Search and Negotiation with Biased Beliefs in Consumer Credit Markets

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Motivation

There is a lot of within-borrower price dispersion in consumer credit markets (Stango Zinman 2016; Ponce Seira Zamarripa 2017)

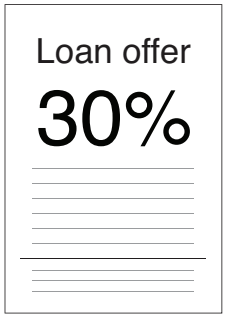
Many consumers pay substantial costs by borrowing at higher rates than they could (Argyle Nadauld Palmer 2023; Bhutta Fuster Hizmo 2024)

Price dispersion can persist in equilibrium if some consumers do not search or negotiate much (Stahl 1989; Hortaçsu Syverson 2004; Allen Clark Houde 2014)

Why do consumers not search or negotiate more?

- Existing studies focus on **costs** that prevent search or negotiation
- We focus instead on expected **benefits**: we ask whether biased beliefs about the interest rate distribution constrain search and negotiation

Given Dispersion, Why Don't People Search or Negotiate More?



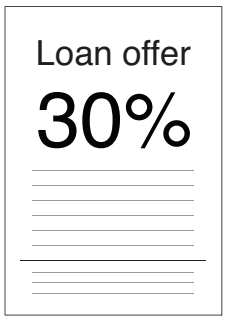
Accept offer

$V(r_{offer})$

Search at another bank

$\mathbb{E}[V(r_{draw})] - c_{search}$

Given Dispersion, Why Don't People Search or Negotiate More?



Accept offer

$V(r_{offer})$

Negotiate

$V(r_{neg.}) - c_{neg.}$

Search at another bank

$\mathbb{E}[V(r_{draw})] - c_{search}$

Costs and Benefits of Search and Negotiation

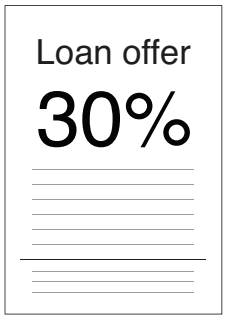
Costs of search and negotiation could be high due to:

- Physical search costs (Allen Clark Houde 2013; Argyle Nadauld Palmer 2023)
- High rejection rates (Agarwal Grigsby Hortaçsu Matvos Seru Yao 2024)
- Effort required to compare complex offers (Galenianos Gavazza 2022)
- Fixed costs of negotiating (Rubinstein 1982; Backus Blake Larsen Tadelis 2020)
- Cost of gathering additional quotes to use in negotiation (Allen Li 2024)

Benefits: Most papers assume consumers have correct beliefs about the interest rate distribution

- **This paper:** We show that individuals have biased beliefs about the interest rate distribution they face
- Test effects of price comparison tool designed to correct biased beliefs

What if Beliefs are Biased?



Accept offer

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Negotiate

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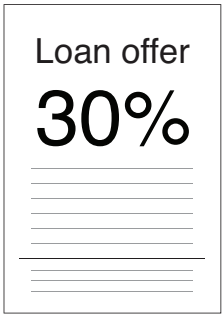
$\mathbb{E}[V(r_{draw})] - c_{search}$

What if Beliefs are Biased?



Accept offer

$V(r_{offer})$

1) Overly optimistic

(underestimate first moment of $F(r_{draw})$)

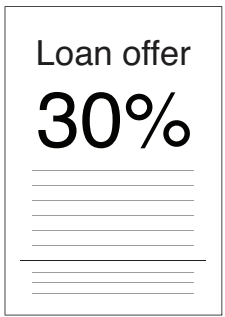
2) Underestimate dispersion

Search at another bank

$\mathbb{E}[V(r_{draw})] - c_{search}$

1) $\uparrow$ 2) $\downarrow$

What if Beliefs are Biased?



Accept offer

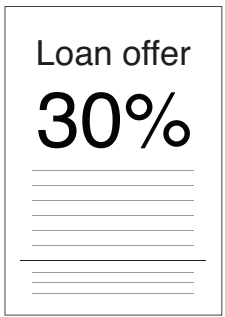
Negotiate

Search at another bank

Negotiation breaks predicted effects of beliefs on search

Underestimate 2nd moment $\Rightarrow$ negotiate less and get higher interest rate

What if Beliefs are Biased?



Accept offer

Negotiate

Search at another bank

Negotiation breaks predicted effects of beliefs on search

Bias in 1st moment:

- Overestimate $\Rightarrow$ don't negotiate for lower rate
- Accurate or somewhat underestimate $\Rightarrow$ successfully negotiate
- Substantially underestimate $\Rightarrow$ don't successfully negotiate

This Paper

How do biased beliefs about the distribution of interest rates affect search, negotiation, and loan terms in consumer credit markets?

Randomized controlled trial (RCT) with 112,063 Chileans looking for loans

Measure beliefs about the interest rate distribution in a baseline survey

Show a price comparison tool designed to correct biased beliefs

- Built in collaboration with Chile's financial regulator using administrative data on universe of consumer loans
- Shows conditional distribution of interest rates obtained by similar borrowers for similar loans over past six months

Measure outcomes in administrative data and follow-up phone surveys where we collect rich data on search histories and negotiation

Key Results

1. People have biased beliefs about interest rates
   - 73% underestimate the interest rate they will obtain
   - 75% underestimate dispersion
2. Price comparison tool led them to update beliefs
   - Beliefs of rate they will get ↗ 16 pp (55%)
   - Beliefs of dispersion ↗ 68%
3. . . . and had no effect on search but ↗ negotiation
   - No change in number of institutions searched or formal applications
   - 39% more likely to negotiate
   - 13% more offers (without applying more)
   - 11% lower interest rates
   - 5% more likely to take out a loan

Experimental Setting and Design

Consumer Loans in Chile

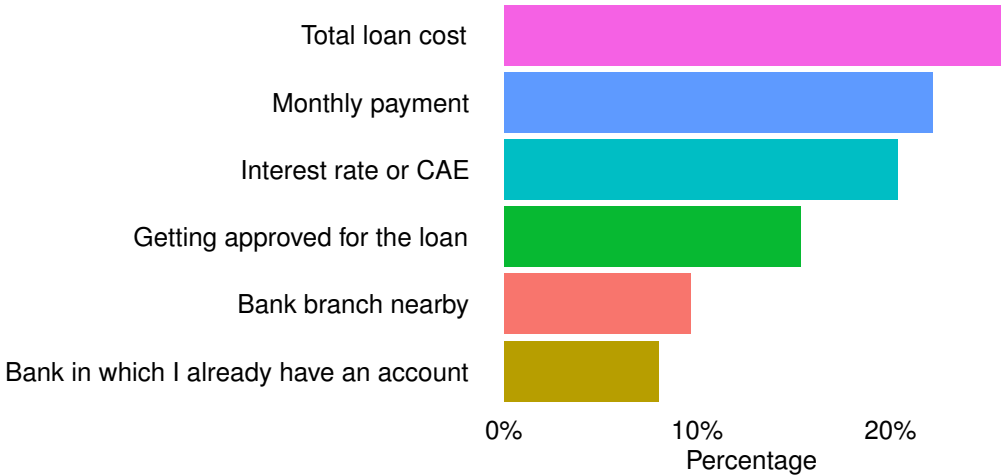
Consumer loans are unsecured installment loans

- Most commonly used to:
  - Pay down higher-interest debt (24% of borrowers)
  - Purchase or repair a car (16%)
  - Invest in their business (11%)
  - Make home improvements (5%)
  - Purchase consumer durables (4%)
- Mean and median interest rate are 25.9% and 23.9%, respectively
- Median loan amount is $4,488 USD
- Median maturity is 3 years

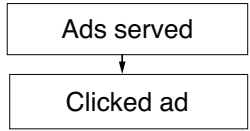
▸ Distribution

▸ Percent getting a loan

Consumer Loans: Most Important Features (Baseline Survey)

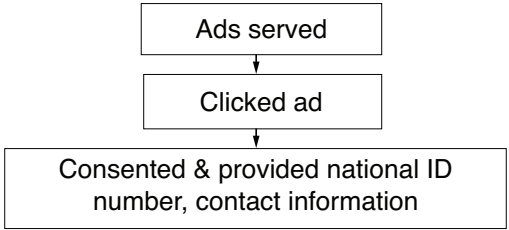


▸ Reason for choosing (follow-up survey)



$N = 4{,}107{,}376$

$N = 612{,}945$
15% of ads served

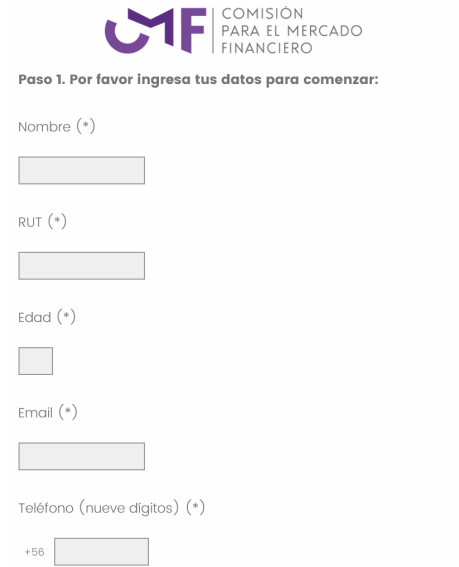


$N = 4{,}107{,}376$

$N = 612{,}945$
15% of ads served

$N = 112{,}063$
18% of clicked ads

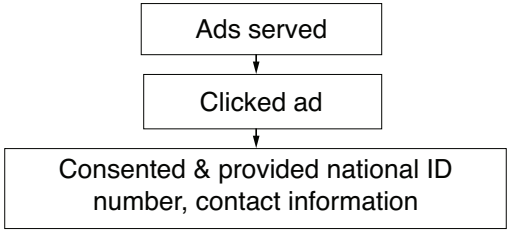
National ID Number and Contact Information



Key: National ID number (RUT) is commonly used in Chile

- e.g., at grocery store; phone repair store
- This allows us to merge with administrative data on originated loans after participation in RCT

Also collect contact information for follow-up phone surveys



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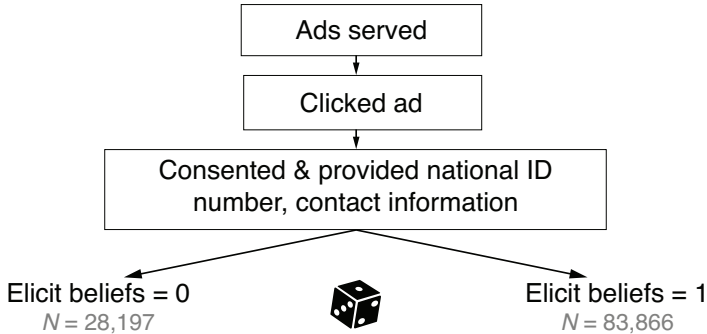

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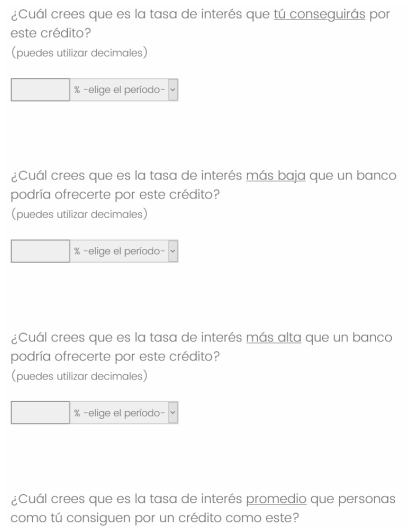
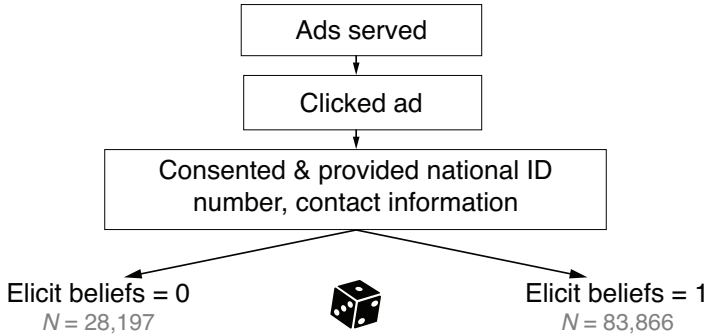
Eliciting Beliefs

Elicit beliefs about:

1. The rate they expect to get on the loan they take out
2. Lowest and highest interest rates a bank would offer them
3. Fraction of offers with an interest rate above midpoint
   - To measure asymmetry in the distribution (Coibion Georgarakos Gorodnichenko Kenny Weber 2024)
4. Rate that people *like them* would obtain
5. How much they would search





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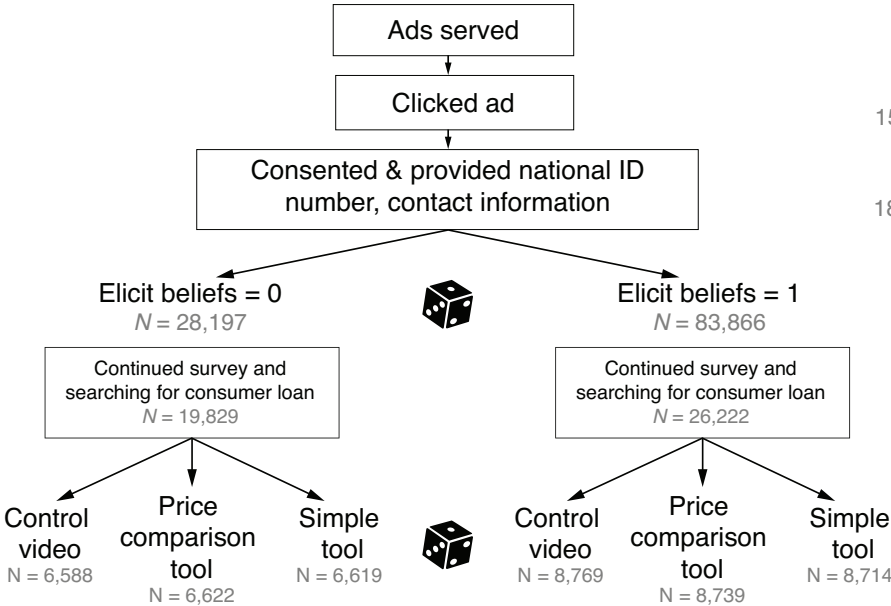


▸ Ads ▸ External validity

Treatment 1: Price Comparison Tool

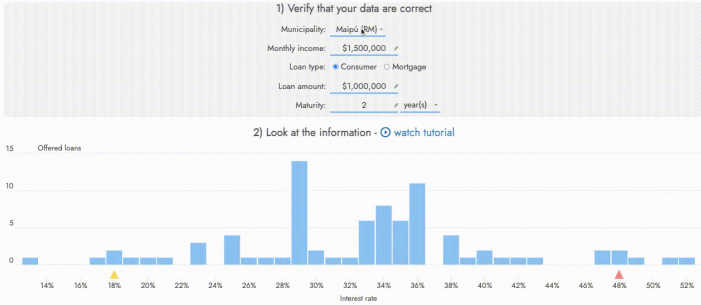
Built using administrative data on the universe of consumer loans in Chile, merged with borrower characteristics

- Data from 1.8 million loans to 1.2 million borrowers over two years
- Updated every month to include data for the previous 6 months

Shows distribution of interest rates conditional on the following inputs:

- Neighborhood of borrower
- Income of borrower
- Note: no credit scores in Chile (just default flags)
- Type of loan
- Loan amount
- Loan maturity

Treatment 1: Price Comparison Tool

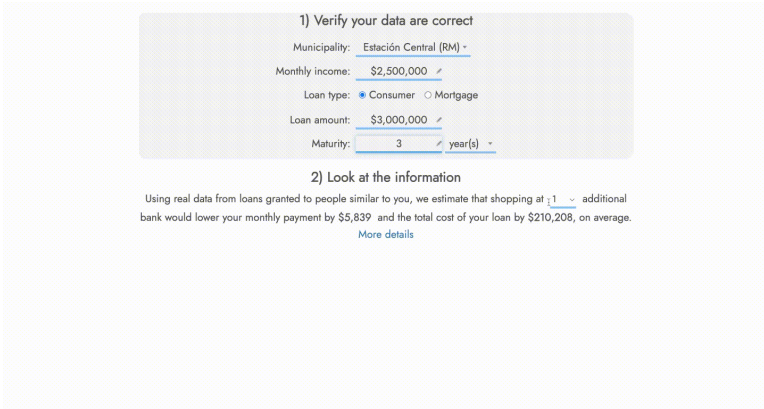


▸ Tutorial video ▸ Other tools interface ▸ Google ▸ Other websites

Treatment 2: Simple Tool

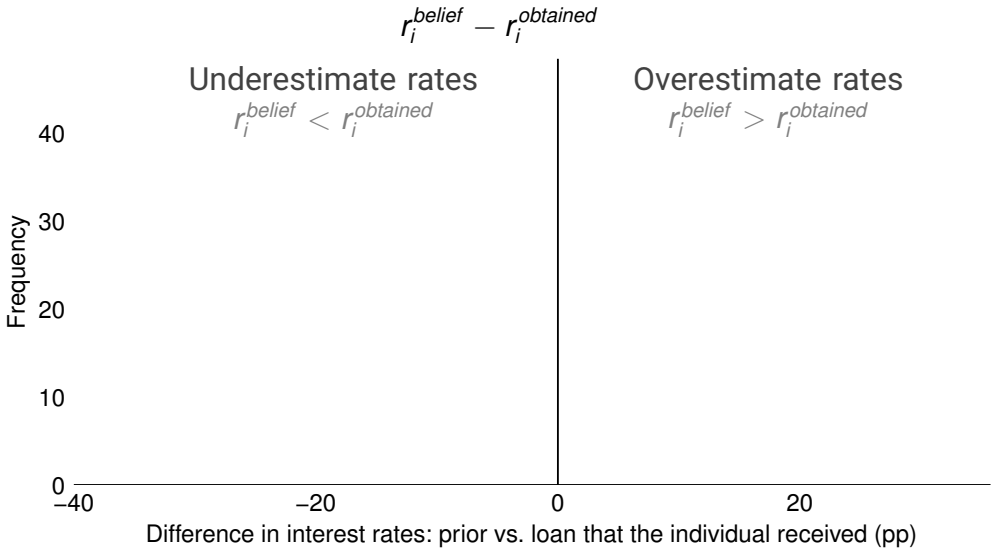
Estimate personalized benefits of search based on simulations where we draw from their conditional distribution ▸ More details

Tell the user the expected benefit from searching at X additional banks



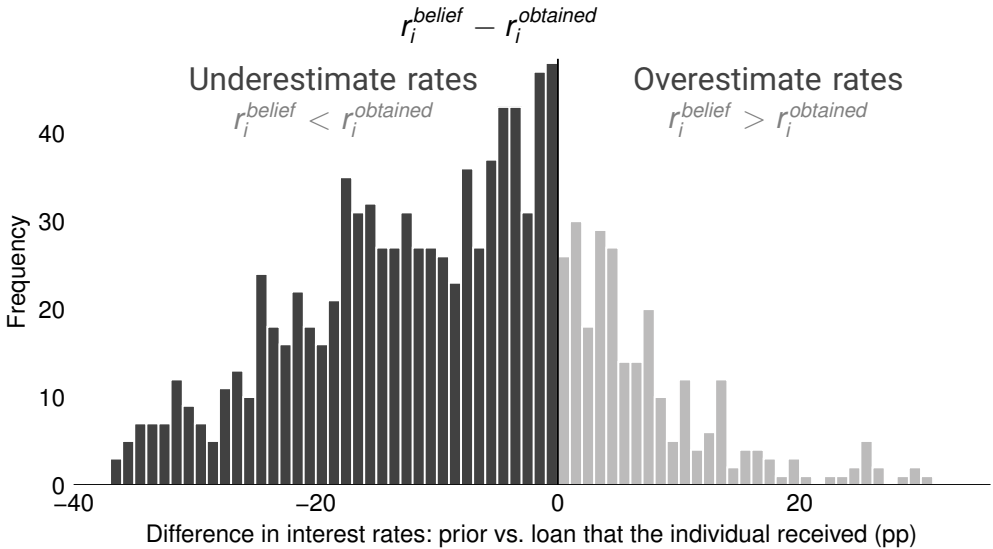
Results

Consumers Tend to Underestimate the Rate They Will Get



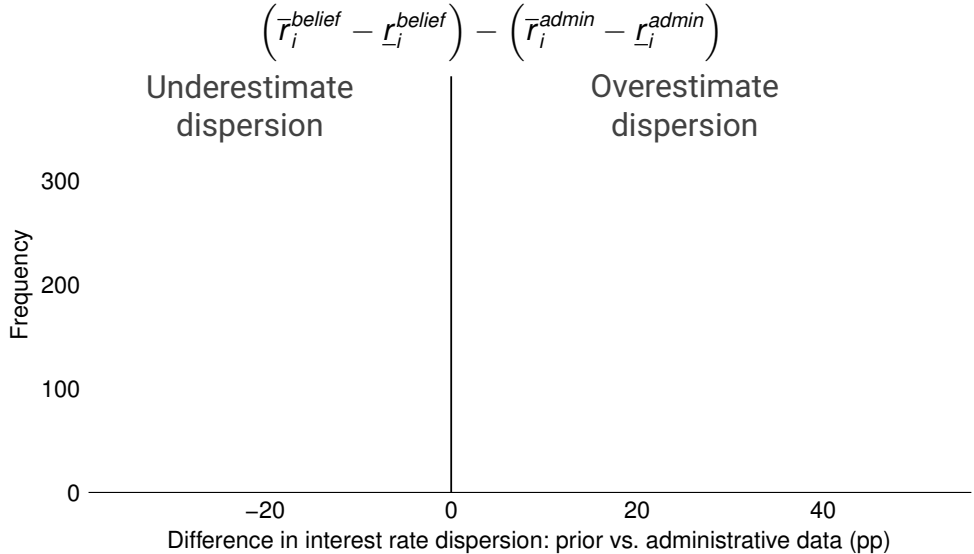
▸ Why? ▸ Belief heterogeneity ▸ Interest rates over time

Consumers Tend to Underestimate the Rate They Will Get



▸ Why? ▸ Belief heterogeneity ▸ Interest rates over time

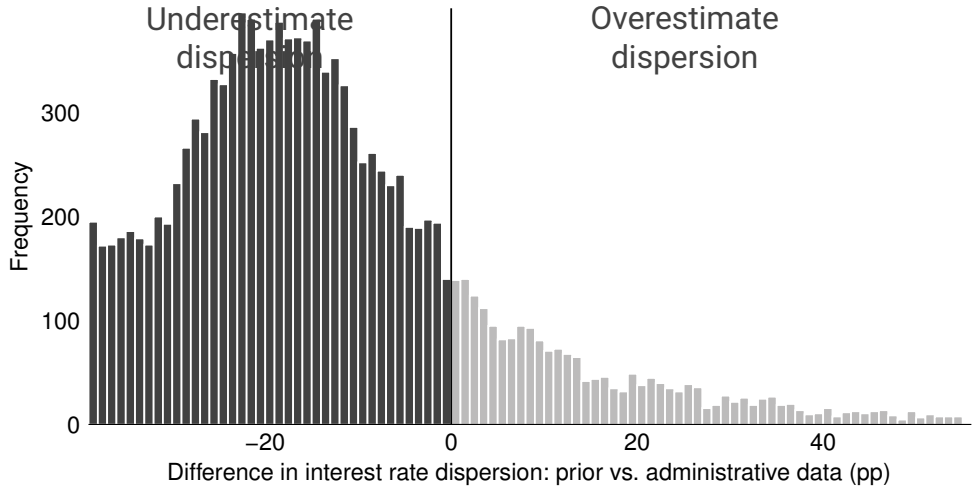
Consumers Tend to Underestimate Dispersion



▸ Why? ▸ Belief heterogeneity ▸ Interest rates over time

Consumers Tend to Underestimate Dispersion

$$\left(\bar{r}_i^{belief} - \underline{r}_i^{belief}\right) - \left(\bar{r}_i^{admin} - \underline{r}_i^{admin}\right)$$



▸ Why? ▸ Belief heterogeneity ▸ Interest rates over time

Price Comparison Tool ⇒ Consumers Update Beliefs Upwards

$$\textit{Posterior}_i - \textit{Prior}_i = \beta_1 \mathbb{1}(\text{Simple Tool})_i + \beta_2 \mathbb{1}(\text{Price Comparison Tool})_i + \lambda_{b(i)} + \varepsilon_i$$

	Expected rate (1)	Lowest rate (2)	Highest rate (3)	Dispersion (4)
Simple Tool	0.70	0.84**	−0.19	0.01
	(0.43)	(0.35)	(0.79)	(0.66)
Price Comparison Tool	16.18***	10.89***	30.35***	15.93***
	(1.18)	(0.93)	(2.24)	(1.45)
Observations	6,817	6,760	6,661	6,272
Control Mean Posterior	29.221	22.655	47.447	23.183
Control Median Posterior	180	120	250	10.680
Bin Density FEs	Yes	Yes	Yes	Yes

▸ Why? ▸ Belief heterogeneity ▸ Priors on RHS ▸ Priors on RHS (logs) ▸ No priors ▸ No priors (logs) ▸ Over time ▸ Normalized dispersion

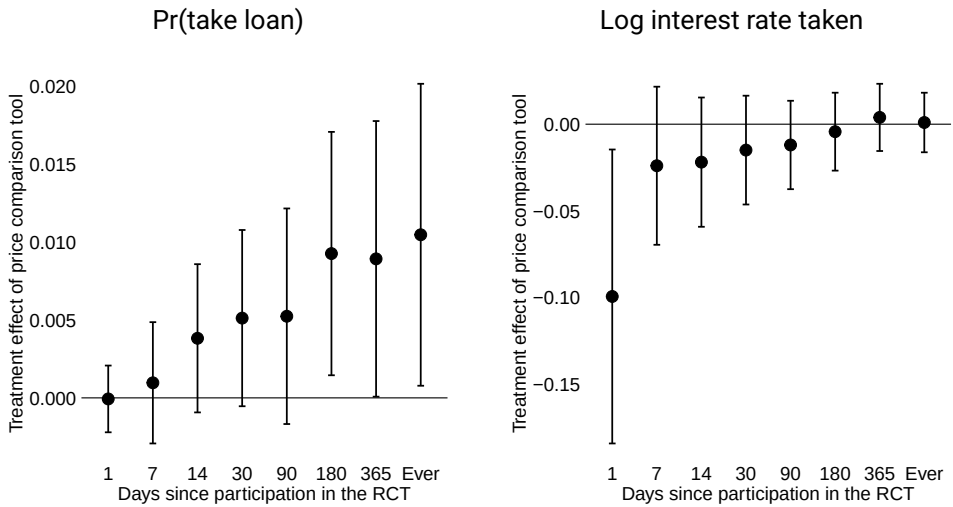
Effects of Simple Tool and Price Comparison Tool

$$y_i = \beta_0 + \beta_1 \mathbb{1}(\text{Simple Tool})_i + \beta_2 \mathbb{1}(\text{Price Comparison Tool})_i + \varepsilon_i$$

	Survey Data							Administrative Data	
	N of inst. searched (1)	N of inst. applied (2)	N of offers (3)	Pr(negotiate) (4)	Log interest rate offered (5)	Pr(take loan) (6)	Log interest rate taken (7)	Pr(take loan) (8)	Log interest rate taken (9)
(Intercept)	3.450***	1.121***	0.531***	0.097***	3.302***	0.369***	3.213***	0.190***	3.174***
	(0.048)	(0.037)	(0.022)	(0.009)	(0.049)	(0.015)	(0.052)	(0.003)	(0.007)
Simple Tool	0.053	0.018	0.019	0.013	0.000	0.013	−0.031	0.006	0.005
	(0.071)	(0.052)	(0.032)	(0.013)	(0.074)	(0.021)	(0.072)	(0.005)	(0.010)
Price Comparison Tool	0.017	0.025	0.069**	0.037***	−0.127**	0.036*	−0.111*	0.009**	0.004
	(0.071)	(0.051)	(0.033)	(0.014)	(0.062)	(0.021)	(0.065)	(0.005)	(0.010)
Observations	3,283	3,167	3,147	3,114	555	3,143	364	46,051	8,988

▸ Search ▸ Offers ▸ Mechanisms ▸ Don't know ▸ Other terms ▸ Balance ▸ Response balance ▸ Belief heterogeneity

Effect on Loan Take-Up and Interest Rates over Time



▸ Survey participation over time

Biased Beliefs and Negotiation

Two predictions from model:

1. For those who underestimate dispersion, tool $\Rightarrow \nearrow$ negotiation

$$y_i = \beta_0 + \beta_1 \mathbb{1}(\text{Simple Tool})_i + \beta_2 \mathbb{1}(\text{Price Comparison Tool})_i + \varepsilon_i$$

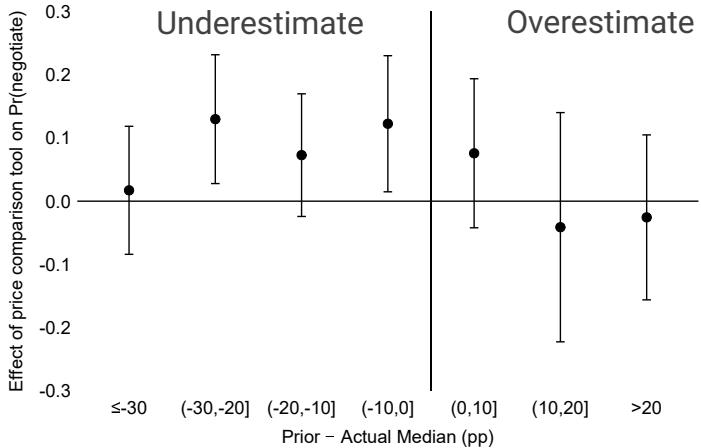
	Underestimated dispersion				All others			
	N of inst. searched	N of inst. applied	N of offers	Pr(negotiate)	N of inst. searched	N of inst. applied	N of offers	Pr(negotiate)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(Intercept)	3.562***	1.188***	0.622***	0.101***	3.391***	1.034***	0.444***	0.078***
	(0.086)	(0.068)	(0.041)	(0.017)	(0.084)	(0.056)	(0.034)	(0.014)
Simple Tool	0.015	0.013	−0.065	0.031	0.289**	0.109	0.104**	0.007
	(0.123)	(0.099)	(0.061)	(0.026)	(0.134)	(0.088)	(0.053)	(0.021)
Price Comparison Tool	0.084	0.033	0.050	0.079***	0.003	0.035	0.068	0.028
	(0.140)	(0.096)	(0.062)	(0.028)	(0.124)	(0.084)	(0.054)	(0.022)
Observations	965	939	935	925	1,063	1,026	1,021	1,013

▸ Belief heterogeneity

Biased Beliefs and Negotiation

Two predictions from model:

2. Treatment effect of tool is non-monotonic in bias about first moment



▸ Belief heterogeneity

Eliciting Beliefs Leads to More Search and Lower Rates

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

	Survey Data							Administrative Data	
	N of inst. searched (1)	N of inst. applied (2)	N of offers (3)	Pr(negotiate) (4)	Log interest rate offered (5)	Pr(take loan) (6)	Log interest rate taken (7)	Pr(take loan) (8)	Log interest rate taken (9)
(Intercept)	3.357***	1.192***	0.579***	0.111***	3.553***	0.360***	3.469***	0.195***	3.174***
	(0.040)	(0.033)	(0.021)	(0.008)	(0.035)	(0.012)	(0.041)	(0.002)	(0.005)
Elicit Beliefs	0.130***	−0.031	−0.003	0.011	−0.073*	0.001	−0.101**	−0.004	−0.012**
	(0.048)	(0.038)	(0.024)	(0.010)	(0.042)	(0.015)	(0.048)	(0.003)	(0.006)
Observations	5,774	5,565	5,525	5,465	1,241	5,516	724	112,063	21,522

▸ Don't know ▸ Balance ▸ Response balance ▸ Other loan terms

Conclusion

People have **biased beliefs** about the interest rates banks will offer them

- Both about the **level** and **dispersion** in rates

Negotiation is an important action in consumer credit markets

- In addition to **search**

Correcting biased beliefs can help consumers negotiate successfully for lower interest rates

But it's really hard for consumers to correct biased beliefs themselves!

- Rates shown on Google, bank websites, and third-party comparison websites are all biased or very noisy
- Getting accurate estimates often requires actually applying

Role for a financial regulator to require that banks report the information and to provide it to consumers

Thank you!

We gratefully acknowledge funding from the Think Forward Initiative (TFI), ING Bank; Household Finance Small Grant Program, Alfred P. Sloan Foundation and NBER; Sparkassenstiftung für Internationale Kooperation; Fondecyt; Digital Credit Observatory; Lab for Inclusive Fintech (LIFT), UC Berkeley; University of Virginia; and the Financial Institutions and Markets Research Center, Avi Nash Fund, and Guthrie Center for Real Estate Research, Northwestern Kellogg.

Appendix

Participant Recruitment

We showed ads to Chileans who Googled keywords related to consumer loans between November 2021 and June 2023

Most popular search queries:

- “consumption loan”
- “apply for a loan online”
- “I need money urgently today”

Example ad:

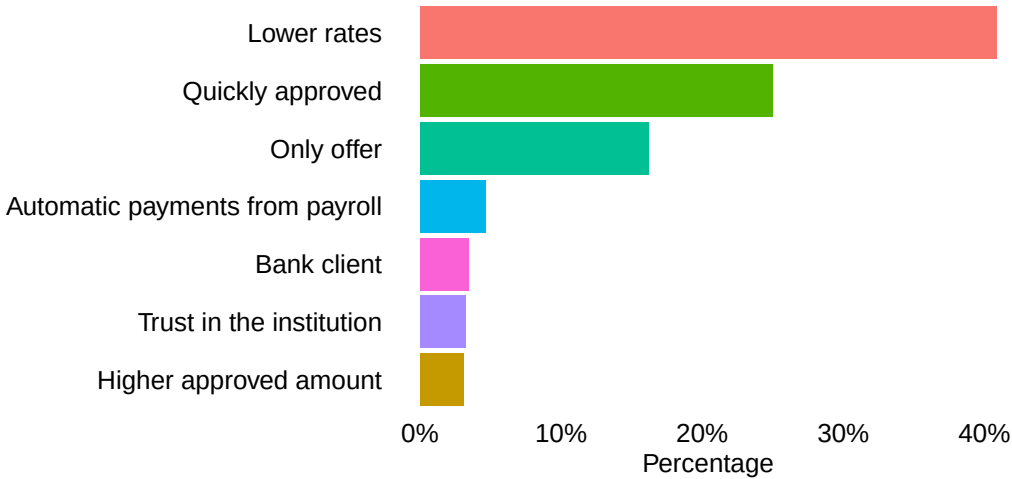
www.eligemejortucredito.cl/credito

Choose Your Loan Better I Comisión Mercado Financiero

We give you tools to help you search for and evaluate loans in the market. Participate in this 10-minute research study on the financial market.

Back

Reasons for choosing a loan (Follow-up Survey)



▸ Most important feature (baseline)

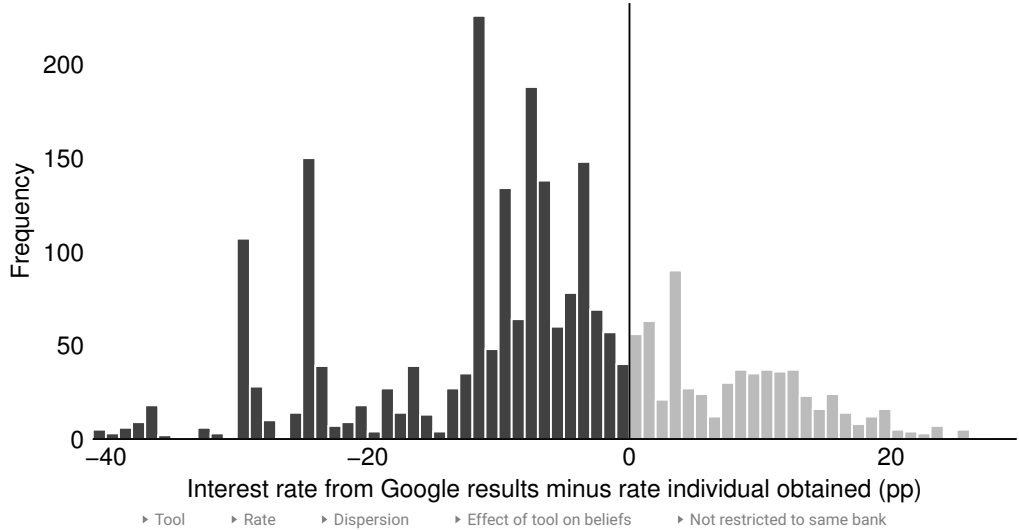
Why Might Consumers Have Biased Beliefs?

Consumers may be obtaining inaccurate information about interest rates from:

- Advertisements by banks (41% report seeing ads)
- Bank websites (44%)
- Comparison websites (12%)
- Friends and family (23%)

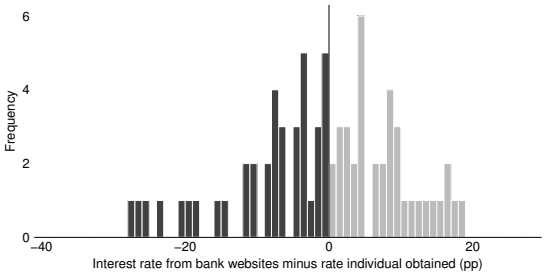
▸ Rate ▸ Dispersion ▸ Effect of tool on beliefs

Why Might Consumers Have Biased Beliefs? Google Results

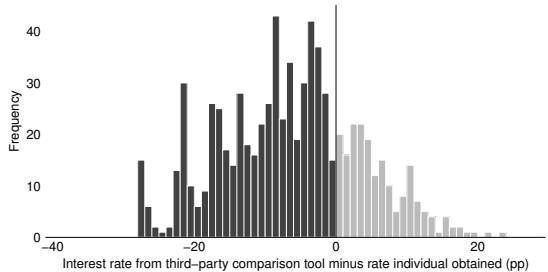


Why Might Consumers Have Biased Beliefs? Websites

Bank websites

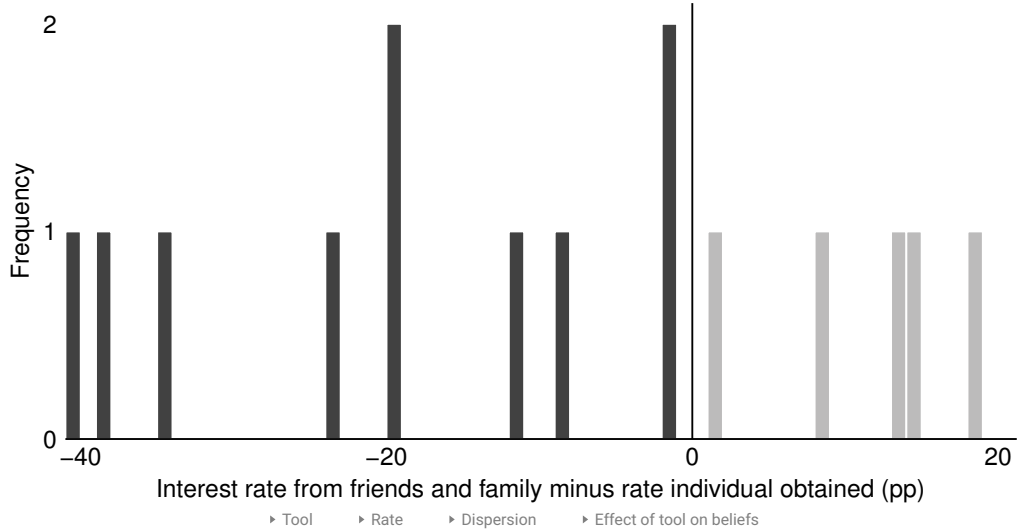


ComparaOnline

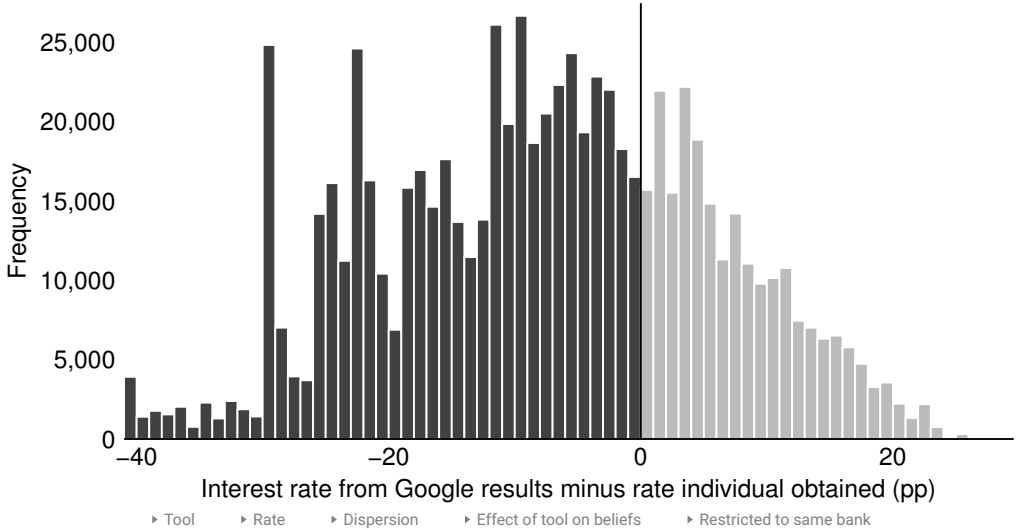


- Tool
- Rate
- Dispersion
- Effect of tool on beliefs
- Loan amount
- Maturity
- Not restricted to same bank

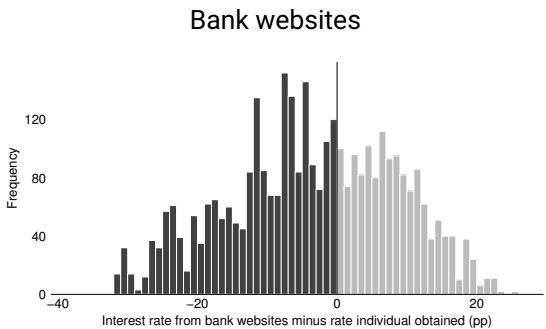
Why Might Consumers Have Biased Beliefs? Friends & Family

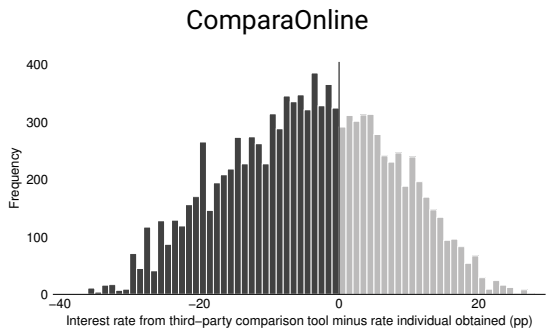


Why Might Consumers Have Biased Beliefs? Google Results



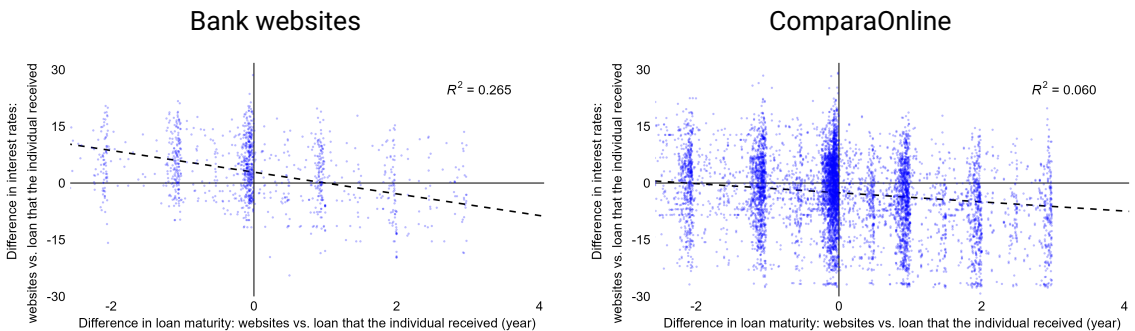
Why Might Consumers Have Biased Beliefs? Websites





▸ Tool ▸ Rate ▸ Dispersion ▸ Effect of tool on beliefs ▸ Loan amount ▸ Maturity ▸ Restricted to same bank

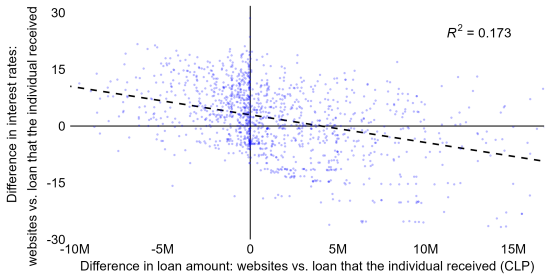
Website Differences Not Due to Different Maturities



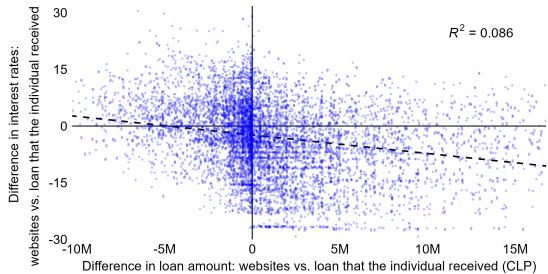
▸ Tool ▸ Rate ▸ Dispersion ▸ Effect of tool on beliefs ▸ Loan amount

Website Differences Not Due to Different Loan Amounts

Bank websites



ComparaOnline



▸ Tool ▸ Rate ▸ Dispersion ▸ Effect of tool on beliefs ▸ Maturity

Price Comparison Tool ⇒ Consumers Update Beliefs Upwards

$$Posterior_i = \gamma Prior_i + \beta_1 \mathbb{1}(\text{Simple Tool})_i + \beta_2 \mathbb{1}(\text{Price Comparison Tool})_i + \lambda_{b(i)} + \varepsilon_i$$

	Expected rate (1)	Lowest rate (2)	Highest rate (3)	Dispersion (4)
Prior	0.80***	0.80***	0.68***	0.52***
	(0.02)	(0.02)	(0.02)	(0.02)
Simple Tool	−0.26	0.44	1.07	−1.96**
	(0.86)	(0.70)	(1.46)	(0.80)
Price Comparison Tool	18.94***	14.36***	39.16***	20.61***
	(1.55)	(1.23)	(2.93)	(1.78)
Observations	6,817	6,760	6,661	6,272
Control Mean Posterior	29.46	22.82	47.88	23.42
Control Median Posterior	18	12	25.2	10.8
Bin Density FEs	Yes	Yes	Yes	Yes

▸ Why? ▸ Posteriors − priors on LHS ▸ Priors on RHS (logs) ▸ No priors ▸ No priors (logs)

Price Comparison Tool $\Rightarrow$ Consumers Update Beliefs Upwards

$$\ln(\textit{Posterior}_i) = \gamma \ln(\textit{Prior}_i) + \beta_1 \mathbb{1}(\text{Simple Tool})_i + \beta_2 \mathbb{1}(\text{Price Comparison Tool})_i + \lambda_{b(i)} + \varepsilon$$

	ln(Expected rate) (1)	ln(Lowest rate) (2)	ln(Highest rate) (3)	ln(Dispersion) (4)
ln(Prior)	0.695***	0.701***	0.684***	0.578***
	(0.010)	(0.010)	(0.010)	(0.013)
Simple Tool	−0.038*	−0.008	−0.041*	−0.091***
	(0.023)	(0.023)	(0.024)	(0.032)
Price Comparison Tool	0.315***	0.273***	0.367***	0.335***
	(0.028)	(0.027)	(0.029)	(0.038)
Observations	6,817	6,760	6,661	6,272
Control Mean Posterior	2.736	2.505	3.163	2.317
Control Median Posterior	2.944	2.565	3.266	2.468
Bin Density FEs	Yes	Yes	Yes	Yes

▸ Why? ▸ Posteriors — priors on LHS ▸ Priors on RHS (levels) ▸ No priors ▸ No priors (logs)

Price Comparison Tool $\Rightarrow$ Consumers Update Beliefs Upwards

$$\textit{Posterior}_i = \beta_1 \mathbb{1}(\text{Simple Tool})_i + \beta_2 \mathbb{1}(\text{Price Comparison Tool})_i + \lambda_{b(i)} + \varepsilon_i$$

	Expected rate (1)	Lowest rate (2)	Highest rate (3)	Dispersion (4)
Simple Tool	−1.01	−0.02	−0.88	−2.95***
	(1.19)	(0.95)	(2.00)	(0.98)
Price Comparison Tool	22.13***	17.22***	43.87***	23.38***
	(1.83)	(1.48)	(3.38)	(1.93)
Observations	7,792	7,640	7,533	7,321
Control Mean Posterior	30.285	23.189	48.624	23.968
Control Median Posterior	18	12	25	12.2
Bin Density FEs	Yes	Yes	Yes	Yes

▸ Why? ▸ Posteriors — priors on LHS ▸ Priors on RHS ▸ Priors on RHS (logs) ▸ No priors (logs)

Price Comparison Tool $\Rightarrow$ Consumers Update Beliefs Upwards

$$\ln(\textit{Posterior}_i) = \beta_1 \mathbb{1}(\text{Simple Tool})_i + \beta_2 \mathbb{1}(\text{Price Comparison Tool})_i + \lambda_{b(i)} + \varepsilon_i$$

	ln(Expected rate) (1)	ln(Lowest rate) (2)	ln(Highest rate) (3)	ln(Dispersion) (4)
Simple Tool	−0.057*	−0.031	−0.066*	−0.128***
	(0.033)	(0.032)	(0.035)	(0.039)
Price Comparison Tool	0.407***	0.376***	0.459***	0.398***
	(0.034)	(0.034)	(0.036)	(0.043)
Observations	7,792	7,640	7,533	7,321
Control Mean Posterior	2.73	2.491	3.148	2.299
Control Median Posterior	2.944	2.565	3.258	2.416
Bin Density FEs	Yes	Yes	Yes	Yes

▸ Why? ▸ Posteriors — priors on LHS ▸ Priors on RHS ▸ Priors on RHS (logs) ▸ No priors (levels)

Price Comparison Tool $\Rightarrow$ Consumers Update Beliefs Upwards

$$\textit{Posterior}_i - \textit{Prior}_i = \beta_1 \mathbb{1}(\text{Simple Tool})_i + \beta_2 \mathbb{1}(\text{Price Comparison Tool})_i + \lambda_{b(i)} + \varepsilon_i$$

	Normalized Dispersion (1)
Simple Tool	−0.02
	(0.01)
Price Comparison Tool	0.03***
	(0.01)
Observations	6,272
Control Mean Posterior	0.672
Control Median Posterior	0.667
Bin Density FEs	Yes

▸ Why? ▸ Posteriors − priors on LHS ▸ Priors on RHS ▸ Priors on RHS (logs) ▸ No priors ▸ No priors (logs)

Balance Table for Elicit Beliefs

	Elicit Beliefs = 0 Mean (1)	Elicit Beliefs (2)	N (3)
Personal characteristics			
Age	35.939***	-0.106	112,063
	(0.059)	(0.068)	
log(Income)	13.625***	0.001	109,665
	(0.007)	(0.008)	
Incomplete high-school	0.037***	-0.001	108,809
	(0.001)	(0.001)	
Complete high-school	0.358***	0.003	108,809
	(0.003)	(0.003)	
Complete 2-year program	0.214***	-0.002	108,809
	(0.002)	(0.003)	
Complete 5-year program or higher	0.391***	0.000	108,809
	(0.003)	(0.003)	
Financial products			
Bank account	0.677***	0.002	106,220
	(0.003)	(0.003)	
Any loan	0.707***	-0.006**	107,127
	(0.003)	(0.003)	
Omnibus F-statistic		0.979	112,063
		[0.463]	
Number of participants by arm	28,197	83,866	112,063

▸ Effects of eliciting beliefs

Balance Table for Elicit Beliefs (Survey Subsample)

	Elicit Beliefs = 0 Mean (1)	Elicit Beliefs (2)	N (3)
Personal characteristics			
Age	36.822***	-0.307	5,729
	(0.251)	(0.294)	
log(Income)	13.589***	0.035	5,624
	(0.032)	(0.037)	
Incomplete high-school	0.028***	0.000	5,592
	(0.004)	(0.005)	
Complete high-school	0.348***	-0.014	5,592
	(0.012)	(0.014)	
Complete 2-year program	0.210***	-0.001	5,592
	(0.010)	(0.012)	
Complete 5-year program or higher	0.414***	0.015	5,592
	(0.013)	(0.015)	
Financial products			
Bank account	0.682***	0.009	5,491
	(0.012)	(0.014)	
Any loan	0.738***	-0.016	5,538
	(0.011)	(0.013)	
Omnibus F-statistic		0.959	5,729
		[0.482]	
Number of participants by arm	1,563	4,166	5,729

▸ Effects of eliciting beliefs

Balance Table for Elicit Beliefs (Sample that Obtained Loans)

	Elicit Beliefs = 0 Mean (1)	Elicit Beliefs (2)	N (3)
Personal characteristics			
Age	35.217***	-0.024	21,102
	(0.111)	(0.128)	
log(Income)	14.042***	0.003	20,852
	(0.009)	(0.011)	
Incomplete high-school	0.007***	0.000	20,802
	(0.001)	(0.001)	
Complete high-school	0.207***	0.002	20,802
	(0.006)	(0.006)	
Complete 2-year program	0.199***	0.000	20,802
	(0.005)	(0.006)	
Complete 5-year program or higher	0.586***	-0.002	20,802
	(0.007)	(0.008)	
Financial products			
Bank account	0.887***	0.008	20,828
	(0.004)	(0.005)	
Any loan	0.889***	-0.002	20,892
	(0.004)	(0.005)	
Omnibus F-statistic		0.456	21,102
		[0.93]	
Number of participants by arm	5,409	15,693	21,102

▸ Effects of eliciting beliefs

Balance Table for Tool Treatments

	Control Mean	Difference relative to control mean: Price Comparison Tool	Difference relative to control mean: Simple Tool	Joint test F-stat	N
	(1)	(2)	(3)	(4)	(5)
Personal characteristics					
Age	35.773***	-0.145	0.057	1.616	46,051
	(0.082)	(0.116)	(0.116)	[0.199]	
log(Income)	13.460***	0.000	0.004	0.06	44,978
	(0.010)	(0.014)	(0.014)	[0.942]	
Incomplete high-school	0.041***	0.001	0.002	0.426	44,615
	(0.002)	(0.002)	(0.002)	[0.653]	
Complete high-school	0.425***	-0.008	-0.007	1.068	44,615
	(0.004)	(0.006)	(0.006)	[0.344]	
Complete 2-year program	0.222***	0.006	0.005	0.865	44,615
	(0.003)	(0.005)	(0.005)	[0.421]	
Complete 5-year program or higher	0.312***	0.000	0.000	0.002	44,615
	(0.004)	(0.005)	(0.005)	[0.998]	
Financial products					
Bank account	0.618***	0.016***	0.013**	4.566**	43,272
	(0.004)	(0.006)	(0.006)	[0.01]	
Any loan	0.668***	0.002	0.006	0.526	43,675
	(0.004)	(0.006)	(0.006)	[0.591]	
Loan characteristics					
log(Loan Amount)	14.737***	0.020	0.017	0.883	43,775
	(0.012)	(0.017)	(0.017)	[0.413]	
log(Maturity (years))	1.320***	-0.003	0.009	1.334	40,920
	(0.005)	(0.007)	(0.008)	[0.263]	
Omnibus F-statistic					
Price Comparison Tool		1.179			30,718
		[0.279]			
Simple Tool			1.277		30,690
			[0.207]		
Number of participants by arm	15,357	15,361	15,333		46,051

▸ Effects of tool

Balance Table for Tool Treatments (Survey Subsample)

	Control Mean	Difference relative to control mean: Price Comparison Tool	Difference relative to control mean: Simple Tool	Joint test F-stat	N
	(1)	(2)	(3)	(4)	(5)
Personal characteristics					
Age	36.533***	-0.374	0.094	0.669	3,253
	(0.304)	(0.426)	(0.434)	[0.512]	
log(Income)	13.546***	-0.001	0.006	0.012	3,200
	(0.033)	(0.051)	(0.049)	[0.988]	
Incomplete high-school	0.026***	-0.002	-0.001	0.053	3,176
	(0.005)	(0.007)	(0.007)	[0.948]	
Complete high-school	0.381***	-0.027	-0.019	0.88	3,176
	(0.015)	(0.021)	(0.021)	[0.415]	
Complete 2-year program	0.205***	0.037**	0.012	2.119	3,176
	(0.012)	(0.018)	(0.018)	[0.12]	
Complete 5-year program or higher	0.388***	-0.008	0.008	0.288	3,176
	(0.015)	(0.021)	(0.021)	[0.749]	
Financial products					
Bank account	0.648***	0.019	0.026	0.83	3,120
	(0.015)	(0.021)	(0.021)	[0.436]	
Any loan	0.698***	0.031	-0.003	1.868	3,147
	(0.014)	(0.020)	(0.020)	[0.155]	
Loan characteristics					
log(Loan Amount)	14.981***	0.033	0.016	0.153	3,083
	(0.041)	(0.059)	(0.058)	[0.859]	
log(Maturity (years))	1.361***	0.008	-0.000	0.065	2,945
	(0.019)	(0.027)	(0.027)	[0.937]	
Omnibus F-statistic					
Price Comparison Tool		0.973			2,150
		[0.481]			
Simple Tool			1.34		2,194
			[0.169]		
Number of participants by arm	1,091	1,059	1,103		3,253

▸ Effects of tool

Balance Table for Tool Treatments (Sample that Obtained Loans)

	Control Mean	Difference relative to control mean: Price Comparison Tool	Difference relative to control mean: Simple Tool	Joint test F-stat	N
	(1)	(2)	(3)	(4)	(5)
Personal characteristics					
Age	35.112***	0.054	0.233	0.61	8,868
	(0.157)	(0.220)	(0.222)	[0.544]	
log(Income)	13.905***	0.028	0.023	1.263	8,746
	(0.014)	(0.019)	(0.019)	[0.283]	
Incomplete high-school	0.007***	0.002	0.000	0.267	8,715
	(0.002)	(0.002)	(0.002)	[0.765]	
Complete high-school	0.244***	-0.012	-0.015	0.997	8,715
	(0.008)	(0.011)	(0.011)	[0.369]	
Complete 2-year program	0.205***	0.011	0.015	1.066	8,715
	(0.008)	(0.011)	(0.011)	[0.345]	
Complete 5-year program or higher	0.544***	-0.001	-0.001	0.002	8,715
	(0.009)	(0.013)	(0.013)	[0.998]	
Financial products					
Bank account	0.863***	0.017*	0.005	2.005	8,731
	(0.006)	(0.009)	(0.009)	[0.135]	
Any loan	0.882***	0.001	0.003	0.067	8,761
	(0.006)	(0.008)	(0.008)	[0.936]	
Loan characteristics					
log(Loan Amount)	15.429***	0.059**	0.043	2.063	8,491
	(0.021)	(0.030)	(0.030)	[0.127]	
log(Maturity (years))	1.426***	0.040***	0.022	3.361**	8,266
	(0.011)	(0.015)	(0.015)	[0.035]	
Omnibus F-statistic					
Price Comparison Tool		1.367			5,905
		[0.154]			
Simple Tool			0.69		5,847
			[0.797]		
Number of participants by arm	2,884	3,021	2,963		8,868

▸ Effects of tool

Don’t Know Interest Rate

	Pr(don’t know interest rate)			
	Offer		Loan taken	
	(1)	(2)	(3)	(4)
(Intercept)	0.713***	0.738***	0.727***	0.761***
	(0.019)	(0.016)	(0.022)	(0.019)
Simple Tool	−0.013		−0.030	
	(0.026)		(0.031)	
Price Comparison Tool	0.026		0.016	
	(0.026)		(0.030)	
Elicit Beliefs		−0.020		−0.046**
		(0.019)		(0.022)
Observations	1,832	2,670	1,278	1,899

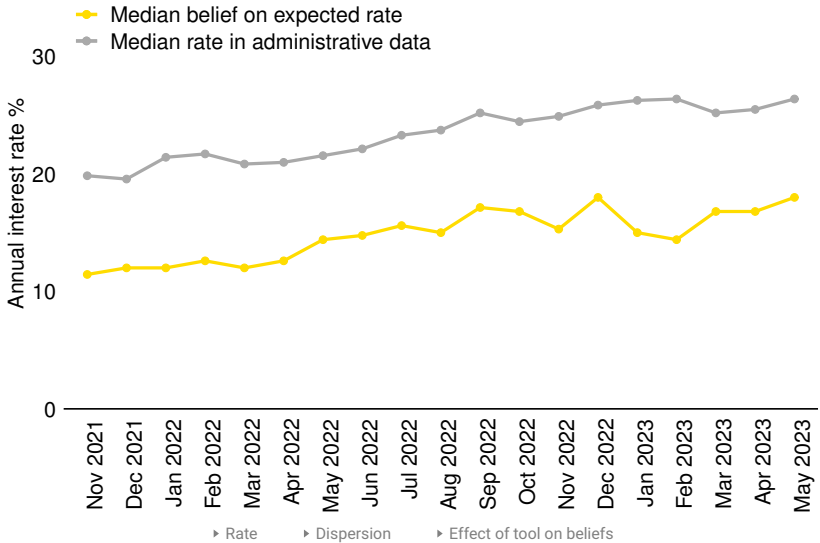
▸ Effects of tool ▸ Effects of eliciting beliefs

Follow-Up Survey Response Rate by Treatment Arm

	Pr(answer the survey)	
	(1)	(2)
(Intercept)	0.157***	0.153***
	(0.004)	(0.004)
Simple Tool	−0.004	
	(0.006)	
Price Comparison Tool	−0.006	
	(0.006)	
Elicit Beliefs		0.004
		(0.004)
Observations	20,831	37,286

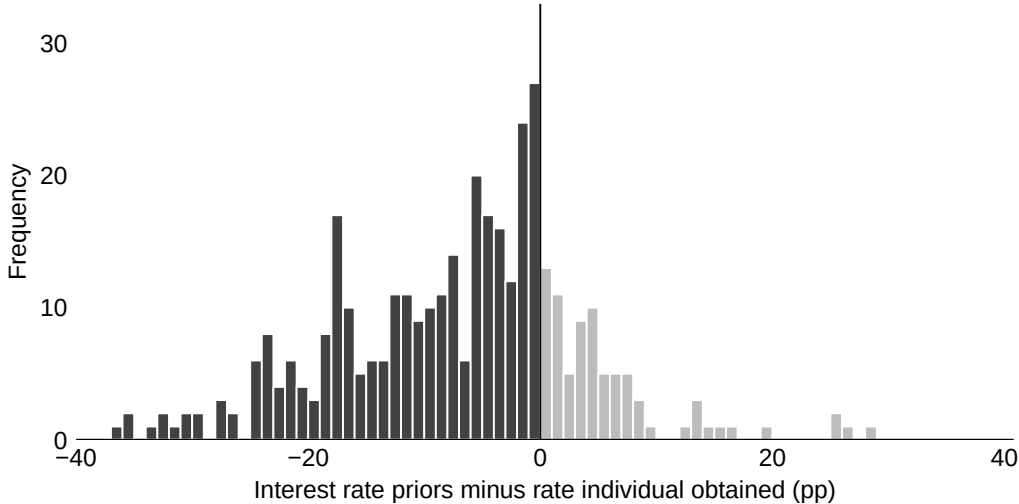
▸ Effects of tool ▸ Mechanisms ▸ Effects of eliciting beliefs

Interest Rates Over Time



Consumers Tend to Underestimate the Rate They Will Get

Restricted to 1st Quartile ($<$ 21 days) Between Participation and Obtaining Loan



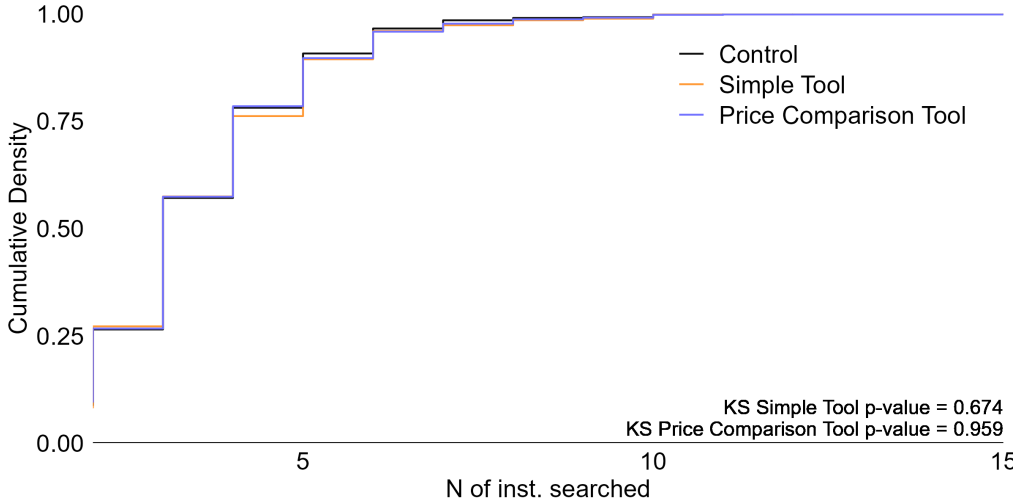
▸ Rate ▸ Dispersion ▸ Effect of tool on beliefs

Beliefs Increase with Interest Rates

	Expected rate (1)	Lowest rate (2)	Highest rate (3)	Dispersion (4)
Median Rate$_t$	1.33***	1.29***	3.25***	1.67***
	(0.15)	(0.12)	(0.31)	(0.19)
Observations	16,015	15,875	15,618	15,045

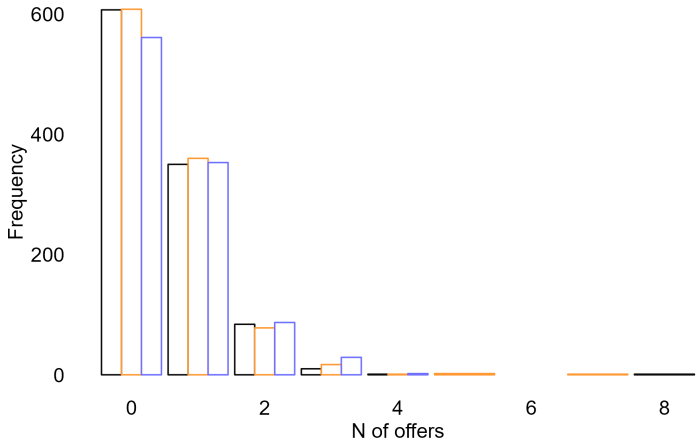
▸ Rate ▸ Dispersion ▸ Effect of tool on beliefs

Distribution of Number Institutions Searched



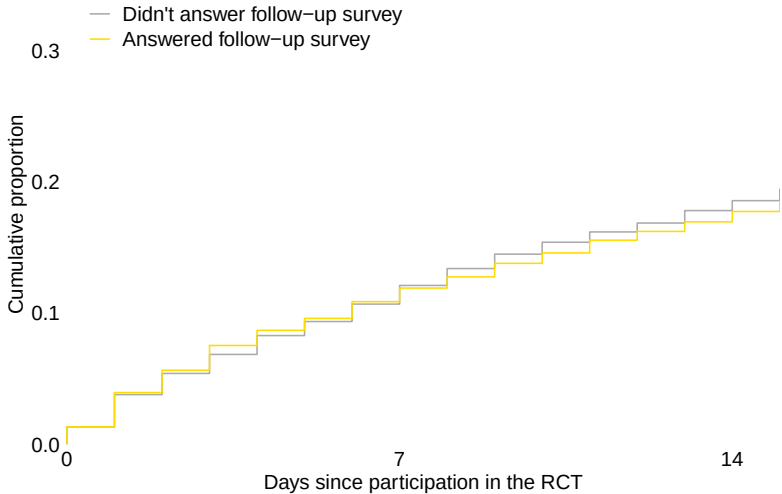
▸ Effects of tool

Distribution of Number of Offers



▸ Effects of tool

Follow-up Survey Participation Over Time



▸ Rates over time

Mechanisms

$$y_i = \beta_0 + \beta_1 \mathbb{1}(\text{Simple Tool})_i + \beta_2 \mathbb{1}(\text{Price Comparison Tool})_i + \varepsilon_i$$

	Search at different inst. than planned (1)	Pr(convey info from tool before applying) (2)	N of inst. negotiated (3)	Pr(successfully negotiate) (4)	N of inst. successfully negotiate (5)
(Intercept)	0.730***	0.000	0.114***	0.054***	0.059***
	(0.019)		(0.011)	(0.007)	(0.008)
Simple Tool	0.011	0.138***	0.016	0.004	0.009
	(0.027)	(0.039)	(0.018)	(0.010)	(0.012)
Price Comparison Tool	0.011	0.145***	0.050***	0.019*	0.022*
	(0.027)	(0.043)	(0.018)	(0.011)	(0.012)
Observations	1,614	190	3,114	3,103	3,103

▸ Effects of tool ▸ Balance ▸ Response balance

Other Loan Terms

$$y_i = \beta_0 + \beta_1 \mathbb{1}(\text{Simple Tool})_i + \beta_2 \mathbb{1}(\text{Price Comparison Tool})_i + \varepsilon_i$$

	Survey Data		Administrative Data		
	Log loan amount (1)	Maturity (2)	Log loan amount (3)	Maturity (4)	Days to take-up (5)
(Intercept)	15.171***	38.242***	15.282***	38.655***	111.964***
	(0.061)	(1.084)	(0.018)	(0.325)	(1.992)
Simple Tool	0.090	−2.331	0.016	−0.349	−0.192
	(0.086)	(1.422)	(0.026)	(0.452)	(2.811)
Price Comparison Tool	−0.019	−0.182	0.013	−0.405	−2.796
	(0.089)	(1.471)	(0.026)	(0.453)	(2.770)
Observations	998	1,027	8,988	8,988	8,988

▸ Effects of tool ▸ Balance ▸ Response balance

Belief Heterogeneity

▸ Rate ▸ Dispersion ▸ Effect of tool on beliefs ▸ Effects of tool ▸ Het. by 2nd moment

Other Loan Terms

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

	Survey Data		Administrative Data		
	Log loan amount (1)	Maturity (2)	Log loan amount (3)	Maturity (4)	Days to take-up (5)
(Intercept)	15.498***	73.686***	15.314***	37.130***	132.021***
	(0.073)	(4.635)	(0.014)	(0.245)	(1.474)
Elicit Beliefs	0.121	6.396	0.015	−0.146	−1.616
	(0.085)	(5.538)	(0.016)	(0.284)	(1.710)
Observations	1,609	1,675	21,522	21,522	21,522

▸ Effects of eliciting beliefs ▸ Don't know ▸ Balance ▸ Response balance

Follow-Up Phone Survey

How do consumers searching for loans form expectations?

- How do people form beliefs about the distribution of rates and the rate they will get?
  - Previous searches
  - Advertisements
  - Information from friends and family
- Did they have a “strategy” for their loan search?
  - Search until get offers from X banks
  - Search until get an interest rate offer below y

Follow-Up Phone Survey

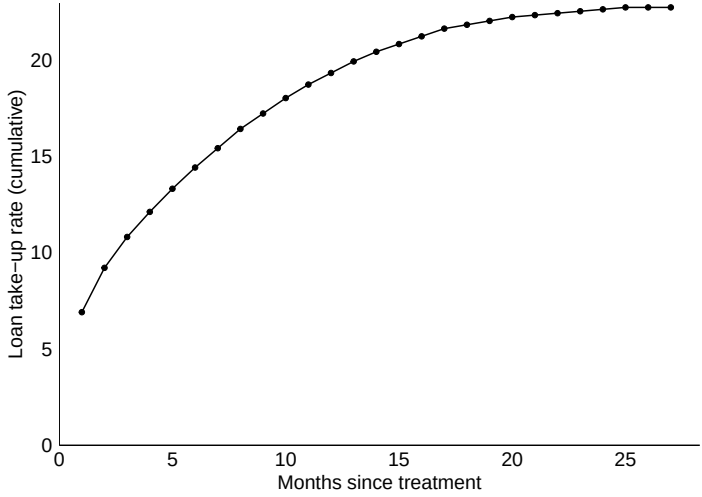
Search history. For each institution where they searched:

- How did they search (online, by phone, in person)?
- Did they try to get a sense of probability of approval or interest rate before applying?
- Did they submit an application?
- Were they approved?
- What were the loan terms?

Negotiating

- Did they negotiate the rate?

Percent Getting a Consumer Loan



Tutorial video

We ask participants to review whether their data is correct.

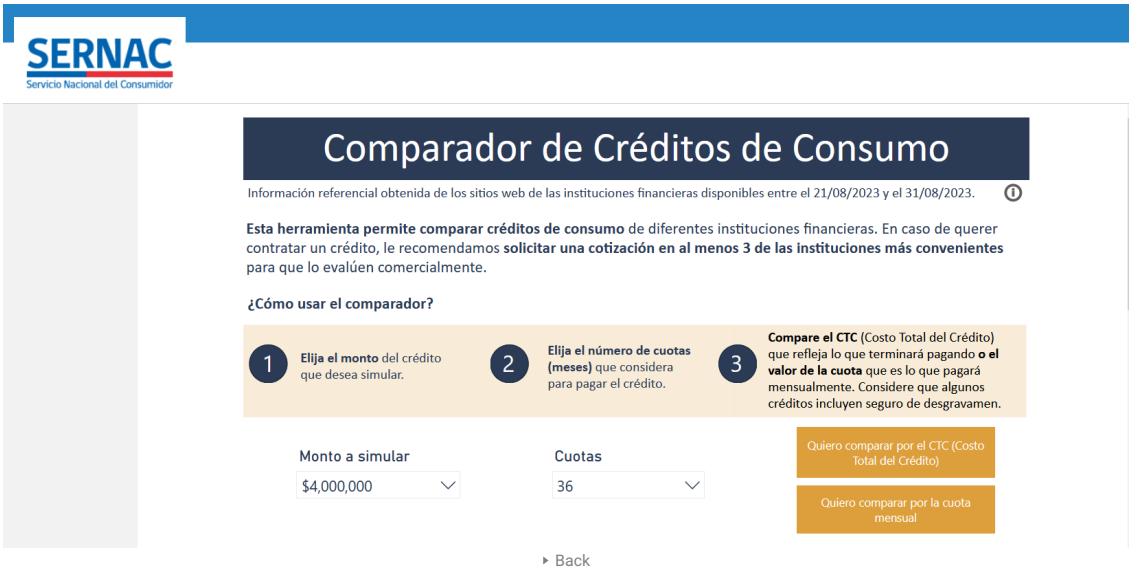
We summarize what the plot shows, and how lower rates translate into cheaper loans.

We summarize what the table shows: how different rates impact their monthly and total loan cost, and that they can play out with different rates.

▸ Back

Other Comparison Tools: ComparaOnline

Other Comparison Tools: SERNAC



More Details Button

We explain how we calculate how much your monthly payments would be reduced by searching at one additional bank.

"We use real data of loan rates granted to people similar to you, for loans similar to the one you are searching for. We simulate your search by choosing one of these rates as the first one you would get and another one as the second one. If the second rate is lower than the first one, we calculate how much your monthly payment would be reduced. If the second rate is higher than the first one, we assume you would keep choosing the first rate and then your monthly payment would not be reduced."

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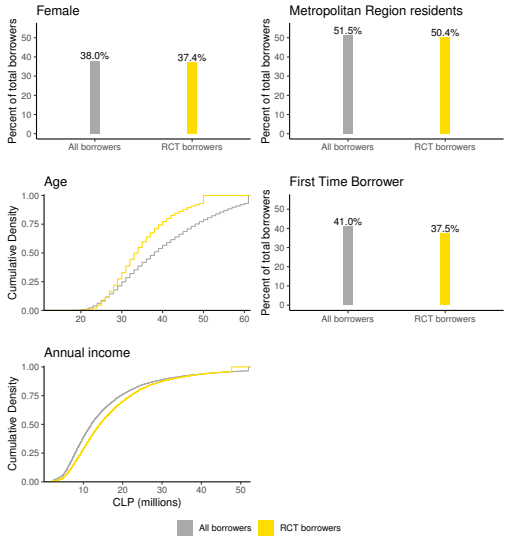
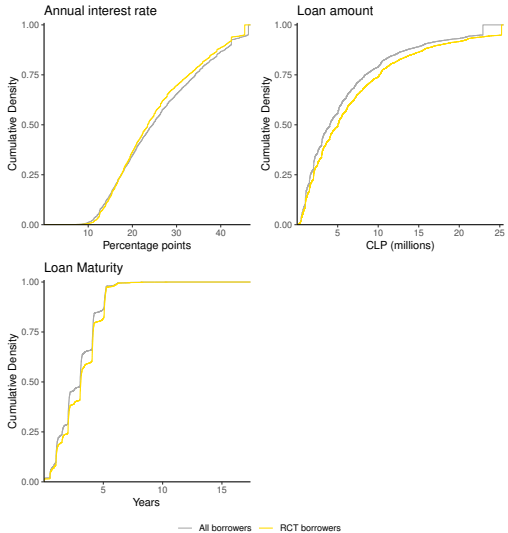
External Validity: Borrower Characteristics



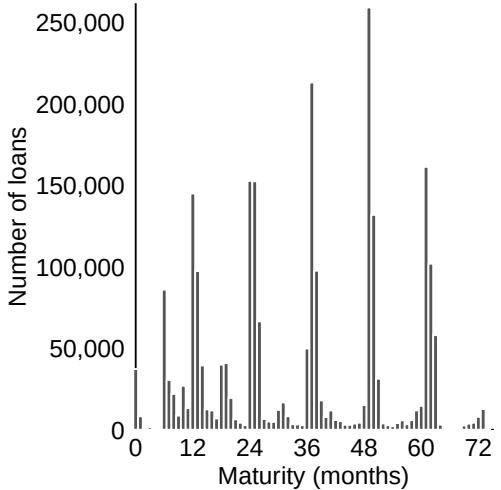
▸ Design: ads ▸ Design: elicit beliefs

External Validity: Loan Characteristics



▸ Design: ads ▸ Design: elicit beliefs

Loan maturity, descriptive data



▸ Consumer loans