Promise Competition

Andreas Born

Stockholm School of Economics

andreas.born@phdstudent.hhs.se

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Motivation

- Consider a buyer who wants to select one of two sellers for a one-time interaction.
- The buyer wants to select the seller who provides better quality (prices fixed).
- Traditionally when we analyze competition we assume sellers make perfectly binding offers.

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- What if they can make *promises* instead?
  - Reneging costly for some but not for all sellers.
- **Examples:** *online markets, restaurant visit, car repair, medical treatment, local politics*

Research Question

Does promise competition...

1. *improve quality provision of sellers?*
2. *lead to selection of better sellers?*

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This Study:

- Introduces signaling model with two-dimensional private information and competition.
- Test predictions in laboratory experiment

Results

1. Promises provide no information
   - Sellers pool promises
   - No selection of particular seller-type
     - neither positive nor adverse
2. Promises raise quality provision on average
   - Competition leads to promises higher or equal to quality 'good' sellers provide absent strategic interaction
   - Honest sellers increase the quality they provide in response

Model

- A buyer wants to select one of two sellers for a one-time interaction
- Two sellers make promise p_i about the quality x_i they offer
- After buyer observes the promises she selects a seller.
- The according seller decides about the quality to provide x.
- Sellers differ in their motivation to provide quality and cost of breaking a promise.

Types

- Sellers differ in two dimensions: (1) **Intrinsic Motivation** a, (2) **Cost of breaking a promise** c.
  $\rightarrow$ four types of sellers:

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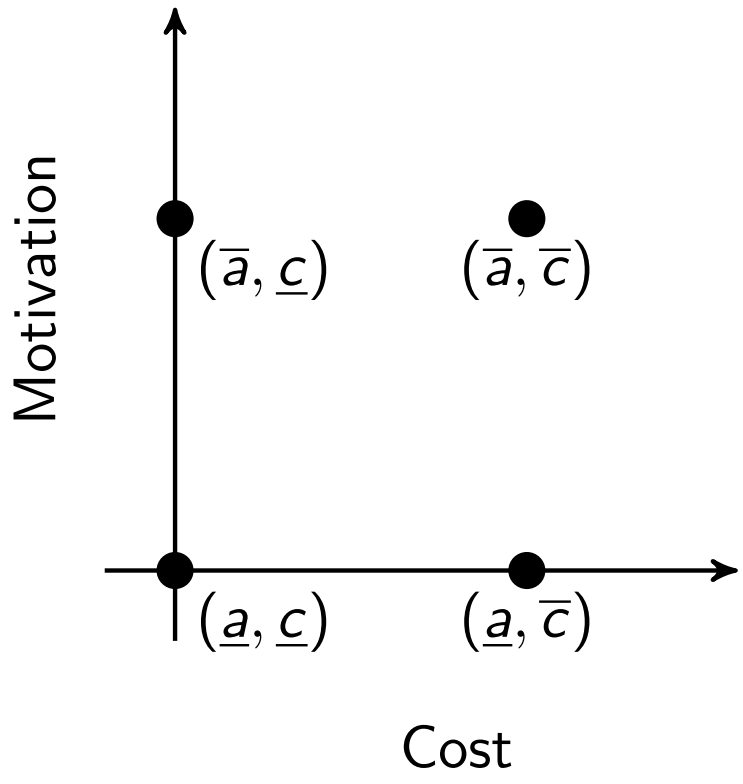

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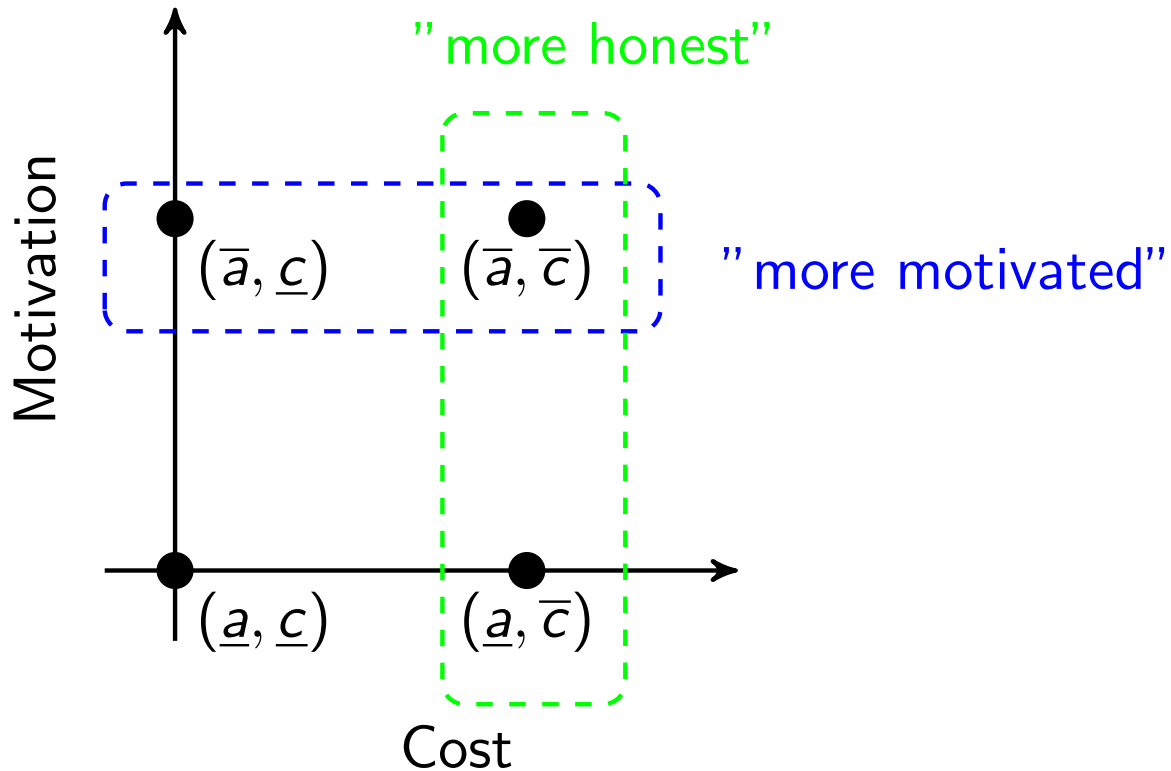

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Predictions

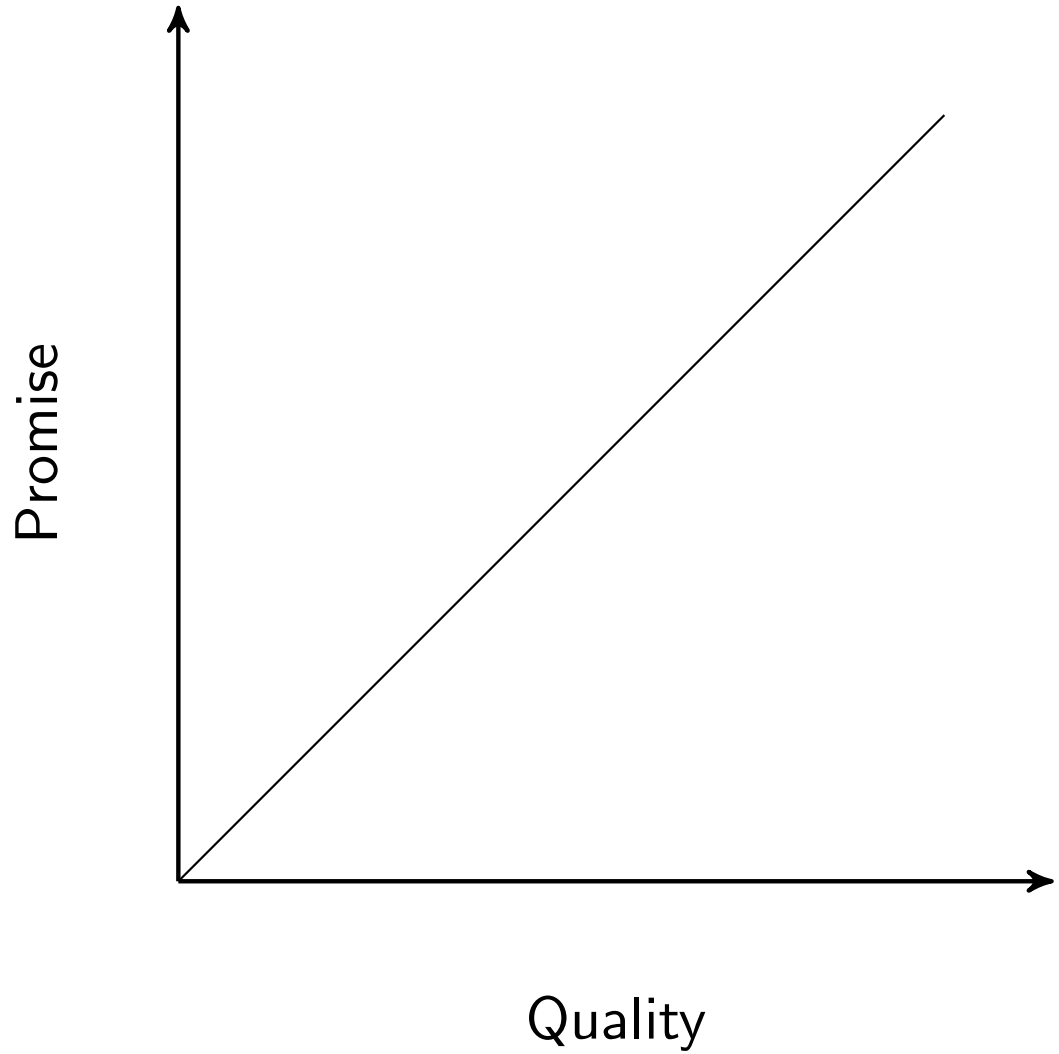
1. Sellers pool promises - promises uninformative for selection.

2. Most sellers promise higher quality than otherwise provided.

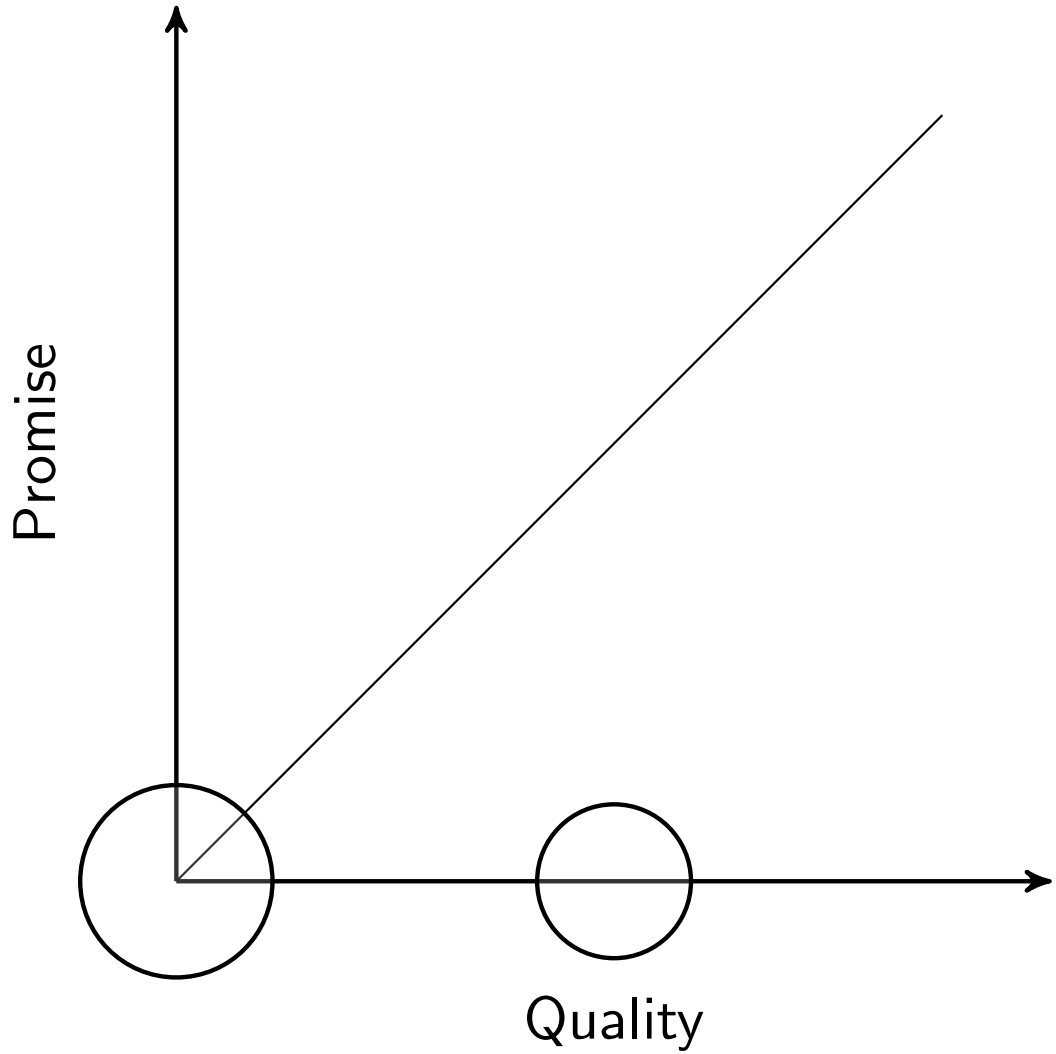
    - Honest sellers *increase quality provision.*

Details

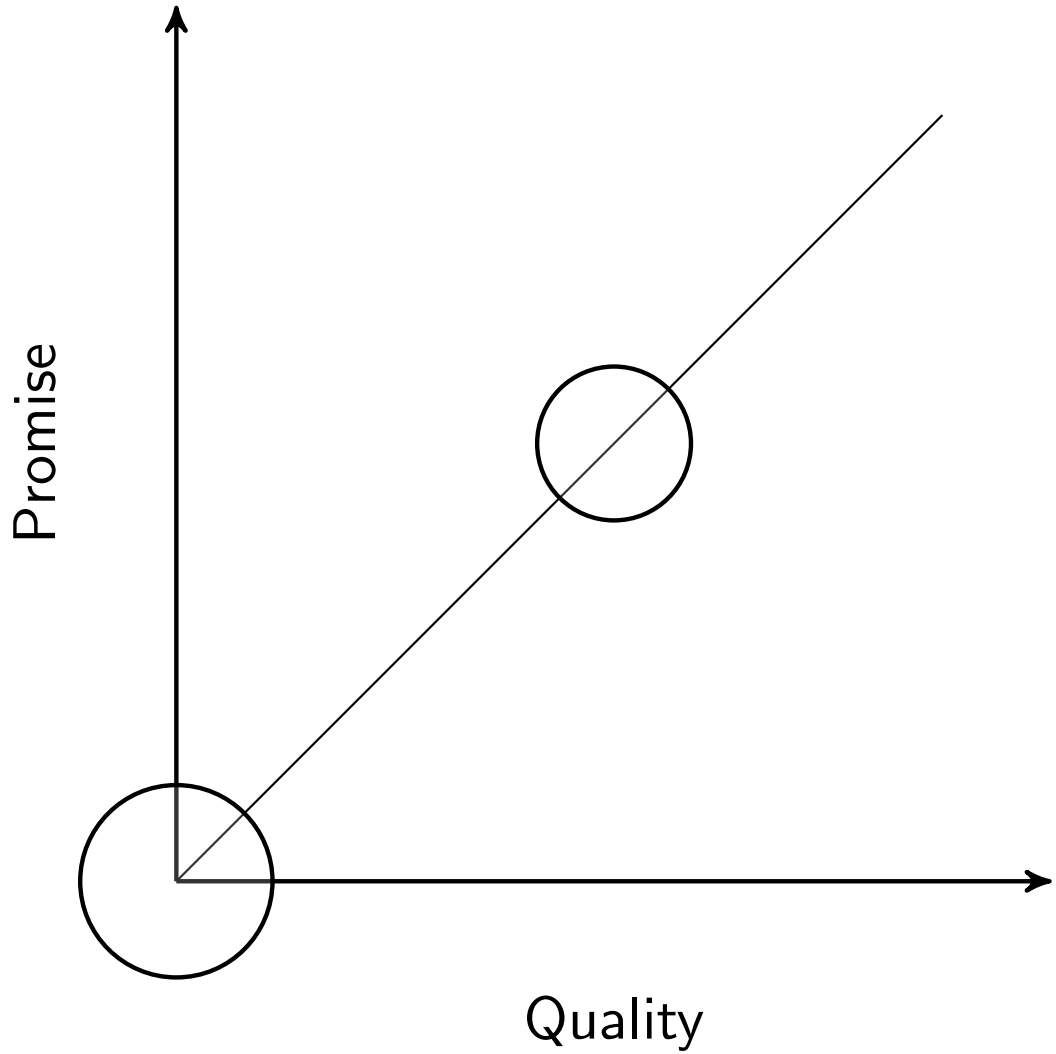
Mechanism



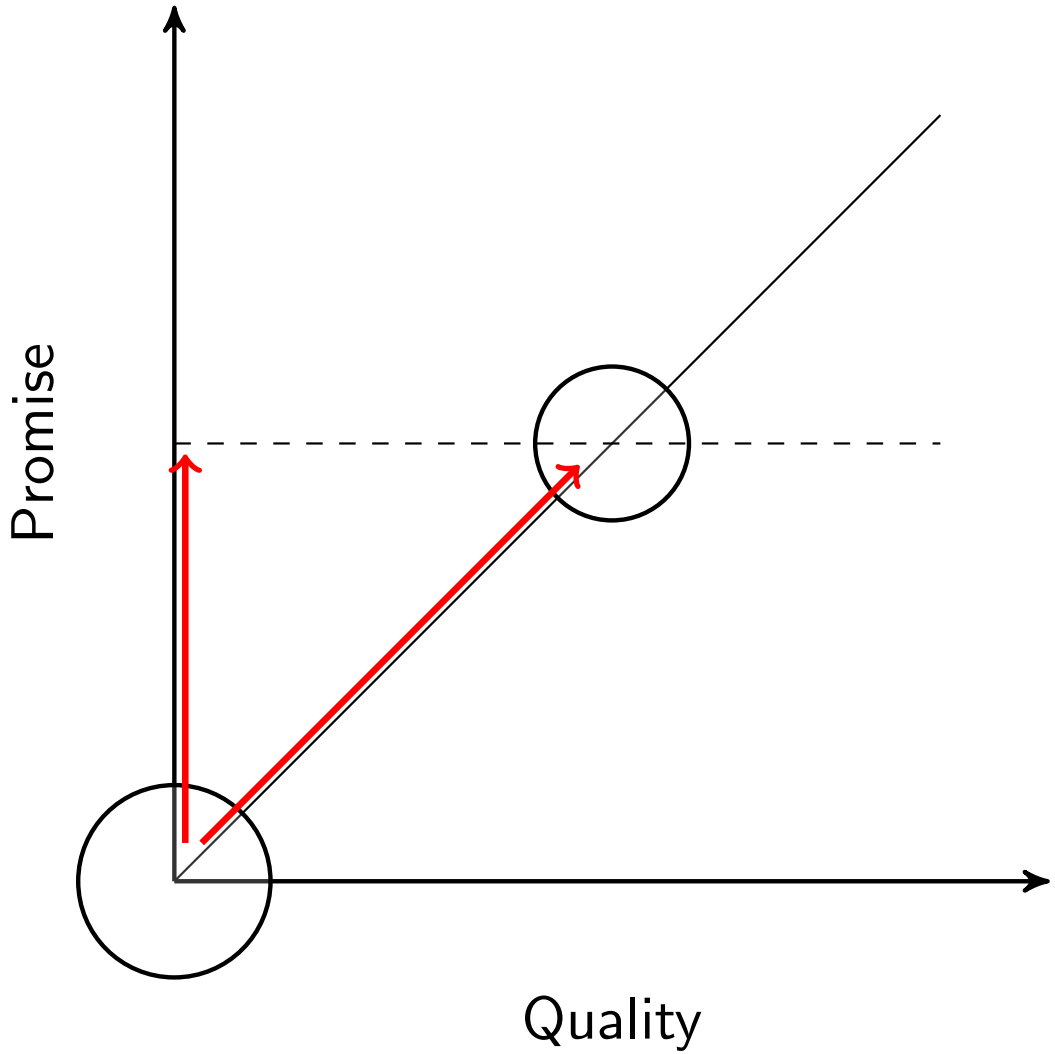
No promises



Promises - no competition



Promise and competition



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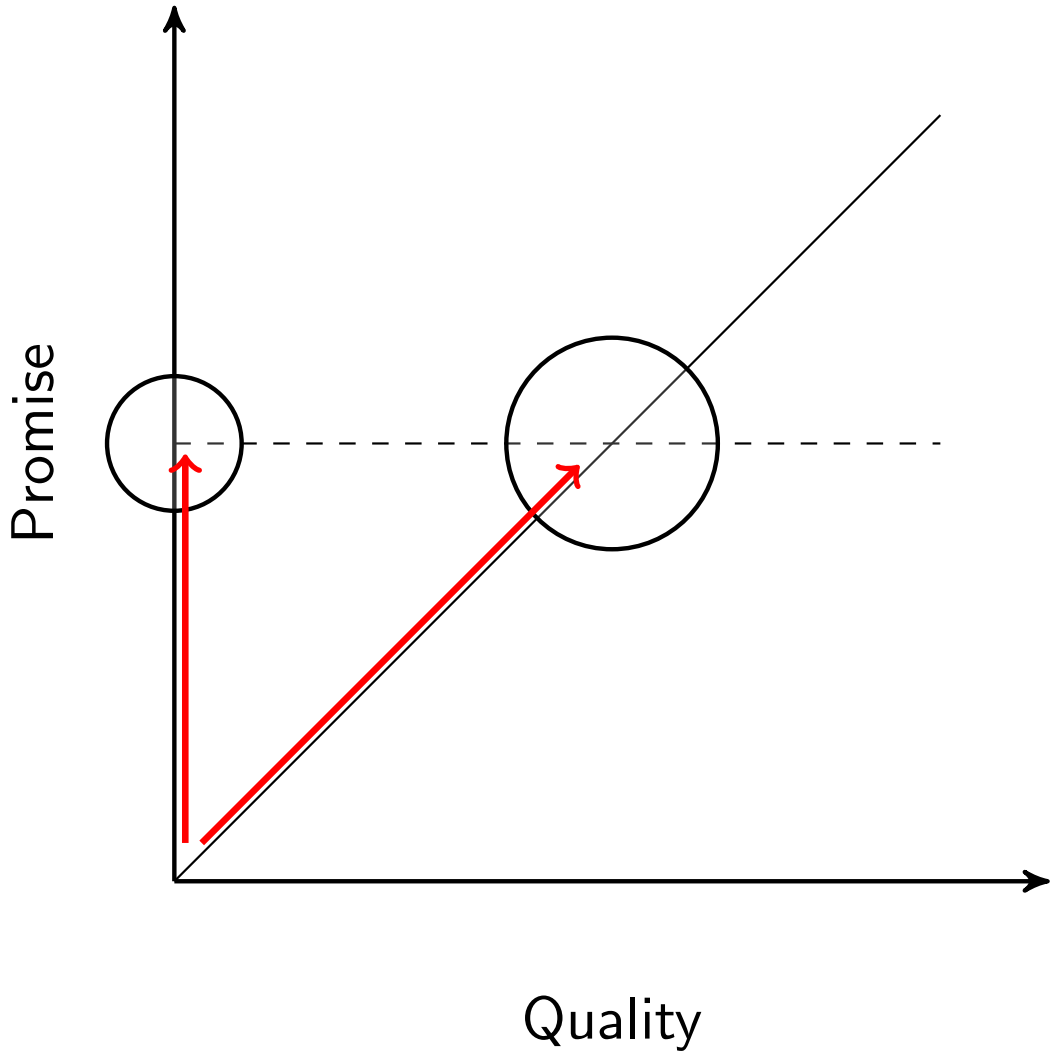


Cost of Promise-breaking

- Cost of promise-breaking may stem from different sources: legal constraints, reputation costs, fabrication costs.
- In the experiment focus on one particular source for the cost of promise breaking - a psychological dis-utility.
- literature demonstrates that some people have cost of lying or breaking promise
- Experimental literature finds varying degree of lying-aversion
- Abeler, Nosenzo, Raymond (2018) and Gneezy, Kajakaite, Sobel (2018) analyze lying cost I use for promise-breaking

Cost of providing quality / intrinsic motivation

- Cost of providing quality may may stem from different sources: motivation, quality already at hand, skill.
- In the experiment focus on one particular source for the cost - a generosity towards the buyer.
- literature demonstrates that some people exhibit generosity
- Experimental literature finds varying degree of generosity.

Experiment

- Second part of study: Lab Experiment to test these predictions
- Abstract setting - investigates whether mechanisms work in clean setting
- Experiment allows to measure selection

Design 1/3 - Promise Game

- Dictator game with two potential senders.
- Both senders make a promise to receiver about intentions.
- Receiver chooses who to play dictator game with.

$\Rightarrow$ chosen sender gets to split 100 points between herself and receiver.

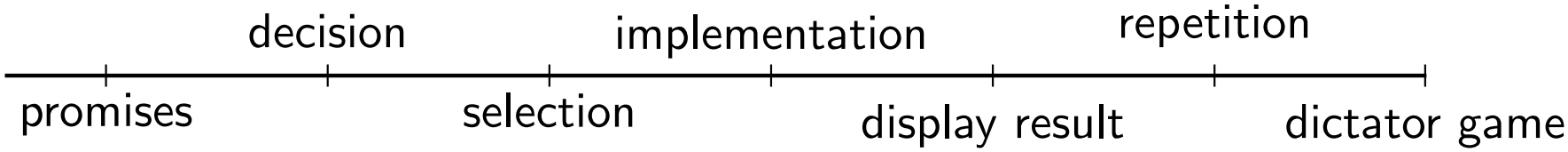
$\Rightarrow$ other sender receives nothing.

Design 2/3 - Issues

- Avoid salience of fair split
  - Every point sent to receiver is doubled
- Learning
  - 10 repetition with stranger matching.
  - Information about past decisions of own group.
- Want to compare givings to a non-promise situation
  - Participants also play regular dictator game
  - Random Order (beginning or end)

Design 3/3

Timeline of the experiment



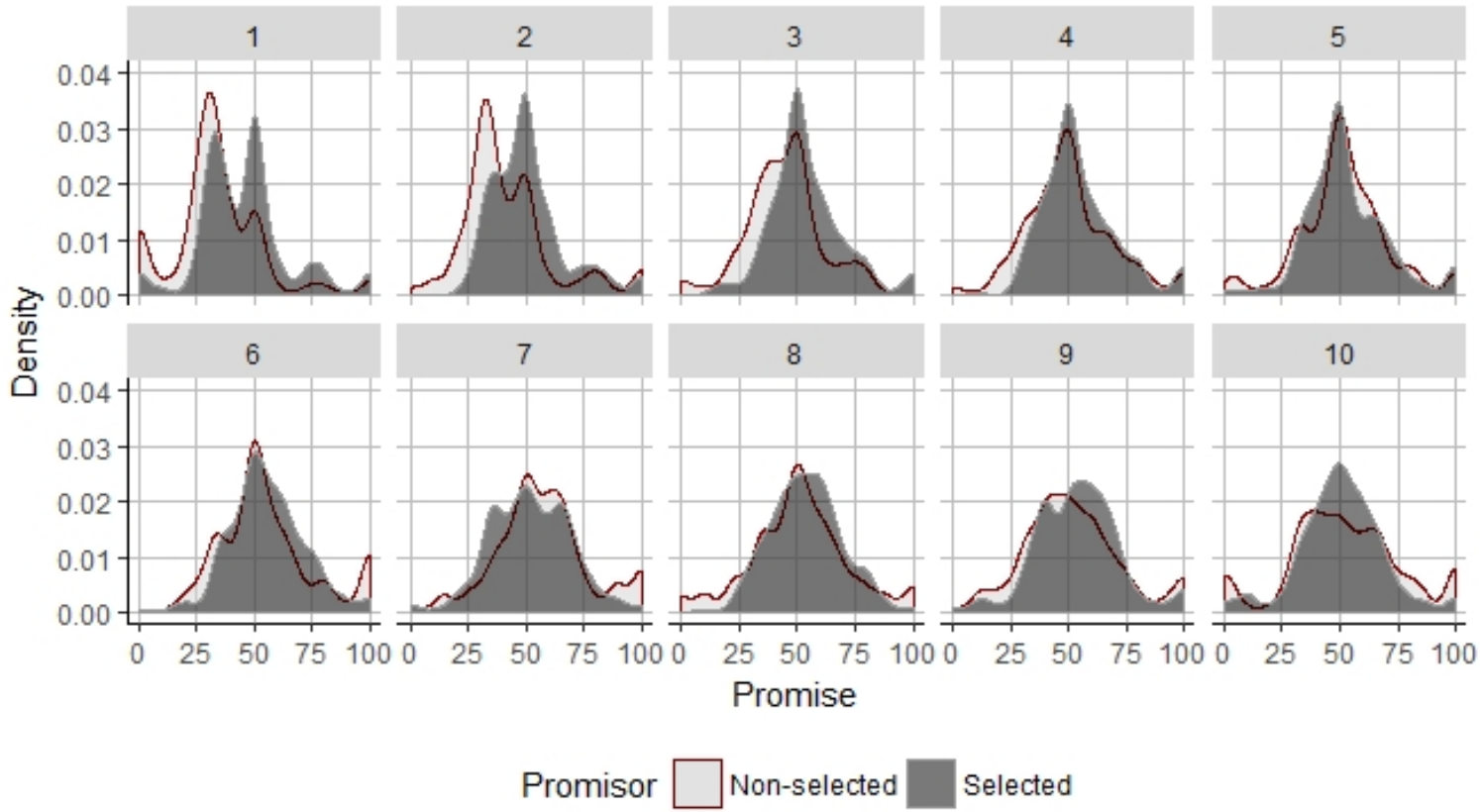
- Decisions elicited with *strategy method*
- Random re-matching each round
- Ten rounds, get paid for a random round

Conduction

- Conducted at Incentive Labs at Rady School of Management, UCSD (155 participants)
- Preregistered

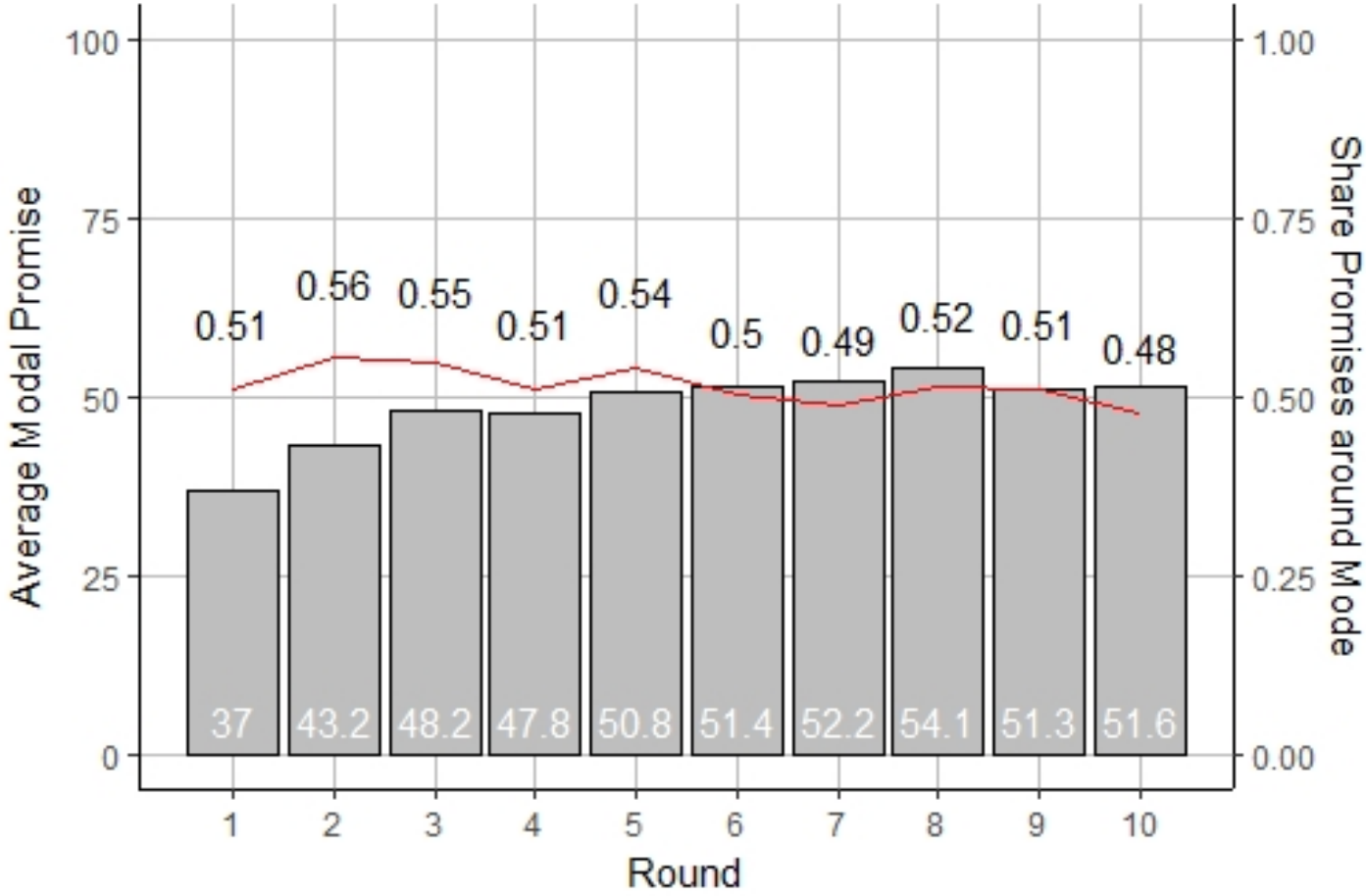
Results - Selected and none-selected promisors

Figure: Density of Promises of selected and not selected agents by round.



adj. promises

The Modal Promise



Define modal promise as the promise with the most other promises in a 5 point environment.

diff aggregations

Selection and giving

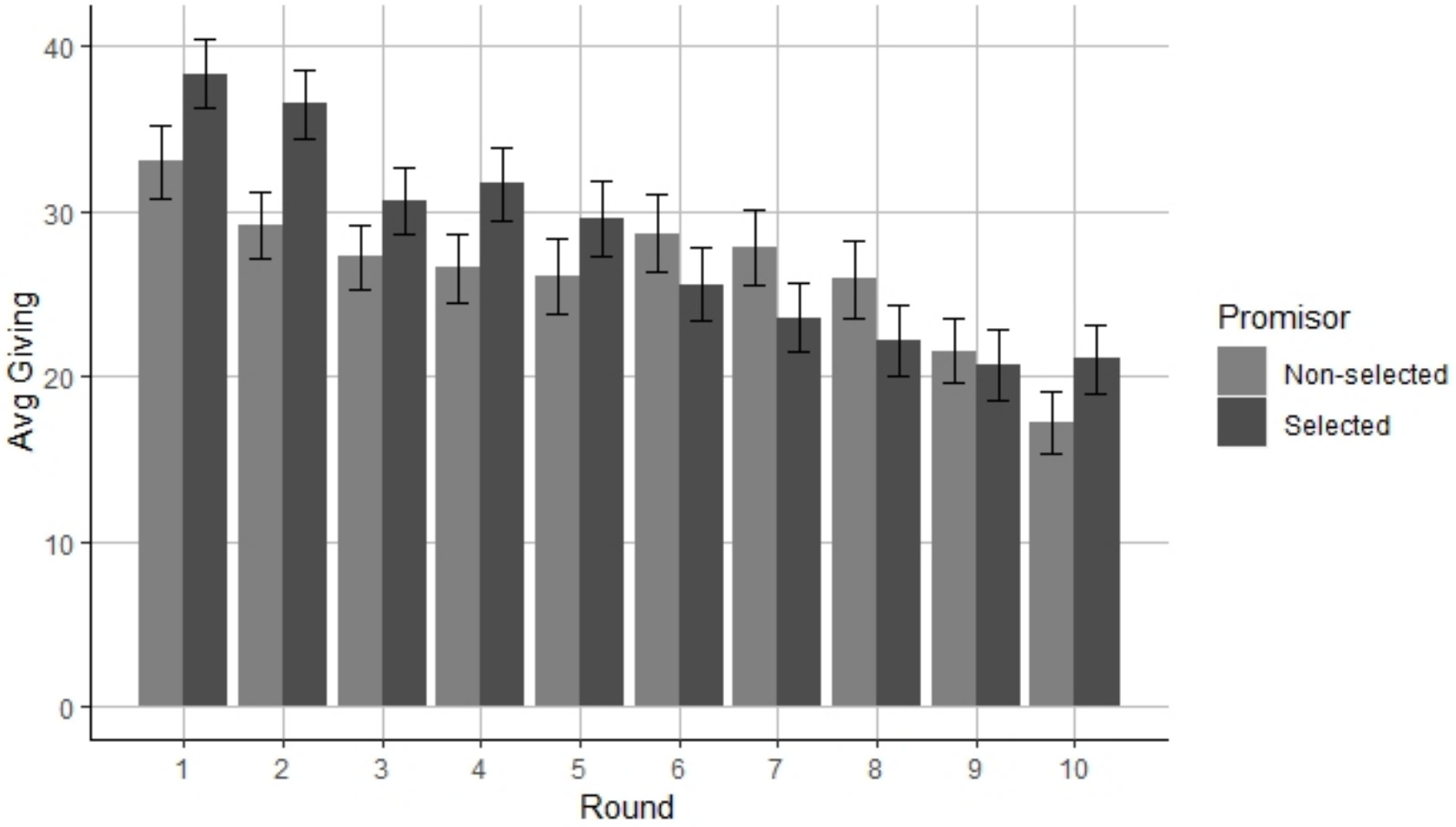


Table Distribution

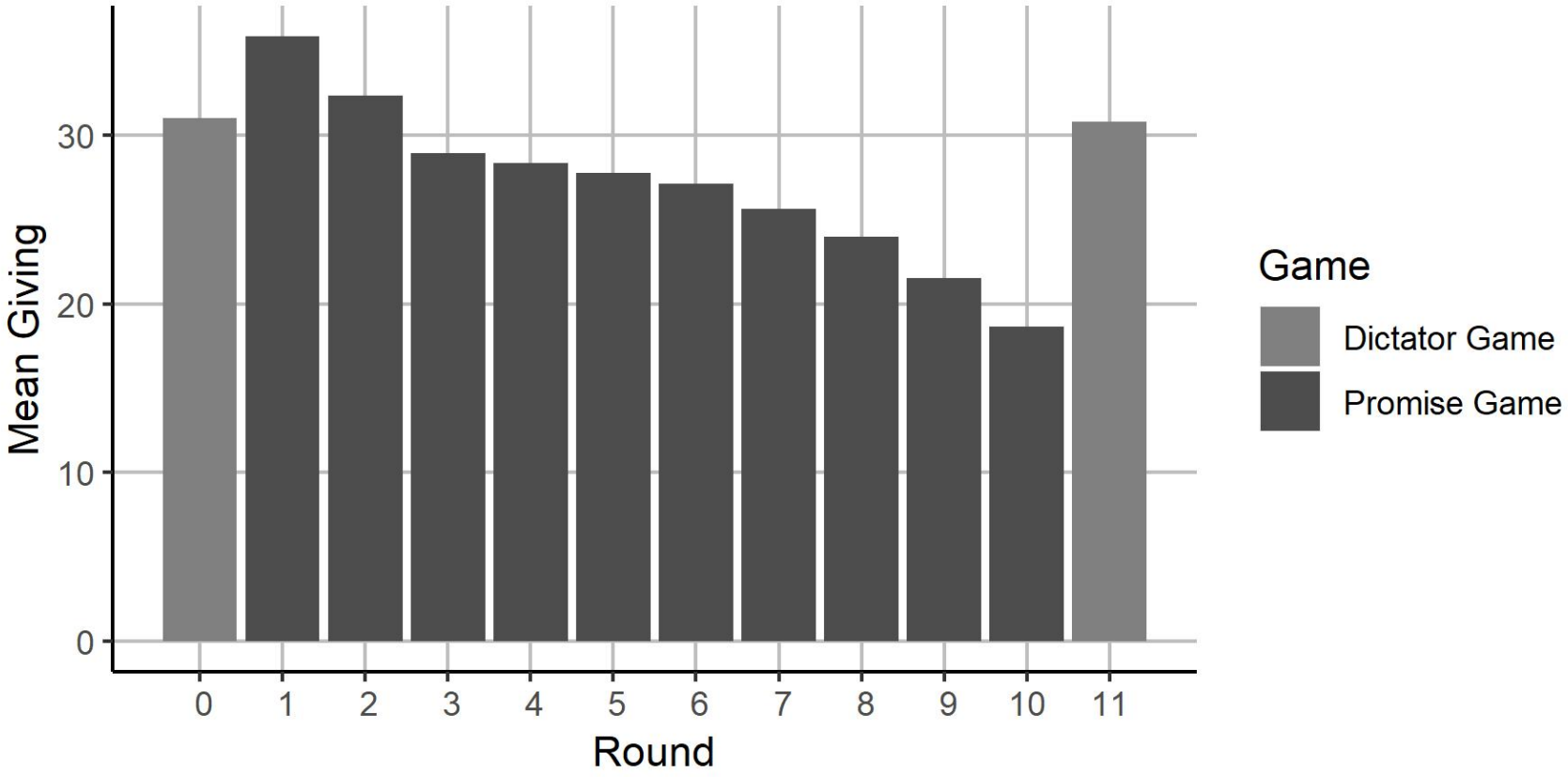
Finding 1

- Participants pool their promises after a few repetitions
- No selection of better/worse promisors

Caveats

- Initially no pooling and positive selection!
- Participants promise around but not at a single promise promise.

Giving by Round and Game



broken promises
comparison distributions

Test of Differences

Table: Comparison promise and dictator game giving

	Mean sending		**Difference**	
Round	Promise Game	Dictator Game	t-statistic	p-value
1	35.745	30.967	2.417	0.017
all	27.141	30.967	-2.086	0.039

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Correlation of Promising and Giving

Table: Regression of change in giving on change in promising

	$\Delta_{t/t-1}$ Giving		
	(1)	(2)	(3)
$\Delta_{t/t-1}$ Promise	0.265^{***}	0.273^{***}	0.282^{***}
	(0.065)	(0.065)	(0.069)
($\Delta_{t/t-1}$ Promise) sqrt			-0.001
			(0.001)
Constant	-2.179^{***}		
	(0.207)		
Individual FE			X
Round FE		X	X
N	1,377	1,377	1,377
R^2	0.075	0.091	0.115

Notes: Clustered standard errors (individual) in parenthesis.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

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Scatter By type

Finding 2

- Participants give more in first round of promise game than dictator game
- Not possible to cleanly compare later rounds of the promise game
- However change in promises correlated with change in giving
- Suggests that mechanism is at work in all rounds of the experiment.

Summary

- Analyze competition with non-binding promises
- Results: Promises are not informative for beliefs or selection.
- Promise competition does improve quality provided.

competition $\rightarrow$ *high promises* $\rightarrow$ *honest sellers: higher quality*

Suggests explanation why promises prevalent in economic transactions even though regularly broken and uninformative.

Who increases giving after promises?

Table: Regression difference in giving on dictator game giving

	Diff. Giving
Giving Dictator game	-0.715^{***}
	(0.082)
Constant	18.322^{***}
	(2.557)
N	153
R^2	0.499

Notes: *Regression of difference in giving between promise and dictator game on giving in the dictator game. Robust standard errors in parenthesis.*
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Why do participants decrease their giving?

	(1)	(2)
Giving $t-1$	0.678^{***}	0.677^{***}
	(0.031)	(0.031)
Giving $t-1$ Select Sender	0.111^{***}	0.087^{**}
	(0.019)	(0.033)
Previous Role: Receiver		-4.648^{*}
		(1.912)
Previous Role: Selected Sender		1.294
		(1.504)
Giving Selected Sender * Receiver		0.111^{*}
		(0.049)
Giving Selected Sender * Selected Sender		-0.032
		(0.041)
Constant	4.052^{*}	5.092^{*}
	(1.809)	(2.032)
Round FE	X	X
Individual FE	X	X
N	1,377	1,377
R^2	0.493	0.499

Notes: *Regression of giving in round t on giving in previous round. Individual fixed effects. Clustered standard errors on individual level in parenthesis.* * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

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Distribution Promises and Giving

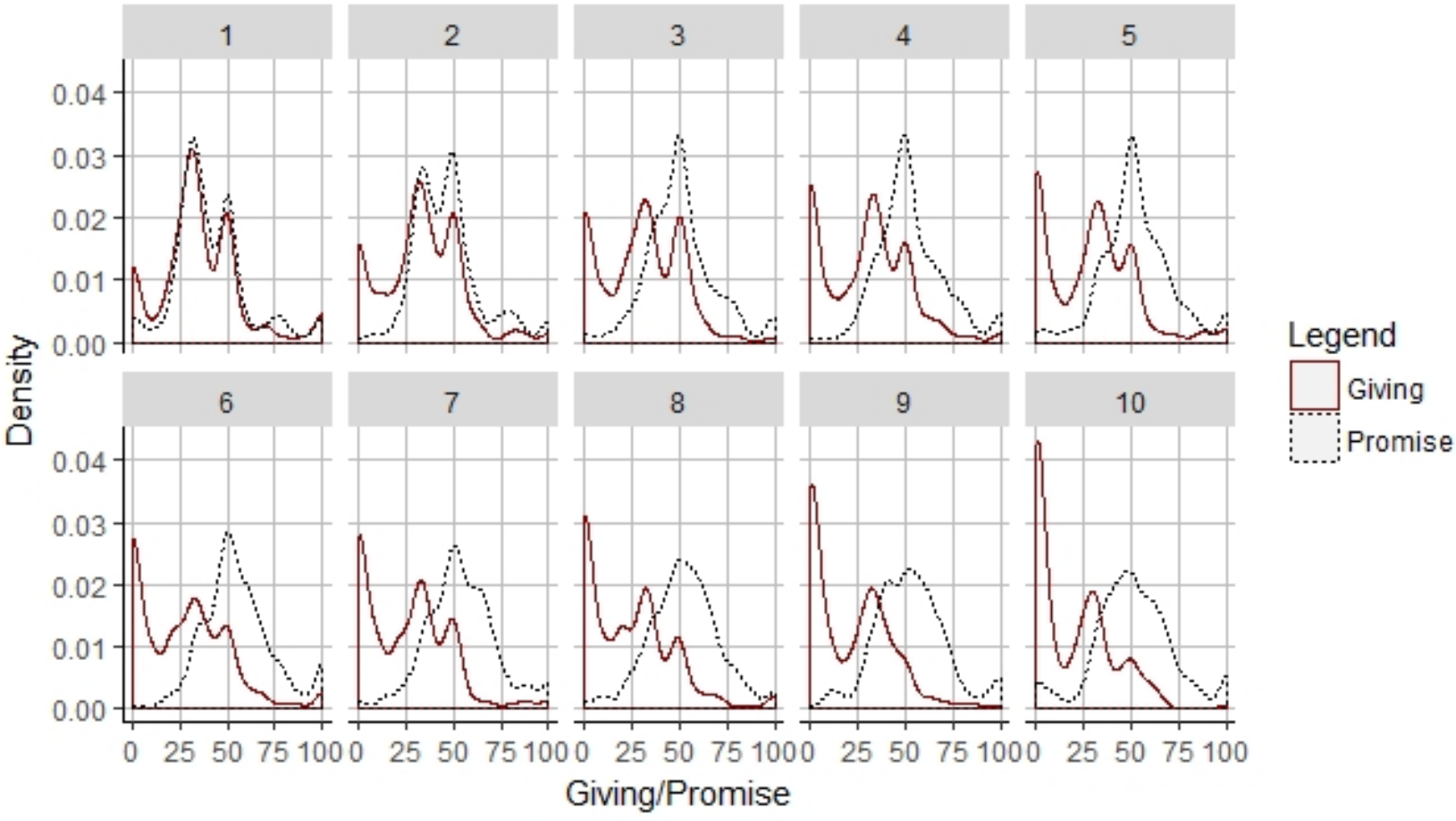

Figure: Density of promises and giving by round.

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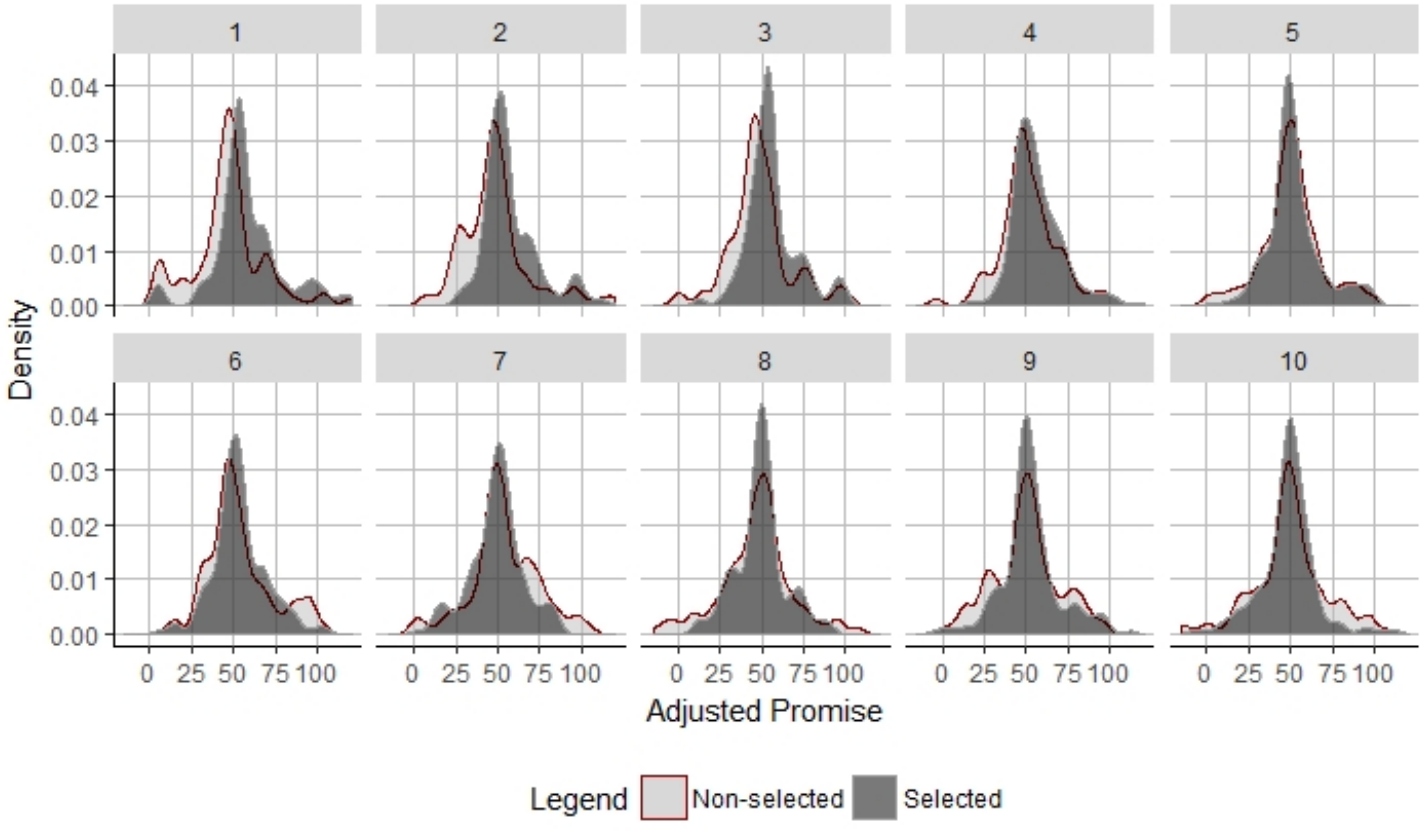
Density of promises adjusted to the mode



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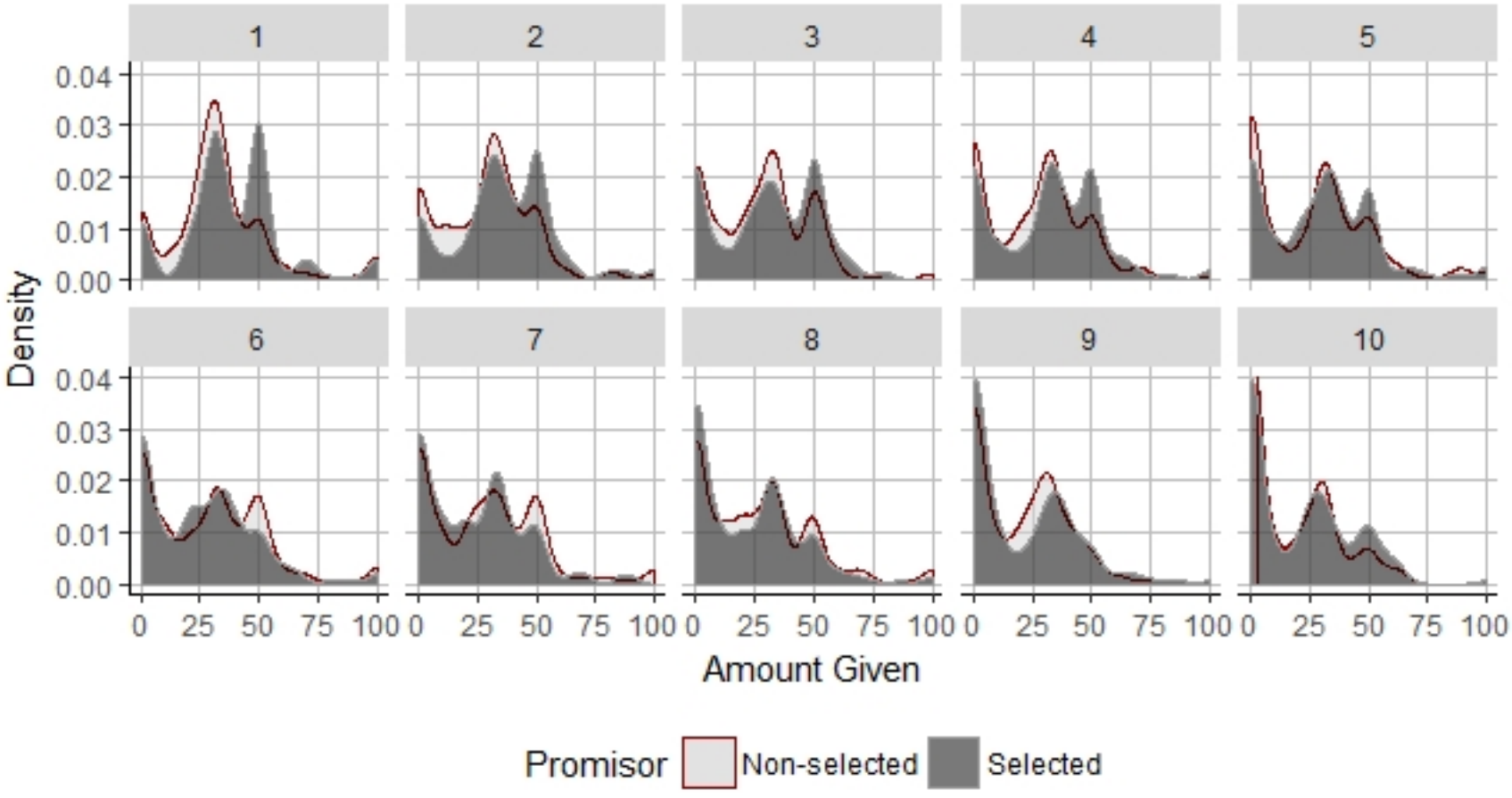
Distribution of giving by selection and round



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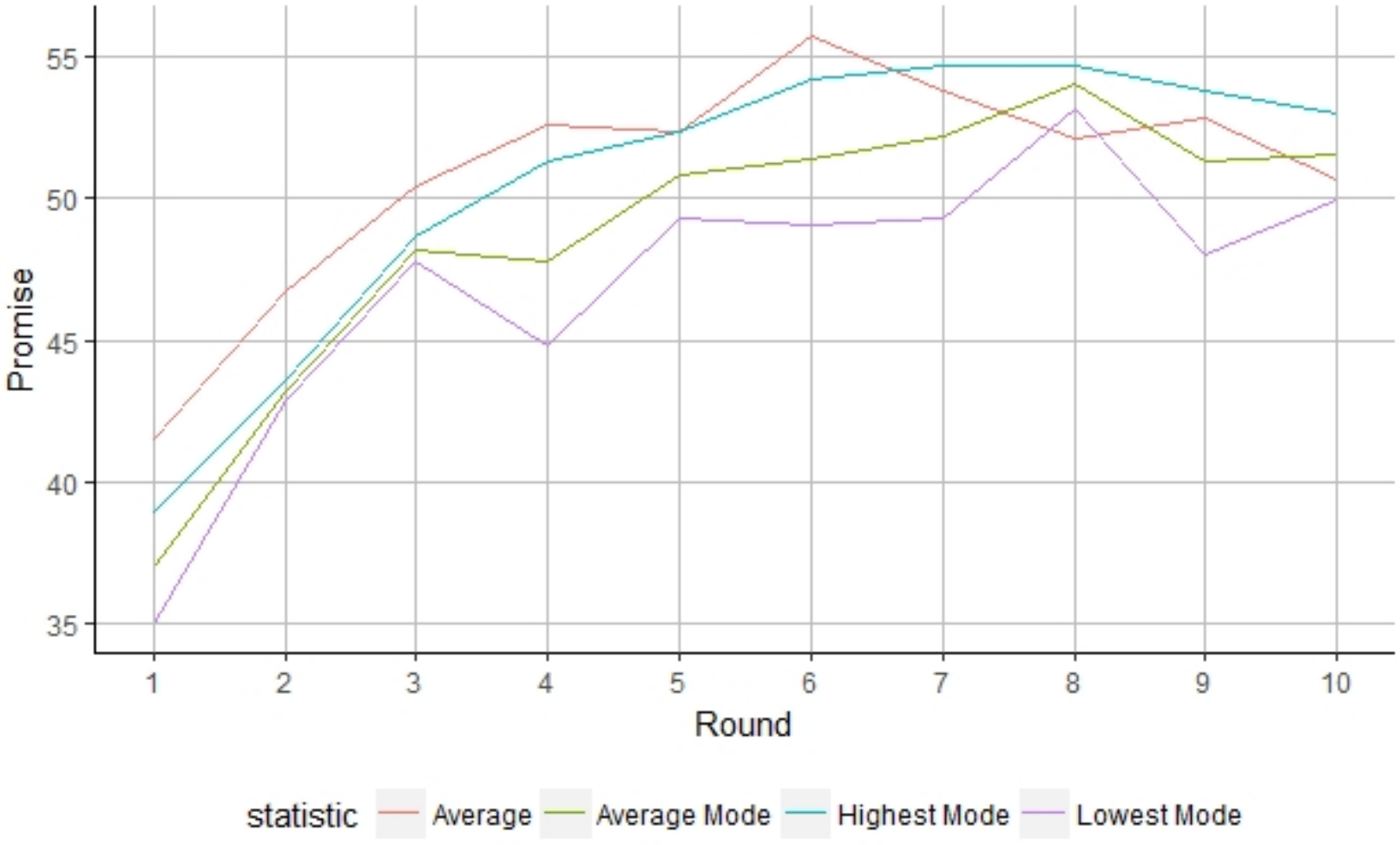
Different aggregations of the promises



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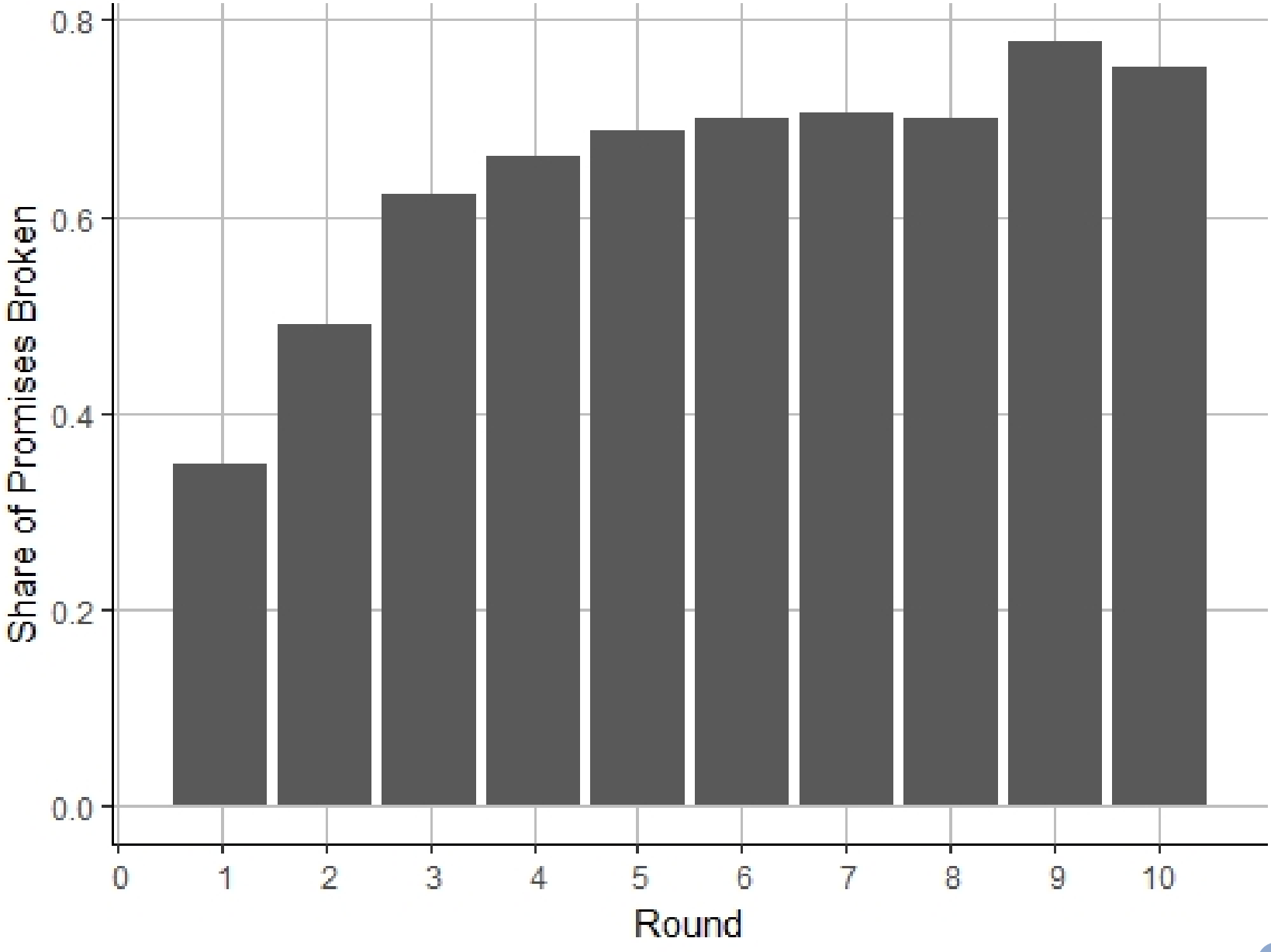
Broken Promises



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Broken Promises - Table

Round	**senders**			Chi-2 test
	all	selected	not-selected	p-value
1	0.346	0.359	0.294	0.273
2	0.490	0.523	0.477	0.493
3	0.621	0.667	0.588	0.193
4	0.660	0.654	0.654	1
5	0.686	0.693	0.686	1
6	0.699	0.739	0.660	0.170
7	0.706	0.719	0.706	0.899
8	0.699	0.778	0.641	0.012
9	0.778	0.797	0.784	0.888
10	0.752	0.725	0.771	0.429

Notes: *The table displays the share of senders who break their promise by round of the promise game. The last column displays the p-value of a test of proportions comparing the share of broken promises by selected and not-selected senders.*

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Example Parametrization

$$g(\rho, x) = \begin{cases} 5 + \frac{(p-x)^2}{p} & \text{if } \rho \neq x; \\ 0 & \text{otherwise,} \end{cases}$$

$\overline{\rho} = 1.$

$f(x) = \frac{-(49.5-x)^2}{33}.$

$\overline{\alpha} = 1.$

$\Rightarrow$ $\underline{x}^n = 0$; $\overline{x}^n = 33.$

$\overline{x}^{max} = 78.87.$

Pooling equilibria with p between 33 and 78.87
Type τ_h fulfills 1/2 of her promise

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Equilibria - Refinement D1

- Perfect Bayesian Equilibrium:
  - Worst belief is that ρ comes from type τ_b
  - Principal expects 0 quality, hence would never select agent with promise ρ

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- Perfect Bayesian Equilibrium:
  - Worst belief is that ρ comes from type τ_b
  - Principal expects 0 quality, hence would never select agent with promise ρ
- Refinements that constrain beliefs: Criterion D1.
- D1 restricts *beliefs about none-equilibrium promises*
- Requires that a Principal beliefs a none-equilibrium promise belongs to type who would deviate for the lowest *selection probability*.
- In other words: The principal beliefs a promise comes from the agent-type who gains the most utility relative to the equilibrium level.

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Assumption 3

- The probability of type τ_b relative to τ_g is low enough such that if all types promise $\overline{x}^n$, the promise yields higher expected value than a lower promise by τ_h exclusively,

$$\frac{\phi_{\tau_g}}{\phi_{\tau_g} + \phi_{\tau_b}} \overline{x}^n > x^*(\overline{x}^n, \tau_h).$$

where ϕ_τ denotes the likelihood of type τ,

and $x^*(p, \tau)$ the optimal action of type τ after promise p.

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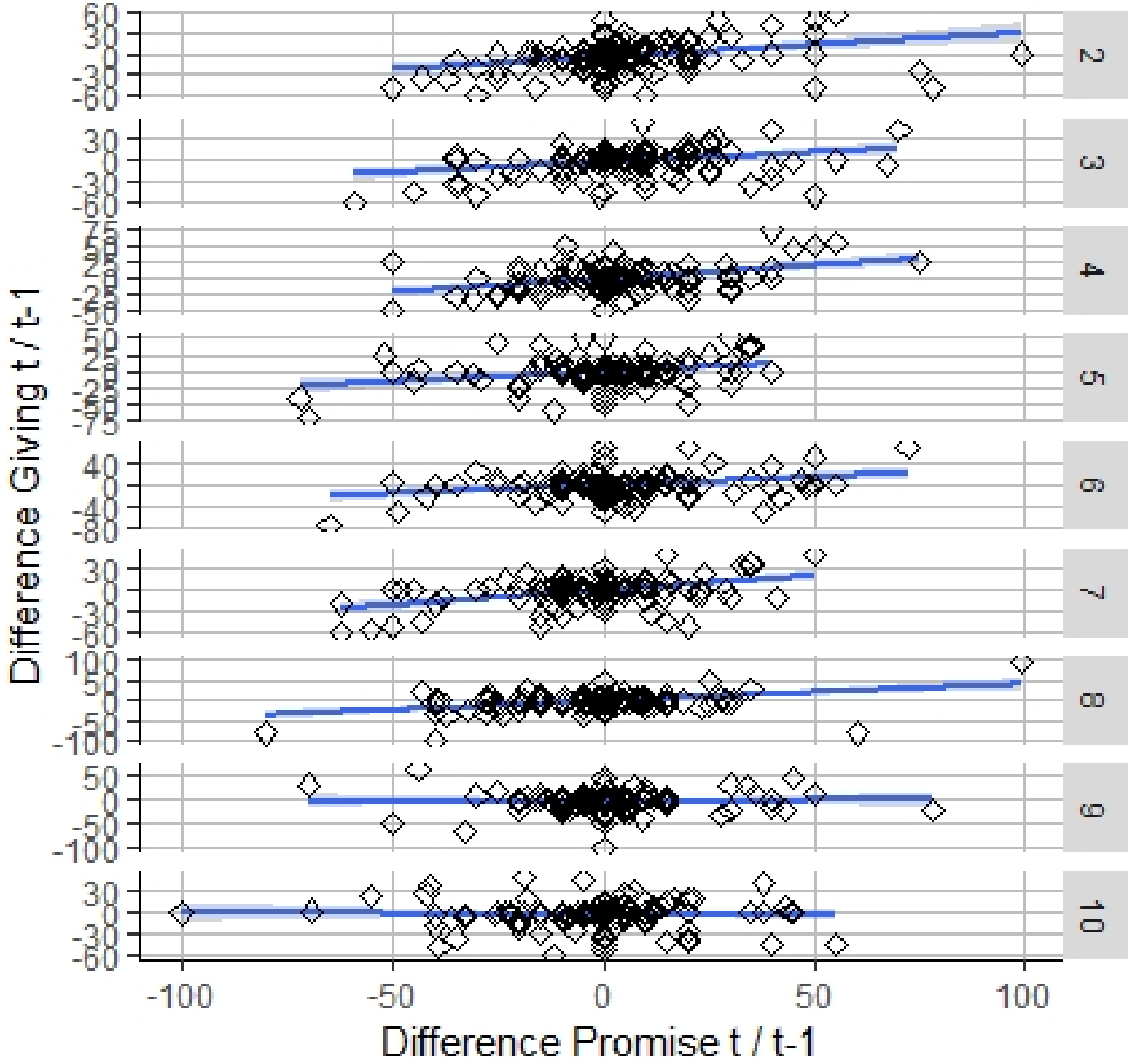
Scatter giving on promises



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Diff Correlation by Type

	$\Delta_{t/t-1}$ Giving	
	keepers	breakers
$\Delta_{t/t-1}$ Promise	0.345***	0.110
	(0.082)	(0.090)
($\Delta_{t/t-1}$ Promise) sqrt	−0.002	−0.002
	(0.001)	(0.002)
Individual FE	X	X
Round FE	X	X
N	900	477
R^2	0.157	0.050

Notes: Regression of difference of giving in round t to $t-1$ on difference of promise. Regression (1) uses participants that keep their promise in round 1. Regression (2) uses participants that break their promise in round 1. Round and individual fixed effects. Clustered standard errors (individual level) in parenthesis.
* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

◂ Back ◂ end

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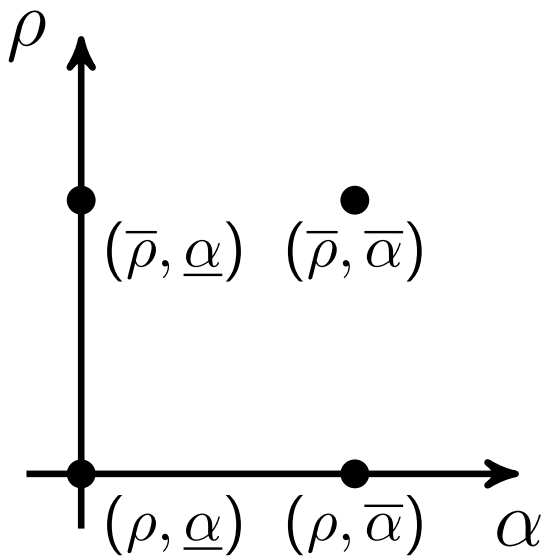

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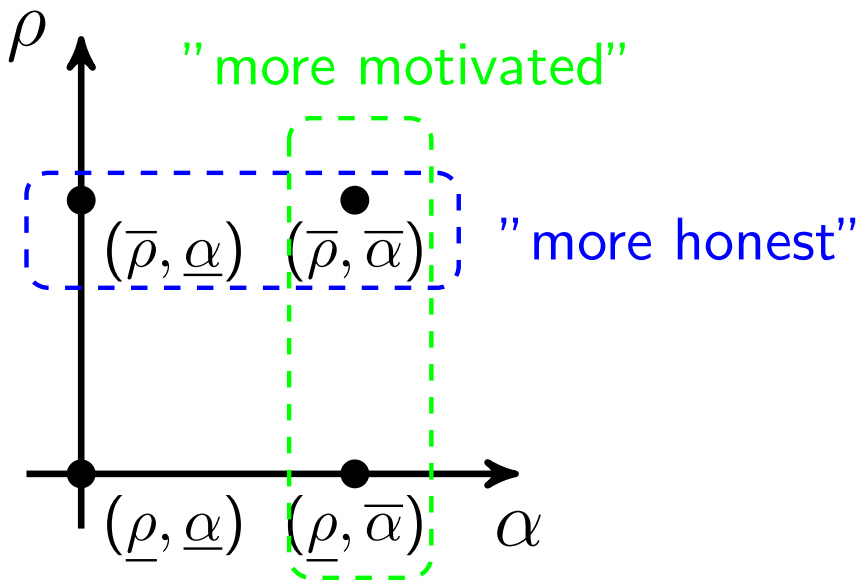

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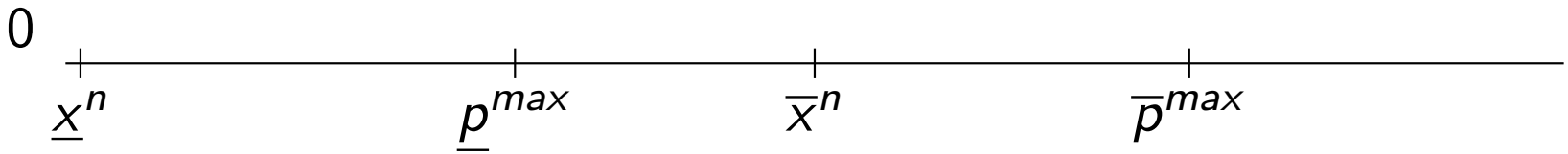
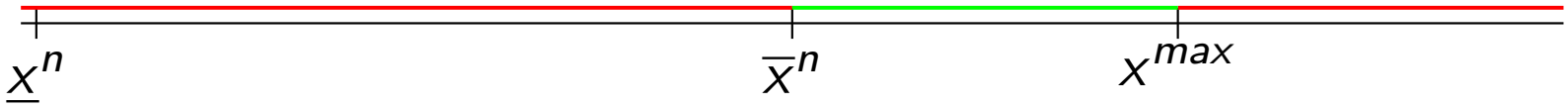
D1 Equilibria



- $\underline{x}^n$, $\overline{x}^n$ natural action of unmotivated/motivated sellers
- $\underline{p}^{max}, \overline{p}^{max}$ highest promise honest/good sellers keep (completely).

D1 Equilibria



- Below $\overline{x}^n$ type τ_g gains most from increasing promise •
- Above x^{max} the principal prefers a lower promise by τ_h •
- Between $\overline{x}^n$ and x^{max} beliefs are that lower promise comes from τ_h and higher promise from τ_b •

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Selection and giving

Table: Amount given by round

Round	**senders**			**difference**	
	all	selected	not-selected	t-statistic	p-value
1	35.883	38.353	33.007	2.116	0.035
2	32.349	36.490	29.163	3.054	0.002
3	28.970	30.654	27.222	1.443	0.150
4	28.361	31.667	26.549	2.019	0.044
5	27.762	29.536	26.052	1.284	0.200
6	27.135	25.588	28.660	-1.136	0.257
7	25.623	23.575	27.843	-1.659	0.098
8	23.968	22.131	25.869	-1.434	0.153
9	21.565	20.686	21.549	-0.358	0.720
10	18.663	21.046	17.170	1.664	0.097

Notes: The table displays the amount senders give in the promise game by round. The different columns represent all senders or only those who got selected or did not. The final two columns display the test statistic and p-value of a two sided t-test.

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Selection and giving

Table: Amount given by round

Round	**senders**			**difference**	
	all	selected	not-selected	t-statistic	p-value
1	35.883	38.353	33.007	2.116	0.035
2	32.349	36.490	29.163	3.054	0.002
3	28.970	30.654	27.222	1.443	0.150
4	28.361	31.667	26.549	2.019	0.044
5	27.762	29.536	26.052	1.284	0.200
6	27.135	25.588	28.660	-1.136	0.257
7	25.623	23.575	27.843	-1.659	0.098
8	23.968	22.131	25.869	-1.434	0.153
9	21.565	20.686	21.549	-0.358	0.720
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