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Minimum Payments and Debt Paydown in Consumer Credit Cards

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The views expressed are those of the authors and do not necessarily represent those of the Director of the Consumer Financial Protection Bureau nor those of the staff.

Our Goals: Describe Behavior, Estimate Effects of Policy Changes

1. Describe taxonomy of borrower behavior
 - Classification of payment behavior by borrower: full payer, minimum payer, mixed payer
 - Persistence of behavior within customer
 - Distribution of payments by fraction of balance
2. Estimate impact of minimum payment formula changes and disclosures on payment behavior
 - Increases in minimum payment floor
 - Three payment-related disclosures mandated by the CARD Act

Sample Description and Payment Behavior Taxonomy

Sample: General-Purpose Cards From Several Large Issuers

Credit Card Database (CCDB)

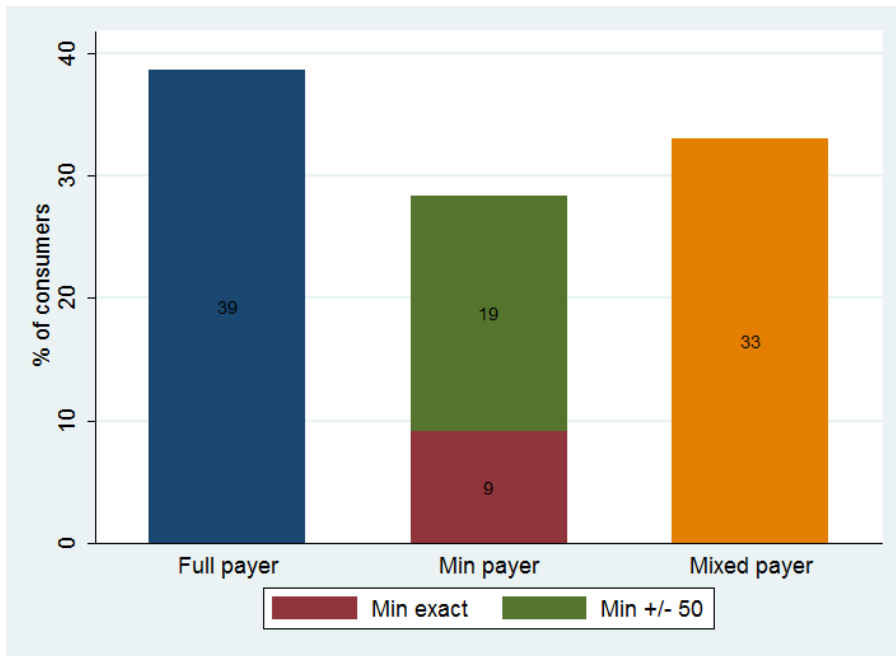
- Majority of all U.S. credit card outstandings
 - Analysis sample: several large issuers, 13 million observations
- Account-level monthly summary data
 - 2008 to present
- Linked to TransUnion credit record quarterly snapshots of debt profile
- Cannot link multiple accounts per customer, but can look at substitution effects

Summary Statistics

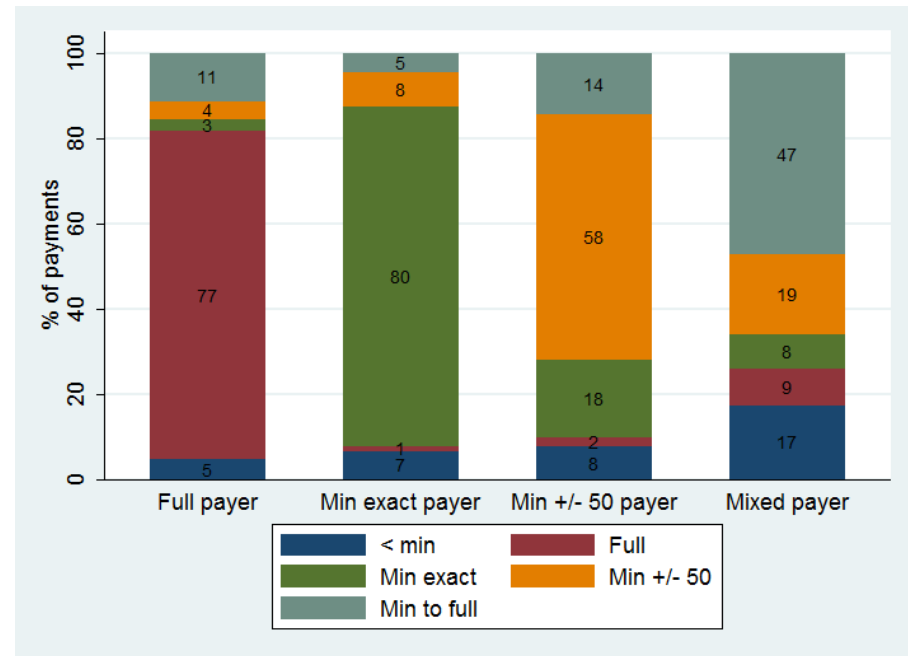
	Mean	Median	Std. Dev.
Income	\$69,797	\$55,800	\$121,683
Fico	713	725	85
Retail APR	16.15%	15.24	8.1
Multiple relationships	31%		
Multiple cards	33%		
Balance	\$3,233	\$1,412	\$4,607
Fraction paid	40%	9%	40%
Minimum payment	\$88	\$39	\$278
Payment:			
< min	10%		
Minimum exact	15%		
Minimum +/- 50	34%		
Min to full	23%		
Full	33%		

Most Accounts Exhibit Consistent Payment Behavior

% of Accounts

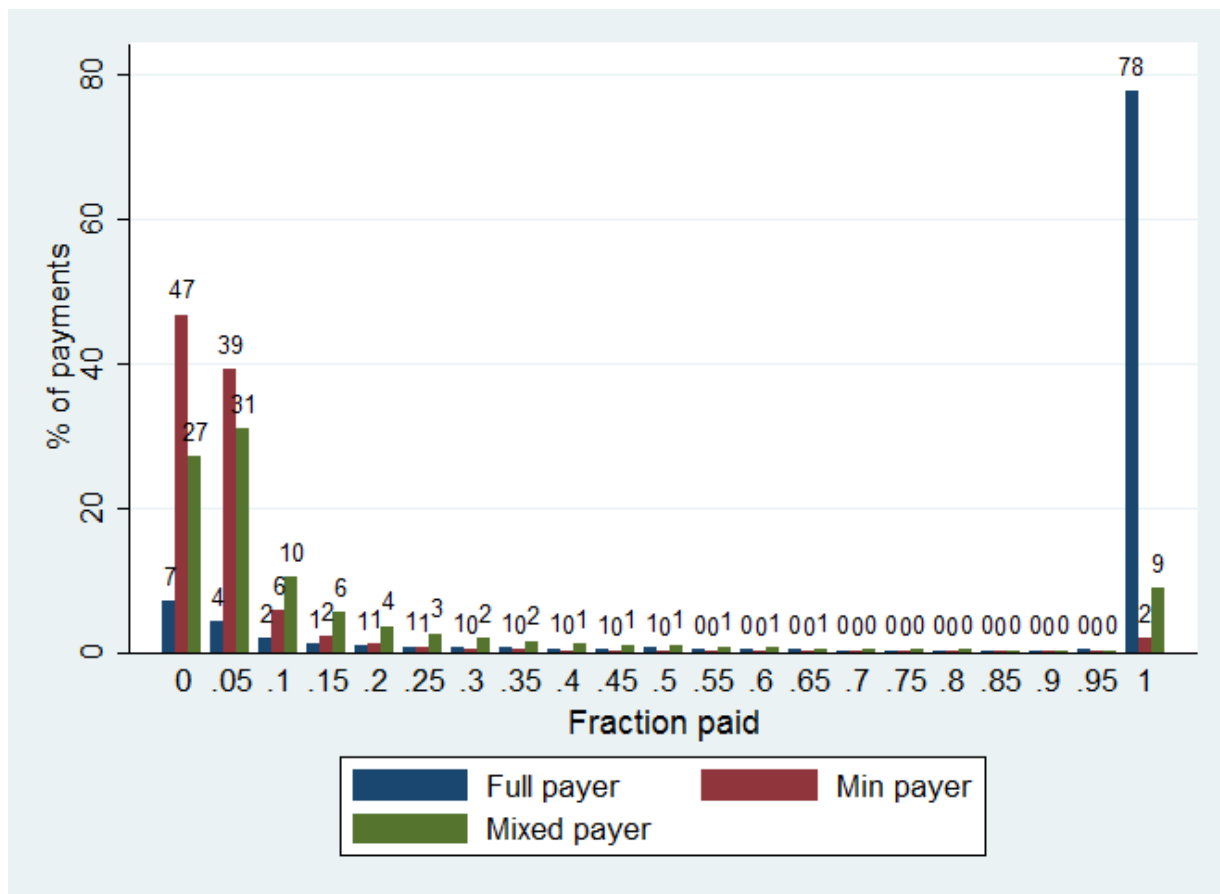


% of Observations



Payer types defined based on whether more than 50% of an account's statement months with positive balances were paid in full, paid with the minimum amount, or paid within \$50 of the minimum.

Payment as Fraction of Balance is Bimodal Within All Payer Types



This is also true within-borrower.

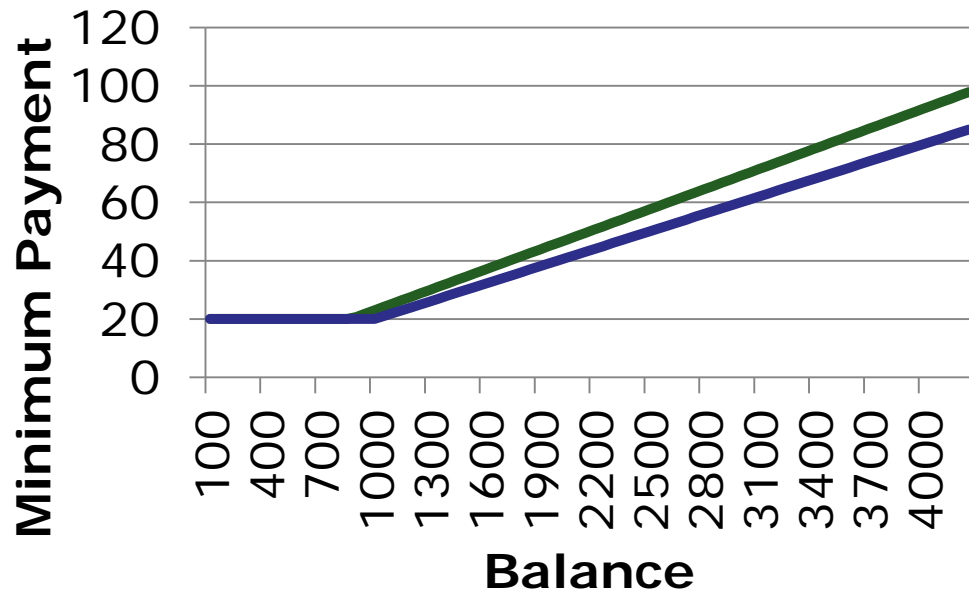
Research Strategy #1: The Impact of Changes in Minimum Payment Formulas

Identification Comes from Issuer-level Changes in Minimum Floors

- Several issuer-level changes in sample period
 - Increases in the minimum payment “floor” (i.e. flat part of the overall formula)
 - Different consumers are impacted differently depending on their balance and revolving behavior, generating within-issuer variation
- Empirical approach
 - Triple differences regressions
 - Controls for issuer, calendar month, consumer and card characteristics, account payment behavior
 - Robust to specifications with account fixed-effects
 - Standard errors clustered by issuer-month

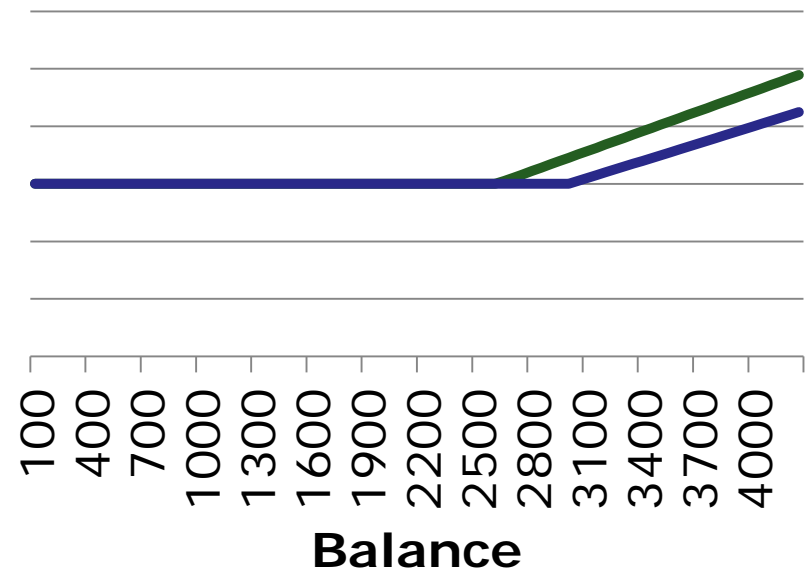
Identification: Changes in Minimum Payments Differ by Balance

\$20 floor



— Revolvers — Transactors

\$60 floor

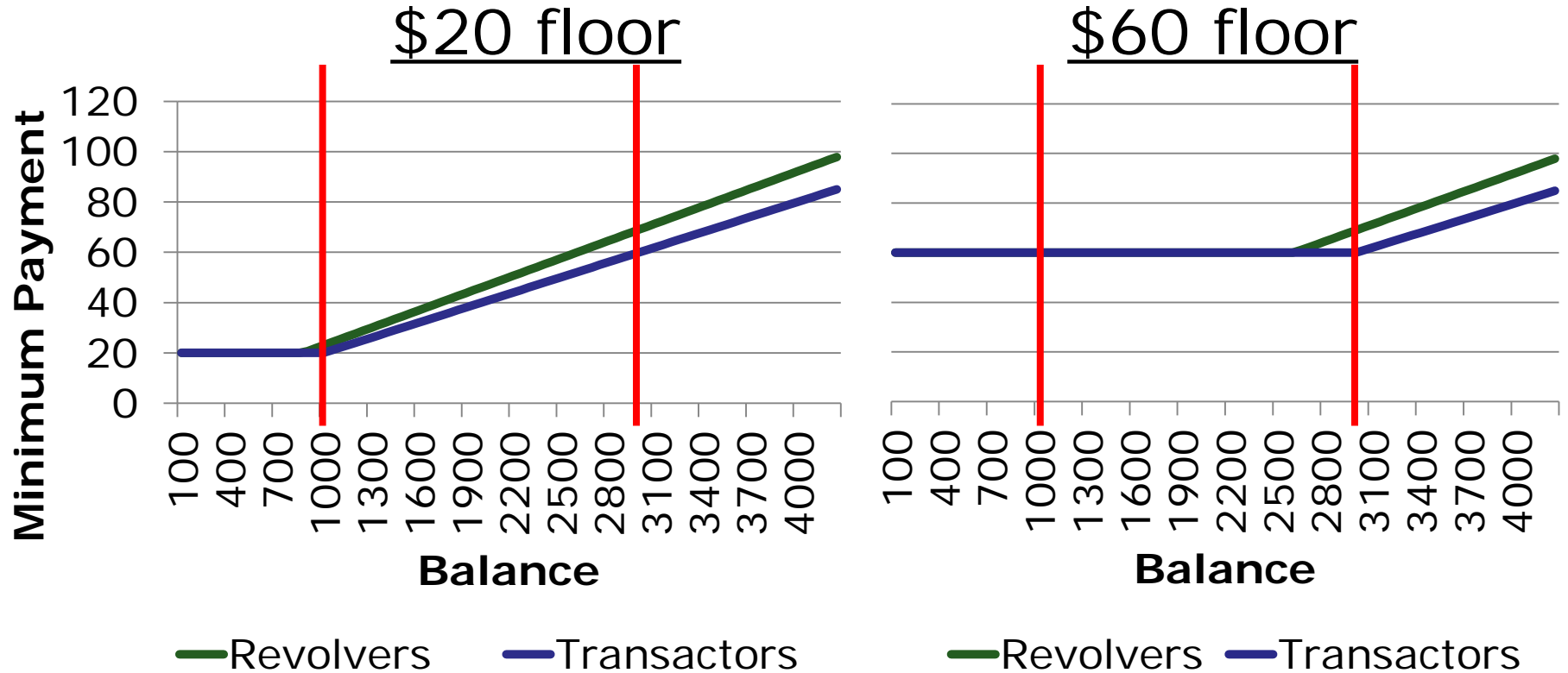


— Revolvers — Transactors

Graphs show a stylized version of typical issuer minimum payment formulas:

$$\text{minimum payment} = \text{Max} \{ \text{floor}, 1\% * \text{balance} + \text{interest} + \text{fees}, 2\% * \text{balance} + \text{fees} \}$$

Identification: Changes in Minimum Payments Differ by Balance

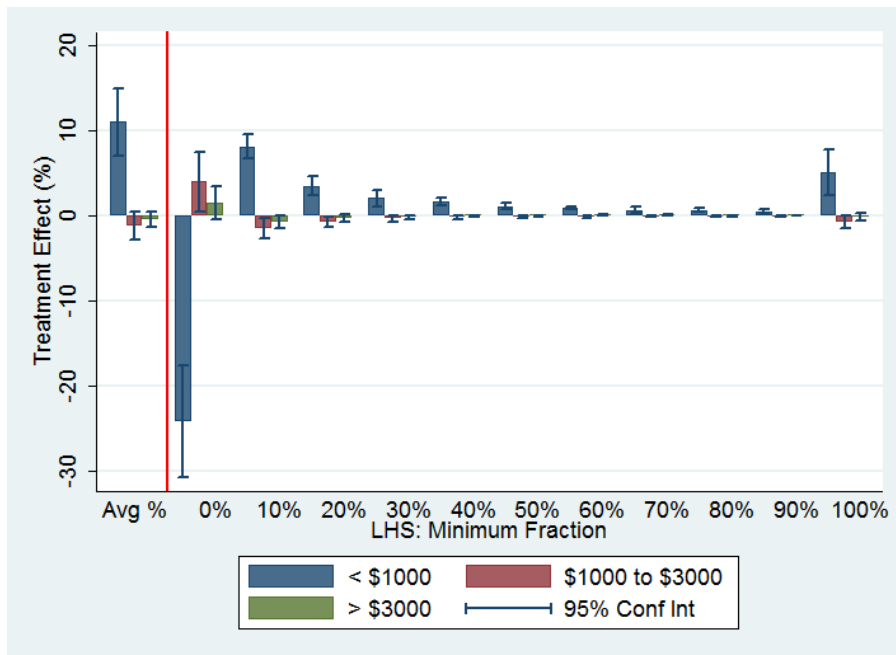


Graphs show a stylized version of typical issuer minimum payment formulas:

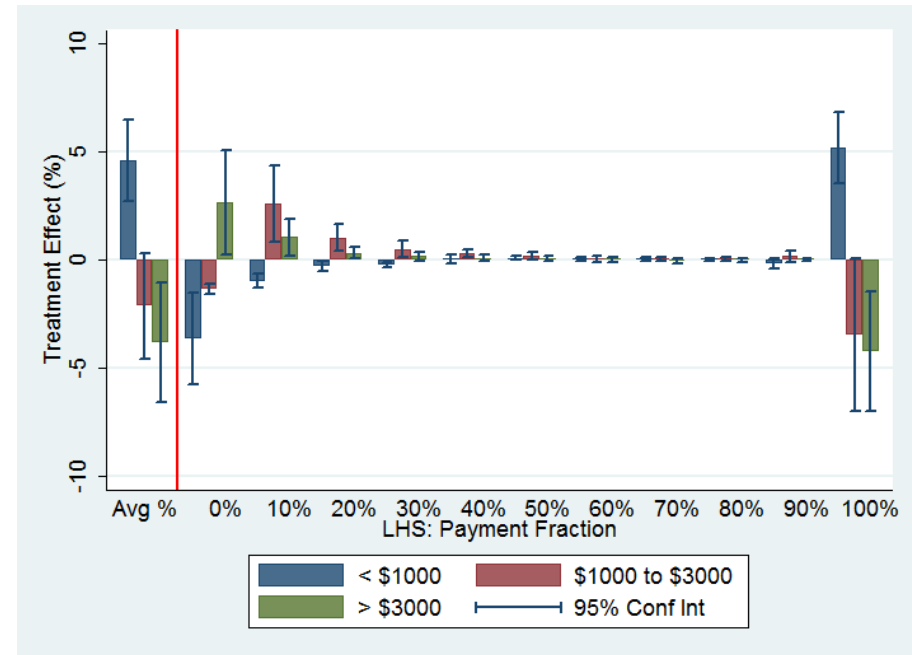
$$\text{minimum payment} = \text{Max} \{ \text{floor}, 1\% * \text{balance} + \text{interest} + \text{fees}, 2\% * \text{balance} + \text{fees} \}$$

Four Percent of High-balance Account-Months Move From Full to Low Payments

Minimum payment fraction



Actual payment fraction



Coefficients of triple difference regressions by balance. Dependent variables are indicators for minimum (left) and actual (right) payments within 10% bins by fraction of balance.

Research Strategy #2: Impact of CARD Act Disclosures

Most Statements Now Include Minimum and Late Payment Warnings

Disclosures Implemented in February, 2010:

Late Payment Warning (we won't focus on this):

Late Payment Warning: If we do not receive your minimum payment by the date listed above, you may have to pay a \$35 late fee and your APRs may be increased up to the Penalty APR of 28.99%.

General minimum payment warning (75% of statements):

Minimum Payment Warning: If you make more than the minimum payment each period, you will pay less in interest and pay off your balance sooner

Non- or negatively-amortizing minimum payment warning (7% of statements):

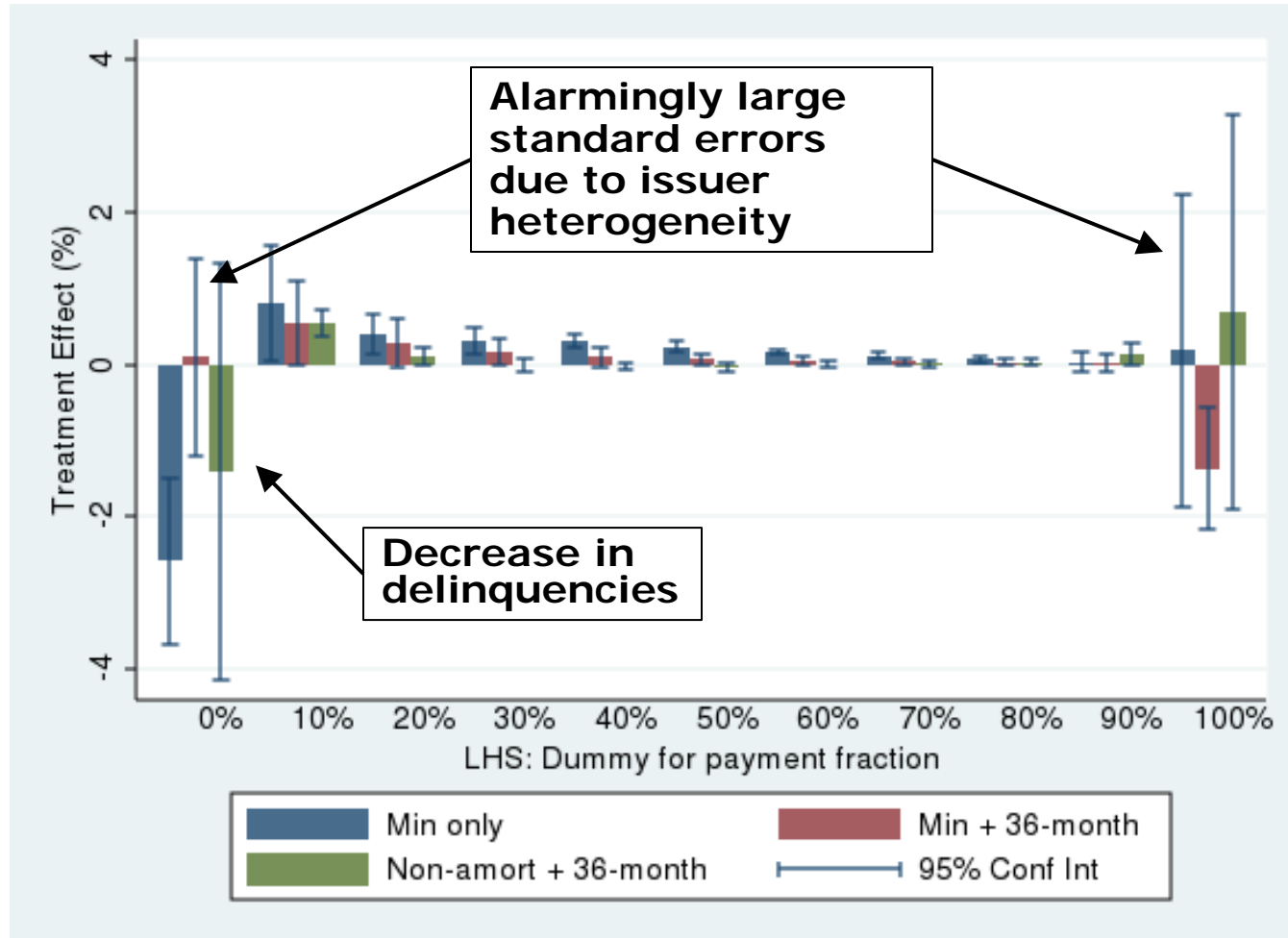
Minimum Payment Warning: Even if you make no more charges using this card, if you make only the minimum payment each month we estimate you will never pay off the balance shown on this statement because your payment will be less than the interest charged each month

More Than Half of Statements Also Include a Three Year Repayment Calculation

Sample Calculation:

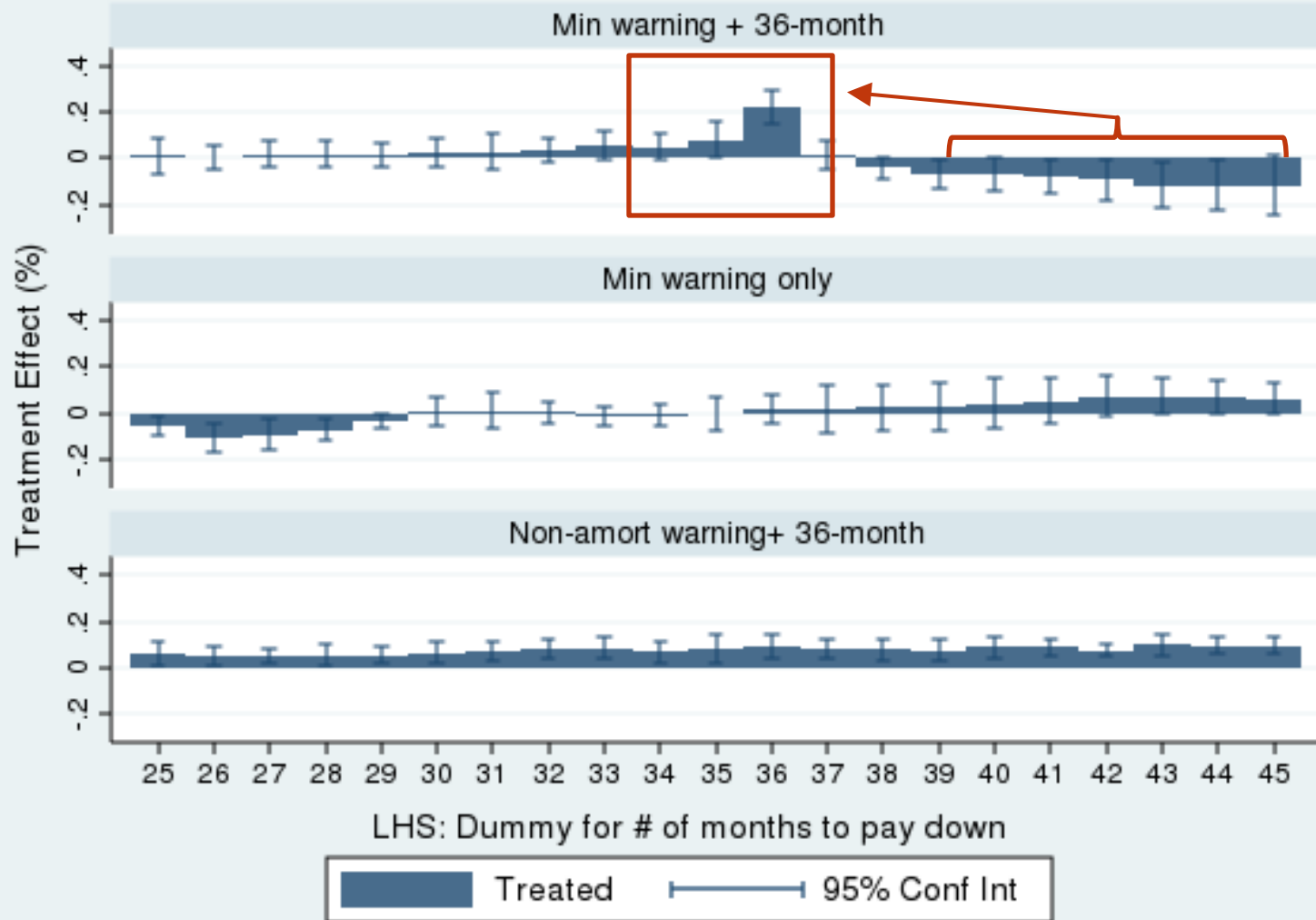
If you make no additional charges using this card and each month you pay. . .	You will pay off the balance shown on this statement in about. . .	And you will end up paying an estimated total of. . .
Only the minimum payment	11 years	\$4,745
\$103	3 years	\$3,712 (Savings = \$1,033)

Minimum Warnings Push Payments Up, 3-year Calc. Pushes Payments Down



Coefficients of triple difference regressions by disclosure eligibility. Left-hand-side (LHS) variables indicate payments within 10% bins by fraction of balance.

Three-year Calculation Pushed Payments Up Slightly for 0.2% of Account-Months



Key Findings: Policy Changes Impact Small Fractions of Accounts in Big Ways, Both Virtuous and Perverse

- Minimum payment floor increases
 - Small increase in delinquencies and 5% overall increase in payments for low-balance account-months due to mechanical effect of change
 - 4% of high-balance account-months move from full to low payments
- CARD Act Disclosures
 - Minimum payment warnings: 1% overall increase in fraction paid
 - Three-year repayment calculation: 1% overall decrease in payments. 0.2% of account-months move to 3-year amount, mostly from the minimum
- **Common Patterns: Defaults and Nudges Significantly Impact Behavior**
 - Minimum payments and other low-value anchors lead to lower payments overall
 - Warnings that dissuade consumers from the minimum payment show some effectiveness
 - > nudges may not always work in the way we expect or intend

Next Steps: Event Study, Regression Kink, Policy Interactions, and Substitution

- Execution
 - Event study results
 - Difference-in-dynamic-regression-kink (DIRK) specification for formula changes
 - Interactions of disclosure requirements and floor changes
 - Substitution effects – TransUnion appends
 - Heterogeneous effects by FICO, income, etc.
- Building up the theory
 - Rational expectations theories seem like unlikely explanations
 - Similar effects for both real change in payment incentives and disclosure, so liquidity constraints unlikely to be full explanation
 - Effects are persistent, so transitory attention effects unlikely
 - Results point to substantial consumer heterogeneity
- Alternative hypotheses
 - Doesn't seem to be driven by rate surfers / promotional offers
 - Confounding CARD Act effects of fee decreases, etc?