}_i * \text{RefiIncentive}_{i,t} + \rho X_{i,t} + \psi_{i,t} + \varepsilon_{i,t}$$

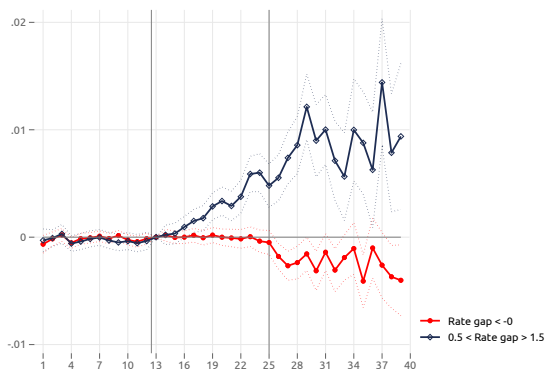
- Post_t : dummy for following TCJA (December 2017)
- $X_{i,t}$ controls for loan characteristics: e.g. ltv, dti, credit score, age
- $\psi_{i,t}$ nonparametric controls for determinants of subsidy loss interacted with quarter FE; zipcode x time FE
- Linear probability model, cluster by zipcode.

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

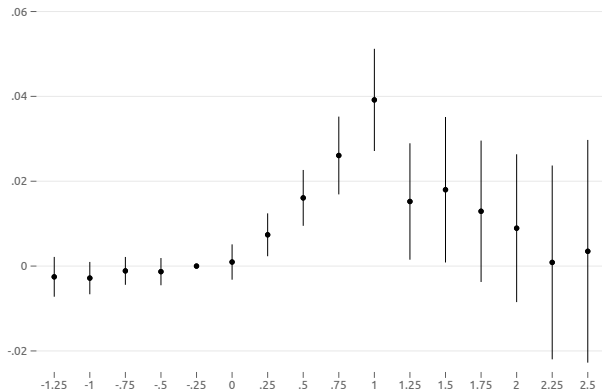
coefficient on post x deduct bin x in-the-money



- Refis increase post-TCJA with size of subsidy loss.
- For bins 22-26, **19 bps** subsidy loss → 0.5 ppt ↑ in refi propensity (**25%** increase).

Approach 2: Change in Refi by Rate Gap x Subsidy Loss

coefficient on post x subsidy loss x rate gap bin

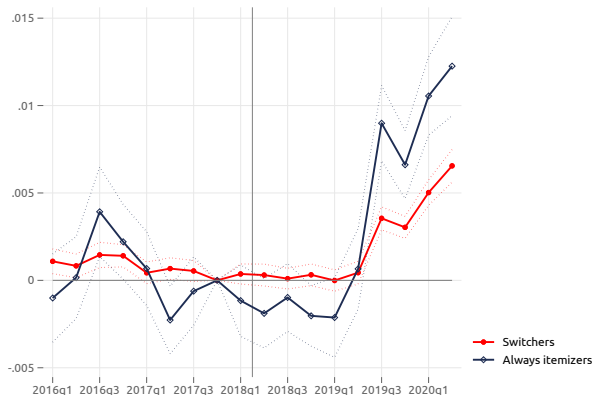


- Refi increase strongest for rate gaps 0.5-1.5, most rate sensitive.

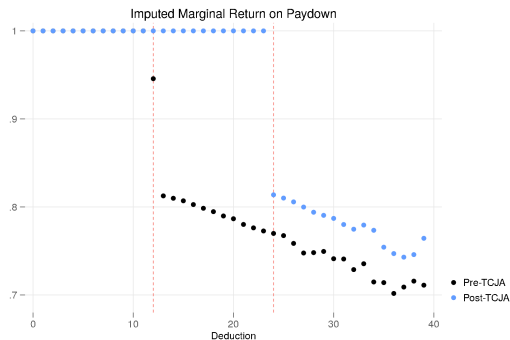
Approach 3: Parallel Trends before TCJA

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

Rate-term refinancing over time



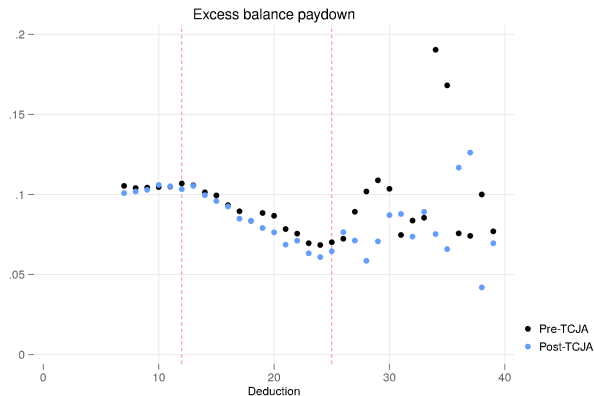
Structure of MID Subsidy: Paydown



Marginal return on mortgage paydown = $F * r$

$$F = \begin{cases} 1 & \text{if deduction} < \text{standard} \\ 1 - t & \text{if deduction} > \text{standard} \end{cases}$$

Excess Debt Paydown Little Changed After TCJA



- The % of balance paid-off in cash-in rate-term refi little changed
- % Δ current LTV at cash-out little changed
- \rightarrow *loss of MID did not cause significant deleveraging*

Conclusion

- Loss of the MID due to TCJA increased sensitivity of refi to rates
 - ▶ For most affected borrowers, **19 bps** subsidy loss → 0.5 ppt ↑ 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
 - ▶ The loss of the MID does **not affect deleveraging**
 - ★ → effect of MID on debt operates primarily at time of origination

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