

Why do we (not) lie?

Cheating is misrepresentation of private information for personal gain.

- Cheating is a big deal
- Large scale: Heads of state, politicians, athletes, Enron, etc
- Small scale. Health care fraud may amount to up to \$272 billion in US alone (Berwick and Hackbarth, 2012)
- Losses to occupational fraud have been estimated at 5% of company revenue worldwide (Association of Certified Fraud Examiners, 2016)

Why do we lie?

- The *Homo Economicus* will cheat whenever there is opportunity
 - No internally imposed costs/constraints

Not everyone cheats!

- Many people are obviously honest and idealistic
 - Whistleblowers, journalists, human rights, etc
 - People here and there
- Interpersonal trust is higher in some countries than in others
- Lying is (sometimes) socially undesired
 - “Thou shalt not bear false witness”
 - Warrior codes: Bushido, chivalry, Vikings

The coin toss/die roll game

- A participant tosses a coin, then reports “heads” or “tails”.
 - “Heads” pays
 - Single-blind: The experimenter does not observe the actual toss
- Variation: Die roll (sometimes, under a cup), report the number rolled
- Variation: Double-blind experiment, the subject anonymously returns money if “tails” is tossed
- Abeler, Nosenzo and Raymond (2016). A meta-study of 72 experiments. Individuals, on average, obtain a quarter of the maximal payoff.

Type-based vs continuous model

R. Gibson, C. Taner, A. Wagner. 2013. AER

- An experiment.
- Each participant placed in the situation of CEO who announces earnings per share
 - Truthful option: Less income
 - False option: More income
- Income for two options varied. Higher payoff for lying made lying more common
 - That would not have an effect if there were only two groups of people: Economic, with zero lying costs, and idealists with high lying costs
 - Continuous distribution with atom(s)?
- Altruistic concerns for shareholders made lying less common

Modeling lying

- Lying costs
 - May depend on social norms and/or behavior of others
 - Conformity in lying
- Guilt aversion: We suffer if our actions lead to lower than expected income for other individuals
- Reputation for honesty
 - To be or to seem? “Few are those who wish to be endowed with virtue rather than to seem so” — Cicero
 - I care about other’s posterior probability that I am a liar
- Inequality aversion, etc

There is no well-defined boundary between honesty and dishonesty. The frontiers of one blend with the outside limits of the other, and he who attempts to tread this dangerous ground may be sometimes in one domain and sometimes in the other. – O. Henry

Limited lying

- People lie, but stop short of fully exploiting the gains
- Die roll experiments: Many subjects report “5” Fischbacher and Heusi (2013)
- Mazar, Amir, and Ariely (2008), etc: Matrix add task. Self-concept maintenance
 - Malleable categorization: It is sometimes easier to think of lying as honest behavior
 - Moral reminders: Ten Commandments, etc.
- People typically attach high value to honesty and strongly believe in their own morality.
- “Moral resentment”. A person who acted unethically rejects a “moral rebel” (Monin et. al. 2008)
 - Whistleblowers are hated because they threaten self-image of colleagues
- Moral compensation. People seek out examples of unethical behavior to boost their self-image.

Limited lying

- Self-concept is dynamic and depends on context. Today, I feel I need to do something good. Tomorrow, I feel justified to do something bad.
- “Moral balancing”. Mazar and Zhong (2010): People who bought “green” products donated less in DG.
- Shalvi et al (2011). Observing desired counterfactuals makes lying easier
 - One versus three die rolls under a cup; report the highest number on the first roll
 - People who made three rolls report a higher number, and perceive lying as less unethical
- Observing other people acting dishonestly makes lying easier
 - Gino and Galinsky (2012). Taking the perspective of a person who acted selfishly leads to more selfish behavior. “Imagine and describe a typical day in his shoes, looking at the world through his eyes”
- People fail to anticipate that they trick themselves. Mazar et. al. (2008)

Some questions about lying

- What makes people lie?
 - Culture?
 - Incentives?
- Is cheating a “fast” or “slow”, in behavioral parlance?
- Are there distinct types in population, with respect to cheating proclivities? Or is tendency to cheat continuously distributed within population?
- What individual characteristics affect cheating? Are correlations stable across countries?
- Are limited and maximal lying same or different?
- Can cheating be changed (“nudged”) by changes in context?
- What rational models better describe cheating?

Cross-national differences in the way people cheat

- Gächter and Schulz (2016). Die roll in 23 countries; cheating is correlated with corruption and executive constraints
- Hugh-Jones (2016). Coin toss, 15 countries, honesty correlated with GDP before 1950
- Trust levels are obviously heterogeneous

And again I say to you, it is easier for a camel to go through the eye of a needle, than for a rich man to enter into the kingdom of God. (Gospel of Matthew 19:24)

- Piff and Robinson (2017). Higher social class has been associated with decreased attentiveness to others and less prosocial behavior
- Schurr and Ritov (2016). Cheating and competitive success
- Gino and Ariely (2012), Vincent and Kouchaki (2015). Perceptions of one's creativity
- Piff et. al. (2012). Perceptions of social class
- Gill, Prowse, and Vlassopolous (2013): Experiment, but no way to distinguish between limited and maximal cheating

Is cheating a national pasttime?

R. Duch (Oxford University), D. Larose (Universidad de Santiago),
A. Zakharov (HSE)

1032 total

- CESS lab in Oxford, 460 subjects
- CESS lab in Universidad de Santiago, 316 subjects
- EPEE lab at HSE, Moscow, 256 subjects
- Recruited through online announcements
- 51.5% male
- Median age is 22 years in UK and Chile, and 20 years in Russia

Our experiment

- We want to distinguish between limited and maximal cheating; both the true state and the decision are observable to the experimenter
- Do people consistently follow cheating strategies?
- How does cheating react to material stimuli?
- Is there a small number of behavioral types, or preferences are continuous?
- What are the correlates of cheating?
- Large number of subjects, several countries. Are the findings robust?

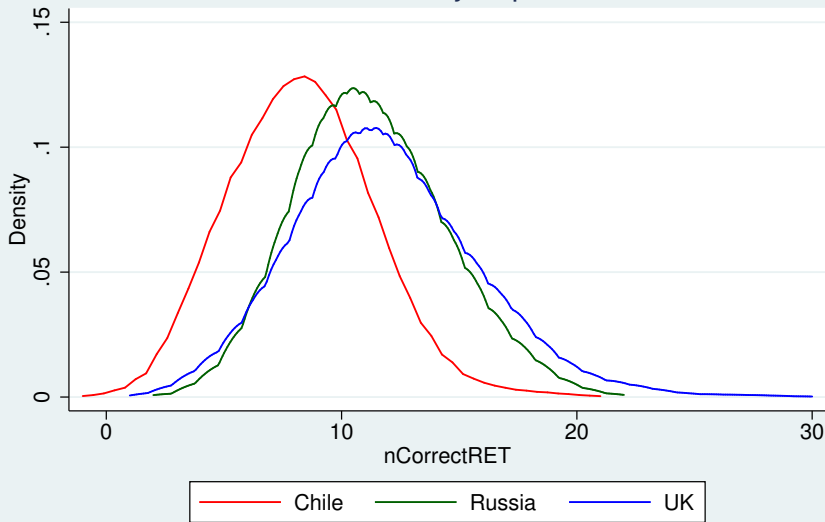
- 1 Dictator game: share 1000ECU between self and confederate
- 2 Real effort task
 - Subjects earn money by adding 2-digit numbers for 1 minute. 150 ECU per correct addition
 - Subject declares income, up to amount earned
 - A specified percentage of declared gains is deducted
 - Proceeds are redistributed within a group of 4
 - 10 rounds: No audit
 - 10 rounds: Positive audit probability (not used in this study)
- 3 Risk aversion test
- 4 Die tossing game
- 5 Questionnaire

- Deduction rate: 10, 20, or 30 percent
- Status: in each group, 2 subjects earn 100 ECU per task, 2 subjects earn 200 ECU
- Shock: With 50% probability, a subject gets a windfall income of 1300 ECU
- Non-fixed: Groups rematched every round

Treatments

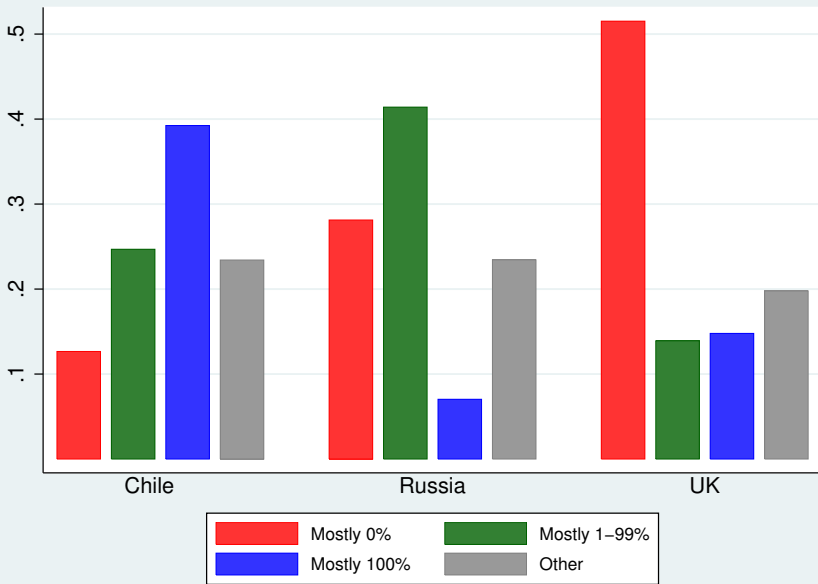
		10%		20%		30%		40%	
		Sess	Subj	Sess	Subj	Sess	Subj	Sess	Subj
Baseline	Russia	4	48	4	52	1	16		
Baseline	UK	3	72	3	64	2	44	1	20
Baseline	Chile	1	12	1	12	1	12		
Status	Russia	1	16	1	16	1	16		
Status	UK	1	24	2	28	1	20		
Status	Chile	1	16	1	16	1	16		
Shock	Russia	1	16	1	16	1	16		
Shock	UK	1	16	1	20	1	20		
Shock	Chile	1	16	1	20	1	16		
Non-fix	Russia	1	16	1	16	1	12		
Non-fix	UK	5	76	2	28	2	28		
Non-fix	Chile	4	80	3	52	3	48		
Total		24	408	21	340	16	264	1	20

Distribution of subject performance

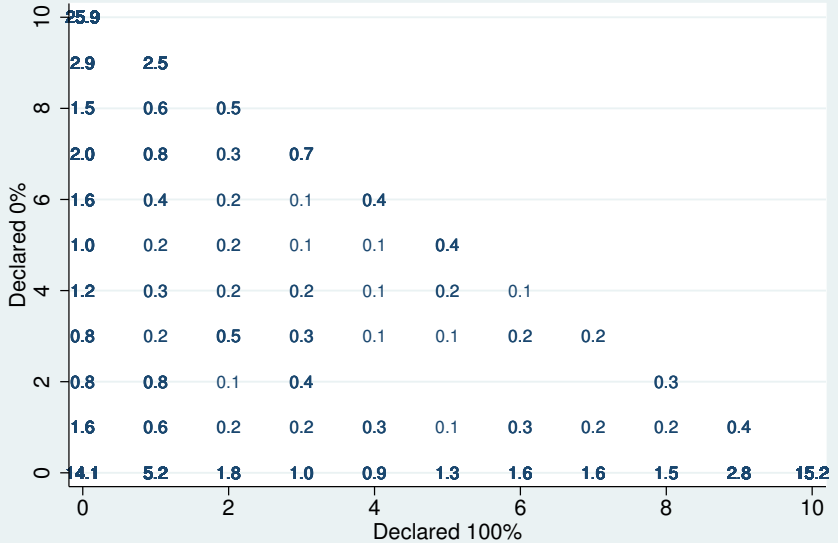


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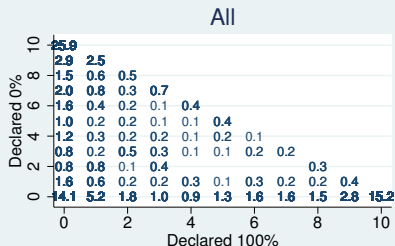
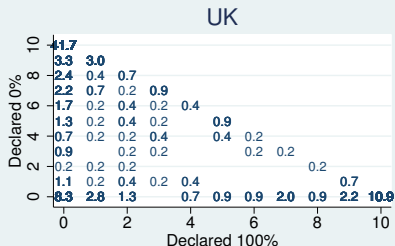
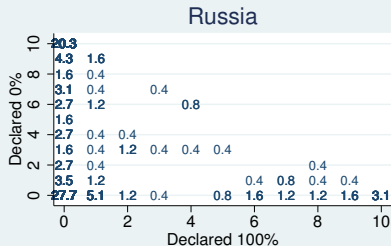
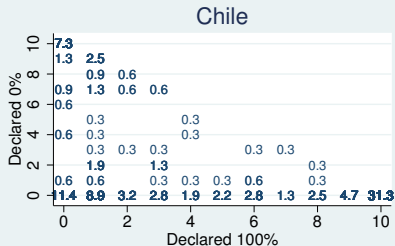
Results



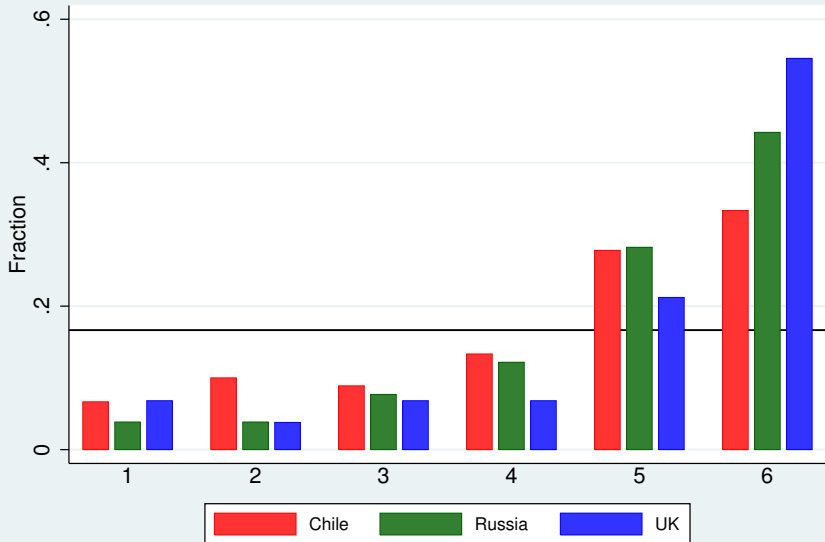
Frequency of declarations, %



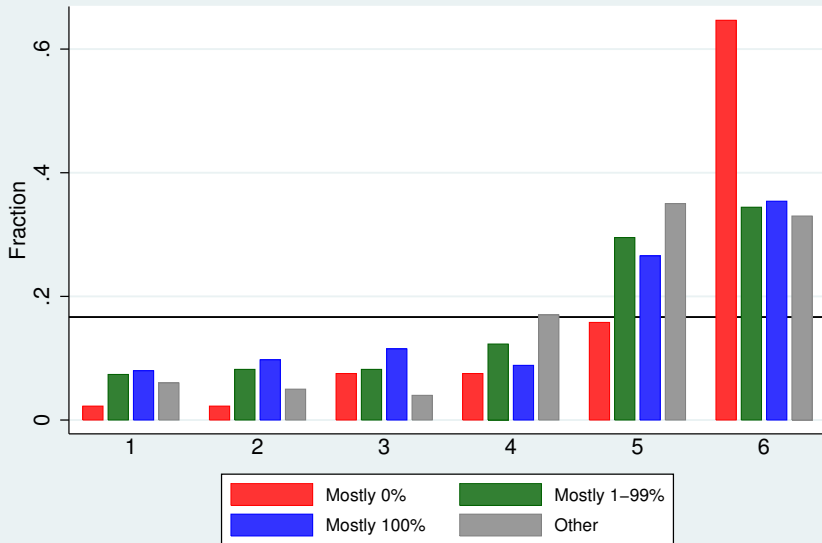
Frequency of declarations, %



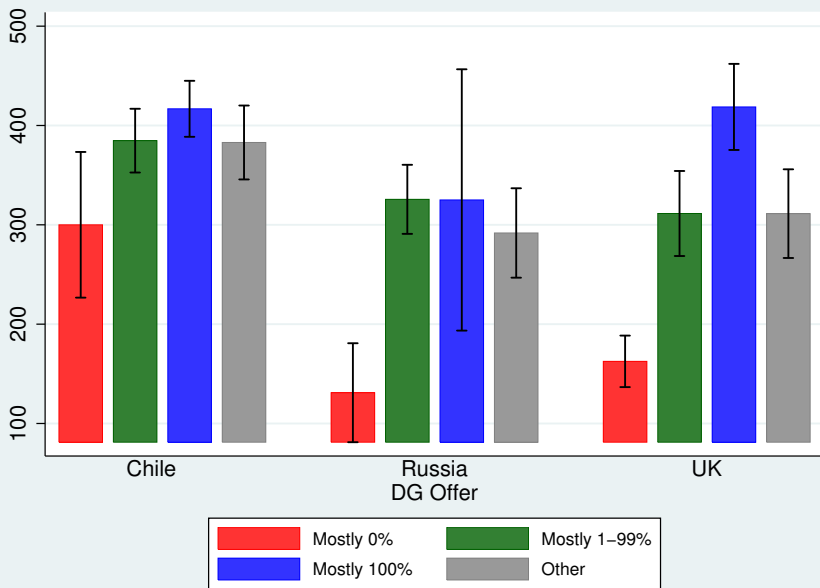
Die roll reported depending on country



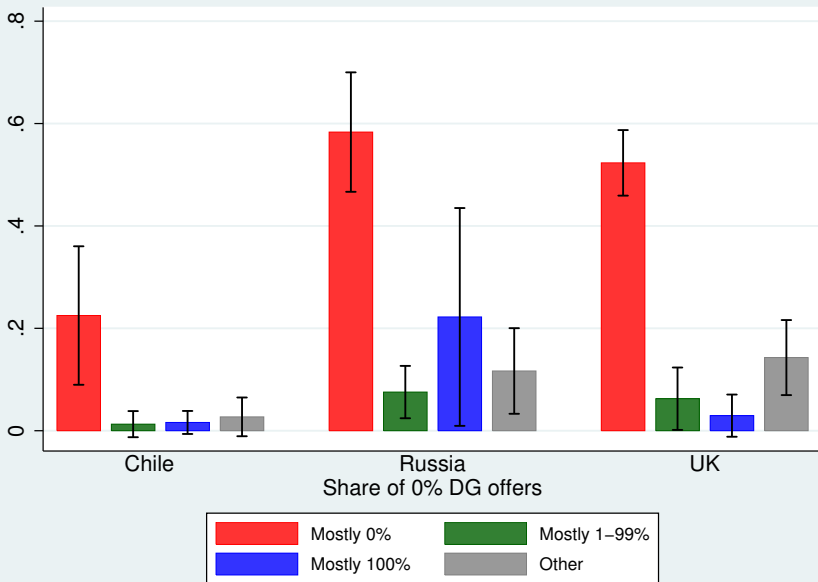
Die reported depending on participant declarations



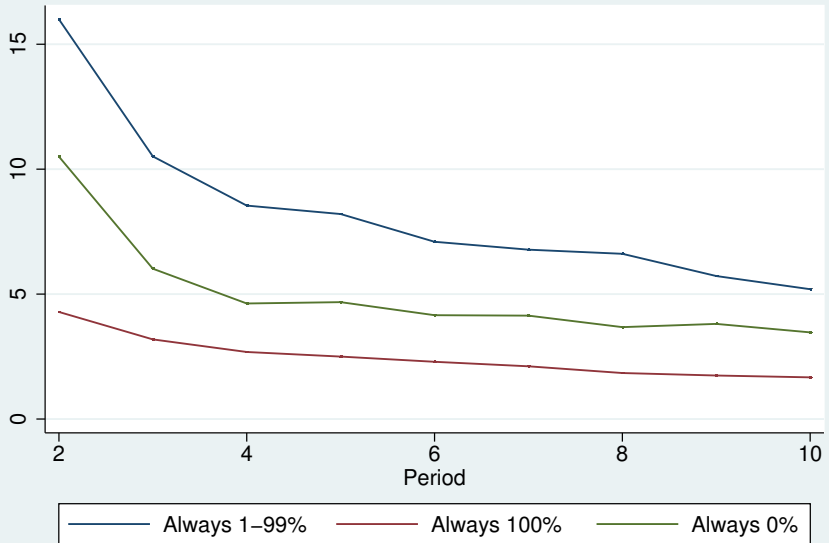
Dictator game



Dictator game

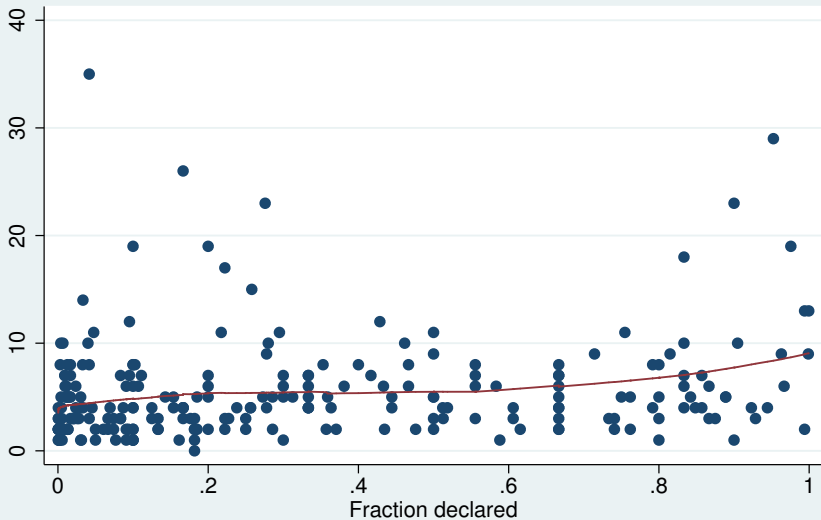


Mean RT for different groups of participants



Reaction time

RT in period 10 for limited cheaters

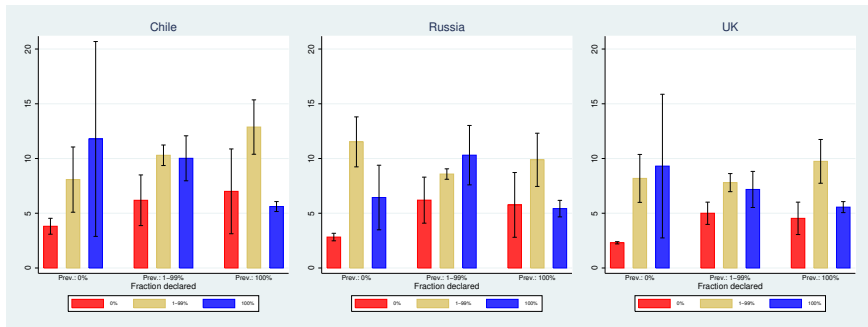


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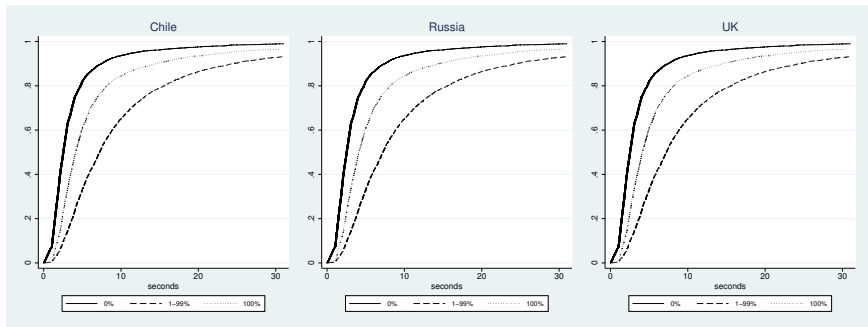
Interpreting the RT evidence

- 1 Decisions to declare 0 and 100% are “fast”, while intermediate decisions are “slow” or deliberative
 - Rubinstein (2007), Arad and Rubinstein (2012), etc
 - Longer decisions on more difficult tasks
- 2 RTs reflect preference intensity. Longer decisions involve decision conflict and/or indifference
 - May be a more relevant explanation for our case, because choice in our experiment is non-strategic
 - Diffusion model
 - Konovalov and Krajbich (2017), Clithero (2016)
 - Yamagishi et al (2017), Evans et al (2015). Very prosocial or antisocial choices involve longer RTs
- 3 Not necessarily mutually exclusive explanations. No unified theory at this point

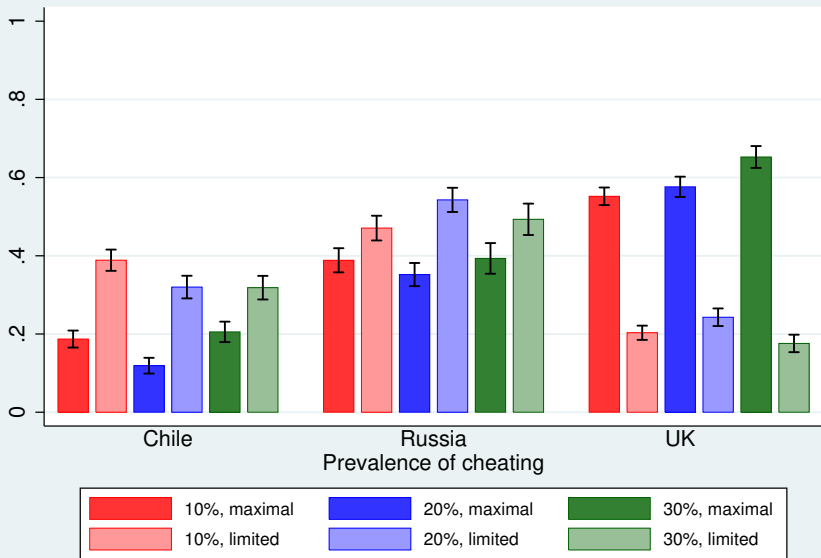
Reaction time



Reaction time

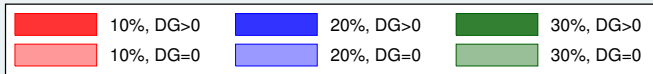
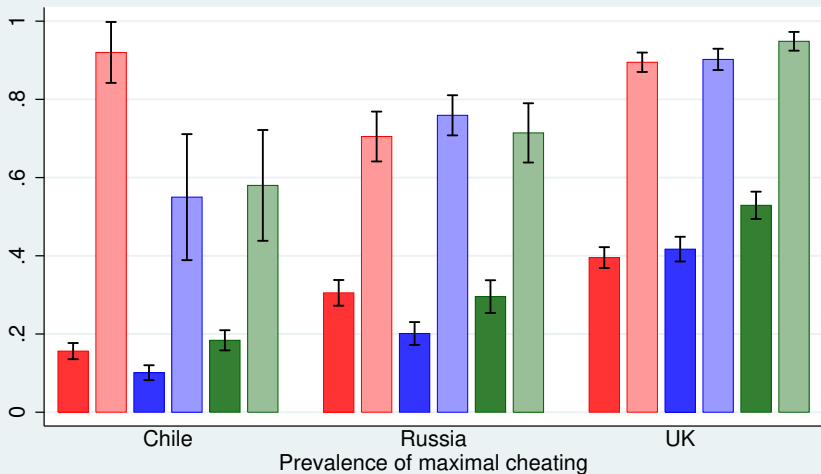


Cheating and deduction rate



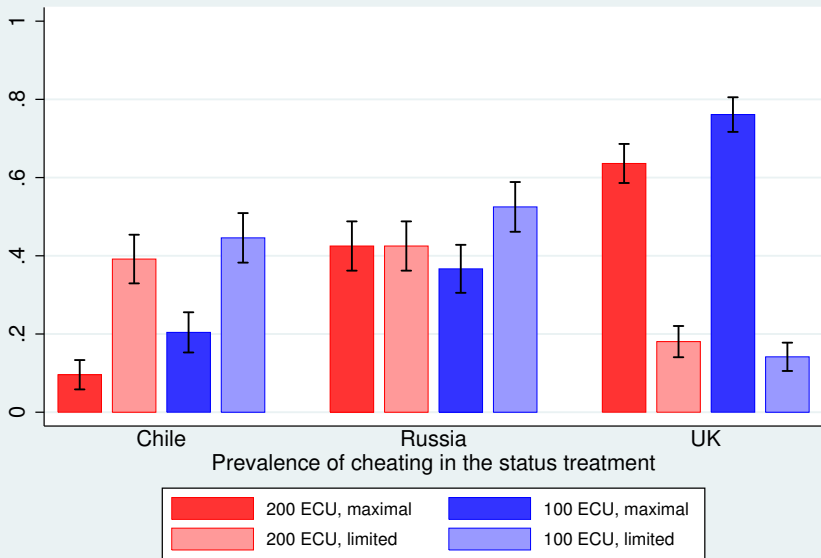
40% tax for UK not shown

Cheating and deduction rate



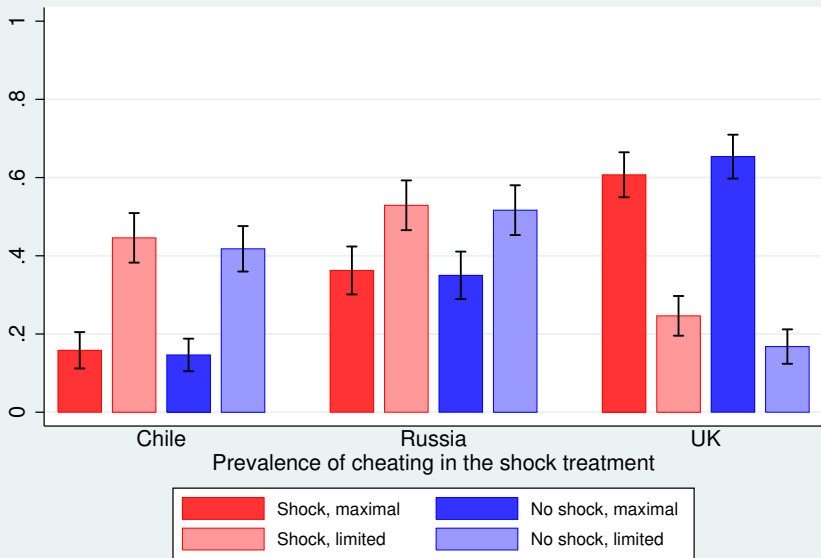
40% tax for UK not shown

Cheating and payoffs per task



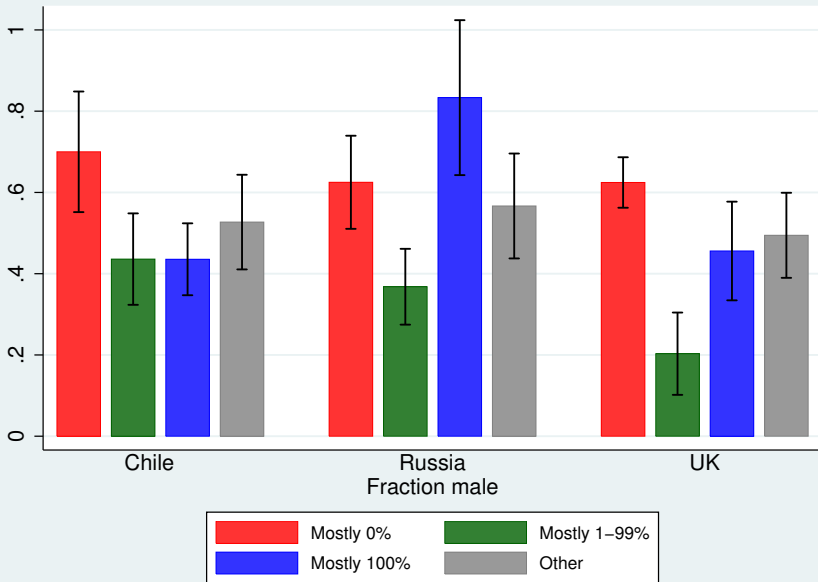
40% tax for UK not shown

Cheating and windfall income

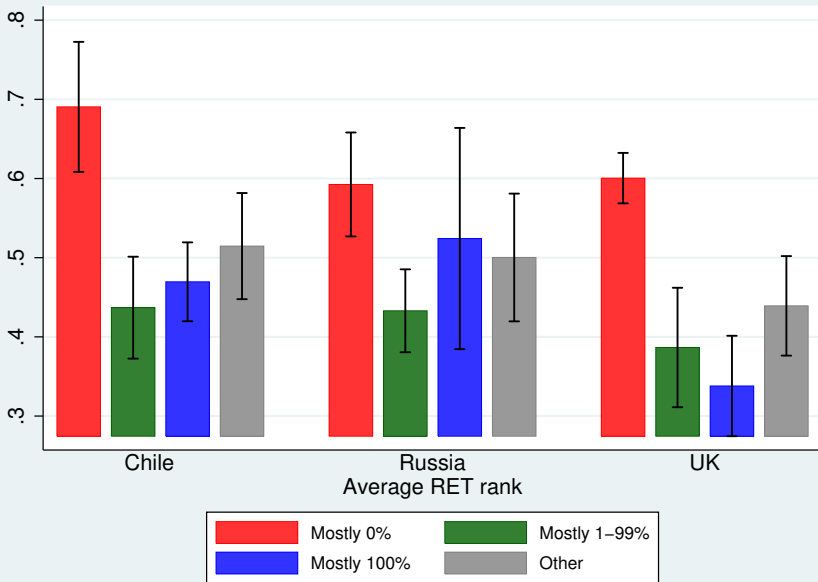


40% tax for UK not shown

Who cheats? Gender



Who cheats? Performance

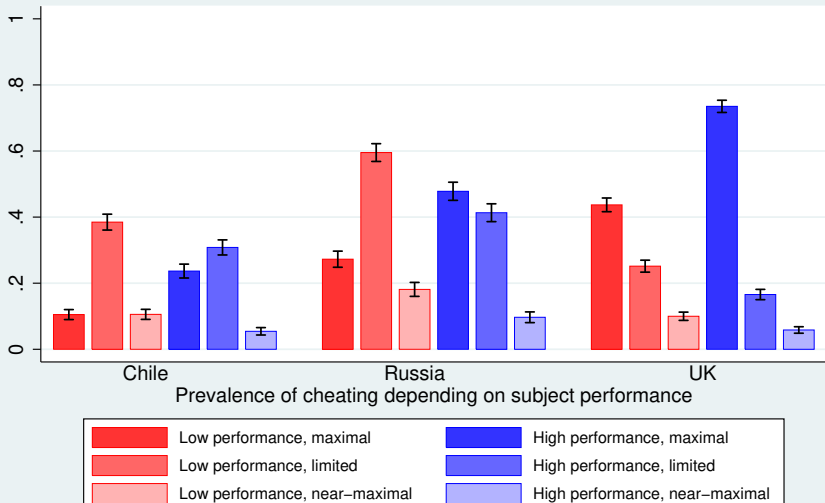


Robustness check: RET performance

	Chile	Russia	UK	All
tax_20	0.0564 (1.51)	0.0438 (1.12)	-0.0449 (-1.48)	0.0143 (0.71)
tax_30	0.00957 (0.25)	0.00126 (0.03)	-0.0478 (-1.48)	-0.0106 (-0.48)
Shock	0.0377 (0.63)	0.0242 (0.49)	0.0440 (1.08)	0.0274 (1.01)
Status, 200 ECU	-0.0418 (-0.58)	0.0797 (1.28)	0.0626 (1.28)	0.0288 (0.85)
Status, 100 ECU	0.0592 (0.82)	0.109 (1.75)	0.0325 (0.67)	0.0517 (1.54)
Non-fixed	0.0879 (1.74)	0.115* (2.34)	-0.0942** (-3.02)	0.0138 (0.61)
Constant	0.525*** (5.03)	0.477*** (3.45)	0.719*** (11.64)	0.686*** (13.04)
Observations	316	256	440	1012

t statistics in parentheses

Who cheats? Performance



40% tax for UK not shown

Who cheats? Performance

		1-1ECU	1-10ECU	1-20ECU	1-30ECU	1-40ECU	1-50ECU
Chile	Low	0.013291	0.029114	0.033544	0.041139	0.044937	0.048735
	High	0.006962	0.023418	0.024051	0.025316	0.025949	0.026582
	p	0.075742	0.317002	0.110754	0.013133	0.003914	0.001166
Russia	Low	0.014844	0.063281	0.078906	0.082812	0.084375	0.085938
	High	0.005469	0.027344	0.031250	0.032031	0.032031	0.032031
	p	0.018076	0.000013	0.000000	0.000000	0.000000	0.000000
UK	Low	0.008696	0.036957	0.050870	0.057391	0.059130	0.060869
	High	0.007826	0.025652	0.033913	0.037826	0.040435	0.043048
	p	0.744663	0.027759	0.004330	0.001840	0.003568	0.007136

Who cheats? Marginal effects

	0%		Intermediate		100%	
RET rank	0.289***	(7.31)	-0.117**	(-2.83)	-0.172***	(-4.32)
RET dev.	-0.00143	(-0.95)	0.00410*	(2.25)	-0.00267	(-1.70)
Male	0.0807***	(3.61)	-0.104***	(-4.52)	0.0236	(1.06)
Age	-0.00647**	(-2.85)	0.00343	(1.57)	0.00304	(1.59)
First period	-0.0602***	(-5.95)	0.0141	(1.23)	0.0461***	(4.42)
Add. period	0.0133***	(9.90)	-0.00926***	(-6.08)	-0.0041**	(-3.14)
OfferDG	-0.0006***	(-11.67)	0.00019***	(3.62)	0.0004***	(7.60)
Tax 20%	-0.0420	(-1.61)	0.0168	(0.63)	0.0252	(1.02)
Tax 30%	0.0209	(0.74)	-0.0232	(-0.81)	0.00226	(0.08)
Tax 40%	0.0218	(0.27)	0.0405	(0.49)	-0.0623	(-0.73)
Shock, yes	-0.0103	(-0.28)	0.0463	(1.18)	-0.0359	(-0.97)
Shock, no	0.00324	(0.09)	0.00579	(0.16)	-0.00903	(-0.24)
Status, 200	-0.0257	(-0.59)	-0.0131	(-0.29)	0.0388	(0.87)
Status, 100	0.0557	(1.35)	0.0165	(0.36)	-0.0722	(-1.58)
Non-fixed	0.0233	(0.83)	-0.0439	(-1.46)	0.0206	(0.74)
Russia	0.136***	(4.11)	0.133***	(4.29)	-0.269***	(-8.41)
Oxford	0.297***	(11.30)	-0.143***	(-5.02)	-0.154***	(-6.75)
Observations	10318		10318		10318	

Clustered SE

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Performance and die game

	1	2	3	4	5	6
All	0.0266 (0.68)	-0.00927 (-0.23)	-0.0182 (-0.40)	-0.0283 (-0.55)	0.00766 (0.11)	0.0310 (0.39)
Observations	468	468	468	468	468	468
Chile	0.0550 (0.79)	-0.00203 (-0.03)	-0.0792 (-1.00)	-0.0720 (-0.79)	0.322** (2.75)	-0.218 (-1.76)
Observations	180	180	180	180	180	180
Russia	-0.0490 (-0.86)	-0.0404 (-0.72)	0.0436 (0.58)	0.0260 (0.29)	-0.00465 (-0.04)	0.0301 (0.23)
Observations	156	156	156	156	156	156
UK	0.0426 (0.51)	0.0297 (0.50)	-0.0141 (-0.17)	-0.0493 (-0.53)	-0.473** (-3.15)	0.375** (2.58)
Observations	132	132	132	132	132	132

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Do people know they are better performers?

In the Non-fixed treatment, people were incentivised to predict their rank in the group (1-4)

Predicted rank	Average RET rank (sd)	<i>n</i>	<i>p</i>
1	.645(.291)	73	.0038
2	.521(.260)	107	.0297
3	.422(.314)	70	.0029
4	.254(.192)	22	

What else?

- In Russia and UK, there is some evidence of value contagion
 - If I observe higher declared income by the other group, I am less likely to cheat maximally (3% and 1% per sd)
 - No effect on limited cheating
- Cheating is more likely in later periods
- Cheating is highly dependent on previous period's actions
- Cheating costs have a unimodal distribution

A structural model

Let y_i be income and $f_i \in [0, 1]$ share of income declared. Let individual utility be

$$U_i = y_i(1 - f_i t) + \frac{t}{4} y_i f_i + \frac{t}{4} \sum_{j \neq i} y_j f_j - C(f_i, y),$$

where

$$C(f, y) = \begin{cases} 0, & f \geq \bar{f} \\ \bar{c} y (\bar{f} - f), & f < \bar{f} \end{cases}$$

is the cost function. Here \bar{f} is the self-deception threshold.

A structural model

Let

$$\bar{c}_i = \lambda_{i1} \exp(\alpha_1 + \beta_1 X_i).$$

Here X_i is a vector of individual covariates and λ_i is an exponentially distributed random variable whose value is known by the individual but not by the outside observer. The values α_1 and β_1 are parameters that determine the distribution of the marginal cost of cheating for a person with a given X_i .

$$P_{1i} = P(\bar{c}_i < 0.75t) = 1 - \exp(-0.75t \exp(-\alpha_1 - \beta_1 X_i))$$

is the probability of maximal cheating. Also assume that

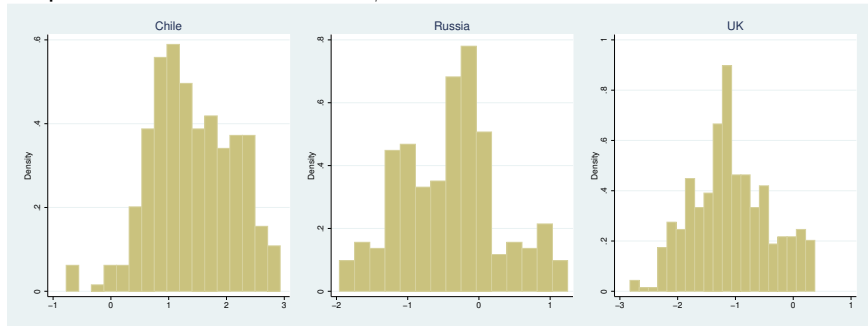
$$P_{2i} = \frac{1}{1 + \exp(-\alpha_2 - \beta_2 X_i)}$$

is the probability that $\bar{f} < 1$.

If $\bar{f}_i < 1$, the self-deception threshold is drawn from a Beta distribution with the first parameter $a_i = \exp(\alpha_3 + \beta_3 X_i)$ and the second parameter $b = 1$. The expected value of \bar{f}_i will be equal to $\frac{a_i}{a_i+1}$, so higher values of a_i imply self-deception of a smaller magnitude.

A structural model

Empirical distribution of $\hat{\alpha}_1 + \hat{\beta}_1 X$ for the first round



This distribution is unimodal according to the Hardigan dip test.

Thank you!