Regulating Consumer Financial Products: Evidence from Credit Cards

Sumit Agarwal, NUS
Souphala Chomsisengphet, OCC
Neale Mahoney, Chicago Booth and NBER
Johannes Stroebel, NYU Stern, CEPR, and NBER
Motivation

- Surge of interest in **regulating consumer financial products**
  - CFPB focusing on mortgages, payday loans, student loans, credit cards
Motivation

• Surge of interest in **regulating consumer financial products**
  - CFPB focusing on mortgages, payday loans, student loans, credit cards

• Proponents
  - Firms exploit behavioral biases, especially among the poor
  - Regulation and additional information can protect consumers
Motivation

- Surge of interest in **regulating consumer financial products**
  - CFPB focusing on mortgages, payday loans, student loans, credit cards

- Proponents
  - Firms exploit behavioral biases, especially among the poor
  - Regulation and additional information can protect consumers

- Skeptics
  - Hard to transfer surplus from producers to consumers (Whac-A-Mole)
  - “The reduced revenue stream to lenders from these fees would mean that other rates and fees would be adjusted to compensate” (Mullainathan et al., 2009)

- How should regulation look like? Prohibiting certain products & behaviors? Providing additional information?
Credit Card Market

- Seen by many as particularly exploitative

  “The whole business model of the credit card industry is not designed to extend credit but to induce mistakes and trap consumers into debt. This is an industry that has been thriving on misleading consumers.” (Dodd, 2009)
Credit Card Market

• Seen by many as particularly exploitative
  
  - “The whole business model of the credit card industry is not designed to extend credit but to induce mistakes and trap consumers into debt. This is an industry that has been thriving on misleading consumers.” (Dodd, 2009)

• Credit CARD Act (2009)
  
  • Limit size of late fees ($40 → $25), restrict over limit fees (opt in)
  • Provide information on cost of making minimum payment
Credit Card Market

- Seen by many as particularly exploitative
  
  - “The whole business model of the credit card industry is not designed to extend credit but to induce mistakes and trap consumers into debt. This is an industry that has been thriving on misleading consumers.” (Dodd, 2009)

- Credit CARD Act (2009)
  - Limit size of late fees ($40 → $25), restrict over limit fees (opt in)
  - Provide information on cost of making minimum payment

- Pushback
  
  - “It appears that there have been significant trade-offs. Since the proposal and adoption of key provisions [...] average credit card interest rates have increased and credit card credit is less available, especially to subprime borrowers.” (ABA, 2013)

- This Paper:
  
  - Analyze intended and unintended consequences of the CARD Act
  - Learn about consumer financial regulation going forward
Data

- OCC Credit Card Metrics dataset

- Account-level panel data on all credit cards issued at 8 largest US banks
  - 170 million credit card accounts (30% of market)
  - Monthly from April 2008 to December 2012
  - FICO score, contract terms, utilization, fees, interest charges and payments
Revenue and Cost Drivers by FICO: Pre-CARD Act
Expressed as annualized percent of borrowing volume (ADB)
Revenue and Cost Drivers by FICO: Pre-CARD Act
Expressed as annualized percent of borrowing volume (ADB)
Revenue and Cost Drivers by FICO: Pre-CARD Act
Expressed as annualized percent of borrowing volume (ADB)
Revenue and Cost Drivers by FICO: Pre-CARD Act
Expressed as annualized percent of borrowing volume (ADB)
• Also includes cost of funds, operational expenses, marketing, etc.

• Credit card lending highly profitable (1.3% of ROA)
  • Low-FICO score segment most profitable, significantly driven by fees
  • Not risk-adjusted, but bad realization of draw (Financial Crisis)
Impact of CARD Act

• Research design

• Intended effects
  - Fees
  - Payoff nudge

• Unintended consequences
  - Theory: Surplus transfer vs. offset
  - Evidence
Identification of CARD Act Effect

- Challenging because of potentially confounding macroeconomic trends
- Difference-in-differences
  - Small business cards excluded from CARD Act (control group)
- Identifying assumption is parallel trends
  - Parallel pre-CARD Act trends
    - Many months, all outcome variables
  - Institutionally similar
    - Guaranteed by personal assets, underwritten on personal FICO score
    - Issued by same business units / jointly assessed by regulators
Econometric Model

• Consumer $\times$ month-specific coefficients

$$y_{it} = \sum_{t \neq \text{May 2009}} \beta_t 1\{\text{ConsumerCreditCard}_i\} + X'_{it} \delta_X + \delta_t + \epsilon_{it}$$

- $X_{it}$: Vector of covariants, including consumer card indicator
- $\delta_t$: Month FE
- Cluster standard errors by bank $\times$ product type

• Today: Also show you means of outcomes over time $\rightarrow$ Transparency
Impact of CARD Act

• Research design

• Intended effects
  - Fees
  - Payoff nudge

• Unintended consequences
  - Theory: Surplus transfer vs. offset
  - Evidence
Over Limit Fees: FICO <660
Raw Data

Annualized Over Limit Fees (% of ADB)

- Consumer Accounts
- Small Business Accounts

Years:
- 2008m1
- 2009m1
- 2010m1
- 2011m1
- 2012m1
Over Limit Fees: FICO < 660

Differences in Differences: $\beta_t$ coefficient
Over Limit Fees

- Did this reduce access to credit for people who want to go over limit?
Over Limit Fees

- Did this reduce access to credit for people who want to go over limit?
Conclusion on Fees

Late and Other Fees

• Late fees also decline
• No increase in other fees (e.g., annual fees)

Key Take-Aways

• Total decline in fees: Annualized 1.7% of ADB ($12.6 billion annually)
• Biggest decline for low-FICO consumers
  - FICO < 660: Approximately 5.5% of ADB
Outline

• Data
  - Pre-CARD Act market overview

• Research design

• **Intended effects**
  - Fees
  - **Payoff nudge**

• Unintended consequences
  - Theory: Surplus transfer vs. offset
  - Evidence
Payoff Nudge

- About 28% of people make only minimum payment or less.

Idea: Provide information about cost of this repayment behavior.
# Payoff Nudge

<table>
<thead>
<tr>
<th>If you make no additional charges using this card and each month you pay...</th>
<th>You will pay off the balance shown in this statement in about...</th>
<th>And you will end up paying an estimated total of...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only the minimum payment</td>
<td>10 years</td>
<td>$3,284</td>
</tr>
<tr>
<td>$62</td>
<td>3 years</td>
<td>$2,232 (Savings of $1,052)</td>
</tr>
</tbody>
</table>
Payoff Nudge

<table>
<thead>
<tr>
<th>If you make no additional charges using this card and each month you pay ...</th>
<th>You will pay off the balance shown in this statement in about ...</th>
<th>And you will end up paying an estimated total of ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only the minimum payment</td>
<td>10 years</td>
<td>$3,284</td>
</tr>
<tr>
<td>$62</td>
<td>3 years</td>
<td>$2,232 (Savings of $1,052)</td>
</tr>
</tbody>
</table>

\[
T = 1 - \ln \left( 1 - \frac{\text{APR}}{12} \frac{\text{Cycle Ending Balance} - \text{Payment}}{\text{Payment}} \right) \div \ln(1 + \frac{\text{APR}}{12})
\]

- \( T = 1 \): full repayment
- \( T = 36 \): approximately 3.5% of balance
0.5% of people shift behavior (intent-to-treat effect)
- Seasonality makes it hard to detect where they come from
  - No evidence that nudge increased overall payments
- Maximum aggregate annualized savings of $71 million
Change Around 36-Months Target: Small Business Accounts

- 0.5% of people shift behavior (intent-to-treat effect)
- Seasonality makes it hard to detect where they come from
  - No evidence that nudge increased overall payments
- Maximum aggregate annualized savings of $71 million
Outline

• Data
  - Pre-CARD Act market overview

• Research design

• Intended effects
  - Fees
  - Payoff nudge

• **Unintended consequences**
  - Theory: Offset vs. transfer
  - Evidence
Offset Model - Intuition

• When would we expect perfect pass-through?

1. Price = Marginal Cost
   • Pre-CARD Act industry profits
   • No observed pass-through of cost shocks (Cost of Funds)

2. Fees are Perfectly Salient
   • Experimental evidence suggests unlikely

• Paper has formal model
Interest Charges: FICO < 660

Raw Data

Annualized Interest Charges (% of ADB)

2008m1 2009m1 2010m1 2011m1 2012m1

Consumer Accounts

Small Business Accounts
Interest Charges: FICO < 660

Differences in Differences: $\beta_t$ coefficient

Annualized Interest Charges (% of ADB)

Year: 2008m1, 2009m1, 2010m1, 2011m1, 2012m1
Conclusion: Cost of Borrowing

- Overall profitability of lending declined as a result of the CARD Act

- Fees declined by an annualized 1.7 percentage points of ADB; aggregate savings of $12.6 billion

- Point estimate for offset is zero
  - Can rule out offset of more than 57% with 95% confidence

- Consistent with low fee salience and limited competition
Credit Limits: FICO < 660

Raw Data

Credit Limit ($) vs Time (m1)

- Consumer Accounts
- Small Business Accounts
Credit Limits: FICO < 660

Differences in Differences: $\beta_t$ coefficient
New Accounts: FICO < 660

Raw Data

Graph showing the percentage of new accounts (% of Pre-CARD Act Level) for consumer accounts and small business accounts from 2008m1 to 2012m1. The graph indicates a decrease in new accounts for both types over the years, with a slight increase towards the end of the period for consumer accounts and a more pronounced increase for small business accounts.
New Accounts: FICO < 660

Differences in Differences: $\beta_t$ coefficient
Average Daily Balances: FICO < 660

Raw Data

![Graph showing average daily balances for consumer and small business accounts from 2008m1 to 2012m1. The graph indicates a general decrease in balances over the years.](graph.png)
Average Daily Balances: FICO < 660

Differences in Differences: $\beta_t$ coefficient
Conclusion: Volume of Credit

- No effect on credit limits, new accounts, or ADB
  - New accounts effect less precisely estimated

- Consistent with model and limited price offset
  - Salient prices do not change
  - Consumer demand unaffected
CARD Act Conclusion

• Intended effects:
  - Fee limits reduced costs by 1.7 ppt of ADB ($12.6 billion)
  - Reduction of 5.5 ppt of ADB for low-FICO borrowers
  - Nudge had small but noticeable effect on payoff behavior
    - No evidence that it increased aggregate payments

• Unintended consequences:
  - No offsetting increase in interest rates, no reduction in credit volume

⇒ Regulation can transfer surplus to consumers
  - In particular in setting with non-salient fees and imperfect competition