

To Pay or Autopay? Fintech Innovation and Credit Card Payments

January 2023

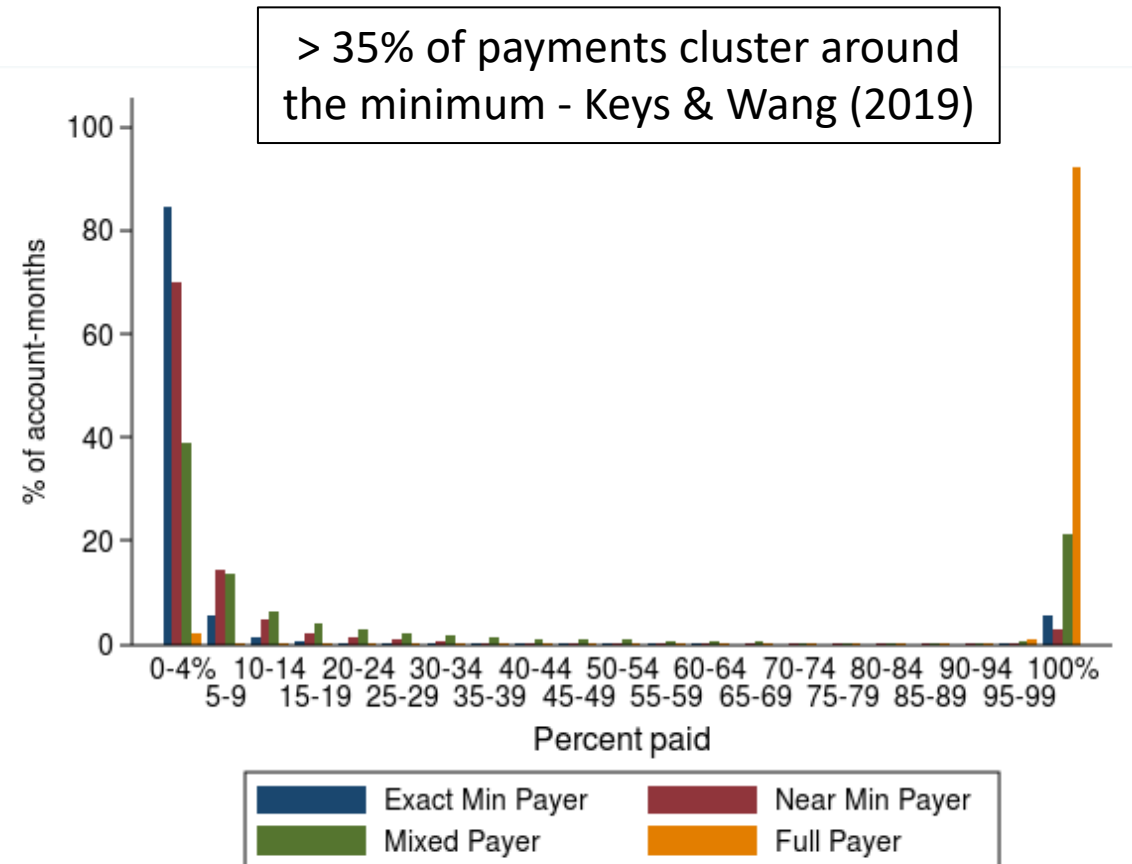
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How Does Technology Affect Credit Card Payment Behavior?

Causal effect of autopay for fintech credit card borrowers

- Two underwriting changes as shocks to autopay enrollment
- Estimate causal effect using RDD
- Benchmark: 20% of credit card accounts enrolled in autopay as of 2020, increasing over time (CFPB 2021)



Related Literatures on Consumer Behavior, Credit Cards, and Fintech

- **Credit card payment behavior**

Sakaguchi, Stewart, Gathergood, Adams, Guttman-Kenney, Hayes & Hunt (2022); Gathergood, Sakaguchi, Stewart & Weber (2022); Kuchler & Pagel (2021); Medina (2020); Keys & Wang (2019); Gathergood, Mahoney, Stewart & Weber (2019); Adams, Guttman-Kenney, Hayes, Hunt, Laibson & Stewart (2018)

- **Financial technology**

D'Acunto, Prabhala & Rossi (2019); Carlin, Olafsson & Pagel (2019); Philippon (2016); Goldstein, Jiang & Karolyi (2019); Thakor (2020)

- **Regulation and competition**

Agarwal, Chomsisengphet, Mahoney & Stroebel (2014, 2017); Stango & Zinman (2015); Ru & Schoar (2016); Nelson (2018); Gross, Kluender, Liu, Notowidigdo & Wang (2021)

Research Setting: Underwriting Change → Autopay Enrollment

1. Underwriting change → small increase / decrease in frictions to autopay enrollment

- a) Cashflow underwriting → requirement to link bank account → more salient prompt to opt in to autopay
- b) One positive and one negative nudge to autopay enrollment

2. Effects of autopay on payment outcomes

- a) Use date of account opening as IV for autopay enrollment via RDD
- b) Effects on minimum payments, delinquency, overall payments, etc

Key Finding: Autopay Has Large Effects on Minimum Payments

- **First stage: Autopay enrollment “nudge” highly sticky → accounts for half of all enrollment!**
- **Large effects on charge-offs**
 - Small technological defaults can affect credit risk
 - Contrary to models with moderate attention costs?
- **Effects of autopay conditional on not charging off:**
 - More minimum payments → could contribute to bimodal distribution
 - Decrease in full payments
 - Lower overall payment amounts

Autopay Opt-in Settings

Now, choose your monthly payment settings

Full statement balance ☒

Automatically pay your statement balance by the due date to avoid interest charges

Minimum payment ☐

AutoPay off ☐

By selecting "Done", you authorize to make withdrawals from your account, as provided in the **Full statement Balance Autopay Terms**

Done

Now, choose your monthly payment settings

Full statement balance ☐

Minimum payment ☒

Automatically pay the minimum due amount each month

AutoPay off ☐

By selecting "Done", you authorize to make withdrawals from your account, as provided in the **Minimum payment Autopay Terms**

Done

Now, choose your monthly payment settings

Full statement balance ☐

Minimum payment ☐

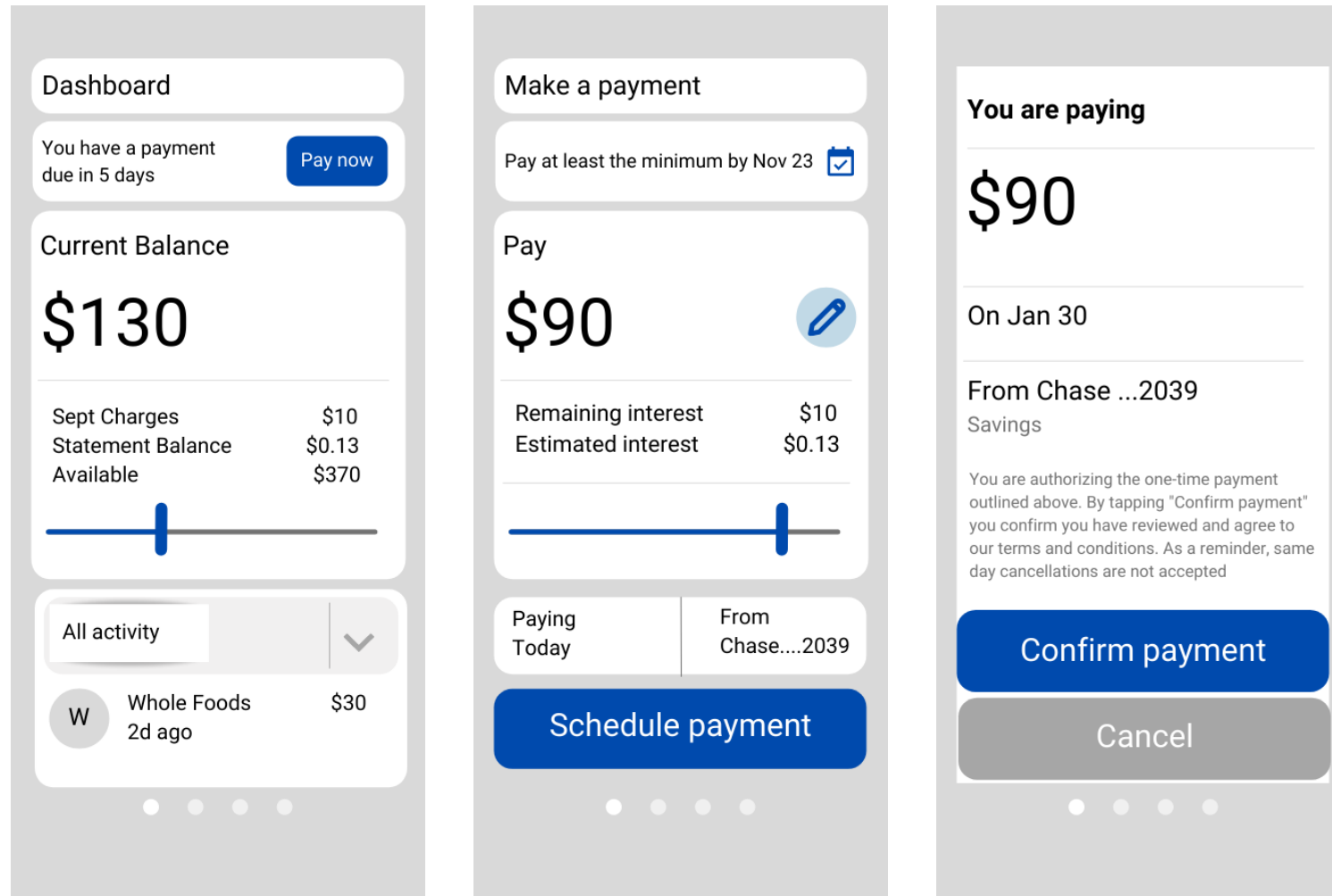
AutoPay off ☒

Turn AutoPay off and make your payments manually each month

Are you sure you want AutoPay off?
We recommend setting up recurring payments so you never miss a bill or damage your credit score. You can always cancel or change the amount before you pay

Done

Manual Payment Interface



Descriptive Statistics

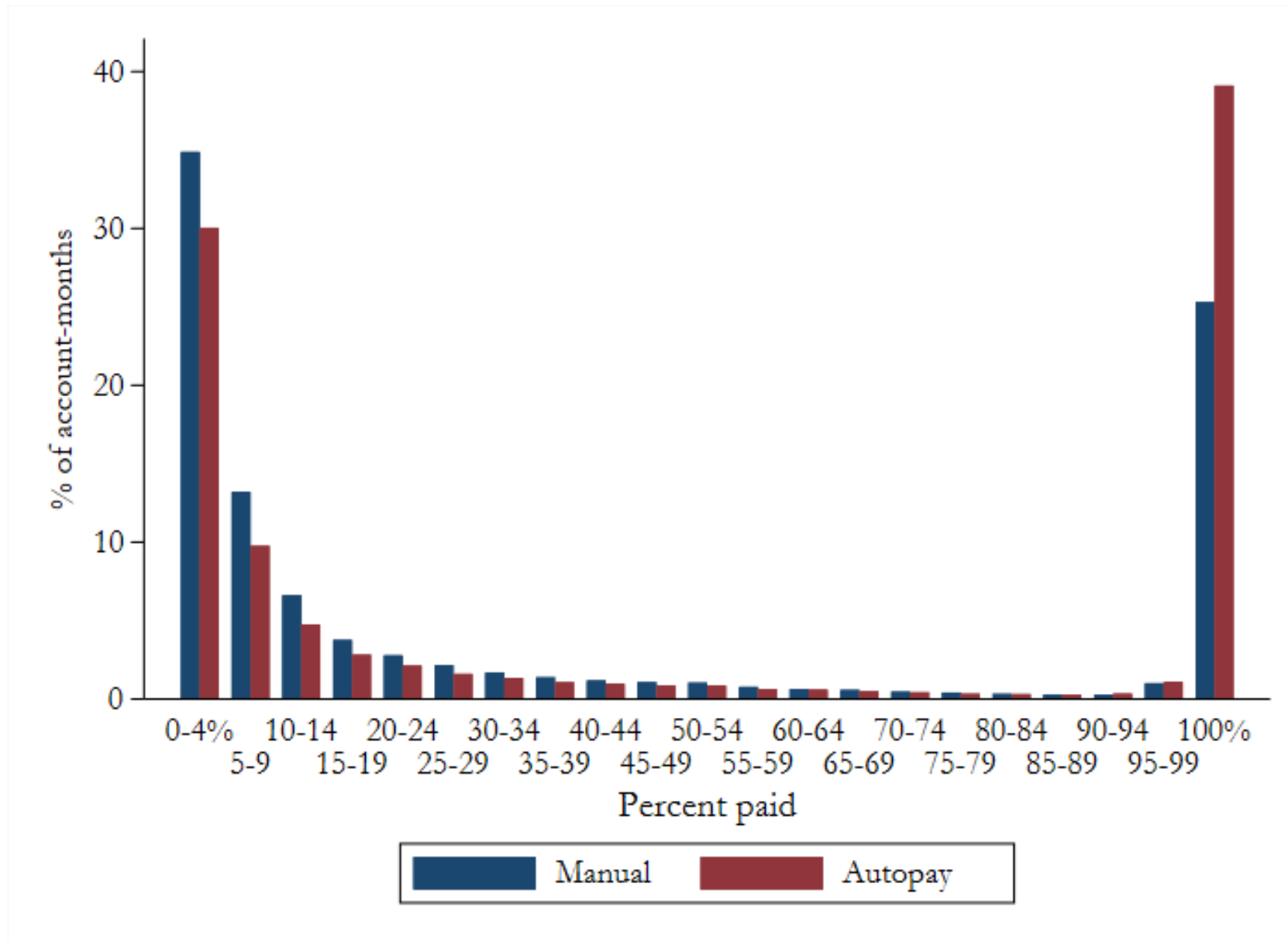
Sample: Fintech Consumers Have Lower Scores and Credit limits

Customers from fintech credit card company

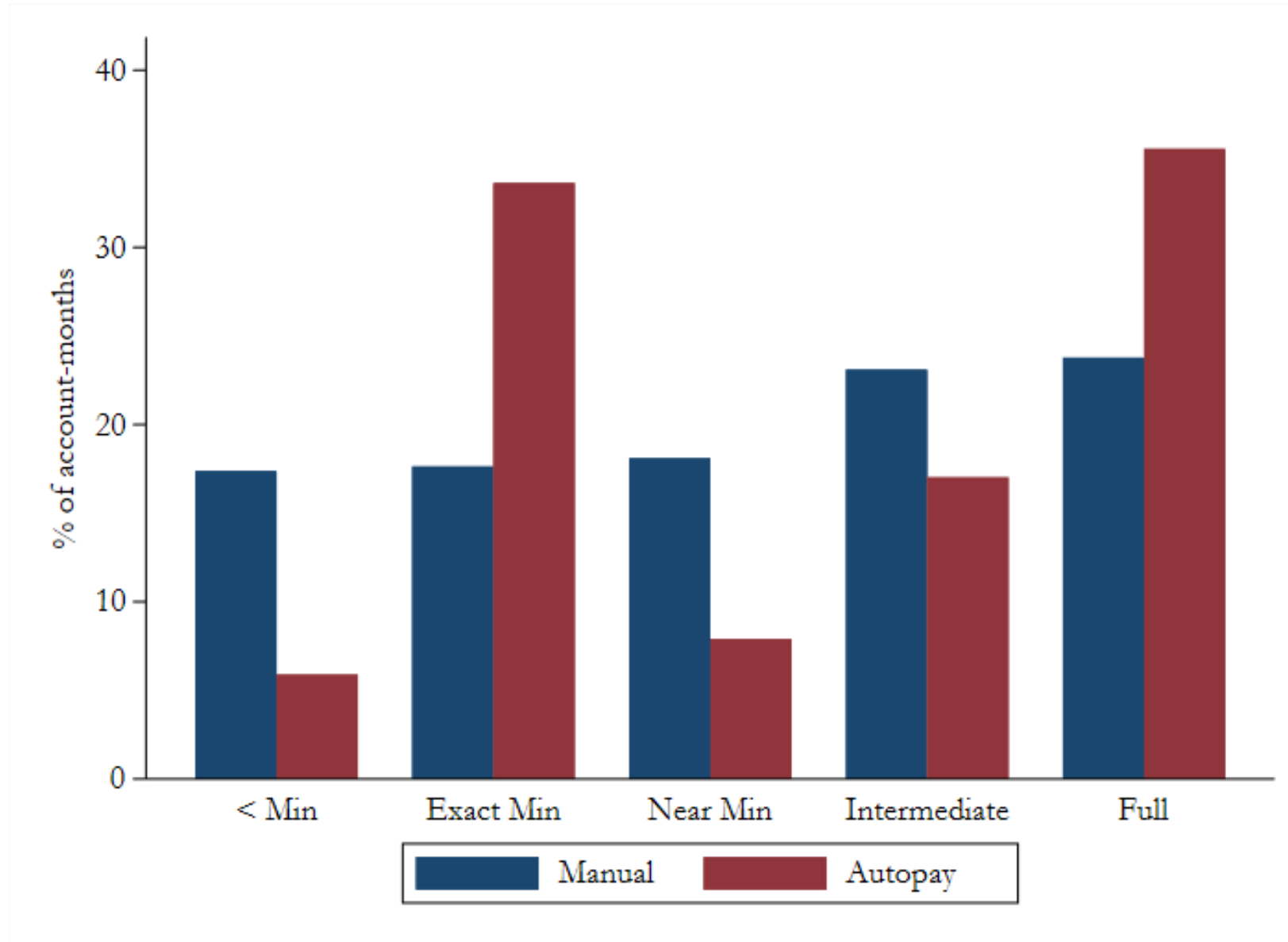
- 2018-2020 (63k accounts)
 - In progress: updates to 2021-22
- Limited demographics

Income	\$44,363
Vantage at application	664
Enrolled in autopay	27%
Credit limit	\$1,839
Retail APR	21%

Auto-payers are More Bimodal



Auto-payers Have Fewer Delinquencies



Regression Discontinuity Design:

effects of changes in underwriting on autopay
opt-in and payment outcomes

RDD: Underwriting Changes Instrument for Autopay Enrollment

Two-stage design using origination date as the running variable

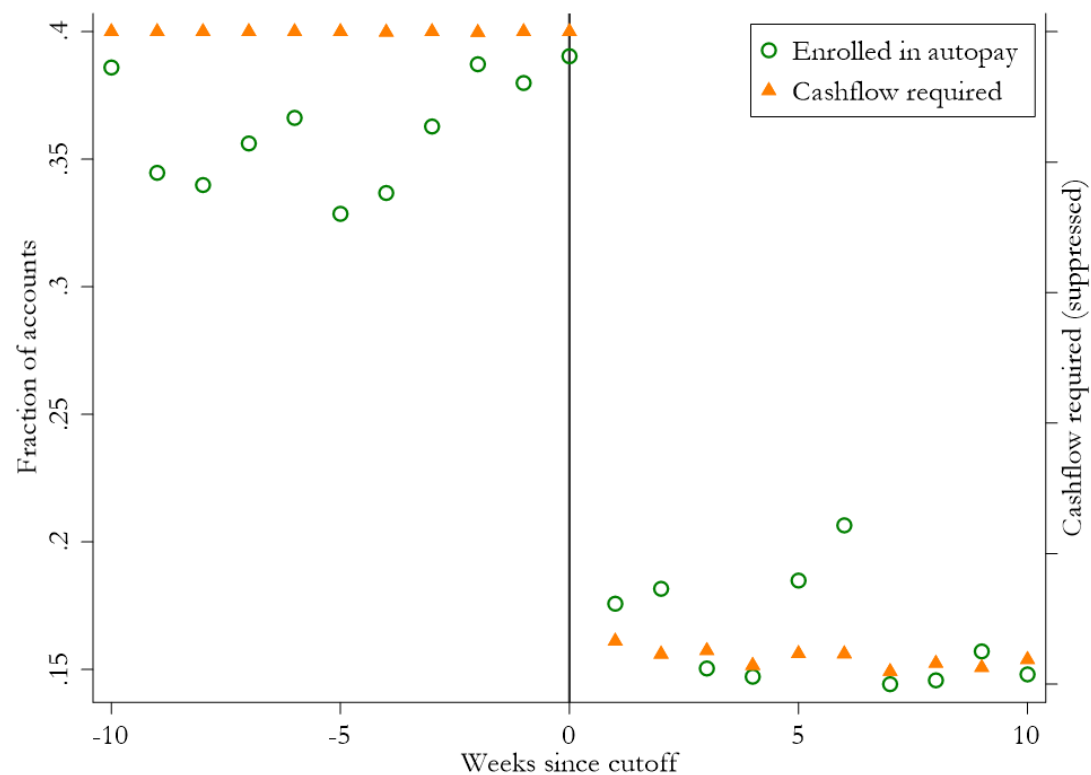
$$Y_{it} = \alpha + \beta \text{Autopay}_{it} + X_{it} + \epsilon_{it}$$

$$\text{Autopay}_{it} = \alpha + \beta \text{Post}_i + \gamma \text{OrigDate}_i^n + \kappa(\text{Post}_i \times \text{OrigDate}_i^n) + X_{it} + \epsilon_{it}$$

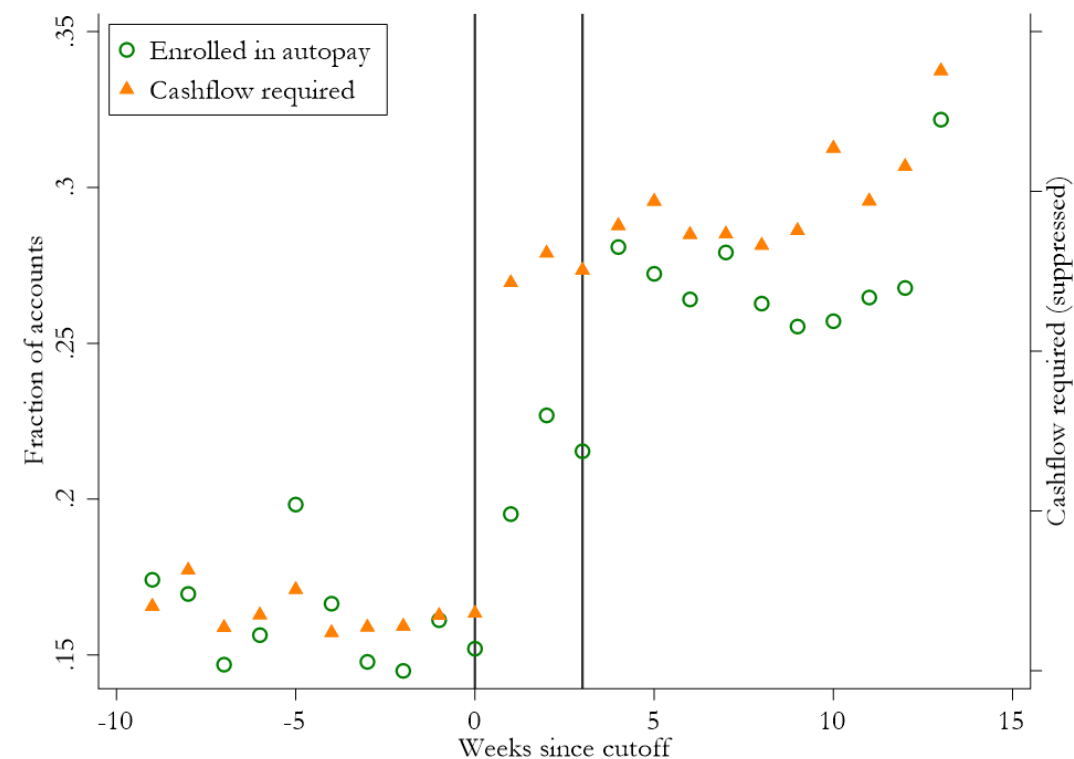
- With and without controls X_{it} :
 - calendar month, state, and origination channel fixed effects
 - account age and account age squared
 - quintiles of vantage, income, and age at application, and APR

First Stage: Autopay Enrollment

First Underwriting Change

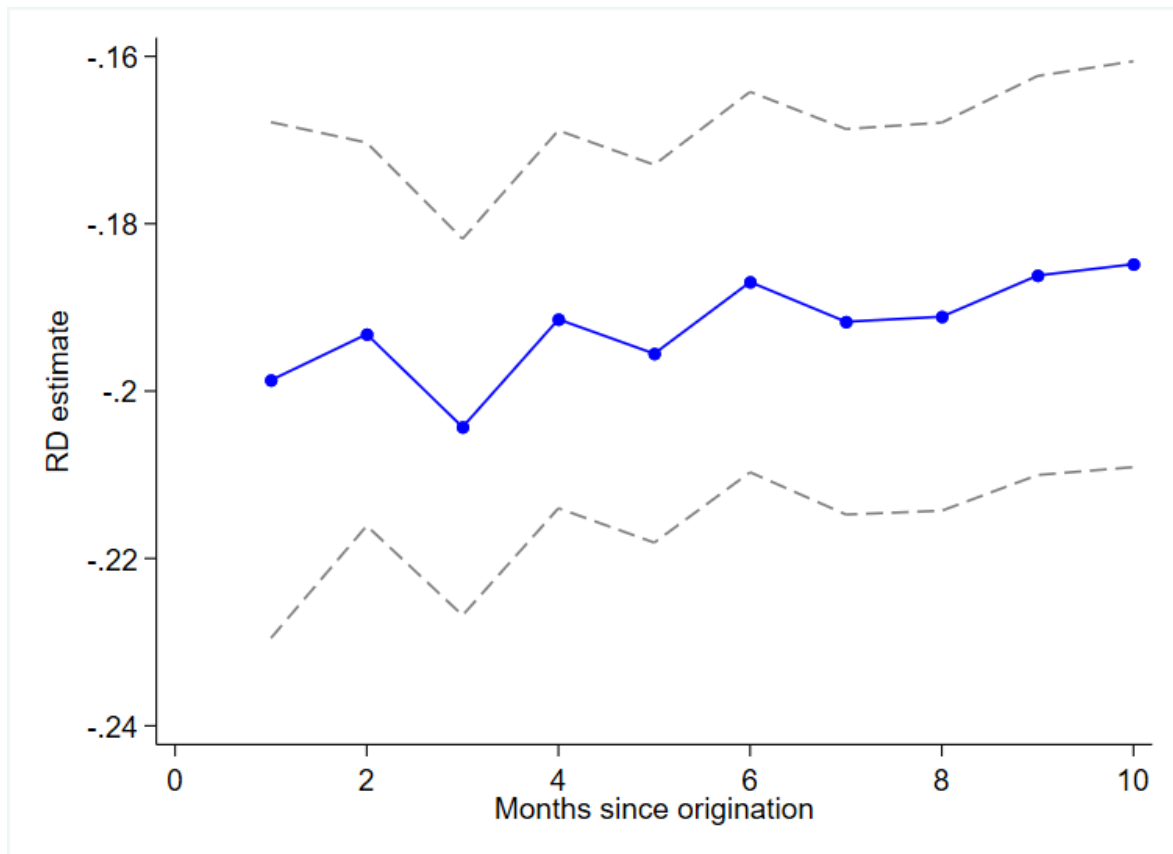


Second Underwriting Change

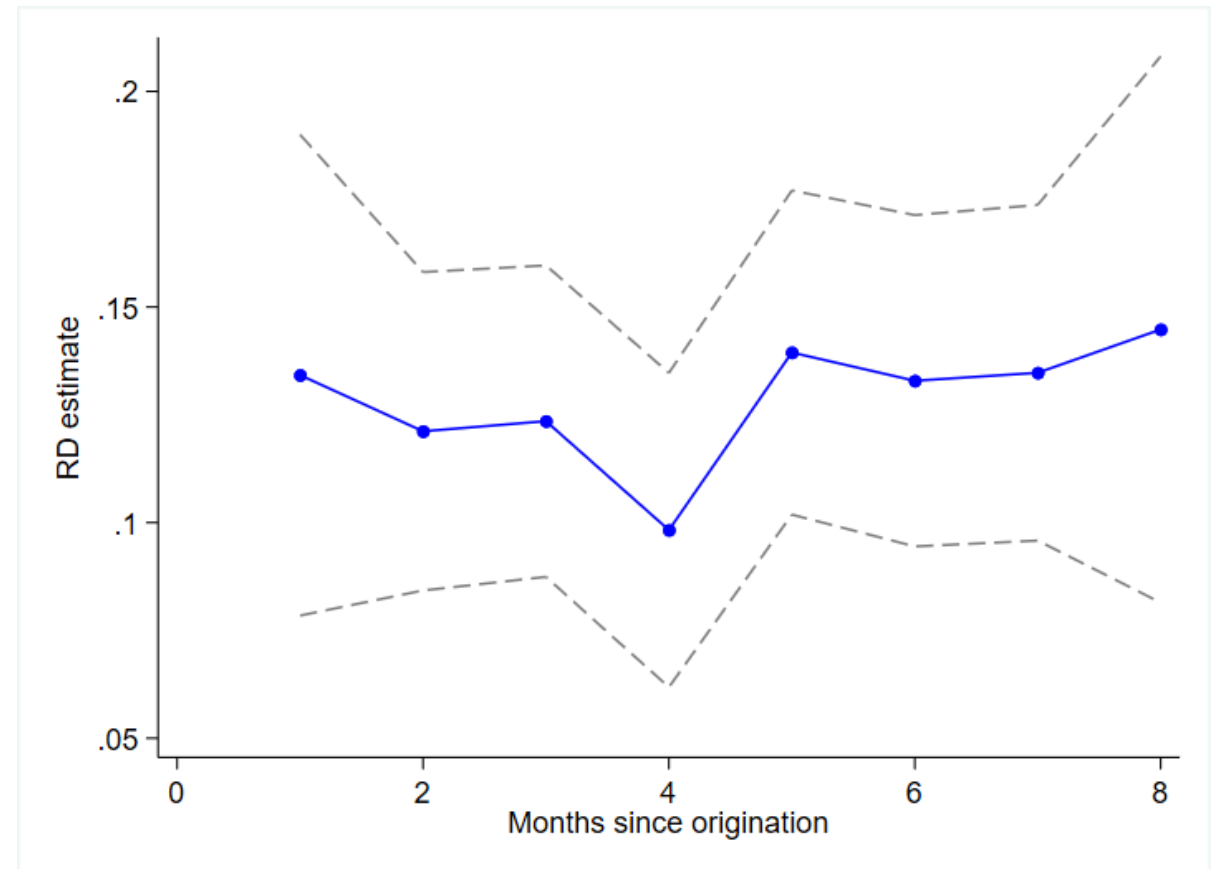


First Stage: Persistence of Autopay

First Underwriting Change



Second Underwriting Change

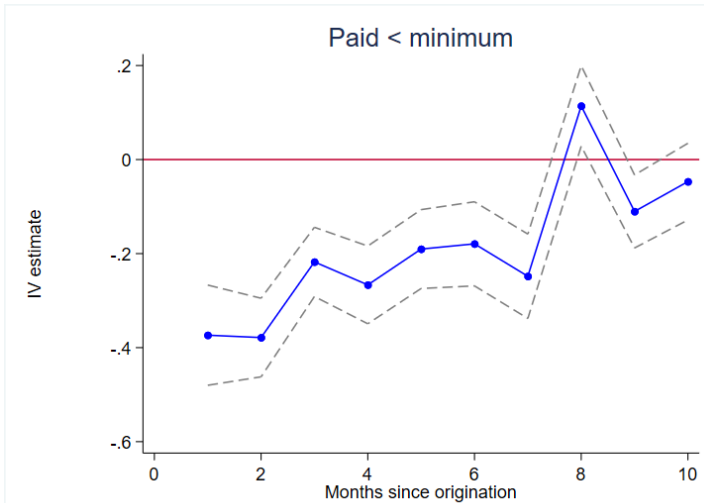


IV: Autopay → Minimum Payments

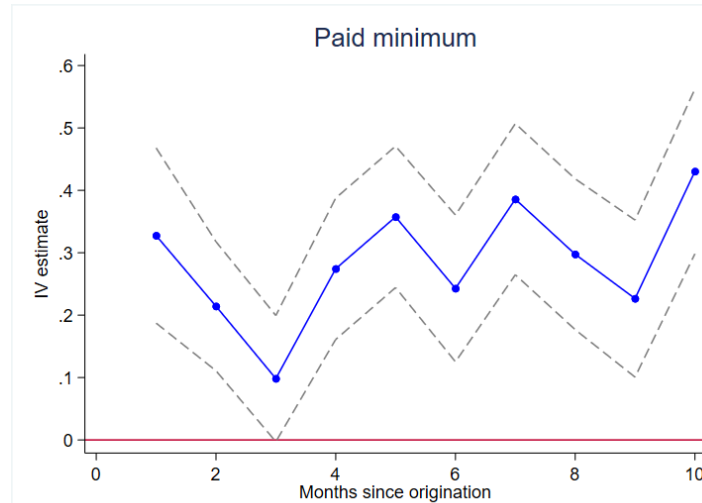
		Chargeoff	Paid Min	Paid Full	Fraction Paid	Payment amount
First Change	Mean	10%	28%	25%	38%	\$266
	Regression coefficient	- 0.189 (0.011) [0.000]	0.278 (0.018) [0.000]	0.128 (0.018) [0.000]	0.137 (0.017) [0.000]	71.80 (24.63) [0.004]
Second Change	Mean	12%	19%	27%	40%	\$293
	Regression coefficient	0.165 (0.032) [0.000]	0.426 (0.054) [0.000]	- 0.313 (0.064) [0.000]	- 0.289 (0.060) [0.000]	- 470.2 (67.79) [0.000]

IV: Persistence of Autopay Effects

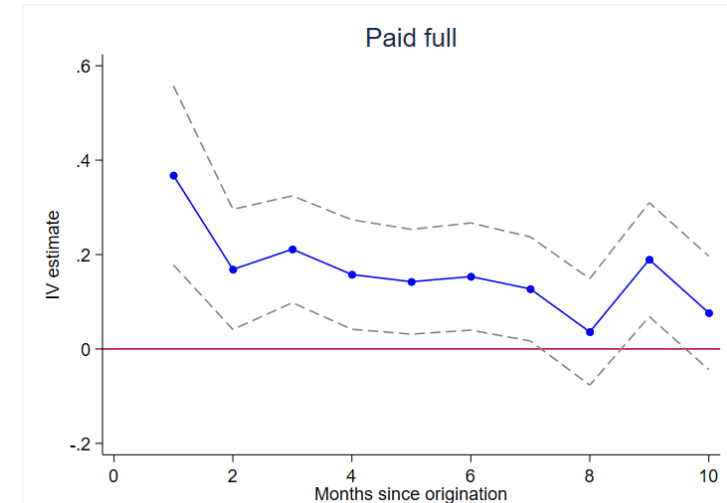
Delinquency



Paid minimum

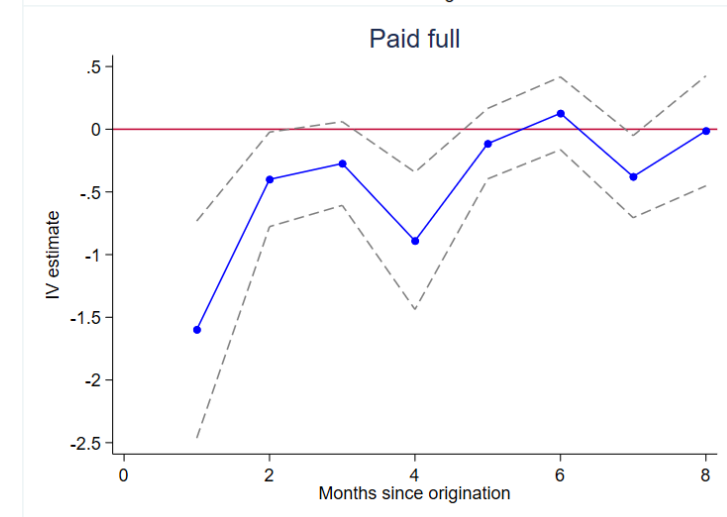
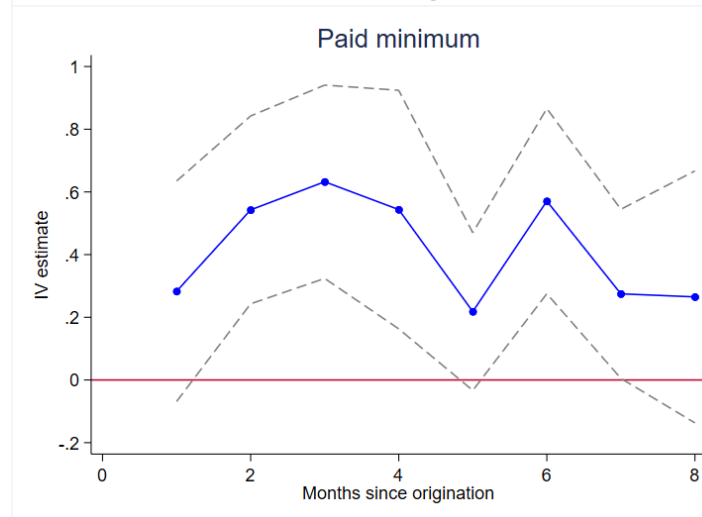
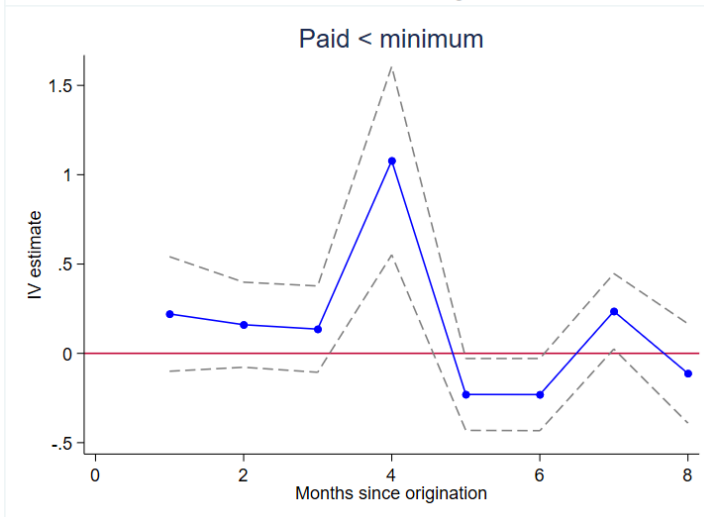


Paid full



First
Change

Second
Change



Autopay → Lower Payments Conditional On Not Charging Off

		Delinq	Paid Min	Paid Full	Fraction Paid	Payment amount
First Change	Mean	5%	29%	27%	40%	\$277
	Regression coefficient	- 0.006 (0.008) [0.405]	0.323 (0.016) [0.000]	- 0.033 (0.017) [0.050]	- 0.050 (0.016) [0.001]	- 57.83 (19.28) [0.003]
Second Change	Mean	5%	20%	29%	43%	\$305
	Regression coefficient	0.019 (0.031) [0.542]	0.441 (0.053) [0.000]	- 0.262 (0.061) [0.000]	- 0.230 (0.056) [0.000]	-441.4 (64.43) [0.000]

Key Conclusion: Autopay Has Large Effects on Minimum Payments

- **Autopay enrollment is sensitive to nudges, highly persistent**
- **Autopay strongly affects minimum payments**
- **Conditional on not charging off, autopay causes:**
 - More minimum payments
 - Fewer full payments
 - Lower overall payment amounts