Why Small Firms Fail to Adopt Profitable Opportunities

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- Across many domains:
  - Manufacturing (Atkin, Chaudhry, Chaudry, Khandelwal, and Verhoogen, 2017; Giorcelli, 2019)
  - Banking (Mishra, Prabhala, and Rajan, 2021)
  - Retail (DellaVigna and Gentzkow, 2019)
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  - Healthcare (Celhay, Gertler, Giovagnoli, and Vermeersch, 2019)
- And across various types of opportunities:
  - Cost-saving technologies (Atkin, Chaudhry, Chaudry, Khandelwal, and Verhoogen, 2017)
  - Management practices (Bloom, Eifert, Mahajan, McKenzie, and Roberts, 2013; Bruhn, Karlan, and Schoar, 2018)
  - Optimal pricing (DellaVigna and Gentzkow, 2019)

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  - Large retail chains in DellaVigna and Gentzkow (2019) forgo $16M in annual profits (2% of revenue)

Why?

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- Several things may be contributing:
  - Lack of information (Bloom, Eifert, Mahajan, McKenzie, and Roberts, 2013; Giorcelli, 2019)
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  - "Managerial inertia" (DellaVigna and Gentzkow, 2019)
  - "Stickiness in organizational structures and practices" (Mishra, Prabhala, and Rajan, 2021)

This Project

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Method:

- Randomized controlled trial (RCT) in Mexico to test three potential explanations:
  - Limited memory
  - Present bias
  - Lack of trust
  - …as well as potentially distorted beliefs about these
- Offer lower merchant fee to 33,978 firms already using FinTech payments technology
- For the median firm, expected reduction in fee equal to 3% of profits ▸ Variation

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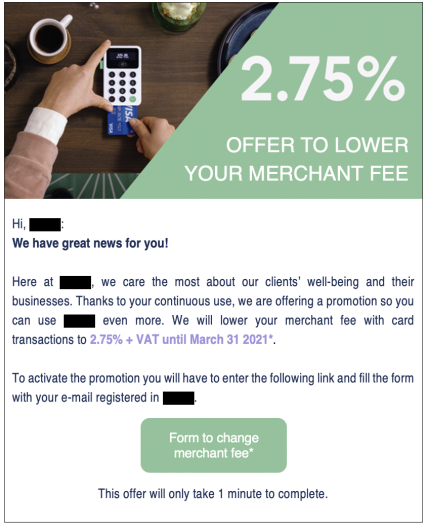
Method:

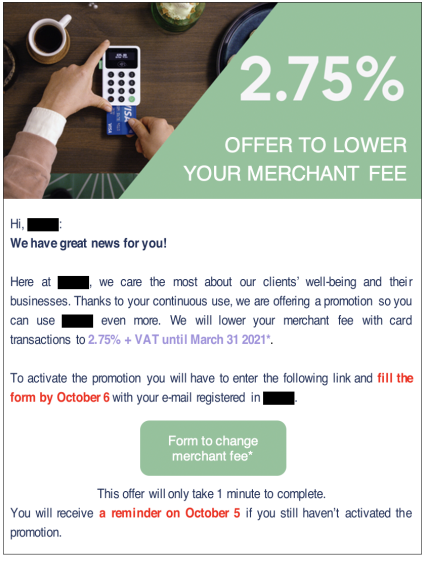
- Randomize:
  - Value of offer (how much we reduce merchant fee)
  - Deadlines
  - Reminders
  - Whether FinTech says in advance that it will send a reminder ("anticipated reminder")
- RCT design motivated by augmented version of Ericson (2017) model
  - How present bias and limited memory affect task completion
  - We augment the model to include trust

This Project: Examples of Treatments

No Reminder/Unanticipated Reminder, No Deadline



Anticipated Reminder, Deadline



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  - Evidence that present bias does not explain non-adoption
- Anticipated reminders do not reduce initial take-up
  - Evidence of overconfidence about memory
- Anticipated reminders ↗ final take-up more than unanticipated reminders
  - By an additional 7%
  - Anticipated reminders change firms' perceptions of the offer's value
  - Effect of anticipated reminder concentrated among low-trust firms

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- We add the probability the firm assigns to the offer being true, $\alpha_t \in [0, 1]$

Model

- Cost c_t drawn each period from a known distribution $F(c)$
- Agent decides to act based on current value function:

$$V_t = \begin{cases} \beta\delta\alpha_t y - c_t & \text{if act} \\ \hat{\rho}_{t+1}\beta\delta E_t[\hat{V}_{t+1}] & \text{if do not act} \end{cases}$$

- $E_t[\hat{V}_{t+1}]$ is the perceived continuation value
  - E_t denotes expectations over future cost draws
  - The hat on $E_t[\hat{V}_{t+1}]$ denotes that it's a function of $\hat{\beta}$ rather than β

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$$c_t^* = \beta\delta\left(\alpha_t y - \hat{\rho}_{t+1} E_t\left[\hat{V}_{t+1}\right]\right)$$

$$E_{t-1}\left[V_t\right] = F\left(\hat{c}_t^*\right)\left[\delta\alpha_t y - E\left[\hat{c}|\text{act}\right]\right] + \left(1 - F\left(\hat{c}_t^*\right)\right)\delta\hat{\rho}_{t+1} E_t\left[\hat{V}_{t+1}\right]$$

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- The probability of adopting at period t is:

$$\Pr\left(\text{adopt at } t\right) = \underbrace{\prod_{j=1}^{t} \rho_j}_{\Pr(\text{remember})} \underbrace{\prod_{k=0}^{t-1}\left(1 - F\left(c_k^*\right)\right)}_{\Pr(\text{not adopted before } t)} F\left(c_t^*\right)$$

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5. Anticipated reminders and post-reminder take-up:
   - Do not affect take-up compared to unanticipated reminder if firms inherently trust the offer ($\alpha_t = 1$)
   - ↗ post-reminder take-up compared to unanticipated reminder if some firms distrust offer and if anticipated reminder ↗ trust

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Logistics

- Messages sent by FinTech company via email and SMS
- Online form to accept lower fee; takes about one minute to complete
- Owner of firm was email recipient for 88% of sample

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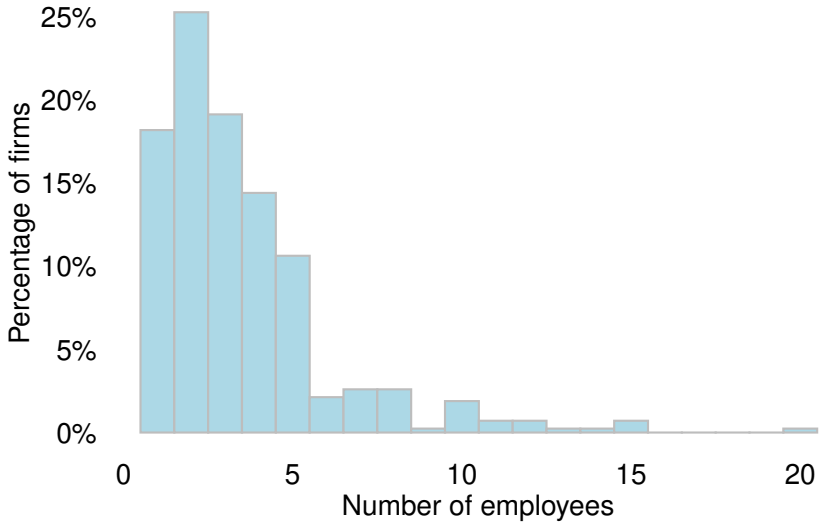
- Main outcome is take-up from administrative data
- Survey a small subsample of firms ($N = 429$) to explore mechanisms

Example of a Firm

Firm characteristics: Number of employees

- Mean = 3.5 employees; median = 3 employees (from survey data)



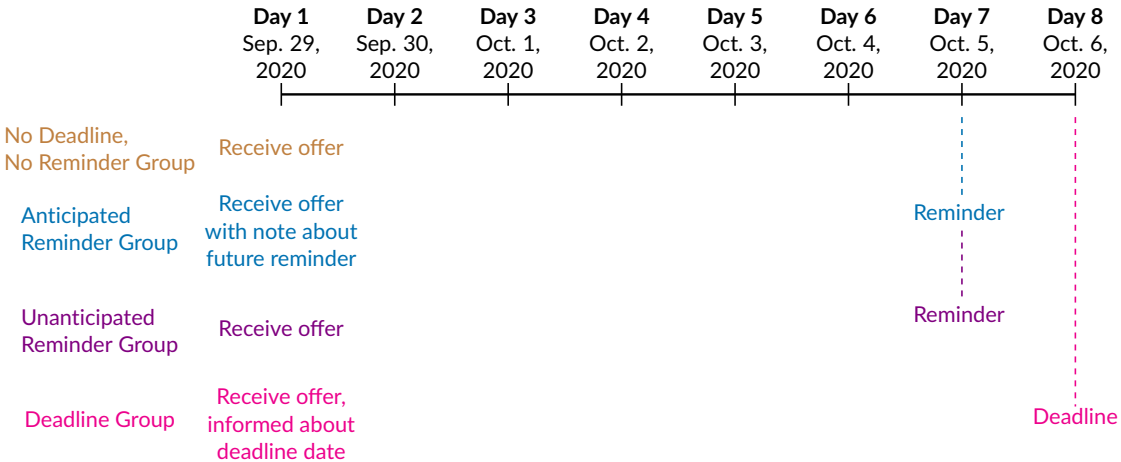
Firm characteristics and balance

$$y_i = \beta_0 + \beta_1 \mathbb{1}(\text{Ant. remind})_i + \beta_2 \mathbb{1}(\text{Unant. remind})_i + \beta_3 \mathbb{1}(\text{Deadline})_i + \beta_4 \mathbb{1}(\text{2.75\% Fee})_i + \varepsilon_i$$

	Intercept	Anticipated reminder	Unanticipated reminder	Deadline	2.75% Fee	F-stat p-value
Owner characteristics						
Owner sex female	0.442***	0.002	-0.003	-0.003	0.002	0.925
Owner age	39.40***	0.29*	0.23	-0.01	-0.03	0.367
Business type						
Beauty	0.087***	0.000	0.000	0.002	0.000	0.988
Clothing	0.089***	0.000	0.001	0.000	0.000	1.000
Professionals	0.239***	-0.001	-0.001	0.001	0.000	0.999
Restaurants	0.123***	0.001	0.002	0.000	-0.001	0.996
Small retailers	0.260***	-0.001	-0.001	0.001	0.000	0.999
Other	0.202***	0.002	0.000	-0.003	0.001	0.969
Pre-treatment sales variables						
Months since first transaction	24.11***	0.10	0.11	-0.08	0.12	0.930
% months business made sales	0.818***	0.001	-0.001	0.001	0.001	0.957
Log average monthly sales volume	8.780***	-0.019	0.009	0.008	-0.003	0.548
Log average monthly transactions	2.044***	-0.007	0.001	0.007	0.004	0.986

▸ Percent of sales through FinTech platform

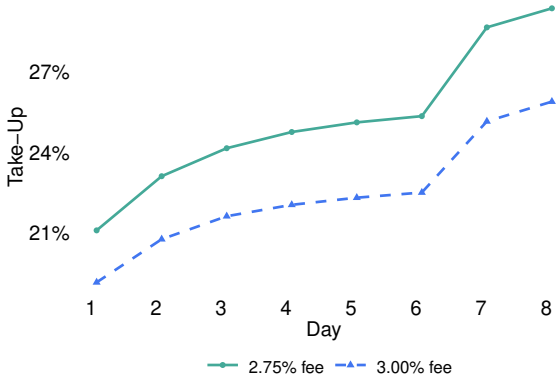
Experimental Design and Timeline

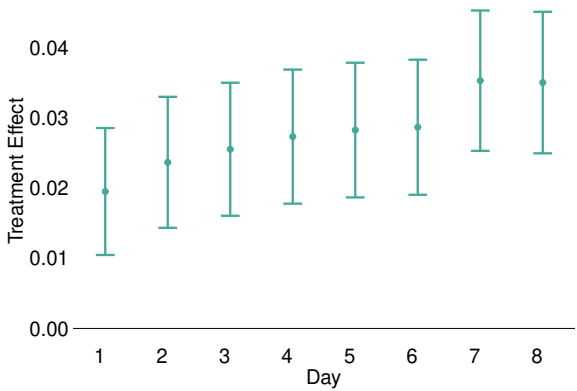


Results

Higher Value Increases Take-Up

- Random variation in value of offer (2.75% fee better than 3% fee)

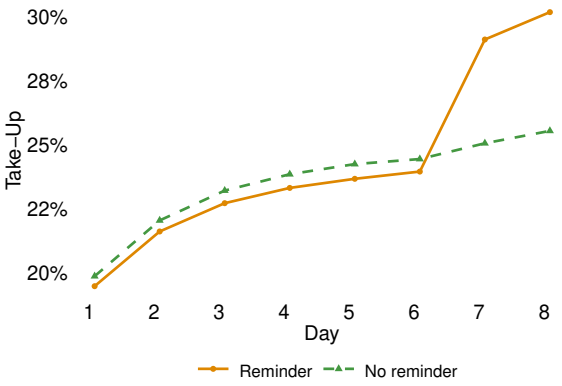


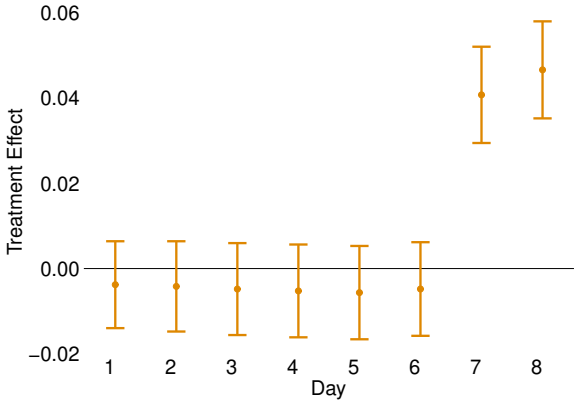


- Opened first email
- Longer-term take-up
- Not 100%

Reminders Increase Take-Up

- Reminder ↗ take-up 5 pp compared to ∼26% in no reminder group

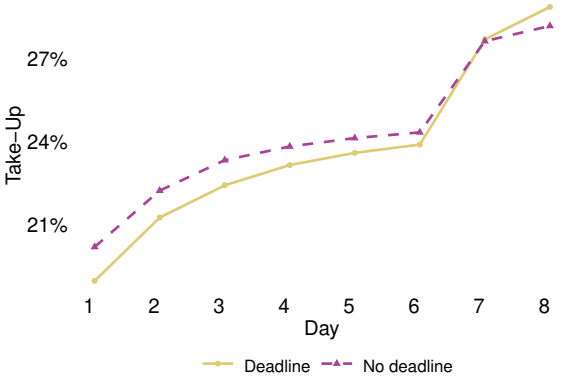


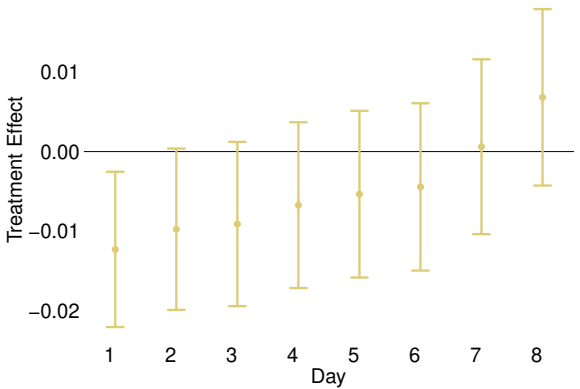


‣ Effect timing ‣ Opened first email ‣ Value of offer ‣ Deadline ‣ Baseline sales ‣ # employees ‣ Not 100%

Deadlines Do Not Increase Take-Up

- Deadline ↘ day 1 take-up, but no difference by day 8
- Positive point estimate on day 8, but no deadline catches up quickly after deadline





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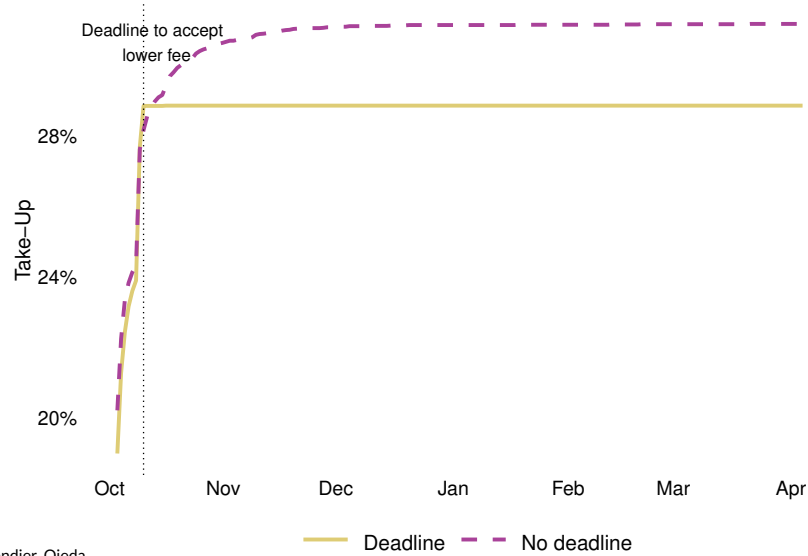
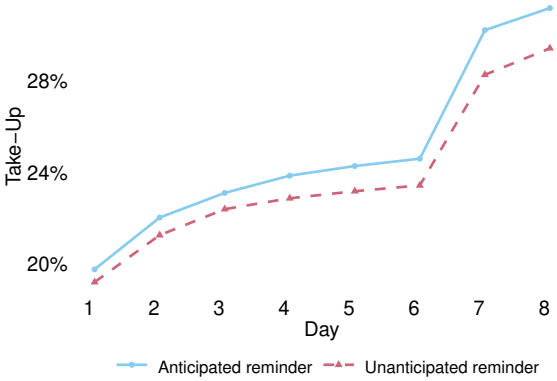
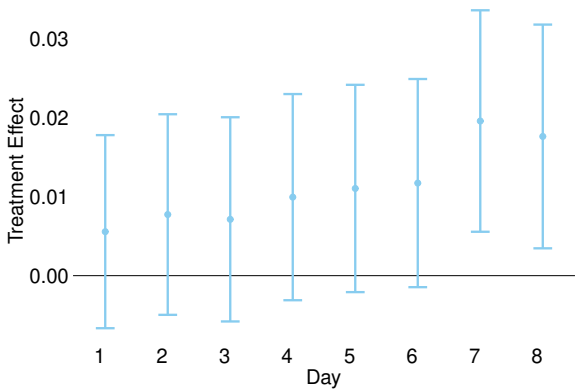
Continued Take-Up After Deadline in No Deadline Group



Anticipated Reminders Increase Take-up

- Anticipated reminders do not reduce take-up on day 1
- Anticipated reminders ↗ take-up 2 pp more than unanticipated by day 8





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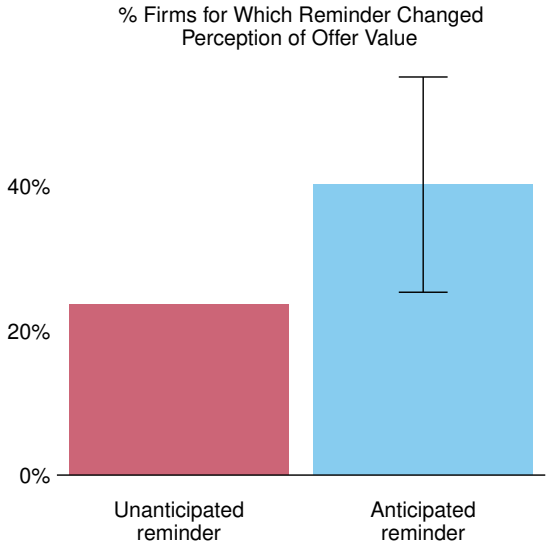
Mechanisms Behind Anticipated Reminder Effect

Anticipated Reminders Increase Perception of Offer's Value

- Survey question: "Did the reminder change your perception of the offer's value?"

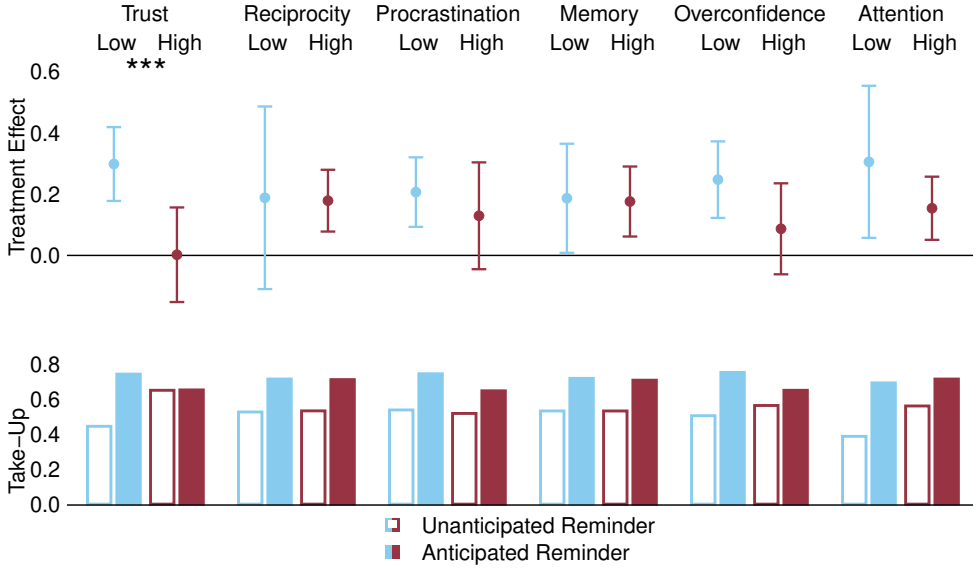
▸ Logins ▸ Survey balance ▸ Survey response balance



Heterogeneity Tests Using General Survey Measures

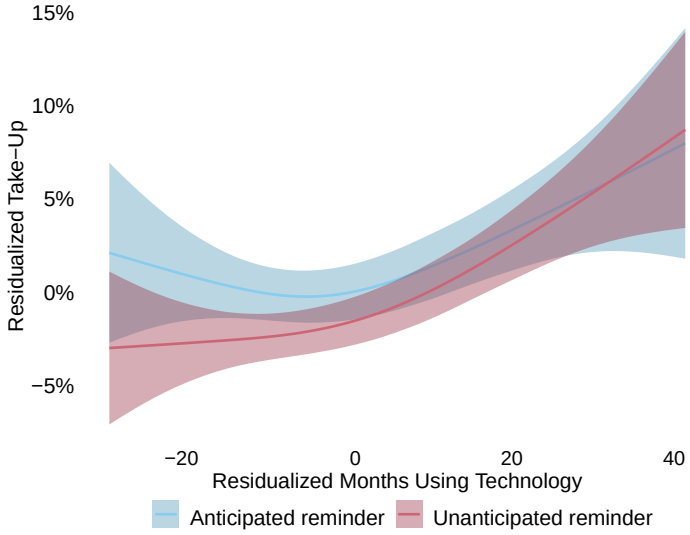
- **Trust**: I trust advertised offers
- **Reciprocity**: I am more inclined to do business with people who live up to their promises
- **Procrastination**: I tend to postpone tasks, even when I know it is better to do them immediately
- **Memory**: I tend to have good memory about pending tasks that I have to do and complete
- **Overconfidence**: I tend to think my memory is better than it really is
- **Attention**: I can focus completely when I have to finish a task
- 1–5 scale; code dummy as “High” if agree or completely agree, “Low” otherwise

Anticipated Reminder Effect Concentrated Among Less-Trusting



Anticipated Reminder Effect Concentrated Among Newer Users

- Firms that have used the technology longer likely have higher trust in FinTech company



Conclusion

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  - Elasticity of card sales with respect to fee ≈ -2 ▸ More details ▸ Mechanisms
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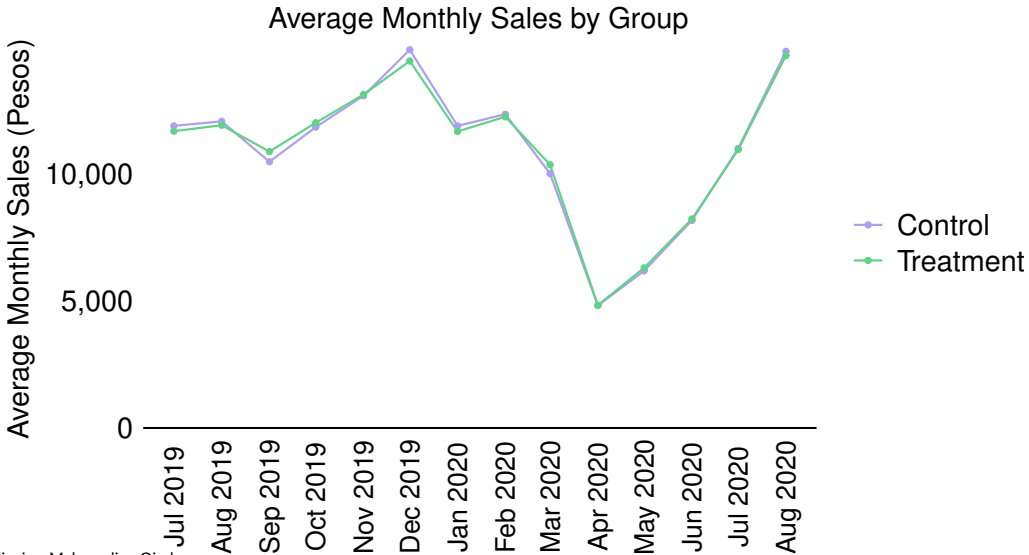
- Evidence that lack of trust is a key friction
  - Lack of trust may be prevalent in many firm-to-firm interactions

Appendix

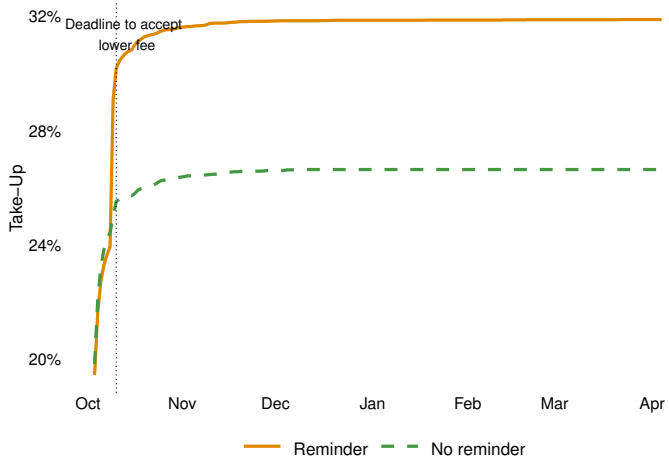
Experimental Design and Timeline

- Offers sent when sample on average back to pre-pandemic sales



Reminders Increase Take-Up Beyond Deadline

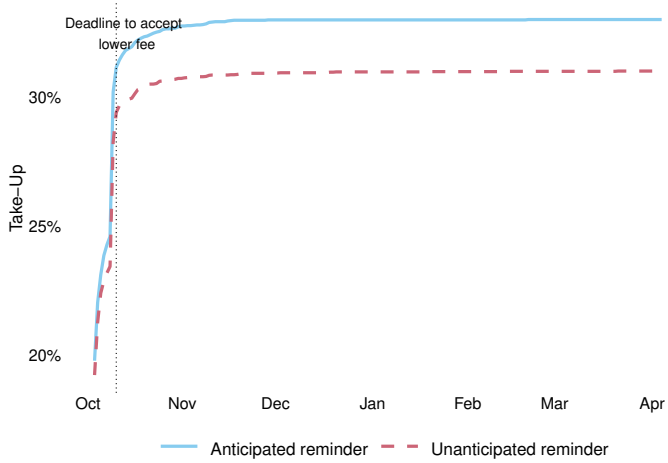
- Reminder effect persists over time



▸ By deadline

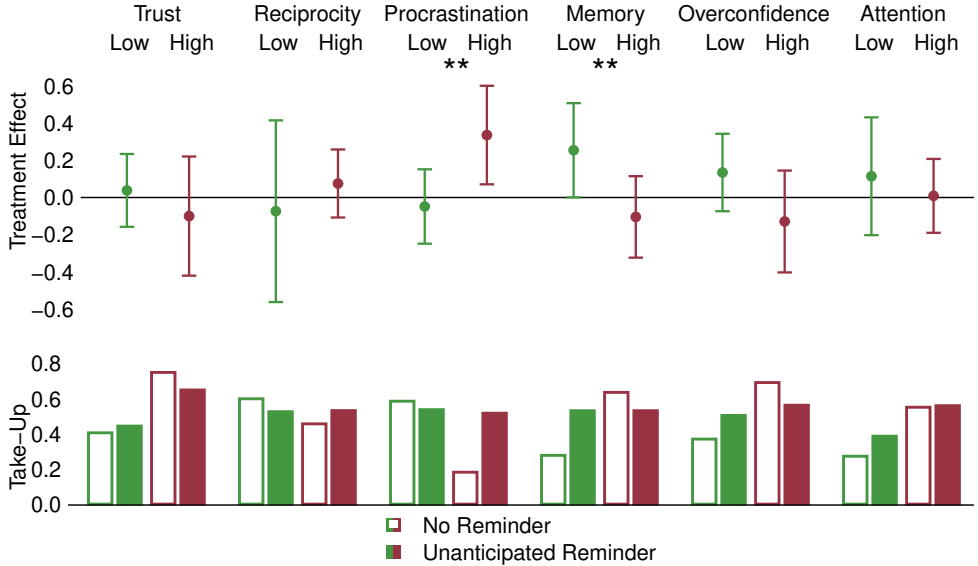
Anticipated Reminders Increase Take-up Beyond Deadline

- Anticipated reminder effect persists over time



▸ By deadline

Unanticipated Reminder Effect Concentrated Among Low-Memory



Elasticity of Electronic Payments

E-payment Usage Elasticity

How does e-payment usage respond to lower merchant fee?

$$y_{it} = \gamma_i + \delta_t + \beta \textit{Treated}_i \times \textit{Post}_t + \varepsilon_{it}$$

- y_{it}: $\log(\text{sales} + 1)_{it}$, $\log(\#\text{ transactions} + 1)$ or $\mathbb{1}(\text{Made at least 1 sale})_{it}$

▸ Conclusion

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- Standard errors clustered at firm level
- To calculate treatment-on-the-treated (TOT):
  - Replace $\textit{Treated}_i \times \textit{Post}_t$ with $\textit{Adopt}_i \times \textit{Post}_t$
  - Instrument $\textit{Adopt}_i \times \textit{Post}_t$ with $\textit{Treated}_i \times \textit{Post}_t$

▸ Conclusion

Lower Merchant Fee Leads to Increased Usage (Intent-to-Treat)

- Being treated ↗ electronic sales by $\sim$ 10%
- ↗ number of card transactions by $\sim$ 3%
- ↗ probability of using technology by 1 pp

	Log(sales + 1) (1)	Log(# transactions + 1) (2)	Made at least 1 sale (3)
Post * Treated	0.114**	0.030*	0.012**
	(0.047)	(0.017)	(0.005)
Observations	696,140	696,140	696,140
Number of firms	33,978	33,978	33,978
Cluster std. errors	Firm	Firm	Firm
Fixed effects	Firm & month	Firm & month	Firm & month
Control mean (levels)	22,074	27.75	0.800
Control mean (levels, winsorized)	11,301	18.15	0.800

▸ Conclusion

Lower Merchant Fee Leads to Increased Usage (TOT)

- Taking up offer ↗ electronic sales by $\sim 40\%$
- Electronic sales elasticity = $\frac{\%\Delta \text{Sales}}{\%\Delta \text{Fee}} \approx \frac{40\%}{-20\%} = -2$
- ↗ increases number of card transactions by $\sim 10\%$
- ↗ increases probability of using technology by ~ 4 pp

	Log(sales + 1) (1)	Log(# transactions + 1) (2)	Made at least 1 sale (3)
Post * Adopted	0.395**	0.102*	0.040**
	(0.164)	(0.057)	(0.017)
Observations	696,140	696,140	696,140
Number of firms	33,978	33,978	33,978
Cluster std. errors	Firm	Firm	Firm
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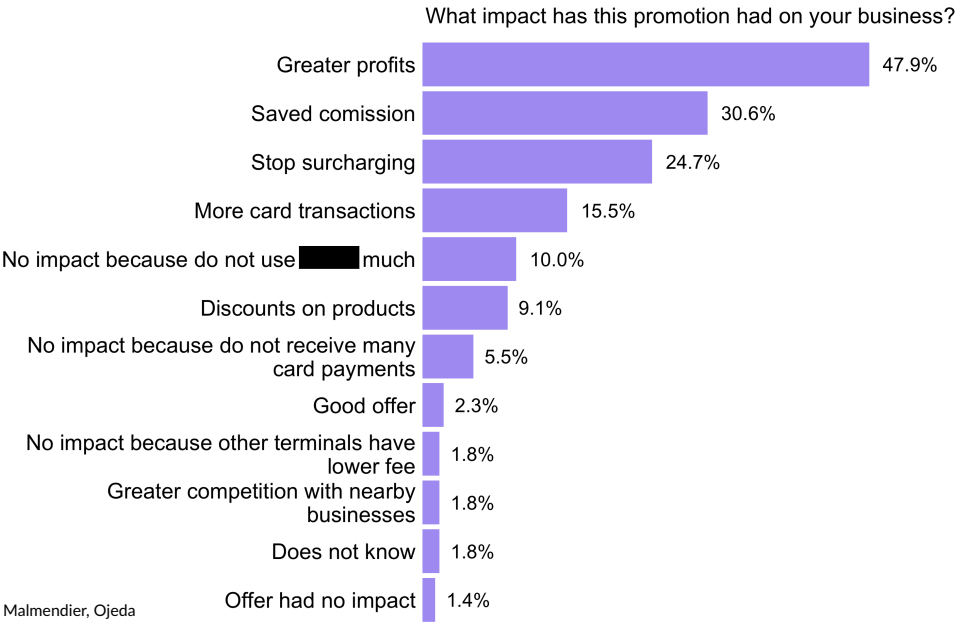
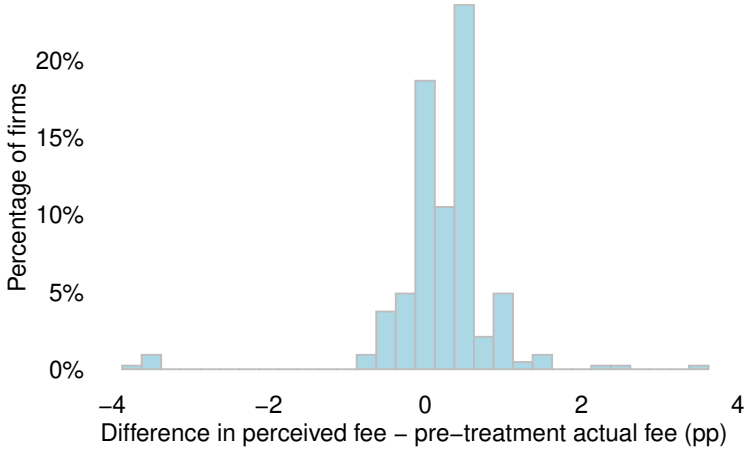
▸ Conclusion

Mechanisms Behind Elasticity



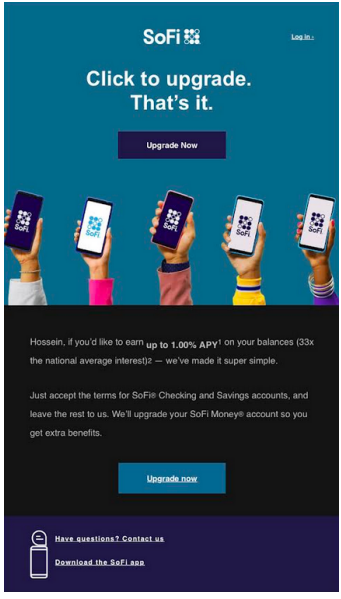
Firms have a good sense of their current fee

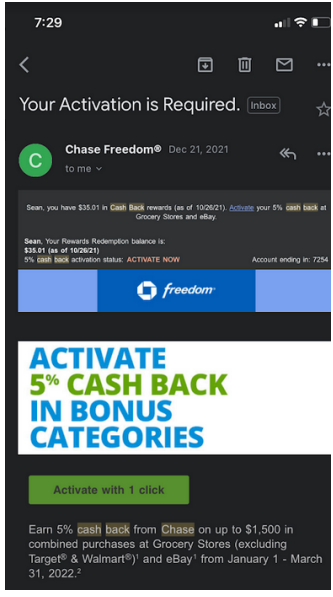
- And are more likely to overestimate current fee
  - Which would make them think offer is even more valuable



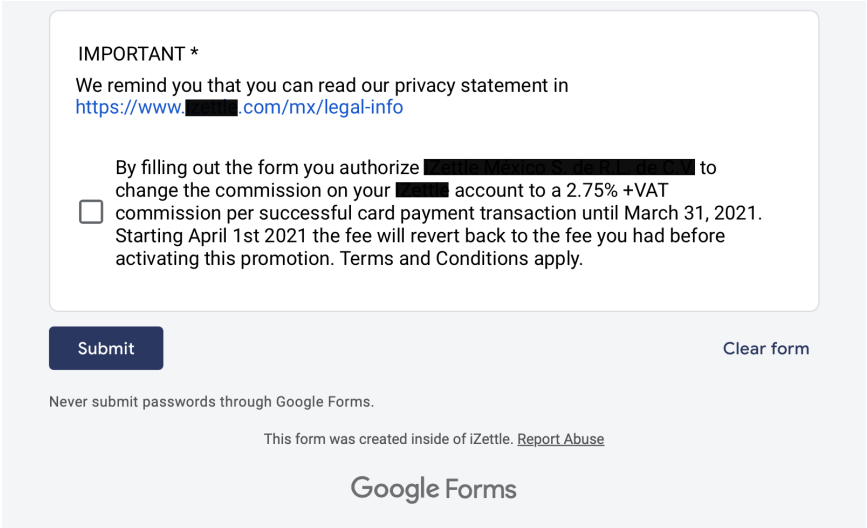
▸ Emails ▸ Experimental setting

This Type of Email is Common





Terms & Conditions are Short and Easy to Understand



IMPORTANT *

We remind you that you can read our privacy statement in
https://www.[redacted].com/mx/legal-info

☐ By filling out the form you authorize [redacted] to change the commission on your [redacted] account to a 2.75% +VAT commission per successful card payment transaction until March 31, 2021. Starting April 1st 2021 the fee will revert back to the fee you had before activating this promotion. Terms and Conditions apply.

Submit

Clear form

Never submit passwords through Google Forms.

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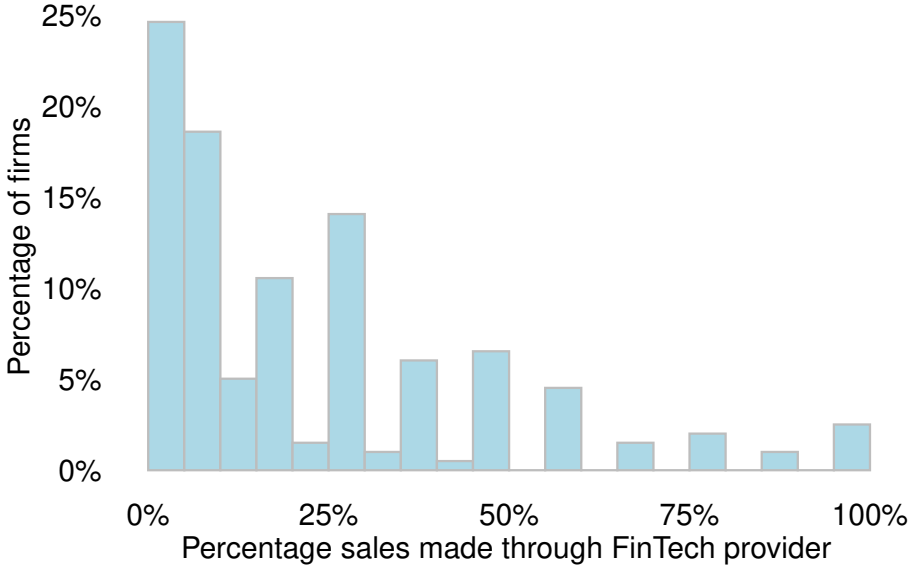
Google Forms

▸ Emails

Percent of sales made through FinTech provider last week



Effect of Reminder by Number of Employees

- Reminder effect does not change with # employees.

	Firm accepted offer	
	(1)	(2)
Intercept	0.450***	0.583***
	(0.112)	(0.143)
Above median # of employees	0.076	
	(0.160)	
More than 1 employee		-0.139
		(0.172)
Reminder	0.135	0.001
	(0.118)	(0.156)
Above median # of employees	-0.012	
× Reminder	(0.168)	
More than 1 employee		0.184
× Reminder		(0.185)

Median number of employees: 3.

▸ Pooled across # employees

Effect of Deadline by Number of Employees

- Deadline effect does not change with # employees.

	Firm accepted offer	
	(1)	(2)
Intercept	0.571***	0.600***
	(0.052)	(0.083)
Above median # of employees	0.070	
	(0.069)	
More than 1 employee		0.013
		(0.091)
Deadline	-0.002	-0.029
	(0.073)	(0.113)
Above median # of employees	0.000	
× Deadline	(0.096)	
More than 1 employee		0.034
× Deadline		(0.125)

Median number of employees: 3.

▸ Pooled across # employees

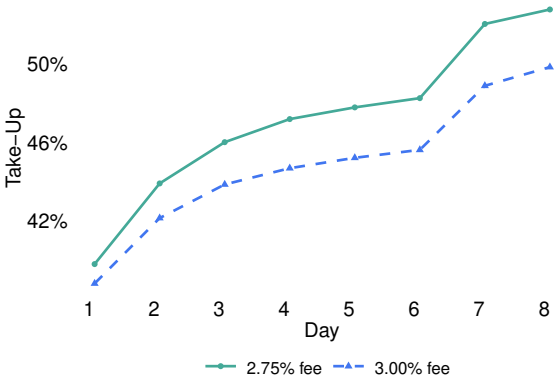
Effect of Anticipated Reminder by Number of Employees

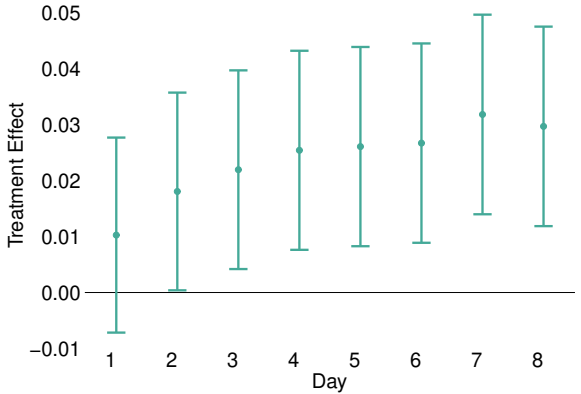
- Anticipated reminder effect does not change with # employees.

	Firm accepted offer	
	(1)	(2)
Intercept	0.481***	0.485***
	(0.056)	(0.087)
Above median # of employees	0.080	
	(0.074)	
More than 1 employee		0.051
		(0.096)
Anticipated reminder	0.205***	0.203*
	(0.076)	(0.120)
Above median # of employees	-0.037	
× Anticipated reminder	(0.099)	
More than 1 employee		-0.022
× Anticipated reminder		(0.132)
Median number of employees: 3.		

▸ Pooled across # employees

Higher Value Increases Take-Up Conditional on Opening First Email

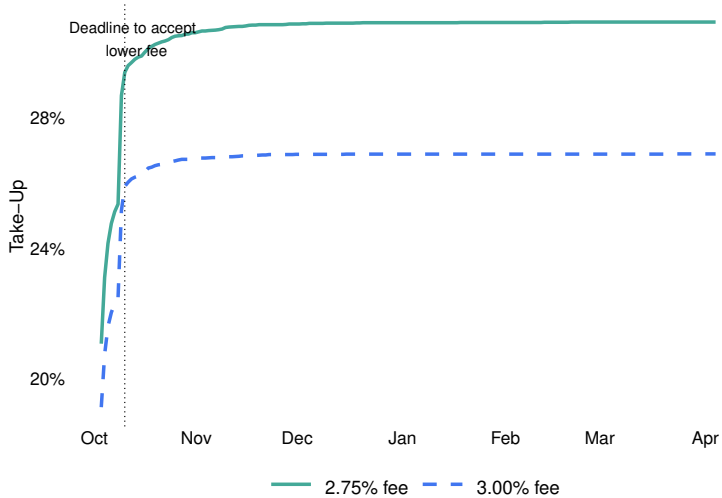




- Unconditional
- Baseline covariates & email openings
- Survey measures & email openings

Higher Value Increases Take-up Beyond Deadline

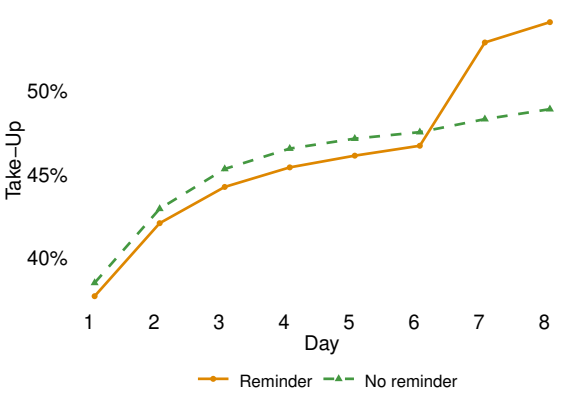
- Higher value effect persists over time

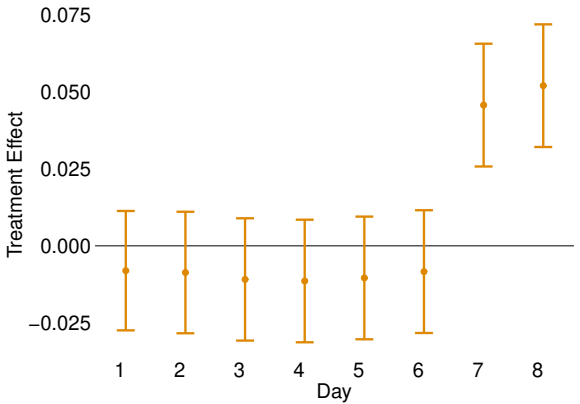


▸ By deadline

Reminders Increase Take-Up Conditional on Opening First Email

- Reminder ↗ take-up 5 pp conditional on opening first email before reminder

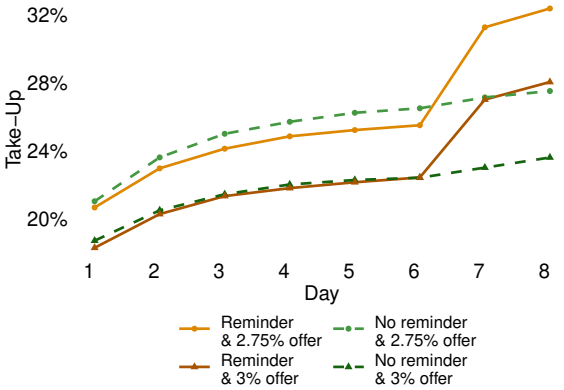


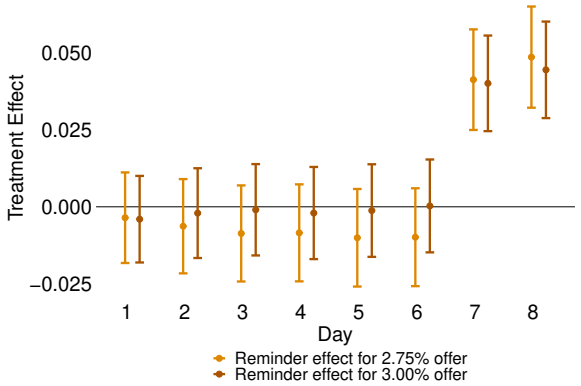


▸ Unconditional ▸ Baseline covariates & email openings ▸ Survey measures & email openings

Effect of Reminder by Offer Value

- Reminders ↗ take-up regardless of offer value

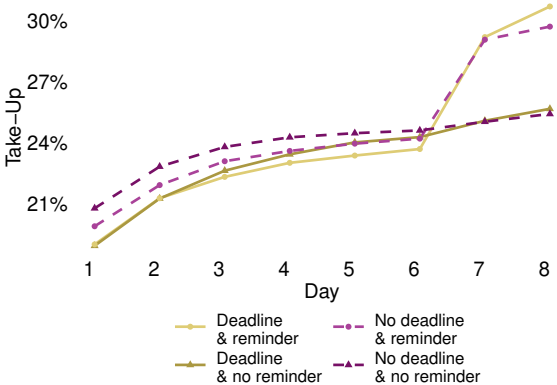


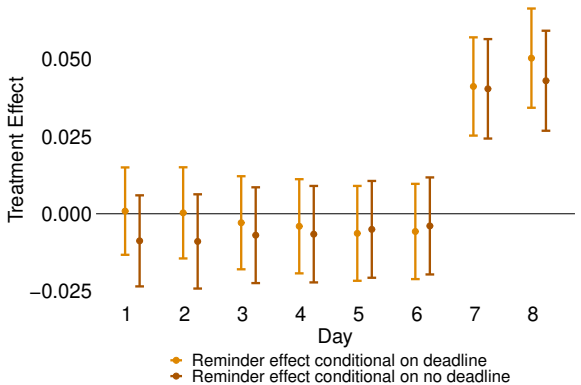


▸ Pooled across value of the offer ▸ Opened first email

Reminder Conditional on Deadline

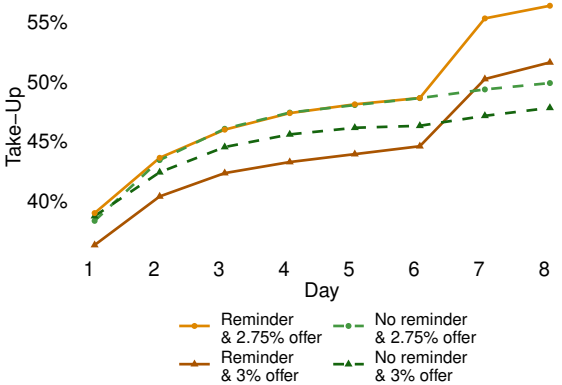
- Reminders ↗ take-up regardless of deadline

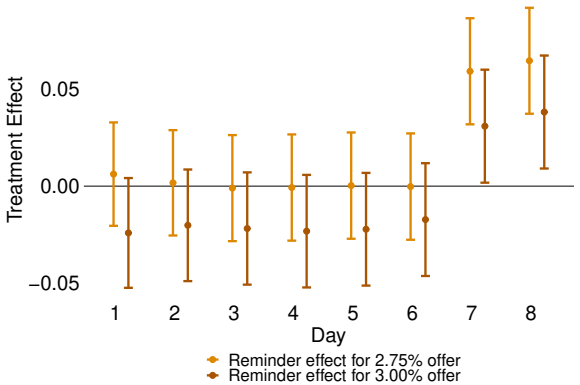




▸ Effect of reminder ▸ Effect of deadline

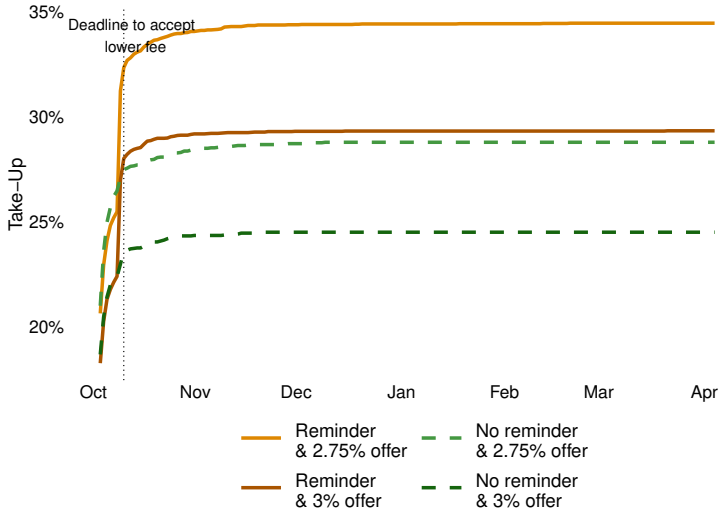
Effect of Reminder by Offer Value Conditional on Opening Email





▸ Unconditional ▸ Baseline covariates & email openings ▸ Survey measures & email openings

Six-Month Effect of Reminder by Offer Value



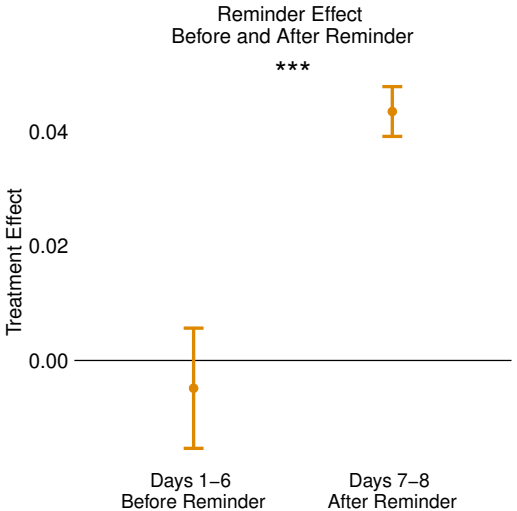
▸ By deadline

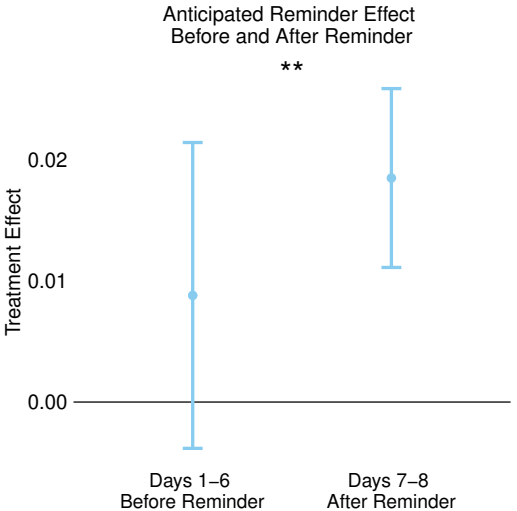
Reminders Increase Take-Up Only After Reminders Sent

	Firm accepted offer	
	(1)	(2)
Reminder	-0.005	
	(0.005)	
Reminder × Post reminder	0.048***	
	(0.002)	
Anticipated reminder		0.009
		(0.006)
Anticipated reminder × Post reminder		0.010**
		(0.004)
Num. Obs	202,616	130,032
Num. Firms	25,327	7,172
Cluster Std. Errors	Firm	Firm
Fixed Effects	Day	Day
Mean Control Take-Up on Day 6	0.244	0.234

▸ Graphs ▸ Effect of reminder ▸ Effect of anticipated reminders

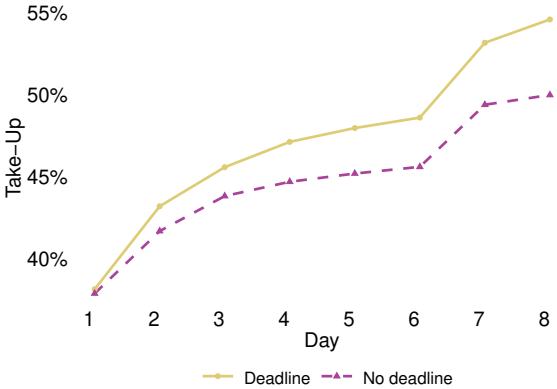
Reminders Increase Take-Up Only After Reminders Sent

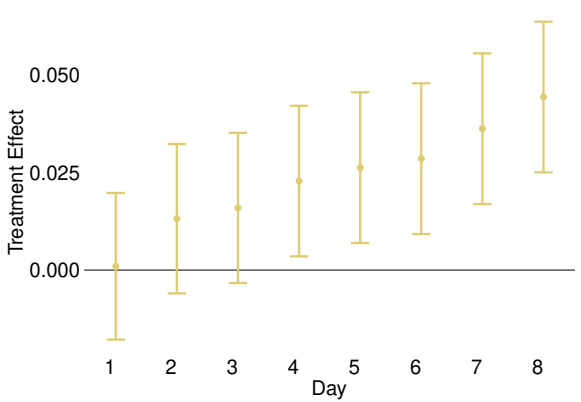




▸ Table ▸ Effect of reminder ▸ Effect of anticipated reminders

Effect of Deadline Conditional on Opening Email

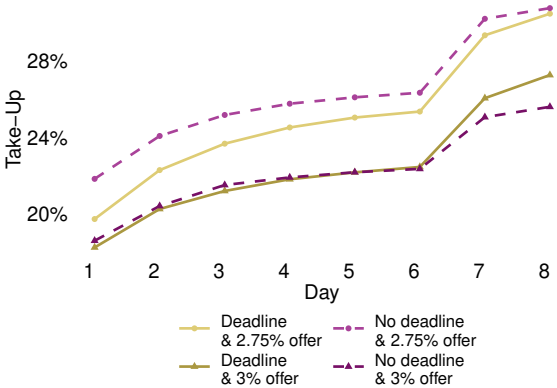


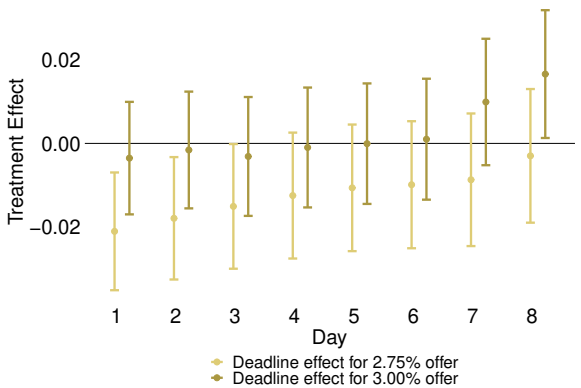


- Unconditional
- Baseline covariates & email openings
- Survey measures & email openings

Effect of Deadline by Offer Value

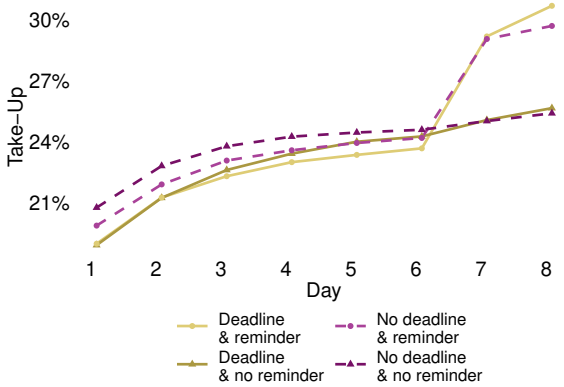
- Within lower-value offer (3.00% fee), deadline ↗ take-up 2 pp
- Within higher-value offer (2.75% fee), deadline has no effect

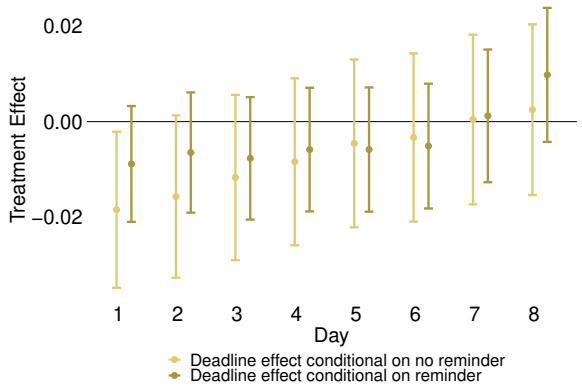




▸ Pooled across value of the offer ▸ Opened first email ▸ Longer-term take-up

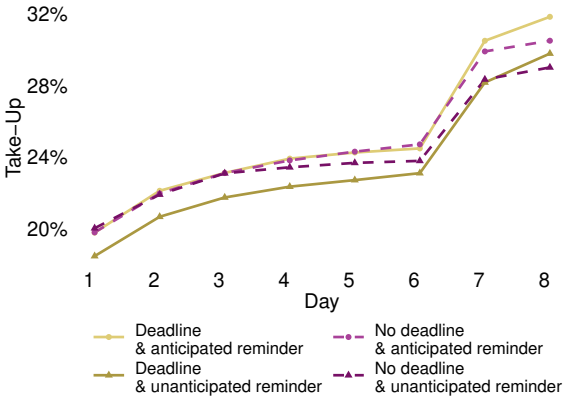
Deadline Conditional on Reminder

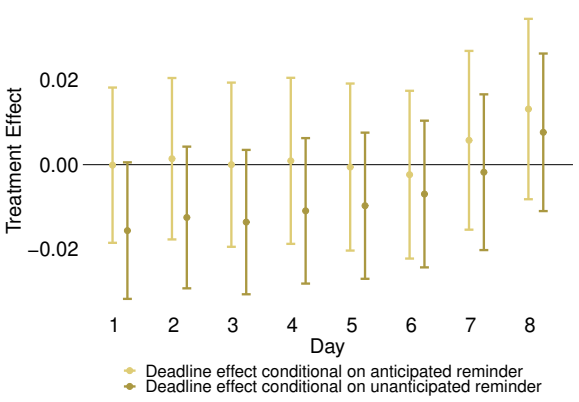




▸ Effect of reminder ▸ Effect of deadline

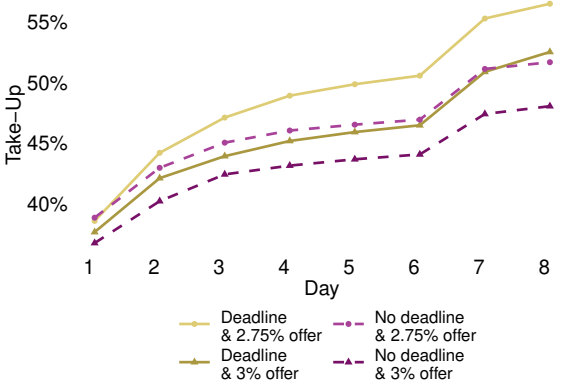
Deadline Conditional on Anticipated Reminder

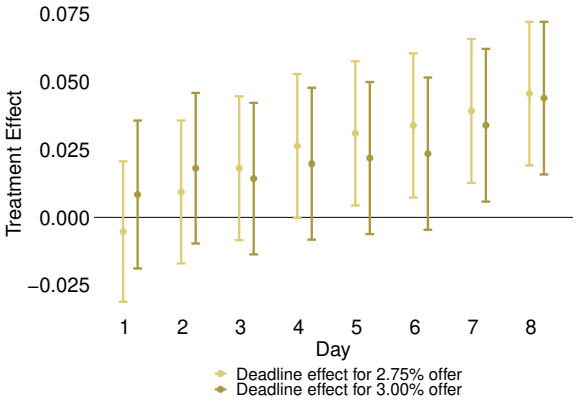




▸ Effect of anticipated reminder ▸ Effect of deadline

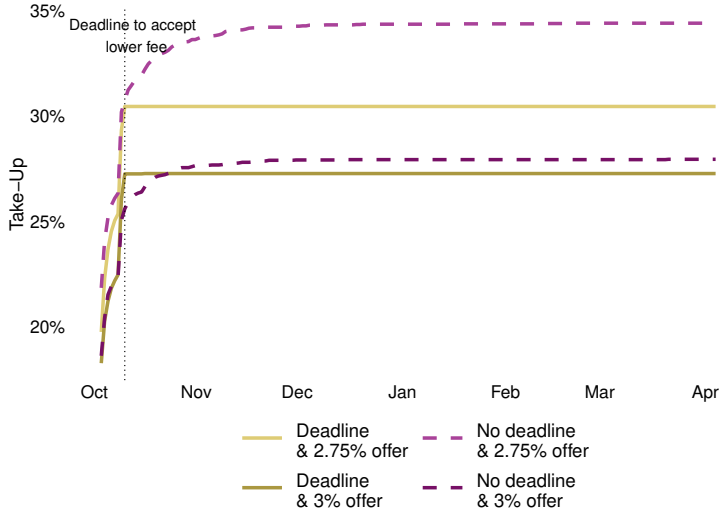
Effect of Deadline by Offer Value Conditional on Opening Email





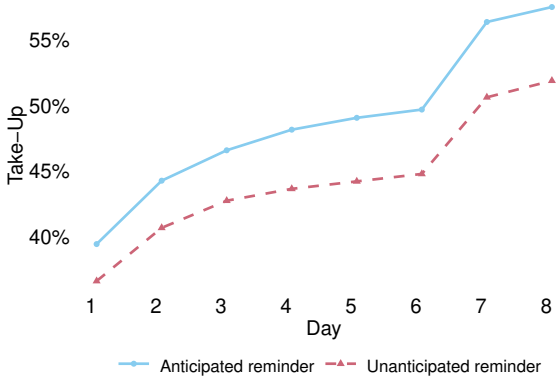
- Unconditional
- Baseline covariates & email openings
- Survey measures & email openings

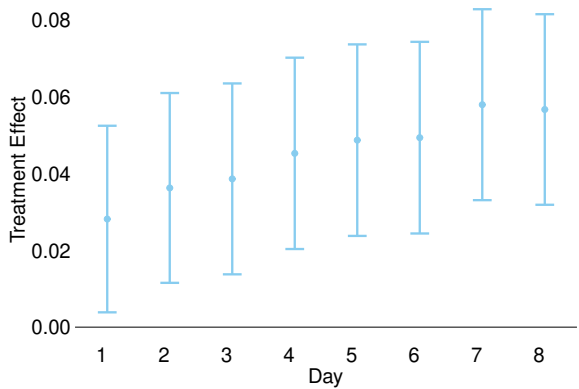
Six-Month Effect of Deadline by Offer Value



▸ By deadline

Anticipated Reminder ↗ Take-Up Conditional on Opening Email

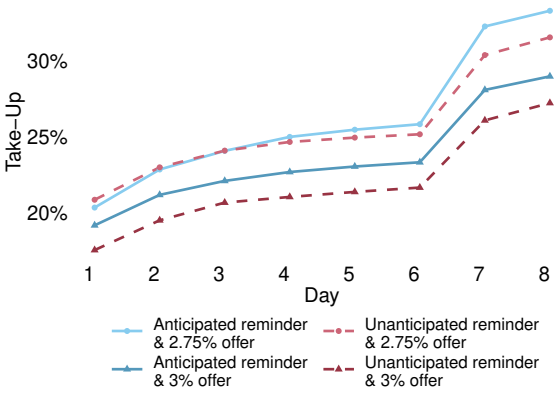


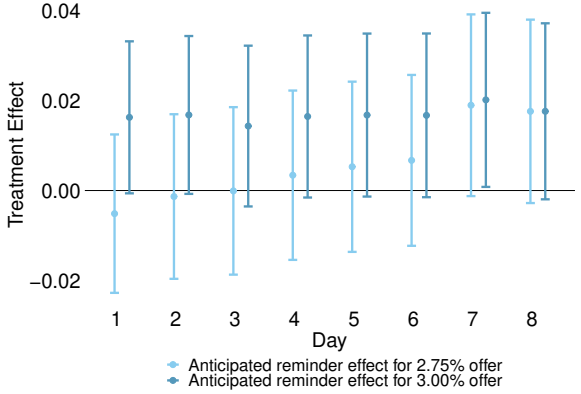


- Unconditional
- Baseline covariates & email openings
- Survey measures & email openings

Effect of Anticipated Reminder by Offer Value

- Anticipated reminders appear to ↗ take-up regardless of offer value
  - Cannot reject that effect is the same regardless of deadline

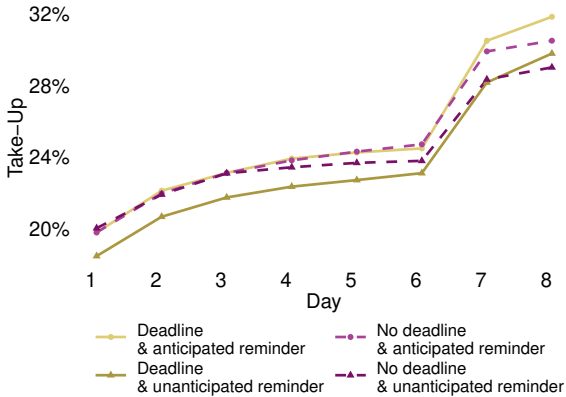


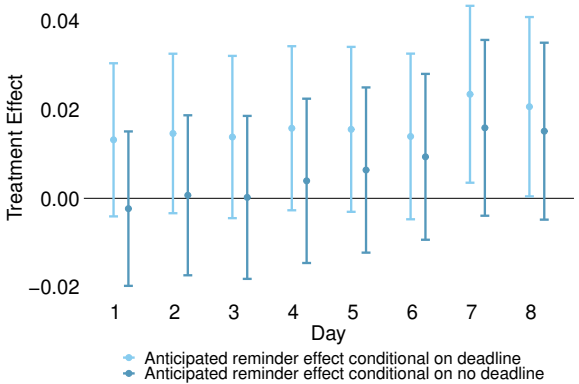


- Pooled across value of the offer
- Opened first email
- Longer-term take-up

Anticipated Reminder Conditional on Deadline

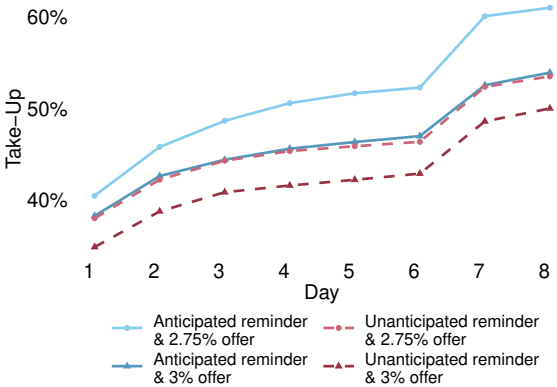
- Anticipated reminders appear to ↗ take-up regardless of deadline
  - Cannot reject that effect is the same regardless of deadline

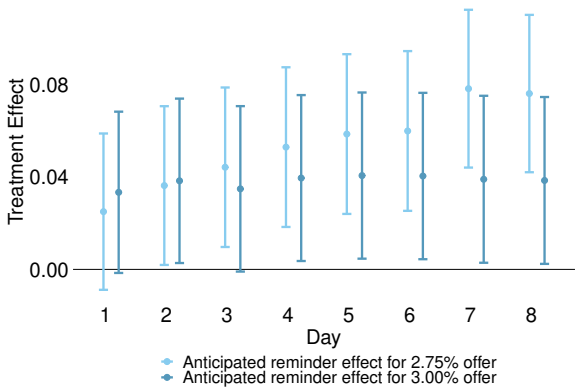




▸ Effect of anticipated reminder ▸ Effect of deadline

Effect of Anticipated Reminder by Offer Value | Opening Email





▸ Unconditional ▸ Baseline covariates & email openings ▸ Survey measures & email openings

Relation Between Baseline Covariates and Email Openings

	Firm opened email before day of reminder	
Owner characteristics		
Owner sex female	-0.038***	-0.041***
Owner age	0.002***	
Business type		
Beauty	-0.041***	-0.034***
Clothing	-0.032**	
Professionals	0.055***	0.070***
Restaurants	-0.015	
Small retailers	-0.007	
Pre-treatment sales variables		
Months since first transaction	0.002***	0.002***
% months business made sales	-0.002	
Log average monthly sales volume	0.019***	
Log average monthly transactions	-0.016***	-0.008***
Number of firms	25,327	25,327

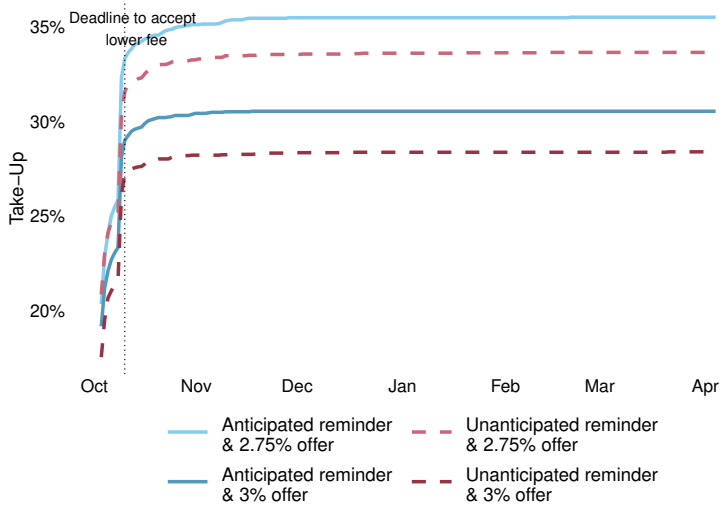
▸ Survey measures & email openings ▸ Fee |email ▸ Reminder |email ▸ Reminder × fee |email ▸ Deadline |email ▸ Deadline × fee |email
▸ Anticipated reminder |email ▸ Anticipated reminder × fee |email

Relation Between Survey Measures and Email Openings

	Firm opened email
Intercept	0.817***
Trust	-0.032
Reciprocity	-0.092
Procrastination	0.074
Memory	0.044
Overconfidence	-0.036
Attention	-0.101*
Number of firms	429

▸ Baseline covariates & email openings ▸ Survey measures ▸ Survey measures & email openings ▸ Fee |email ▸ Reminder |email
▸ Reminder × fee |email ▸ Deadline |email ▸ Deadline × fee |email ▸ Anticipated reminder |email ▸ Anticipated reminder × fee |email

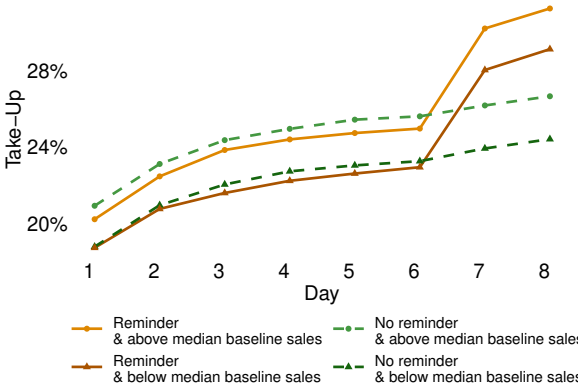
Six-Month Effect of Anticipated Reminder by Offer Value

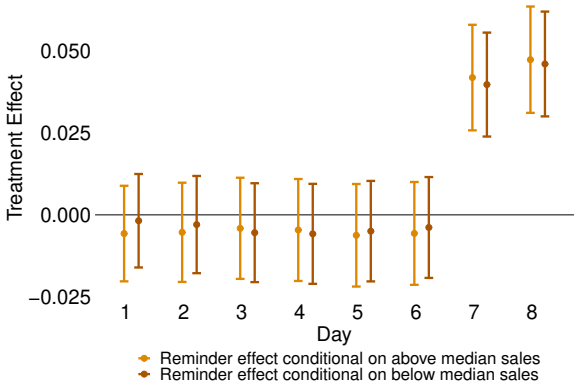


▸ By deadline

Effect of Reminder by Baseline Sales

- Reminders ↗ take-up regardless of baseline sales

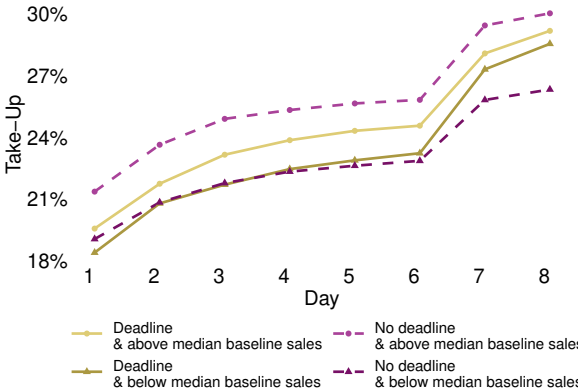


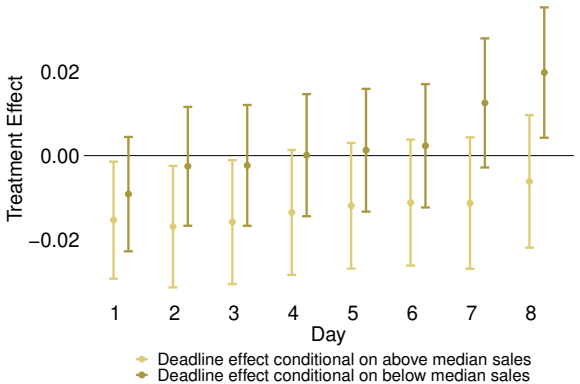


▸ Pooled across baseline sales

Effect of Deadline by Baseline Sales

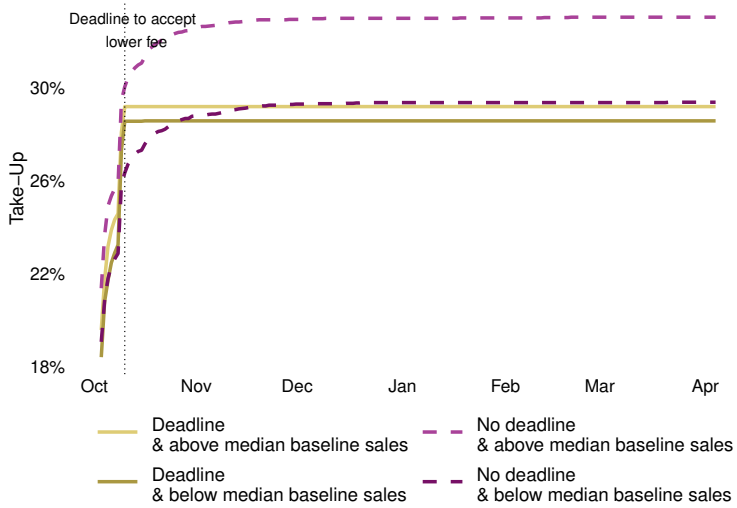
- For below-median sales, deadline ↗ take-up 2 pp by deadline
- For above-median sales, deadline has no effect





▸ Pooled across baseline sales

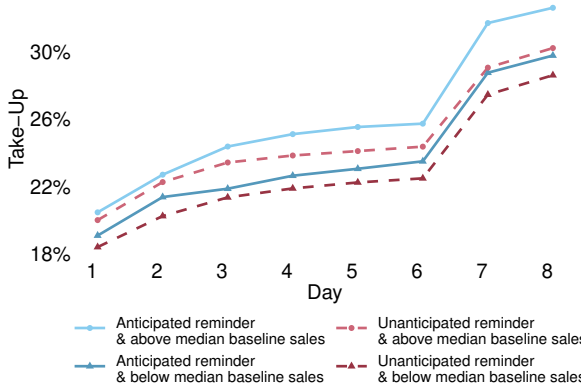
Six-Month Effect of Deadline by Baseline Sales

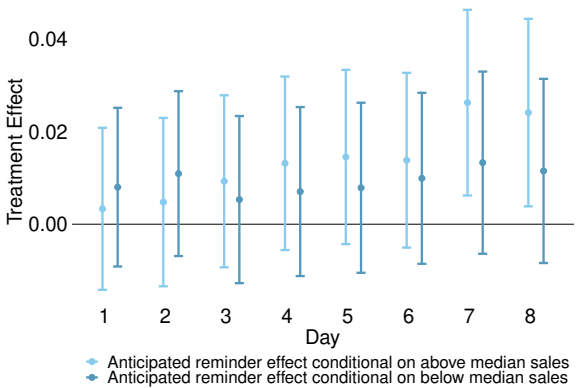


▸ Pooled across baseline sales

Effect of Anticipated Reminder by Baseline Sales

- Anticipated reminders appear to ↗ take-up regardless of baseline sales
  - Cannot reject that effect is the same regardless of baseline sales





▸ Pooled across baseline sales

Survey balance

$$y_i = \beta_0 + \beta_1 \mathbb{1}(\text{Antic. reminder})_i + \beta_2 \mathbb{1}(\text{Unantic. reminder})_i + \beta_3 \mathbb{1}(\text{Deadline})_i + \varepsilon_i$$

	Intercept	Anticipated reminder	Unanticipated reminder	Deadline	F-stat p-value
Owner characteristics					
Owner sex female	0.459***	-0.076	-0.061	0.083*	0.287
Owner age	40.87***	-1.41	-0.84	0.18	0.872
Business type					
Beauty	0.167***	-0.096	-0.085	-0.034	0.076
Clothing	0.024	0.065*	0.060*	0.003	0.591
Professionals	0.252***	0.029	0.064	-0.003	0.814
Restaurants	0.074*	0.030	0.037	0.002	0.924
Small retailers	0.367***	−0.141*	-0.104	0.016	0.300
Other	0.116*	0.114*	0.029	0.017	0.115
Pre-treatment sales variables					
Months since first transaction	21.36***	0.61	2.90	1.93	0.356
% months business made sales	0.856***	-0.042	-0.043	0.006	0.710
Log average monthly sales volume	8.653***	0.080	0.136	-0.035	0.867
Log average monthly transactions	2.056***	-0.164	-0.052	0.131	0.586

▸ Perception of offer's value ▸ Anticipated reminder compliers ▸ Unanticipated reminder compliers ▸ Deadline compliers

Survey response balance by characteristics

$$y_i = \beta_0 + \beta_1 \mathbb{1}(\text{Respond})_i + \varepsilon_i$$

	Did not respond	Responded	Difference	P-value
Owner characteristics				
Owner sex female	0.423	0.438	0.016	0.589
Owner age	39.83	39.94	0.11	0.867
Business type				
Beauty	0.085	0.068	-0.017	0.261
Clothing	0.085	0.082	-0.003	0.853
Professionals	0.258	0.291	0.034	0.197
Restaurants	0.116	0.105	-0.012	0.520
Small retailers	0.260	0.263	0.004	0.888
Other	0.197	0.191	-0.006	0.801
Pre-treatment sales variables				
Months since first transaction	25.16	23.89	-1.27	0.221
% months business made sales	0.817	0.820	0.003	0.824
Log average monthly sales volume	8.745	8.741	-0.004	0.944
Log average monthly transactions	2.015	2.029	0.014	0.866

▸ Perception of offer's value ▸ Anticipated reminder compliers ▸ Unanticipated reminder compliers ▸ Deadline compliers

Survey response balance by treatment arm

$$y_i = \beta_0 + \beta_1 \mathbb{1}(\text{Ant. remind})_i + \beta_2 \mathbb{1}(\text{Unant. remind})_i + \beta_3 \mathbb{1}(\text{Deadline})_i + \beta_4 \mathbb{1}(\text{2.75\% Fee})_i + \varepsilon_i$$

	Responded survey
Intercept	0.300***
	(0.045)
Anticipated reminder	-0.005
	(0.045)
Unanticipated reminder	-0.013
	(0.045)
Deadline	0.002
	(0.025)
2.75% fee	0.028
	(0.025)
Num.Obs.	1399

▸ Perception of offer's value ▸ Anticipated reminder compliers ▸ Unanticipated reminder compliers ▸ Deadline compliers

Survey response correlated with take-up

$$\mathbb{1}(\textit{Respond})_i = \beta_0 + \beta_1 \mathbb{1}(\textit{Accept})_i + \varepsilon_i$$

	Responded survey
Intercept	0.251***
	(0.016)
Firm accepted offer by deadline	0.125***
	(0.025)
Num.Obs.	1399

▸ Perception of offer's value ▸ Anticipated reminder compliers ▸ Unanticipated reminder compliers ▸ Deadline compliers

Logins to Check Current Fee or Sales

- Administrative data on logins to partner's platform to check current fee or sales
- Compare anticipated and unanticipated reminder groups

	Log in (1)	Viewed deposits (2)
Intercept	0.095***	0.037***
	(0.003)	(0.002)
Anticipated reminder	-0.003	0.000
	(0.005)	(0.003)
Number of firms	16,254	16,254

▸ Perception of offer's value ▸ Anticipated reminder compliers ▸ Unanticipated reminder compliers ▸ Deadline compliers

Anticipated Reminder Effect Concentrated Among Less-Trusting

$$\mathbb{1}(\text{Adopt})_i = \beta_0 + \beta_1 \mathbb{1}(\text{Survey measure})_i + \beta_2 \mathbb{1}(\text{Ant. remind})_i + \beta_3 \mathbb{1}(\text{Survey measure})_i \times \mathbb{1}(\text{Ant. remind})_i + \varepsilon_i$$

- Comparing anticipated to unanticipated reminder

Survey measure	Firm accepted offer beyond deadline					
	Trust	Reciprocity	Procrastination	Memory	Overconfidence	Attention
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.444***	0.526***	0.538***	0.532***	0.505***	0.387***
	(0.048)	(0.115)	(0.044)	(0.073)	(0.050)	(0.088)
Survey measure	0.206***	0.006	-0.020	0.000	0.058	0.173*
	(0.072)	(0.121)	(0.080)	(0.084)	(0.073)	(0.097)
Anticipated reminder	0.298***	0.188	0.206***	0.186**	0.247***	0.305**
	(0.061)	(0.152)	(0.058)	(0.091)	(0.064)	(0.127)
Survey measure	-0.296***	-0.009	-0.077	-0.011	-0.160	-0.151
× Anticipated reminder	(0.100)	(0.160)	(0.106)	(0.108)	(0.099)	(0.137)
Number of firms	389	389	389	389	389	389
Prop. survey measure = 1	0.366	0.895	0.315	0.683	0.420	0.841
Prop. firms took up treatment	0.611	0.611	0.611	0.611	0.611	0.611

▸ Graph ▸ Weighted ▸ Survey balance ▸ Survey response balance ▸ Logins

Unanticipated Reminder Effect Concentrated Among Low-Memory

$$\mathbb{1}(\text{Adopt})_i = \beta_0 + \beta_1 \mathbb{1}(\text{Survey measure})_i + \beta_2 \mathbb{1}(\text{Unant. remind})_i + \beta_3 \mathbb{1}(\text{Survey measure})_i \times \mathbb{1}(\text{Unant. remind})_i + \varepsilon_i$$

- Comparing unanticipated reminder to no reminder

Survey measure	Firm accepted offer beyond deadline					
	Trust (1)	Reciprocity (2)	Procrastination (3)	Memory (4)	Overconfidence (5)	Attention (6)
Intercept	0.406***	0.600***	0.586***	0.278***	0.370***	0.273**
	(0.088)	(0.221)	(0.092)	(0.107)	(0.094)	(0.135)
Survey measure	0.344*	-0.143	-0.404***	0.359**	0.322**	0.279*
	(0.178)	(0.237)	(0.149)	(0.148)	(0.160)	(0.164)
Unanticipated reminder	0.038	-0.074	-0.048	0.254*	0.135	0.114
	(0.100)	(0.249)	(0.102)	(0.129)	(0.106)	(0.162)
Survey measure	-0.138	0.149	0.384**	-0.359**	-0.264	-0.106
× Unanticipated reminder	(0.192)	(0.266)	(0.170)	(0.171)	(0.176)	(0.191)
Number of firms	228	228	228	228	228	228
Prop. survey measure = 1	0.366	0.895	0.315	0.683	0.420	0.841
Prop. firms took up treatment	0.611	0.611	0.611	0.611	0.611	0.611

▸ Graph ▸ Weighted ▸ Survey balance ▸ Survey response balance ▸ Logins

Anticipated Reminder (Weighted)

$$\mathbb{1}(\text{Adopt})_i = \beta_0 + \beta_1 \mathbb{1}(\text{Survey measure})_i + \beta_2 \mathbb{1}(\text{Ant. remind})_i + \beta_3 \mathbb{1}(\text{Survey measure})_i \times \mathbb{1}(\text{Ant. remind})_i + \varepsilon_i$$

- Comparing anticipated to unanticipated reminder

Survey measure	Firm accepted offer beyond deadline					
	Trust (1)	Reciprocity (2)	Procrastination (3)	Memory (4)	Overconfidence (5)	Attention (6)
Intercept	0.351***	0.434***	0.436***	0.437***	0.406***	0.311***
	(0.045)	(0.114)	(0.043)	(0.073)	(0.048)	(0.080)
Survey measure	0.200***	-0.002	-0.015	-0.007	0.058	0.148*
	(0.073)	(0.120)	(0.079)	(0.084)	(0.073)	(0.090)
Anticipated reminder	0.305***	0.187	0.220***	0.189**	0.261***	0.286**
	(0.063)	(0.161)	(0.062)	(0.096)	(0.067)	(0.130)
Survey measure	-0.305***	0.000	-0.090	-0.003	-0.173*	-0.121
× Anticipated reminder	(0.107)	(0.170)	(0.111)	(0.114)	(0.104)	(0.142)
Number of firms	389	389	389	389	389	389
Prop. survey measure = 1	0.358	0.895	0.324	0.681	0.420	0.832
Prop. firms took up treatment	0.510	0.510	0.510	0.510	0.510	0.510

▸ Graph ▸ Unweighted ▸ Survey balance ▸ Survey response balance ▸ Logins

Unanticipated Reminder (Weighted)

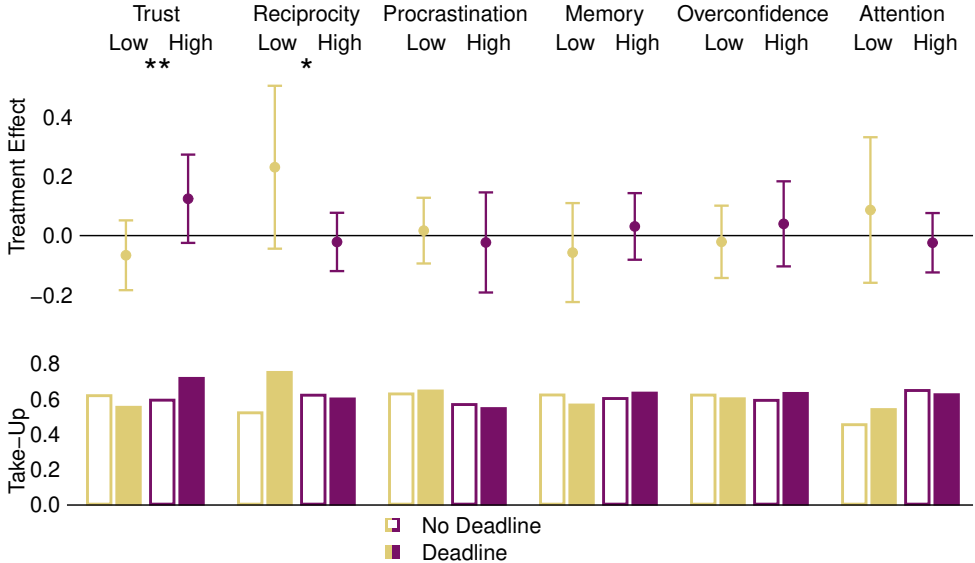
$$\mathbb{1}(\text{Adopt})_i = \beta_0 + \beta_1 \mathbb{1}(\text{Survey measure})_i + \beta_2 \mathbb{1}(\text{Unant. remind})_i + \beta_3 \mathbb{1}(\text{Survey measure})_i \times \mathbb{1}(\text{Unant. remind})_i + \varepsilon_i$$

- Comparing unanticipated reminder to no reminder

Survey measure	Firm accepted offer beyond deadline					
	Trust	Reciprocity	Procrastination	Memory	Overconfidence	Attention
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.310***	0.496**	0.482***	0.201**	0.278***	0.197*
	(0.078)	(0.230)	(0.095)	(0.085)	(0.081)	(0.108)
Survey measure	0.353*	-0.140	-0.354***	0.333**	0.318*	0.249*
	(0.200)	(0.243)	(0.129)	(0.140)	(0.167)	(0.143)
Unanticipated reminder	0.042	-0.062	-0.045	0.236**	0.127	0.113
	(0.090)	(0.257)	(0.104)	(0.112)	(0.094)	(0.135)
Survey measure	-0.153	0.138	0.340**	-0.340**	-0.260	-0.101
× Unanticipated reminder	(0.213)	(0.272)	(0.151)	(0.163)	(0.182)	(0.169)
Number of firms	228	228	228	228	228	228
Prop. survey measure = 1	0.358	0.895	0.324	0.681	0.420	0.832
Prop. firms took up treatment	0.510	0.510	0.510	0.510	0.510	0.510

▸ Graph ▸ Unweighted ▸ Survey balance ▸ Survey response balance ▸ Logins

Deadline Effect



Deadline Effect

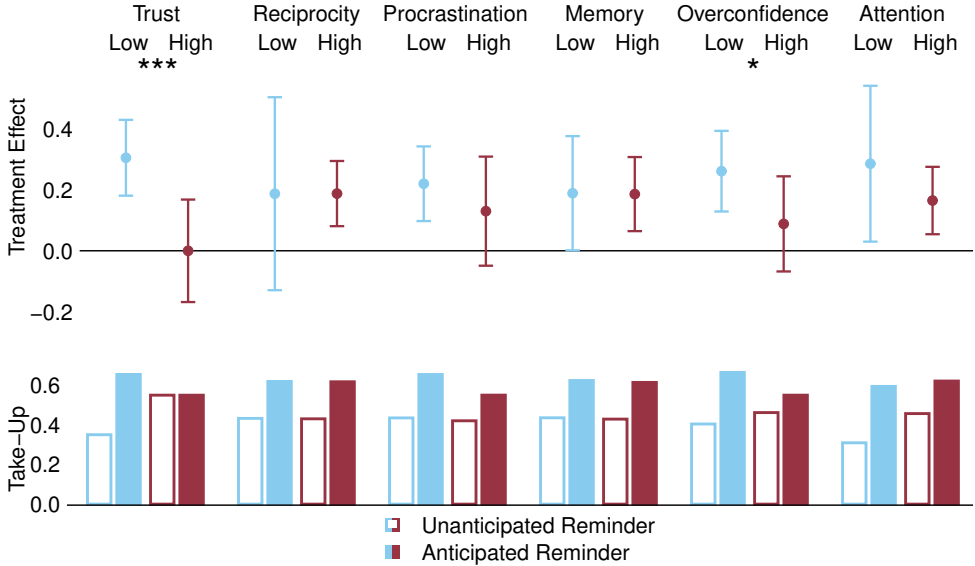
$$\mathbb{1}(\text{Adopt})_i = \beta_0 + \beta_1 \mathbb{1}(\text{Survey measure})_i + \beta_2 \mathbb{1}(\text{Deadline})_i + \beta_3 \mathbb{1}(\text{Survey measure})_i \times \mathbb{1}(\text{Deadline})_i + \varepsilon_i$$

- Comparing deadline to no deadline

Survey measure	Firm accepted offer beyond deadline					
	Trust (1)	Reciprocity (2)	Procrastination (3)	Memory (4)	Overconfidence (5)	Attention (6)
Intercept	0.618***	0.520***	0.628***	0.622***	0.621***	0.452***
	(0.042)	(0.100)	(0.040)	(0.057)	(0.044)	(0.077)
Survey measure	-0.026	0.100	-0.060	-0.020	-0.030	0.195**
	(0.070)	(0.107)	(0.073)	(0.070)	(0.068)	(0.085)
Deadline	-0.066	0.230	0.017	-0.057	-0.021	0.086
	(0.060)	(0.140)	(0.056)	(0.085)	(0.062)	(0.125)
Survey measure	0.190**	-0.251*	-0.040	0.088	0.060	-0.110
× Deadline	(0.097)	(0.148)	(0.103)	(0.102)	(0.096)	(0.135)
Number of firms	429	429	429	429	429	429
Prop. survey measure = 1	0.366	0.895	0.315	0.683	0.420	0.841
Prop. firms took up treatment	0.611	0.611	0.611	0.611	0.611	0.611

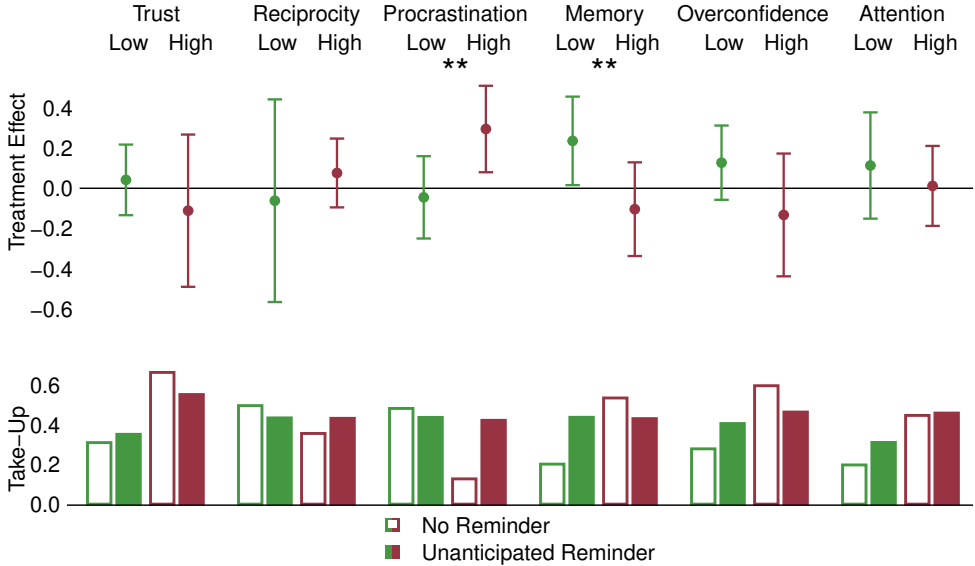
▸ Graph ▸ Weighted ▸ Survey balance ▸ Survey response balance ▸ Logins ▸ Unanticipated reminder

Anticipated Reminder (Weighted)



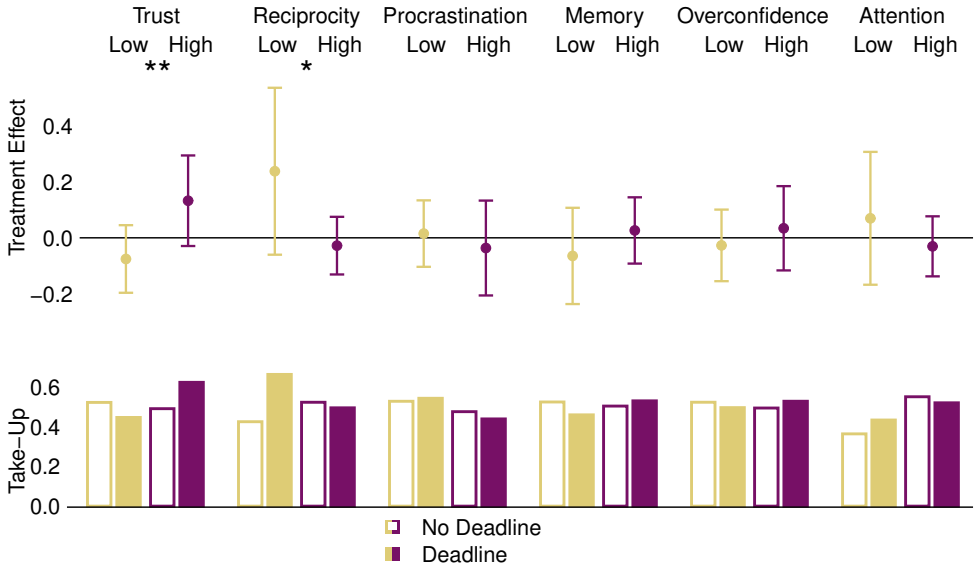
▸ Table ▸ Unweighted ▸ Survey balance ▸ Survey response balance ▸ Logins

Unanticipated Reminder (Weighted)



▸ Table ▸ Unweighted ▸ Survey balance ▸ Survey response balance ▸ Logins

Deadline (Weighted)



▸ Table ▸ Unweighted ▸ Survey balance ▸ Survey response balance ▸ Logins

Deadline Effect (Weighted)

$$\mathbb{1}(\text{Adopt})_i = \beta_0 + \beta_1 \mathbb{1}(\text{Survey measure})_i + \beta_2 \mathbb{1}(\text{Deadline})_i + \beta_3 \mathbb{1}(\text{Survey measure})_i \times \mathbb{1}(\text{Deadline})_i + \varepsilon_i$$

- Comparing deadline to no deadline

Survey measure	Firm accepted offer beyond deadline					
	Trust (1)	Reciprocity (2)	Procrastination (3)	Memory (4)	Overconfidence (5)	Attention (6)
Intercept	0.522***	0.425***	0.528***	0.524***	0.523***	0.364***
	(0.044)	(0.099)	(0.043)	(0.060)	(0.046)	(0.073)
Survey measure	-0.032	0.098	-0.052	-0.021	-0.029	0.187**
	(0.074)	(0.106)	(0.076)	(0.074)	(0.072)	(0.083)
Deadline	-0.076	0.238	0.015	-0.065	-0.027	0.070
	(0.062)	(0.152)	(0.061)	(0.088)	(0.065)	(0.121)
Survey measure	0.208**	-0.266*	-0.052	0.091	0.061	-0.100
× Deadline	(0.103)	(0.161)	(0.106)	(0.107)	(0.101)	(0.133)
Number of firms	429	429	429	429	429	429
Prop. survey measure = 1	0.358	0.895	0.324	0.681	0.420	0.832
Prop. firms took up treatment	0.510	0.510	0.510	0.510	0.510	0.510

▸ Graph ▸ Unweighted ▸ Survey balance ▸ Survey response balance ▸ Logins ▸ Unanticipated reminder

Elasticity of Usage of E-Payments

- Whether lowering merchant fee benefited FinTech partner depends on elasticity

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- Treatment-on-the-treated estimate: taking up offer $\nearrow$ sales by $\sim$ 40%

Elasticity of Usage of E-Payments

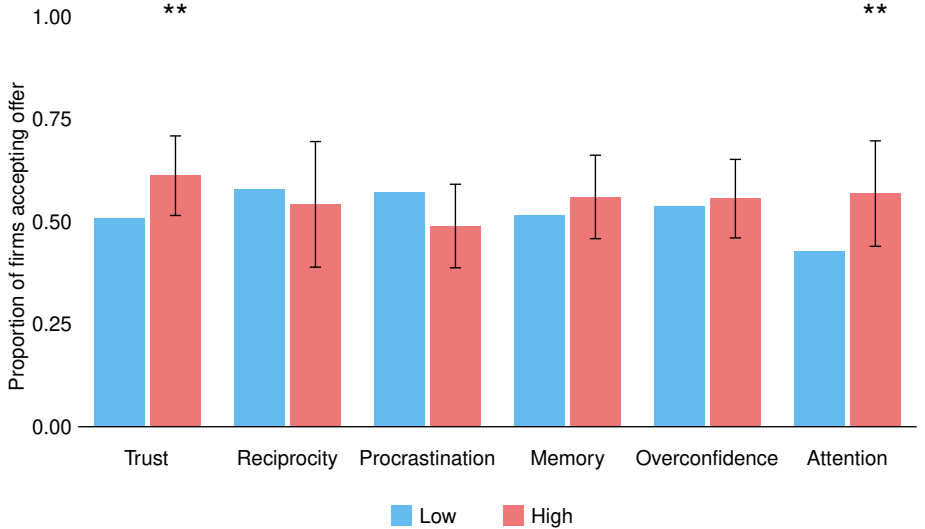
- Whether lowering merchant fee benefited FinTech partner depends on elasticity
- Treatment-on-the-treated estimate: taking up offer $\nearrow$ sales by $\sim 40\%$
- Sales Elasticity = $\frac{\%\Delta \text{Sales}}{\%\Delta \text{Fee}} \approx \frac{40\%}{-20\%} = -2$

Elasticity of Usage of E-Payments

- Whether lowering merchant fee benefited FinTech partner depends on elasticity
- Treatment-on-the-treated estimate: taking up offer $\nearrow$ sales by $\sim 40\%$
- Sales Elasticity = $\frac{\%\Delta \text{Sales}}{\%\Delta \text{Fee}} \approx \frac{40\%}{-20\%} = -2$
- $\Rightarrow$ profitable for FinTech partner to lower merchant fee

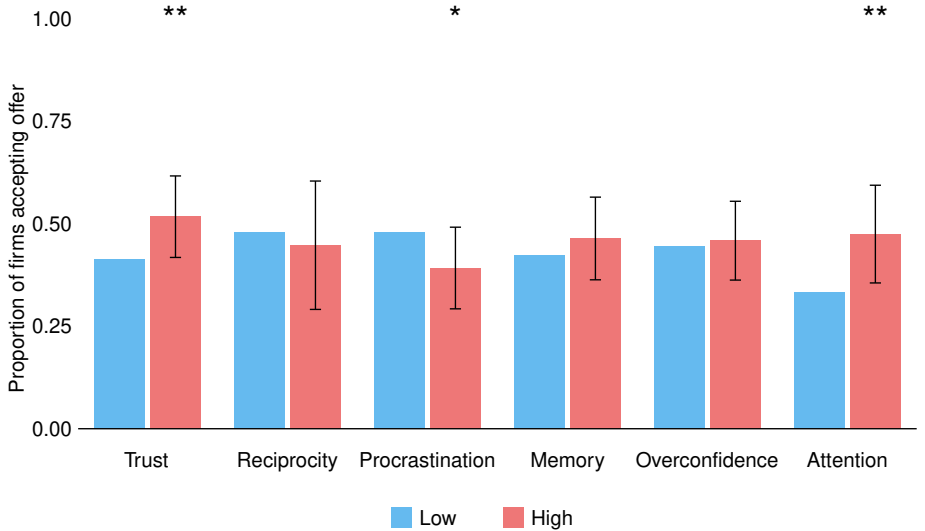
▸ More details ▸ Mechanisms

Survey Measures and Take-Up



- Anticipated reminder compliers
- Unanticipated reminder compliers
- Deadline compliers

Survey Measures and Take-Up (Weighted)



- Anticipated reminder compliers
- Unanticipated reminder compliers
- Deadline compliers

Self-Reported Reasons for Not Adopting