Communication and Hidden Action: Evidence from a Lending Experiment

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Motivation

- Lender-borrower interaction is subject to opportunistic behaviour

- Non-binding communication can reduce opportunistic behavior (Balliet, 2009)

- Lenders are changing the way they communicate with prospective borrowers

Research question

How does pre-contractual communication
between borrowers and lenders
affect repayment behavior and credit provision ?

…. if the borrower can conceal strategic default …..

What we do and find

- Laboratory experiment with a stylized lending game
    - study repayment behavior and credit provision
    - vary whether borrowers can communicate with lenders
    - vary whether borrowers can conceal strategic defaults

- Positive impact of communication on loan repayment & credit provision

    … is undermined when borrowers can hide strategic defaults…

Contribution

- Moral incentives and loan repayment
 - Guiso et al. JF 2013; Fisman et al. AER 2017; Bursztyn et al. JPE 2019

  →We study how pre-contractual communication affects repayment behavior and credit provision

- Communication and cooperation
  - Charness and Dufwenberg Ectra 2006; Vanberg Ectra 2008

  → The impact of communication on agents behavior depends on their ability to hide opportunistic behavior

Lending game

Lender chooses 1 of 4 possible **C**redit sizes

C=10   40   70   C=100

D   R   D   R
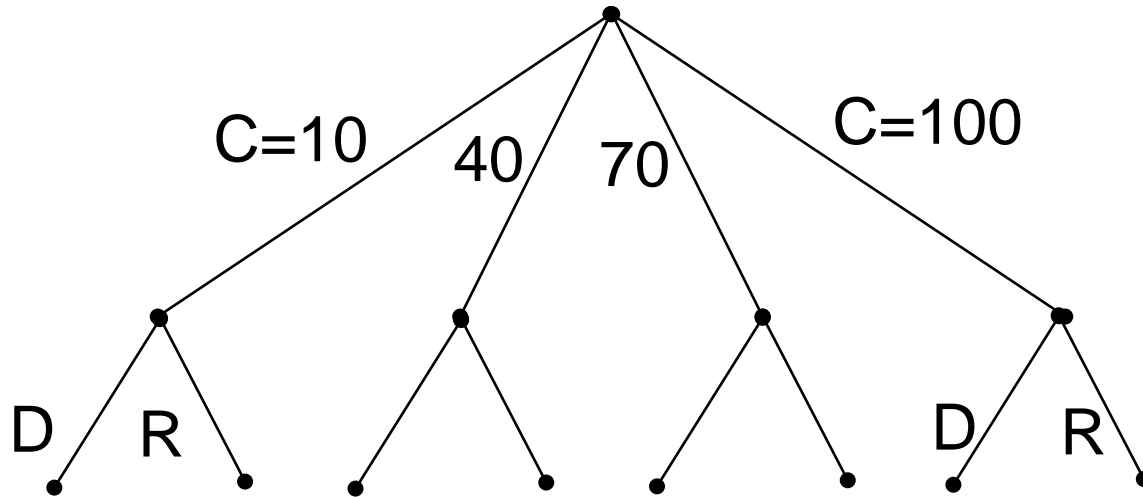
Borrower chooses to **D**efault or **R**epay for each possible credit size (strategy method)

Baseline condition

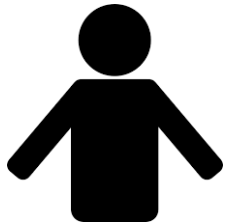**Credit size**

10   40   70   100

Default

Repay

Endowment = 150
Investment return = 4*C
Repayment due = 2.5 * C

150 - C

150 + 1.5 * C

150 + 4 * C

150 + 1.5 * C

Hidden action condition

Credit size

10   40   70   100

$p=1/3$ $p=2/3$

Investment return = 0

Repay

Default

150 - C   150 - C   150 + 1.5 * C

150   150 + 4 * C   150 + 1.5 * C

Main Treatments

	Baseline	**Hidden action**
	Determinstic income, revealed	Stochastic income, not revealed
Communication	C-B	C-H
No Communication	N-B	N-H

Communication:
- from borrower to lender
- text message of max 300 characters
- before lender chooses credit size

Why a lab experiment ?

- Identification
    - We can exogenously vary the ability to communicate
    - We can shut down other effects of communication (e.g screening)
    - We can exogenously vary the information conditions of lenders

- Measurement
    - We can distinguish strategic default from forced default

Procedures

- Matching group of 10 subjects interacts for 10 period
  - 5 lenders, 5 borrowers
  - either borrower or lender for all periods
  - random matching of borrower-lender pair in each period
  - No ID number

- 10 matching groups per treatment
  - 100 subjects per treatment

- Implemented at Uni Hamburg
  - 14 euro / 80 minutes

Behavioral assumptions

- Borrowers suffer moral costs from a strategic default: K_i
  - K_i varies across borrowers
  - K_i increases for a given borrower if promised to repay
    (Ellingsen & Johanneson EJ 2004)
  - K_i increases for given borrower if promise-breaking is revealed
    (Abeler et al. Ectra 2019)

- Lenders have heterogenous beliefs about the distribution of moral costs across borrowers: b_j

Main Hypothesis

	Baseline	**Hidden action**
	Deterministic income, revealed	Stochastic income, not revealed
Communication	∨ ∨ C-B ∧ ∧ ∨	C-H ∧
No Communication	N-B	N-H

Credit provision
Strategic default

Results: Baseline condition
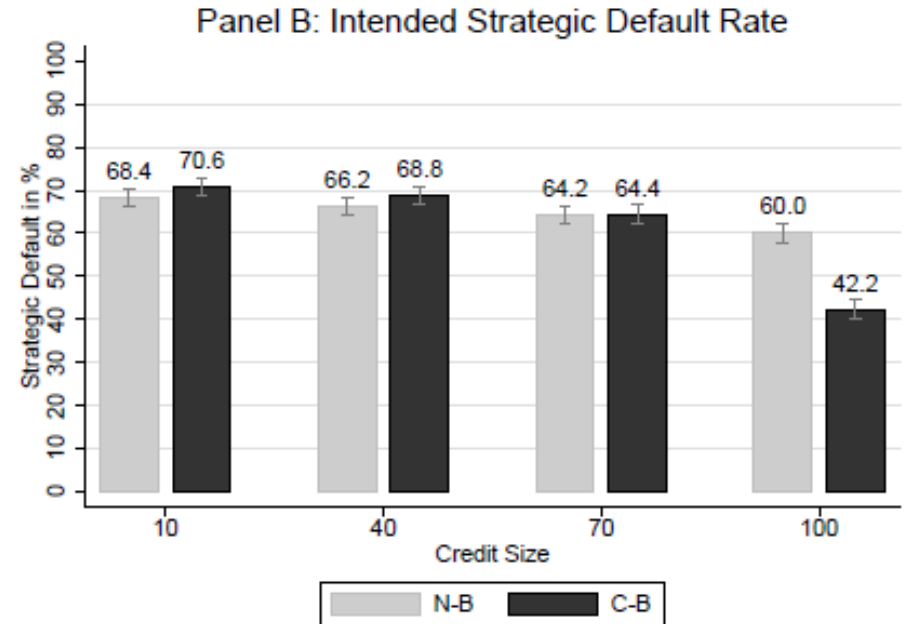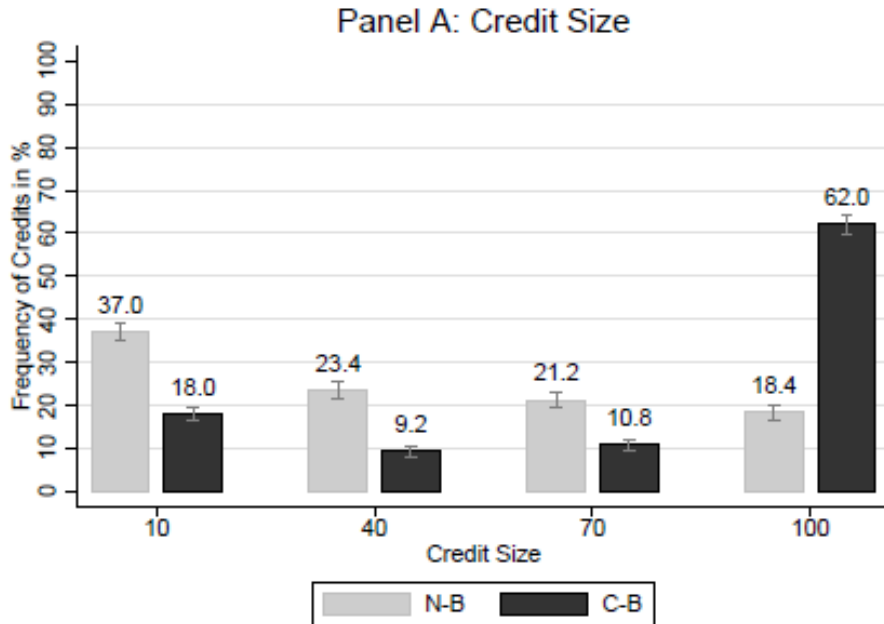
Panel A: Credit Size

Credit Size	N-B	C-B
10	37.0	18.0
40	23.4	9.2
70	21.2	10.8
100	18.4	62.0

Y-axis: Frequency of Credits in %

Panel B: Intended Strategic Default Rate

Credit Size	N-B	C-B
10	68.4	70.6
40	66.2	68.8
70	64.2	64.4
100	60.0	42.2

Y-axis: Strategic Default in %

	Credit (mean)	Strat. default (incidence)	Borrower profit (mean)	Lender profit (mean)
Communication	75.0	0.44	329	196
No Communication	46.3	0.65	291	148
M-W (n=20)	p <0.01	p =0.02	p =0.01	p <0.01

Results: Hidden action condition
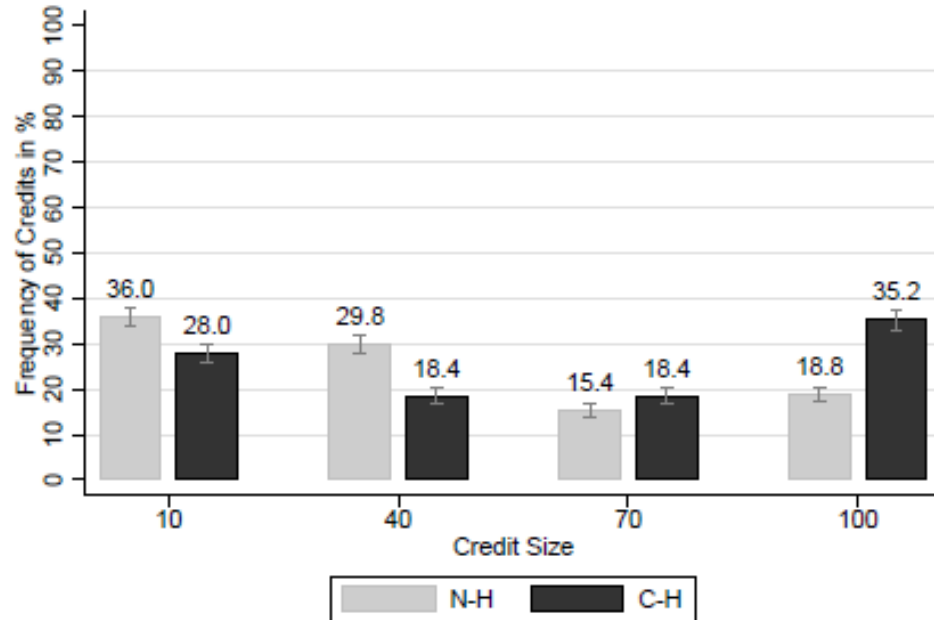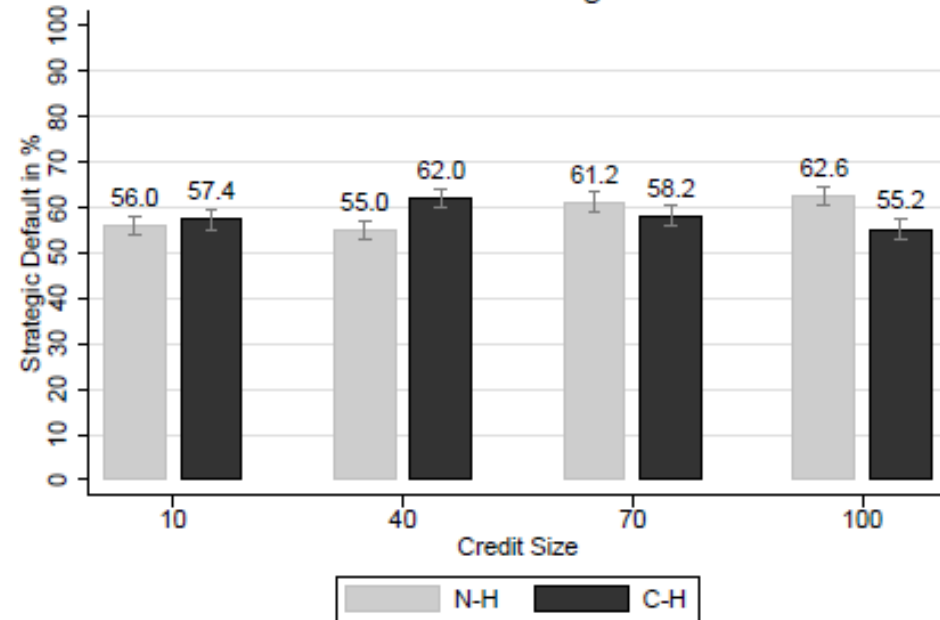
Panel A: Credit Size

Panel B: Intended Strategic Default Rate

	Credit (mean)	Strat. default (incidence)	Borrower profit (mean)	Lender profit (mean)
Communication	58.2	0.52	250	143
No Communication	45.1	0.55	234	140
M-W (n=20)	p =0.16	p =0.41	p =0.19	p =0.65

Table 5: Difference in Difference Regressions: Hidden Action vs. Baseline

Dependent variable:	Outcome				Behavior	
	Credit Size (1)	Strategic Default (2)	Borrower Profit (3)	Lender Profit (4)	Credit Size 100 (5)	ISD 100 (6)
Hidden Action	-1.200	-0.103	-56.73***	-8.950	0.00400	0.0260
	(5.708)	(0.0697)	(13.59)	(9.870)	(0.0617)	(0.0830)
Communication	28.74***	-0.208***	38.96***	47.26***	0.436***	-0.178**
	(5.708)	(0.0697)	(13.59)	(9.870)	(0.0617)	(0.0830)
Hidden Action × Communication	-15.60*	0.176*	-22.86	-44.10***	-0.272***	0.104
	(8.073)	(0.0985)	(19.21)	(13.96)	(0.0872)	(0.117)
Constant	46.30***	0.650***	290.5***	148.4***	0.184***	0.600***
	(4.036)	(0.0493)	(9.607)	(6.979)	(0.0436)	(0.0587)
Observations	40	40	40	40	40	40
F	11.87	3.071	19.99	14.25	22.09	2.387
R^2	0.497	0.204	0.625	0.543	0.648	0.166

Note: Difference–in–difference (OLS) regressions with matching group averages as observations. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Columns (1-4) present regressions with market outcomes as dependent variables. Columns (5-6) present regressions with lender and borrower behavior as dependent variables. In all regressions, the no communication baseline treatment (N-B) is the benchmark condition. Hidden Action is a variable indicating the treatments with forced default. Communication is a dummy variable which is equal to one in the treatments with communication and zero otherwise. Hidden Action × Communication captures the interaction effect between the hidden action and communication treatment.

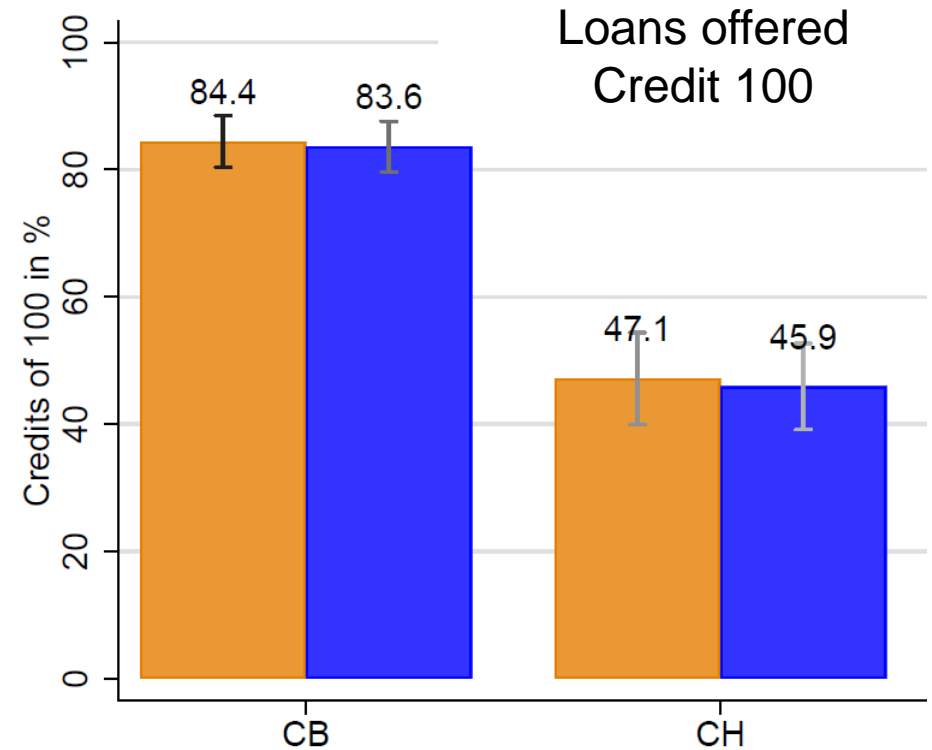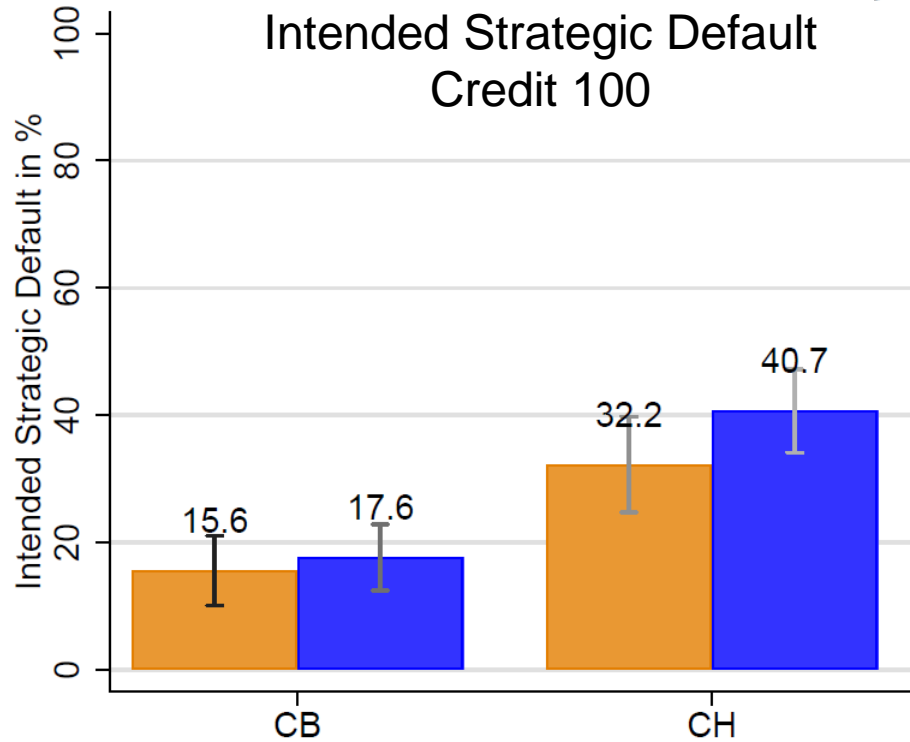# Mechanism: Hidden action and promise breaking ?

	C-B	C-H
Messaging	0.664 [0.4; 0.88]	0.710 [0.4; 0.88]
Promise	0.494 [0.12; 0.62]	0.404 [0.18; 0.78]
Promise 100	0.466 [0.12; 0.6]	0.356 [0.12; 0.68]
Promise+Request	0.542 [0.12; 0.7]	0.53 [0.18; 0.53]
Promise+Request 100	0.484 [0.12; 0.7]	0.416 [0.18; 0.68]
Threat	0.102 [0; 0.2]	0.0240 [0; 0.16]
Threat 100	0.0800 [0; 0.2]	0.0220 [0; 0.16]

Share of interactions with specific message content

mean of matching group averages
[min; max]

Mechanism: Promise breaking

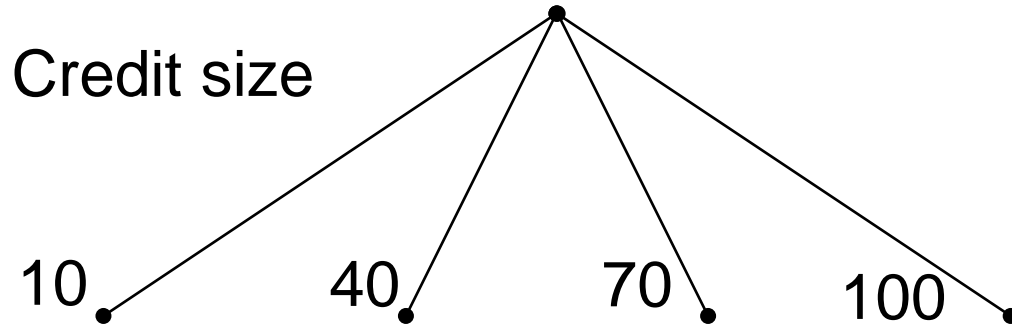**Intended Strategic Default Credit 100**

- CB: 15.6, 17.6
- CH: 32.2, 40.7

Loans offered Credit 100

- CB: 84.4, 83.6
- CH: 47.1, 45.9

Legend:
- After message '*Promise 100*'
- After message '*Promise or Request 100*'

Mechanisim: Hidden action vs. uncertainty

	Baseline	**Hidden action**	**Revealed action**
	Determinstic income, revealed	Stochastic income, not revealed	Stochastic income, revealed
Communication	C-B	C-H	C-R
No Communication	N-B	N-H	N-R

Revealed action condition

Credit size

10   40   70   100

p=1/3   p=2/3

Investment return = 0
Revealed to lender

Repay

Default

150 - C   150 - C   150 + 1.5 * C

150   150 + 4 * C   150 + 1.5 * C
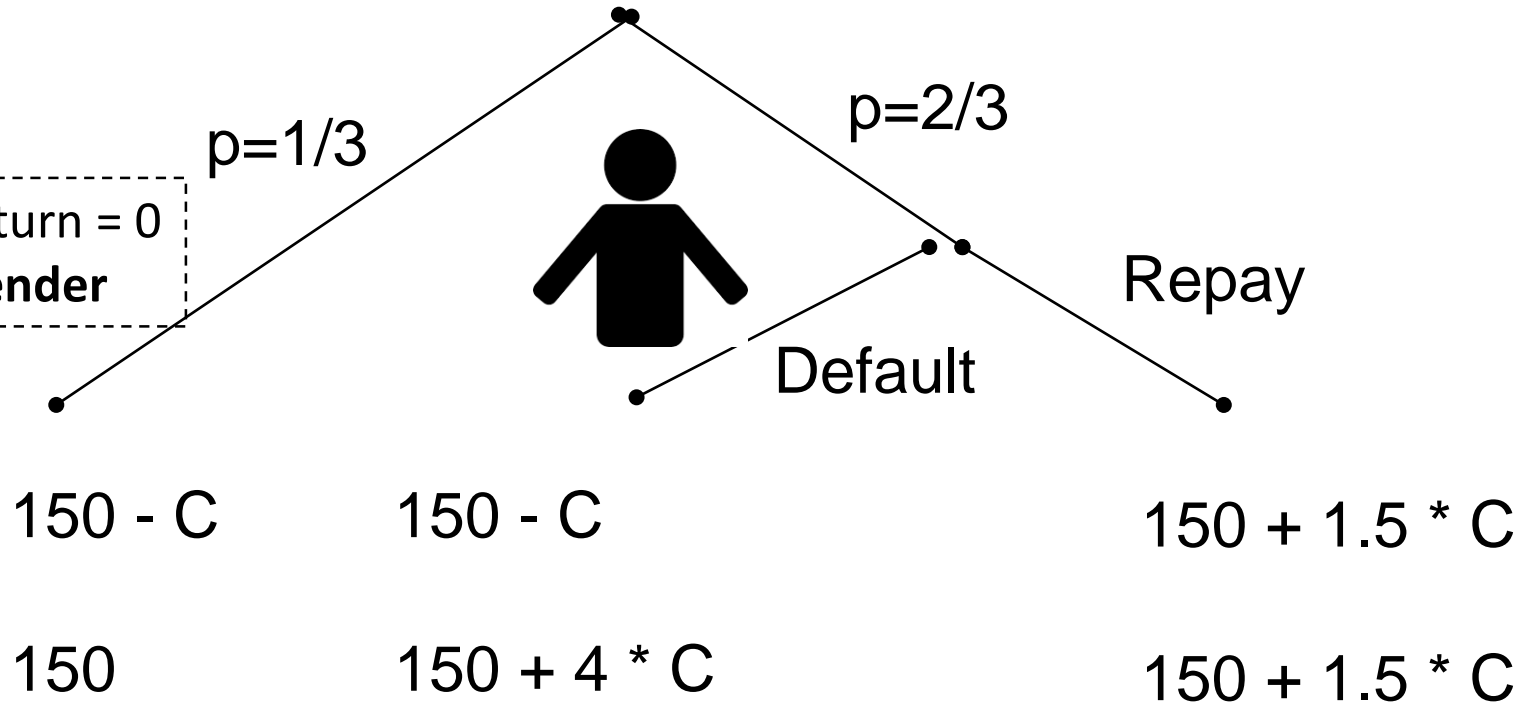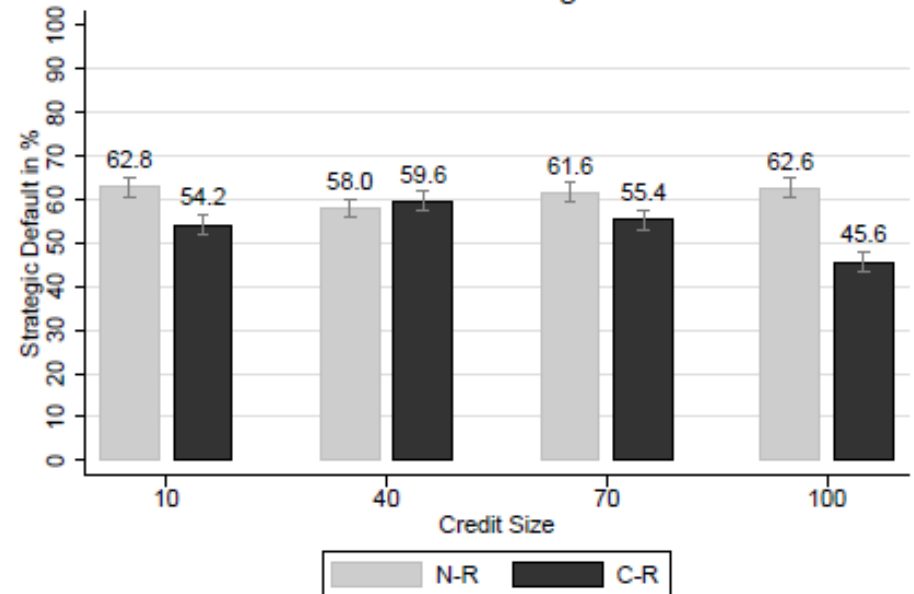
Results: Revealed action condition
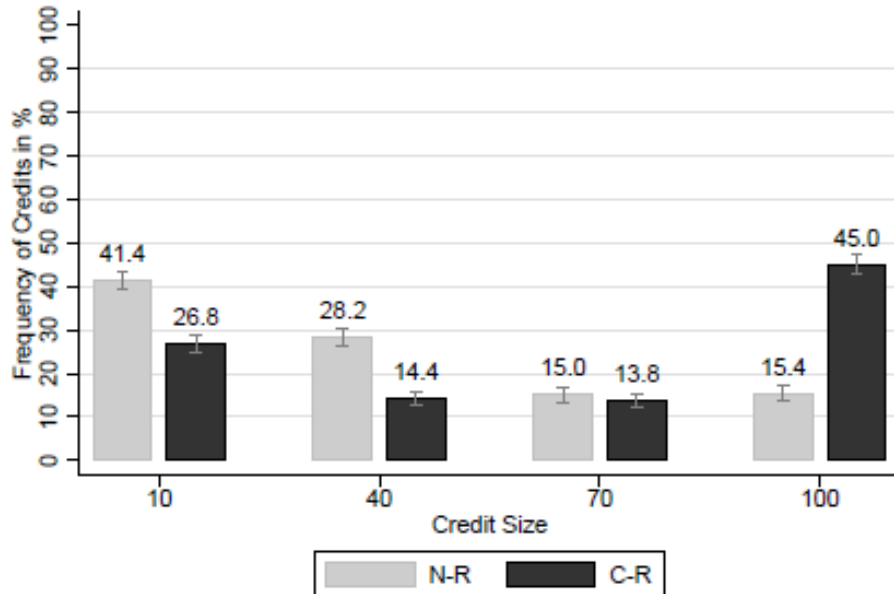
Panel A: Credit Size — Panel B: Intended Strategic Default Rate

	Credit (mean)	Strat. default (incidence)	Borrower profit (mean)	Lender profit (mean)
Communication	63.1	0.46	252	148
No **C**ommunication	41.3	0.60	227	135
M-W (n=20)	$p < 0.01$	$p = 0.01$	$p = 0.02$	$p = 0.04$

Summary & conclusions

- Pre-contractual communication can mitigate opportunistic behaviour in lending …..but its effectiveness depends on lender's ex-post information

- Promises to repay are kept because agents want to <u>be regarded as being honest</u> .. not just because they feel obliged to do so

- Pre-contractual communication needs to be aligned with post-contractual monitoring

  …..if one objective is to boost repayment morale …