The Equilibrium Effects of Asymmetric Information: Evidence from Consumer Credit Markets

Andres Liberman (NYU)   Christopher Neilson (Princeton)
Luis Opazo (ABIF)   Seth Zimmerman (Chicago)

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Motivation

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    - Limited duration of bankruptcy and default flags
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- Is this a free lunch? What happens to non-beneficiaries and in aggregate?
  - Hard questions to answer, need: i) sufficiently large shock to information, and ii) counterfactual for non-beneficiaries

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- ▶ Findings:
  1. Policy increases (decreases) expected costs for borrowers not in default (in default)
  2. Reduced (increased) borrowing among non-defaulters (defaulters); aggregate 4% drop in new borrowing
  3. Interpret with simple adverse selection framework, welfare <u>loss</u> under several assumptions for banking sector mark-ups

Agenda

Empirical setting

Effects of policy change on predicted costs and borrowing

Welfare

Empirical setting

Data and selected stats

1. Individual-level panel with bank balances, default (90 days), age, and gender; no contract terms (rates)

2. 6-month snapshots of "Consolidated Default", which add bank and non-bank debt (retailers) plus other sources (e.g., bounced checks)

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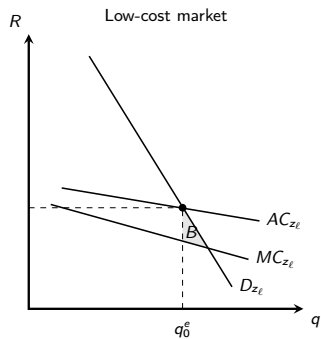|	
Fraction with Consolidated Default	**0.33**
Fraction with Bank Default	0.14
Consumer Bank debt ('000 pesos)	2,172
Age	44
Female	0.45
N	5.4 mm

Note: as of Dec-11

Policy change
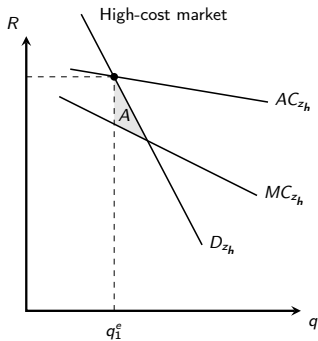
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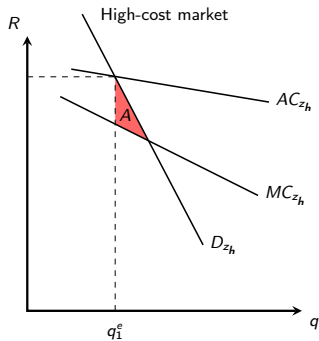- We (econometrician) observe consolidated defaults

Time series of policy change

Count of Defaulters
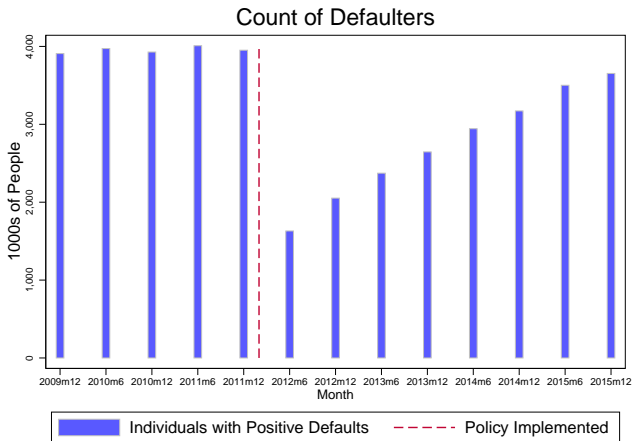
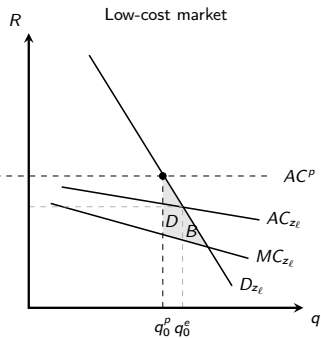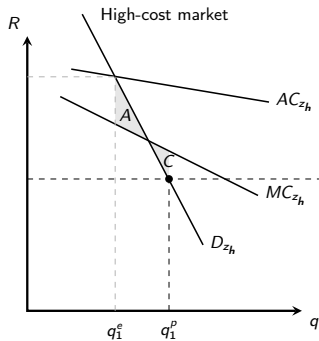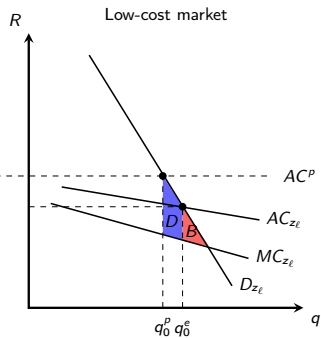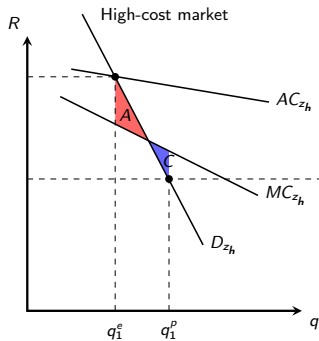Effects of policy change on predicted costs and borrowing

Framework

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High-cost market

R

AC_{z_h}

A

C

MC_{z_h}

D_{z_h}

q_1^e q_1^p q

Low-cost market

R

AC^p

AC_{z_ℓ}

D B

MC_{z_ℓ}

D_{z_ℓ}
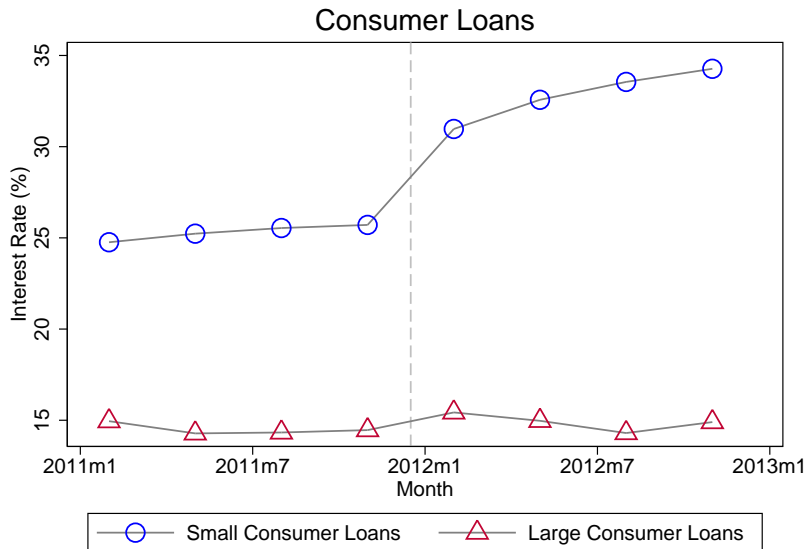
q_0^p q_0^e q
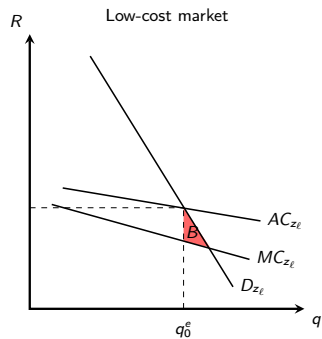
Framework

Suggestive evidence: aggregate rates

Consumer Loans

Estimate change in predicted costs

- Compute two predictions of costs $1\,(\Delta BankDefault > 0)$ at the time loans are issued
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  - One that uses registry information ("pre")
  - One that does not ("post")
- Random forest approach (e.g., Mullainathan and Spiess 2017)
  - Banks group individuals by observables to predict costs and make lending decisions
  - Consider many predictors and construct a regression "tree" for each
  - A "forest" averages predictions across all trees

Exposure to policy change

▶ For each individual, compute change in log cost prediction:
$Exposure = \log \hat{C}_{post} - \log \hat{C}_{pre}$

Predictions trained in pre-period
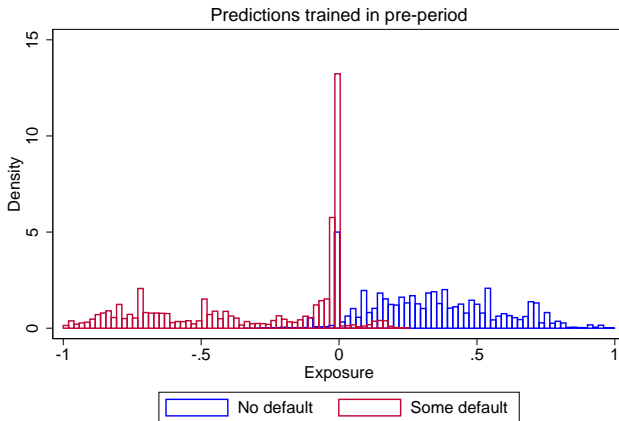
99.2% of exposure data, December 2010 onwards

Estimate effects on borrowing

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- Difference-in-differences: compare new consumer borrowing by high-cost (low-cost) relative to zero, before and after policy change

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- ▶ Difference-in-differences: compare new consumer borrowing by high-cost (low-cost) relative to zero, before and after policy change

- ▶ Recovers causal effect of default information on borrowing if
    1. Parallel trends for high-cost (low-cost) relative to zero, and
    2. No effect for the zero-exposure group: see paper for evidence using cohort analysis

Effects of deletion on costs and borrowing

$$Y_{i,c} = \gamma_c + \underbrace{\tau_C}\ D_{iC} + X_{iC}\Psi_C + e_{iC}$$

○	High Exposure	+ 95% CI
△	Low Exposure	× 95% CI
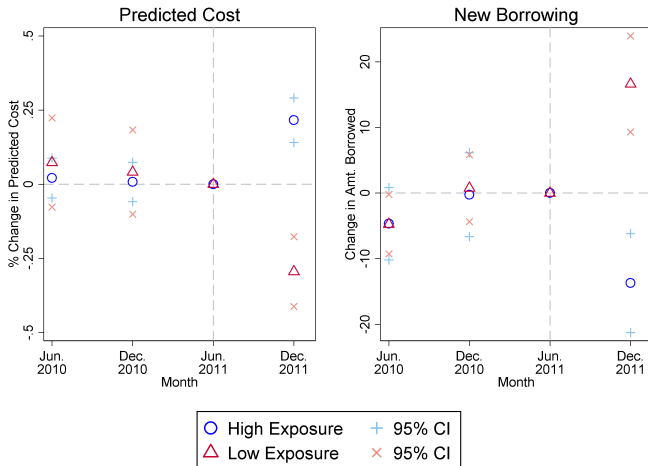
Aggregating

- Net: policy reduced borrowing by $40 million, 4% of pre-period new borrowing
  - Low-cost market: 2.1mm individuals, aggregate $60 million loss
  - High-cost market: 0.6 mm individuals, aggregate $20 million gain
- Bigger loss among poorer individuals and those without a mortgage

Welfare

Welfare

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- If efficient ex ante: going from no to some adverse selection always reduces welfare
  - But: we find that deletion decreases costs in high-cost group and increases them in low-cost, consistent with downward sloping average cost curves and adverse selection in pre-period

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  - But: we find that deletion decreases costs in high-cost group and increases them in low-cost, consistent with downward sloping average cost curves and adverse selection in pre-period
- In second-best world, welfare may still increase if high-cost value credit more than low-cost
  - Benchmark with zero-markups suggests welfare loss

Benchmark: no mark-ups

Full Sample
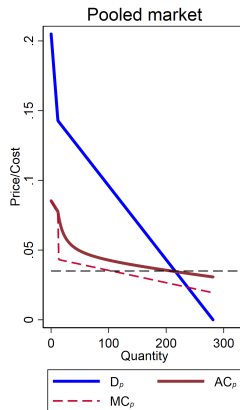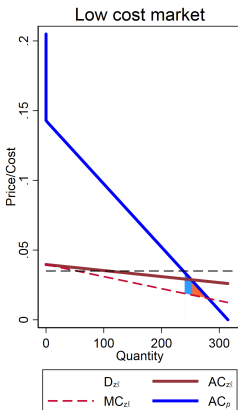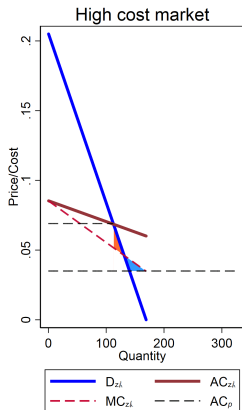
Welfare loss under various mark-ups

% change in welfare loss
relative to baseline loss
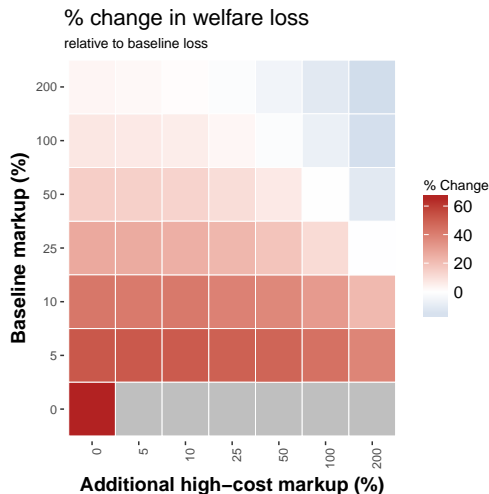
- No evidence of counteracting effect in other credit markets; but: potential externalities (e.g., labor markets Bos, Breza, Liberman (2018)) and insurance effect

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- Relevant to study trade-offs in a "big-data" world where past behavior is publicly available and predicts future behavior