

Andrea Martinangeli  
Lisa Windsteiger

# Cheating Responses to Tax Evasion

---

Max Planck Institute for Tax Law and Public Finance  
Working Paper 2022 – 07

June 2022



Max Planck Institute for  
Tax Law and Public Finance

Department of Business and Tax Law  
Department of Public Economics

<http://www.tax.mpg.de>

Working papers of the Max Planck Institute for Tax Law and Public Finance Research Paper Series serve to disseminate the research results of work in progress prior to publication to encourage the exchange of ideas and academic debate. Inclusion of a paper in the Research Paper Series does not constitute publication and should not limit publication in any other venue. The preprints published by the Max Planck Institute for Tax Law and Public Finance represent the views of the respective author(s) and not of the Institute as a whole. Copyright remains with the author(s).

Max Planck Institute for Tax Law and Public Finance  
Marshallplatz 1  
D-80539 Munich  
Tel: +49 89 24246 – 0  
Fax: +49 89 24246 – 501  
E-mail: [ssrn@tax.mpg.de](mailto:ssrn@tax.mpg.de)  
<http://www.tax.mpg.de>

# Cheating Responses to Tax Evasion

Andrea F.M. Martinangeli\*      Lisa Windsteiger†

This draft: May 31, 2022

## Abstract

We explore cheating behaviours in a die roll task in response to information about tax malpractice in Italy using a survey experiment on a representative sample of the Italian population. We thus generalise laboratory findings on conditional behaviours (cooperation, cheating) to uncover their real-world bearing in the context of tax compliance. Cheating is strongly conditioned on information about tax malpractice, as is the perceived tax compliance norm. We uncover asymmetries along the income gradient: Conditional cheating responses are driven by information about tax malpractice on behalf of top income earners, while perceived tax compliance norms are driven by information about tax malpractice among low income earners.

**JEL classification Codes:** D01, D31, D63, H23, H26

**Keywords:** Tax evasion, tax avoidance, conditional cooperation, cheating, survey experiment

**Acknowledgments:** We are extremely grateful to Ingvild Almås, Pierluigi Conzo, Mylène Deloule, Marco Faravelli, Roberto Hernan-Gonzales, Martin Kocher, Philipp Lergetporer, Sarah Necker, Andreas Peichl, Anasuya Raj, Sven Arne Simon, Sevgi Yüksel and our colleagues at the MPI for Tax Law and Public Finance for valuable comments and feedback at various stages of this project. Fruitful discussions during seminars at the Burgundy School of Business greatly benefited this work. Stefan Bruckmeyer, Nicole Stefan and Maximilian Worbs provided excellent research assistance. We acknowledge financial support by the Max Planck Society.

**Conflicting Interests:** None

**Ethics Clearance:** Ethics Council of the Max Planck Society, Decision nr. 2020-29

**Pre-Registration:** AEARCTR-0005459

---

\*CEREN EA 7477, Burgundy School of Business, Université Bourgogne Franche Comté, Dijon, France; [andrea.martinangeli@bsb-education.com](mailto:andrea.martinangeli@bsb-education.com)

†Max Planck Institute for Tax Law and Public Finance. [lisa.windsteiger@tax.mpg.de](mailto:lisa.windsteiger@tax.mpg.de)

---

# 1 Introduction

That individuals condition their behaviours on those of others is a well known fact. This simple yet powerful intuition constitutes the essence of well-documented phenomena shaping the way in which people behave in society, from cooperating insofar and inasmuch as others cooperate in turn (e.g. Fischbacher et al., 2001) to following understood or inferred norms of behaviour (e.g. Bicchieri, 2010; Krupka and Weber, 2013). The power of this principle is evident in that it has been, in the past few decades, harnessed by policy design aimed at encouraging individuals to conform to or distance themselves from those of others (for instance, Thaler and Sunstein, 2009; Allcott, 2011).

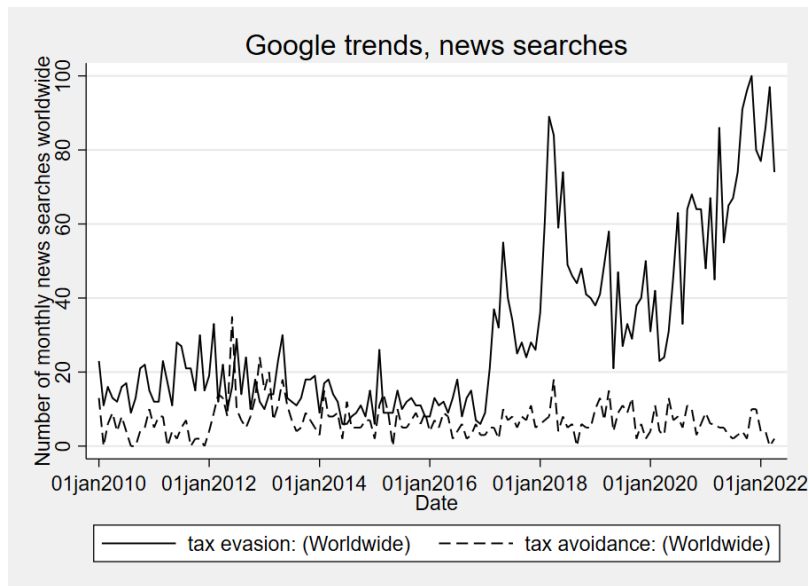
In light of the strong impact of others' behaviours on individuals' choices, we ask what effect high-visibility and high-impact information about antisocial and unethical behaviours is likely to have on individuals' propensity to act unethically. Specifically, we run a large-scale population representative experiment to investigate individuals' behavioural responses to information about tax malpractice, one of the protagonists of news reporting since at least the first "Panama Papers" leaks in 2016.<sup>1</sup> By shining a light on tax evasion and avoidance via international tax havens, these events have dramatically increased the salience of tax malpractice in the past decade (e.g. Garside, 2016). Figure 1 testifies to the increased interest in the topic by displaying the Google Trends worldwide time series of monthly news searches (between January 2010 and April 2022) with keywords "tax evasion" and "tax avoidance".<sup>2</sup> The accumulated evidence about the power of (information about) peers' behaviours in shaping individuals' actions suggests that such heightened news, social and political focus might erode beliefs (both normative and empirical) about the incidence of tax malpractice in society, and thus translate into an increased propensity to engage in antisocial tax practices.

Tax morale has in fact a strong conditional nature: A large number of individuals are each called upon to contribute their share in the provision of public goods. It is then only natural that each individual will evaluate the group's behaviour (factual or perceived) before deciding how to act themselves. This behavioural conditionality works via at least two channels: i) The cooperation component, whereby individuals choose whether to cooperate or not with others in the public's interest, and ii) that of compliance, whereby individuals choose whether or not to comply with the formal or informal rules regulating tax administration. Conditional cooperation (see e.g. Fischbacher et al., 2001; Frey and Meier, 2004; Frey and Torgler, 2007; Kocher et al., 2008; Martinsson et al., 2013; Rockenbach et al., 2021; Martinangeli, 2021) has been argued to constitute an important driver of tax compliance: In a multi-country investigation Frey and Torgler (2007) find for instance tax morale to be negatively associated with the perceived extent with which taxes are evaded in one's

---

<sup>1</sup>We will use the term "tax malpractice" in reference to any unethical or antisocial behaviours in tax compliance of either illegal (tax evasion) or legal though condemnable (tax avoidance) nature.

<sup>2</sup><https://trends.google.com/trends/?geo=FR>



**Figure 1:** Google trends time series of monthly news searches with keywords “tax evasion” and “tax avoidance”.

own country, with evidence hinting at a causal link between the two.<sup>3</sup>

The second component of tax morale, the propensity and willingness to engage in cheating behaviours (e.g. misreporting, hiding or shifting income), also incorporates a strong conditional element. Information about the dishonesty of others has been repeatedly shown to increase individuals’ propensity to act dishonestly in turn by conveying information about the underlying norms regulating behaviours (e.g. Gino et al., 2009; Rauhut, 2013; Diekmann et al., 2015; Kroher and Wolbring, 2015; Isler and Gächter, 2022).

It is hence imperative to uncover the fall-out of tax malpractice and of the widespread dissemination of information about it, and to hence gain an insight into the breadth of their consequences on the social fabric: On its behaviours, but also on its perceptions of the norms regulating them and on the propagation of unethical, antisocial and uncooperative practices.

Because unethical practices in tax compliance are most profitable and common among the highest income earners (Alstadsæter et al., 2019), news reporting on the topic has naturally mainly been centred on the upper end of the income distribution. Tax malpractice on behalf of the upper echelons of our societies has thus received greater resonance and political and popular interest than tax dishonesty on behalf of the lower portions of the income distribution. Such one-sided focus might well be consequential for the behavioural responses to tax malpractice throughout society.

<sup>3</sup>See also Traxler (2010).

---

Previous economic investigations on conditional behaviours are, to the best of our knowledge, silent on whether the impact exerted by the actions of peers would differ according to their income. A long-standing literature in evolutionary psychology and biology has however established that high status individuals are capable of, for instance, altering the cognitive mechanisms of onlookers. These processes make high status individuals more capable of attracting others' attention and of influencing their actions (e.g. Henrich and Gil-White, 2001; Zitek and Tiedens, 2012; Koski et al., 2015). In economics, recent evidence has emerged showing that "richer" individuals trigger stronger conditional responses in others' prosociality (Martinangeli, 2021; Rockenbach et al., 2021), and are, broadly speaking, more influential on others' personal choices (Martinangeli and Meiske, 2021). Building on these findings, we hypothesize that conditional responses to tax malpractice might be asymmetric over the income gradient of the perpetrators. That is to say that (information about) tax malpractice occurring at the top and at the bottom of the income distribution might obtain different effects on individuals' behaviours.

As mentioned above, exposure to information about tax malpractice might shift both individuals' beliefs about the incidence of these behaviours and their perceptions about the social norms surrounding it. We thus collect our respondents' *prior* and *posterior* beliefs about the phenomenon of tax malpractice. We use these beliefs to investigate whether any behavioural conditionality uncovered can be explained by a shift in individuals' beliefs about others' actions. To gain an insight into the shift in norm perceptions, a second potential mechanisms for our results, we elicit our participants' perceptions of the tax compliance norm using a variant of the Krupka and Weber method (Krupka and Weber, 2013) measuring perceived norms at population level. Specifically, we ask the participants to make an incentivised guess of the modal appropriateness rating assigned to the practice of tax evasion by the respondents in the 5th wave World Value Survey in Italy (Inglehart et al., 2014). Higher values stated as their guess by our respondents are unequivocal evidence of a weaker perceived tax compliance norm.

We broaden up our insight into the societal consequences of information about tax malpractice by investigating whether they induce changes in subjective levels of generalised social trust and worldviews on wealth and wealth accumulation. The incidence and extent of antisocial behaviours might in fact affect individuals' willingness to trust others in society to do their share in the pursuit of social welfare, and beliefs and attitudes over the social and personal forces driving wealth accumulation (honest work or treachery) and the role of the formal institutions in regulating over distributional concerns.

To pursue this investigation, we adopt a large-scale experimental approach to circumvent the pitfalls of investigating behavioural responses to tax compliance in natural settings (Falk and Heckman, 2009), namely i) the lack of credible exogenous variation in visible peer behaviours, and ii) the likely strong response biases induced by the investigation of a sensitive topic like tax malpractice. The experimental paradigm allows us in fact to observe direct responses to exogenously induced variation in information about the incidence of tax compliance, and hence to uncover the causal effect of information about tax malpractice on

---

our respondents' behaviour. Truthful reporting of actual behaviours and attitudes in the tax domain is hard (if not impossible) to obtain, and is ridden with systematic confounds and biases (such as social desirability or self-image concerns) posing serious threats to the validity of the results. Further complicating the matter, behaviours in the tax compliance domain can hardly be incentivised within the framework of a research design.

For this reason, we resort to studying conditional cheating responses proxied by a cheating-towards-the-experimenter task à la Fischbacher and Föllmi-Heusi (2013) and Kocher et al. (2018). Specifically, in the course of our survey respondents randomly get to see one of six videos showing the outcome of a die roll. Mimicking a die roll in real life, outcomes range from one to six and appear with probability 1/6 each. Respondents are informed that they can earn extra payment if the outcome is (correctly or wrongly) reported to be a six.

Cheating behaviours and honesty are widely studied not only because of their intrinsic interest, but also because of their economic and distributional consequences on real world outcomes and their implications for real world phenomena, including tax malpractice. The cheating paradigm sheds light on the behavioural consequences of tax dishonesty in the compliance domain, and offers a generalisation of the findings of the vast cheating literature and their application to the real world scenarios they address.<sup>4</sup> In summary, this study allows us to study, within a broader paradigm, behaviours typically observed in laboratory environments, to generalise those findings to the general population, and to uncover their real-world bearing and consequences in the domain of tax compliance. We run our experiment on a sample of slightly more than 4500 individuals representative of the Italian adult population along the gender, income, age and geographic dimensions.

We find that cheating rates increase significantly whenever tax malpractice is presented as more severe among high income than low income individuals. Instrumenting the change in participants' posterior beliefs with the experimental conditions and the perception gap between prior beliefs and the information provided, we find that greater posterior beliefs about tax malpractice among top incomes increases the propensity to cheat, while increases in posteriors about tax malpractice among low incomes has no significant effect. Moreover, we observe that the tax compliance norm is perceived as *stronger* whenever low income earners, the largest among the two groups, are presented as engaging in *less severe* tax malpractice. An instrumental variable analysis of posterior beliefs relying on the exogenous information conveyed by our experimental conditions reveals that: i) posterior beliefs about tax malpractice at the lower but not at the upper end of the distribution drive norm perceptions among low income earners; ii) social trust declines significantly across the entire sample with posterior beliefs about tax malpractice at the top of the income distribution, though iii) posteriors about tax malpractice at the bottom of the income distribution decrease social trust only among high income earners.

Section 2 illustrates the experimental strategy, the sample and the implementation, Section 3 describes our hypotheses and the empirical analysis, Sections 4 and 5 present the results

---

<sup>4</sup>See Jacobsen et al. (2018) for a review of the literature.

---

while Section 6 discusses and concludes.

## 2 Experimental strategy

The experimental component of our research design consists of the random provision of information about the estimated incidence of tax malpractice in Italy to subgroups of a representative Italian online survey panel. We systematically vary whether respondents receive high vs. low estimates of tax malpractice in lower vs. higher portions of the income distribution.

To construct our information intervention, we first collected data from a survey of economists based in Italian research departments (our “economists survey” henceforth). The purpose of this survey was that of allowing us to construct information conditions for our experiment which are grounded on the opinions we actually collected from economists. We were able to contact via email 470 out of the top 500 leading economists according to the RePEc ranking list on the 11th of November 2019.<sup>5</sup> We provided them with a link to an anonymous Qualtrics survey we had designed specifically for this purpose, in which we asked them for their personal estimate of the share of total income that remains undeclared by each of the income quintiles of the Italian income distribution, and by the top 10% and 1% income earners.<sup>6,7</sup> We then grouped the responses obtained according to whether they provide relatively high or low estimates of the share of undeclared income for the bottom quintile and the top 10% of income earners. The range of variation in estimated undeclared income is then used to construct the information conditions we provided to the respondents of the main survey. Specifically, to construct a *high* (respectively, *low*) estimate of undeclared total income for a given income quantile we take the mean of the estimates provided by the group of experts estimating a share of undeclared total income *above* (*below*) 50% for that quantile, as summarised in Table 1. This strategy allows us to truthfully inform the respondents that “some of” the surveyed economists estimate that the “bottom” and “top” income earners do not declare the computed average shares of their total income. Crucially, as we provide our respondents with information about estimated undeclared total income for both top and bottom income earners, we ensure that both estimates originate from the same group of experts. As will be clear from what follows, our information conditions cover all configurations of high and low estimates for top and bottom income earners.<sup>8</sup>

The average estimated shares differ across the subgroups of experts. As can be seen from Table 1, however, all high estimates are clustered between 61 and 66%. Similarly, all

---

<sup>5</sup><https://ideas.repec.org/top/top.italy.html#authors>

<sup>6</sup>The response rate was approximately 22% after running our experts survey for three days (i.e. on the 14th of November 2019), totalling 105 responses over 470 contacted economists. We used these responses to construct our information conditions.

<sup>7</sup>The survey can be found here: [https://taxmpg.eu.qualtrics.com/jfe/form/SV\\_8k9ICdH0fLhkKIB](https://taxmpg.eu.qualtrics.com/jfe/form/SV_8k9ICdH0fLhkKIB).

<sup>8</sup>We carefully specify in the survey that the information provided originates from a subset of a number of interviewed experts.



---

the low estimates are clustered between 23 and 28%. Therefore, in order to provide all respondents with identical information about high and low estimates, we inform them that the estimated share of undeclared total income is “more than half (around 65%)” or “less than half (around 25%)”.

## 2.1 Sample, sample size and power

We ex-ante aimed at collecting responses from 800 individuals per information condition, totalling 4000 respondents, from a representative sample of the Italian population (representative with respect to gender, age and income). The panel, the distribution of the survey and the payments were administered by the survey company Respondi.<sup>9</sup> As further detailed in our pre-registered analysis plan, we restrict our investigation to respondents who had an opportunity to cheat on their reporting task (i.e., their random draw would yield no additional payoff to them unless they falsely report the winning outcome). As the winning outcome occurs with a probability  $p=1/6$  we obtain an expected sample size per condition of  $5/6 \cdot 800 = 666$  respondents with an opportunity to cheat (since only those respondents who do not see the die roll video with outcome six can cheat to receive the extra payment).

Ex-ante power computations (referring to pairwise comparisons of cheating rates across information conditions) yield a minimum detectable upward effect size in cheating behaviour (proportion of winning outcomes reported) of  $\delta=0.07$  over an assumed baseline proportion  $b=0.5$  at power  $\pi=0.8$ .<sup>10</sup>

We collected 4539 complete responses.<sup>11</sup> Once we exclude the respondents who did *not* have an opportunity to cheat, our analysis sample consists of 2487 individuals *excluding* the neutral condition.

## 2.2 Information conditions

We randomly assign the respondents to one of 5 information conditions in a 2x2+1 design. In addition to our four main experimental conditions, we include a “neutral condition” in which respondents read a neutral sentence only generically referring to tax malpractice.<sup>12</sup> The other conditions vary whether respondents are informed about:

---

<sup>9</sup><https://www.respondi.com/EN/>

<sup>10</sup>Notice that the above assumed baseline proportion allows us to be as conservative as possible in our power computation, as it is the one associated with the largest variance. Fixing the effect size, the resulting power increases for more extreme values of the baseline proportion (or equivalently, the minimum detectable effect decreases for power fixed at  $\pi=0.8$ ).

<sup>11</sup>Our results are robust to the exclusion of the fastest and slowest 5% responses.

<sup>12</sup>We purposefully avoid using the terms “evasion” or “avoidance”, as we do not wish to restrict our investigation to either of the two, nor do we wish to force our respondents to take a stand on the legal or moral dimension of the two practices. Our wording allows instead respondents to freely interpret our information in either way and without any consequence on our research objectives.

- 
1. a *high* estimated share of undeclared income among both the *top* ( $10^{\text{th}}$  decile) and *bottom* ( $1^{\text{st}}$  quintile) income earners (Condition *HH*),
  2. a *high* and a *low* share among respectively *top* and *bottom* income earners (Condition *HL*),
  3. a *low* and a *high* share among respectively *top* and *bottom* income earners (Condition *LH*),
  4. a *low* estimated share among both the *top* and *bottom* income earners (Condition *LL*)

The expert survey data used to generate the information conditions is presented in Table 1.

Subgroup of surveyed experts	Quantile	Estimated share of undecl. total income	Mean in subgroup	Resulting condition
Subgroup 1:	Top 10%:	> 50%	61.14	Condition HH
	First quintile:	> 50%	62	
Subgroup 2	Top 10%:	> 50%	62.19	Condition HL
	First quintile:	< 50%	25.14	
Subgroup 3	Top 10%:	< 50%	27.28	Condition LH
	First quintile:	> 50%	66	
Subgroup 4	Top 10%:	< 50%	25.63	Condition LL
	First quintile:	< 50%	23.24	

**Table 1:** Shares of total income undeclared by the first quintile and top decile of income earners in Italy estimated by the surveyed experts.

The experimental information is conveyed to the respondents by means of video clips which they visualise in the course of the survey. Stills of the clips are provided in Figures D3 to D7 in Appendix D.

Each of the videos begins with a statement concerning how tax malpractice is a topic recurrently discussed in the media. Only the video for the Neutral condition then continues immediately with an invitation for the respondent to proceed with the survey. All the other videos inform our respondents of the estimated incidence of tax malpractice among top and bottom income earners as described above.

In all information conditions the order in which information about top and bottom income earnings is presented is randomised to control for order effects. Moreover, immediately after having viewed the video clips, respondents are asked to restate the information just received, and must do so in order to proceed with the questionnaire. They are in this case

---

given the opportunity to re-play the video. This way, we both ensure that any inattentive respondents will be pushed to go back to the videos, and we obtain information to be used as a manipulation check.

**Condition Neutral** The information provided in the Neutral condition only generically refers to tax malpractice without making reference to its estimated incidence in the population (see Appendix D for screenshots of the experimental conditions).

**Condition HH** Figure D4 in Appendix D displays the information given to the respondents assigned to Condition HH. This group of respondents are presented with estimates that among top and bottom income earners “more than half (around 65%) of total income remains undeclared”. We randomised the order of presentation to control for order effects.

**Condition HL** Figure D5 displays the information given to the respondents assigned to Condition HL. This group of respondents are presented with estimates that among top income earners “more than half (around 65%) of total income remains undeclared”, and that among bottom income earners “less than half (around 25%) of total income remains undeclared”. We randomised the order of presentation to control for order effects.

**Condition LH** Figure D6 displays the information given to the respondents assigned to Condition LH. This group of respondents are presented with estimates that among top income earners “less than half (around 25%) of total income remains undeclared”, and that among bottom income earners “more than half (around 65%) of total income remains undeclared”. We randomised the order of presentation to control for order effects.

**Condition LL** Figure D7 displays the information given to the respondents assigned to Condition LL. This group of respondents are presented with estimates that among top and bottom income earners “less than half (around 25%) of total income remains undeclared”. We randomised the order of presentation to control for order effects.

## 3 Empirical strategy

### 3.1 Outcome variables

Our primary outcome of interest is the relationship between cheating behaviours and our information conditions. Following a large body of recent literature, our behavioural outcome variable measures cheating behaviours towards the experimenter (e.g. Fischbacher and Föllmi-Heusi (2013), Kocher et al. (2018)): After receiving one of the above described information treatments, the respondents have to report the outcome of a “lottery” visualised on screen. The video displays the outcome of a six-faced fair die roll. Respondents

---

are asked to report the visualised outcome and are informed that in case the reported outcome of the die roll is the number “6”, they will receive an additional payment of 25 Points (one-third of the baseline participation payment), while any other reported outcome will result in no additional payment.<sup>13</sup> As the additional payment is conditional on the self-reported outcome of the die roll, respondents have a clear incentive to misreport the outcome. The distribution of reported outcomes can be ex-post contrasted with the implemented distribution of outcomes displayed (i.e. that of a roll of a fair die) such that the incidence of cheating can be measured and compared across conditions. As we know which outcome was displayed on video, we can detect cheating at the individual level.<sup>14</sup> We can thus construct an indicator taking value 1 if the respondent has cheated and zero otherwise, given that an opportunity to cheat existed (i.e. the displayed outcome of the die roll was not 6). The following text is displayed to the respondents (translated from Italian):

*“The video displayed just above was randomly selected by the software among six videos displaying the six possible outcomes of the roll of a six faced die.  
The outcome that you can see is therefore obtained as if a die had been actually rolled. You can watch the video again if you wish.*

*Your task is to tell us the result of the die roll.*

***You will earn 25 additional points if you tell us that the outcome is 6.***

*You will not earn additional points if you tell us that the outcome is not 6.*

*What is the outcome of the die roll?*

Further, we elicit norm shifts along the lines of Krupka and Weber (2013) by asking respondents to guess (against additional payments) the modal rate of agreement/disagreement to questions on the appropriateness of questionable behaviours (tax evasion, claim of underserved benefits, free riding on public transport and bribery) elicited in the World Values Survey for Italy, wave 2005. For exact guesses, the respondents receive an extra monetary incentive equal to 15 points (one-fifth of the fixed participation payment).

Finally, we elicit the respondents’ unincentivised opinion of commonly debated topics of general interest: whether wealth can be accumulated only at others’ expense, the value of hard work for life success, the importance of redistribution, generalized trust, the likelihood of being exploited by others and the appropriateness of current personal and general tax burden in Italy.

---

<sup>13</sup>The survey company we hired remunerates their panel in Points, where 1 Point=1 Euro cent.

<sup>14</sup>We emphasize at the beginning of the survey that we collect only anonymous data.

---

## 3.2 Covariates

We elicit the respondents' standard socio-economic background: their region of residence, education, household income, household size, employment status, age and gender. We moreover elicit, but do not use in our analyses, the respondents' ethnic background, their political orientation and media consumption.

We further elicit the respondents' prior and posterior beliefs about the incidence of income tax malpractice among the top and bottom income earners in Italy. These two beliefs together will allow us to gain an insight both into the effectiveness of our experimental conditions on each respondent, and into one of the channels by which the information provided might work, i.e. belief updating (Martinangeli and Windsteiger, 2019; Haaland et al., 2020).

Notice that in our pre-analysis plan we specified that we would use an attention check question to screen out inattentive survey respondents. However, we could not include this question due to technical reasons on the survey company side. Our analysis in Section 4 thus exploits our prior-posterior beliefs elicitation to distinguish those respondents who have paid attention to the information provided (the "treated") and updated their beliefs accordingly from those who did not (the "untreated"). We will perform separate analyses of our experimental conditions on these two groups.

## 3.3 Hypotheses

Our primary focus is the relationship between the information conditions provided and the rates of cheating in the reporting task. Hence, we formulate hypotheses related to this outcome variable (cheating rate) and investigate the secondary outcome variables in support and generalization of our main findings.

The overarching hypothesis is that exposure to higher estimated tax evasion rates will cause an increase in the cheating rate in the reporting task compared to exposure to lower tax evasion estimates.

**Hypothesis 1.** *Cheating increases with the reported tax evasion estimates.*

Furthermore, our design allows us to capture asymmetries in the impact of estimated tax evasion rates according to the income bracket for which these rates are reported. Specifically, we hypothesise that the effect on cheating rates will differ according to whether estimated evasion rates increase in high compared to low income brackets.

Two alternative predictions can be formulated. First, cheating rates might be higher if high tax evasion rates are reported for high income brackets compared to low income brackets. This hypothesis rests on the fact that higher income brackets have a greater capacity to contribute to public welfare and public good provision, with a lower relative impact on private consumption. This hypothesis is aligned with the findings in Martinangeli (2021). Second, and conversely, cheating rates might be higher if high tax evasion rates are reported

---

for low income brackets compared to high income brackets. Low income brackets, relying more heavily on public support and social welfare systems, might be expected to pay their fair contribution to their financing. This leads to the formulation of two alternative hypotheses.

**Hypothesis 2** (Asymmetries).

- a. *Cheating rates are higher when high estimated tax evasion occurs in high income brackets compared to low income brackets.*
- b. *Cheating rates are higher when high estimated tax evasion occurs in low income brackets compared to high income brackets.*

**3.4 Specifications and analysis**

Hypotheses 1 and 2 will be tested as follows. Our dependent variable is an indicator taking value 1 if a respondent cheated and zero otherwise, given that a cheating opportunity existed. Denote the event of a winning random draw as  $D=1$  and the complementary outcome of a losing random draw as  $D=0$ . We model the probability that respondent  $i$  will cheat as a function of the information condition they received and of a number of controls listed in Section 3.2 conditional on  $D_i=0$ :

$$Pr(L_i = 1|C_{iNN}, C_{iLL}, C_{iLH}, C_{iHL}, C_{iHH}, X_i, D_i = 0) = \Phi(\alpha + \alpha_{LL}C_{iLL} + \alpha_{LH}C_{iLH} + \alpha_{HL}C_{iHL} + \alpha_{HH}C_{iHH} + \beta'X_i + \varepsilon_i) \tag{1}$$

where  $L_i$  is an indicator variable equal to 1 if respondent  $i$  has cheated given that the random draw resulted in no additional payoff (scope for cheating exists). The indicators  $C_{i\cdot}$  represent our conditions, with the Neutral condition  $C_{iNN}$  serving as excluded category, and where  $C_{iLL}$  takes value 1 if respondent  $i$  was in Condition LL and similarly for the other conditions.  $X_i$  represents a vector of individual and regional covariates. We fit the model using the cumulative distribution function  $\Phi$  of the standard normal distribution. We can then test for our Hypotheses as follows:

**Hypothesis 1**

$$H0 : \alpha_{LL} < \alpha_{HH} \qquad H1 : \alpha_{LL} \geq \alpha_{HH}$$

**Hypothesis 2a**

$$H0 : \alpha_{LH} > \alpha_{HL} \qquad H1 : \alpha_{LH} \leq \alpha_{HL}$$

**Hypothesis 2b**

$$H0 : \alpha_{LH} < \alpha_{HL} \qquad H1 : \alpha_{LH} \geq \alpha_{HL}$$

---

Notice that an equivalent way of performing these tests is that of excluding the neutral condition subsample and writing Equation (1) relative to, say,  $C_{iLL}$  which would serve as the excluded category, and accordingly rewriting the hypotheses. This is possible because our hypotheses do not involve comparisons of any of our information conditions with the neutral one. We will perform such analysis as a robustness check of our results.

## 4 Results

Figure 2 displays the distribution of prior and posterior beliefs about the proportion of income that remains undeclared by high and low income individuals, respectively. Two things are worth pointing out in these graphs. First, our respondents do not have very clear or accurate prior beliefs about the proportion of income hidden by the two groups. Both bottom and top income earners are expected to hide the most disparate proportions of their incomes. For both groups, beliefs about the percentage of income that remains undeclared range from 0% to 100%, averaging 44% for bottom and 54% for top income earners (two-sided T-test  $p$ -value  $< 0.001$ ). These observations suggest that information about specific numbers (proportions of hidden income) might have little meaning per se for our respondents, unless reference points allow the observer to interpret them (as “high” or “low”) or to rank top and bottom income earners according to the severity of their tax malpractice.<sup>15</sup>

Second, while prior beliefs are fairly spread out over the entire support, posterior beliefs are strongly concentrated around the values provided in our experimental conditions (the neutral condition is excluded from this graph because this group did not receive information to update their beliefs), suggesting that our experimental strategy obtained the desired effect.<sup>16</sup>

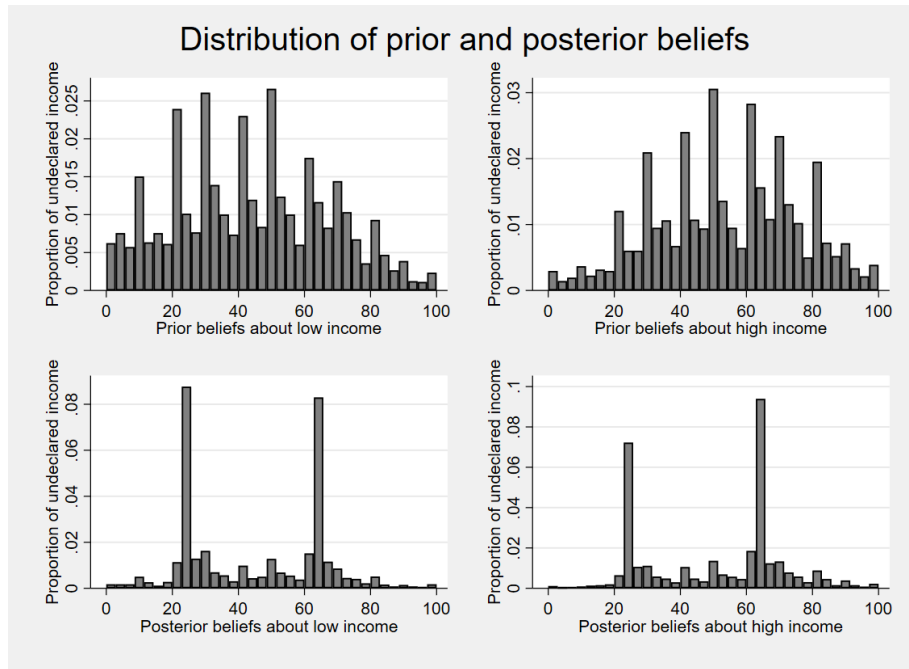
Our main outcome of interest is the propensity to cheat in the video die-rolling task. We observe a cheating rate slightly short of 30% over the full sample (29.16%) of respondents who had the opportunity to cheat, i.e. visualised a roll different from “6”. Slightly less than one-third of our sample misreported the outcome of the die roll they visualised, reporting an outcome of “6” when it was not.

We now formally investigate the determinants of cheating propensity given the opportunity to cheat. In all the analyses performed throughout this article, we restrict our estimations to the subsample of individuals who did not visualise a roll of 6 in the video. The regression

---

<sup>15</sup>It is interesting to see that the vast majority of the respondents (60.3%) reported prior beliefs assigning greater proportions of hidden income to the top income earners than to the bottom income earners. Conversely, 33.2% stated prior beliefs assigning greater proportions of hidden income to bottom earners, and only a small minority (6.4%) stated equal beliefs about the two groups. Figure B2 in Appendix B.

<sup>16</sup>Appendix A displays analogous graphs to the lower panels of Figure 2 for each experimental condition. In all cases, the posteriors are strongly concentrated around the communicated values for both high and low incomes, confirming that our manipulation succeeded and that the respondents did not assign more credibility to some conditions than to others.



**Figure 2:** Distribution of prior (top panels) and posterior (bottom panels) beliefs about income undeclared by high and low income individuals.

controls include age, gender, education level (= 1 if respondents have completed high school), equivalent household income, worker (= 1 if in the labour force) and region fixed effects, and standard errors are clustered at region level.

Our aim is to show that respondents cheat more in HL (where rich hide more income than poor in relative terms) compared to any other situation: i.e. when the top and bottom income earners are estimated to hide roughly equal proportions of their incomes, or when the rich top earners estimated to evade smaller proportions than the bottom earners. We are in this sense broadening our analysis compared to what we declared in our pre-analysis plan. There, we only report the hypotheses and tests in Sections 3.3 and 3.4. It appears clear however from looking at the results and at the information display in Appendix D that our HH and LL conditions failed to deliver the intended meaning: It is hard for a non-specialist respondent to interpret the numbers alone without any context or reference point. It is hence unclear to the viewer whether a 65% proportion of undeclared income is a high or a low proportion without having a different number to contextualise it, as it happens when top and bottom income earners are estimated not to declare the same income proportion. Different is the situation when the two are estimated to hide different proportions of their income: In this case, it is clear which one is the group hiding the greater or the smaller share of income.



Table 2 displays the results of Probit regressions of propensity to report having visualised a roll of 6 and hence of having cheated. In these analyses, as in all those in the remainder of this article, the excluded condition is HL, representing high income individuals as hiding more income than poor income individuals. Though we observe a significantly greater propensity to cheat in the baseline than in Condition HH, no further effects can be uncovered in this analysis. We dig deeper into these findings in Table 2.

VARIABLES	(1)	(2)
	Probability of misreporting given roll $\neq$ 6	
<u>Baseline: HL</u>		
HH	-0.104*	-0.103**
	(0.056)	(0.052)
LH	-0.081	-0.082
	(0.058)	(0.057)
LL	-0.075	-0.068
	(0.089)	(0.087)
Constant	-0.483***	-0.320***
	(0.050)	(0.121)
Controls		✓
Observations	2,847	2,843

Robust standard errors,  
clustered at region level, in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 2:** Probit regression of the propensity to cheat given the opportunity to do so (didn't visualise a die roll with outcome 6) on condition indicators. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

Table 3 displays the results of our analysis splitting the sample according to whether respondents earn incomes above or below median income (columns 1 to 4) and analyses interacting the treatment with an indicator with a dummy distinguishing above from below median income respondents (columns 5 and 6). We see that the effects of our experimental interventions are strongly significant for high income respondents. Under the HL condition, high income respondents display a greater propensity to cheat than in any other condition: All coefficients are negative and significant. Notice that the participants in Condition LH received information that one of the two income groups is taken not to report a high proportion of income, just as is the case in condition HL. Even though the respondents could, based on the information they received, unequivocally rank the two groups on the estimated incidence of tax malpractice (see the discussion above about the presence of a clear numerical context), we still observe lower cheating propensity than in condition HL. Put differently, high income individuals seem to be more prone to cheating when

the “tax scoundrels” have a high income than when they have a low income. Low income individuals so far do not exhibit any evidence for systematic conditional cheating responses to our information. The interacted analyses confirm all of these observations.<sup>17</sup>

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	<b>Probability of misreporting given roll <math>\neq</math> 6</b>					
	Low income		High income		Interaction	
<u>Baseline: HL</u>						
HH	0.031 (0.112)	0.043 (0.106)	-0.248*** (0.076)	-0.264*** (0.078)	0.031 (0.112)	0.043 (0.105)
LH	0.078 (0.104)	0.076 (0.106)	-0.246*** (0.081)	-0.250*** (0.083)	0.078 (0.104)	0.079 (0.107)
LL	0.052 (0.138)	0.064 (0.135)	-0.205** (0.080)	-0.192** (0.077)	0.052 (0.138)	0.061 (0.134)
High income					0.202** (0.102)	0.192* (0.113)
HH $\times$ High income					-0.279* (0.156)	-0.304** (0.149)
LH $\times$ High income					-0.324** (0.152)	-0.316** (0.156)
LL $\times$ High income					-0.256* (0.145)	-0.258* (0.134)
Constant	-0.584*** (0.094)	-0.379*** (0.138)	-0.382*** (0.036)	-0.726*** (0.148)	-0.584*** (0.094)	-0.543*** (0.115)
Controls		✓		✓		✓
Observations	1,504	1,501	1,343	1,339	2,847	2,843

Robust standard errors,  
clustered at region level, in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 3:** Probit regression of the propensity to cheat given the opportunity to do so on condition indicators. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

We summarise these findings in Result 1:

**Result 1.** *Cheating is significantly higher among high income respondents in experimental conditions presenting top income earners as engaging more severely in tax malpractice compared to low income earners.*

Result 1 sustains Hypothesis 2a, though for high income respondents only.

Notice that from Table 3, when comparing conditions HH and LL we cannot find evidence in support of Hypothesis 1 (a Wald test for equality of the coefficients on HH and LL does not find a significant difference of the two). This finding should not surprise: As pointed out earlier, respondents in survey have no clear preconceived idea about what a plausible

<sup>17</sup>We will henceforth present the results of split sample analyses whenever relevant. Interacted regressions yield similar results (available upon request).

estimate for income under-reporting is. This suspicion is confirmed by the distribution of prior beliefs in Figure 2.

#### 4.1 The impact of belief updating

We now investigate belief updating as a mechanism for the effects observed in Section 4. We adopt an instrumental variable approach to extract the exogenous component of belief updates due to our experimental variation. Following Fuster and Zafar (2022), in the first stage of the two-stages-least-squares approach we regress posterior beliefs on i) the experimental condition indicators, ii) the “perception gap”, i.e. the distance between the respondent’s prior beliefs and the information they received as part of the experimental condition, and iii) their interaction. In the second stage, the posterior predicted values are used as regressand of the cheating indicator. In what follows,  $B_k$ , with  $k \in b, t$  denotes the respondent’s posterior belief about the proportion of undeclared income by income group  $k$ , and with  $b$  and  $t$  respectively denoting bottom and top incomes. For the sake of concision, we report second stage results and omit first stage output, which we make available upon request.

	(1)	(2)	(3)	(4)	(5)	(6)
	<b>Probability of misreporting given roll <math>\neq 6</math></b>					
	Full sample		Low income		High income	
$B_p$	-0.003** (0.001)	-0.003** (0.001)	-0.000 (0.002)	-0.000 (0.002)	-0.005** (0.002)	-0.007*** (0.002)
$B_r$	0.003 (0.002)	0.003 (0.002)	-0.000 (0.003)	0.001 (0.004)	0.006** (0.003)	0.005** (0.003)
Constant	-0.556*** (0.126)	-0.387*** (0.142)	-0.515*** (0.135)	-0.100 (0.131)	-0.611*** (0.168)	-0.880*** (0.246)
Observations	2,847	2,843	1,504	1,501	1,343	1,339

Robust standard errors, clustered at region level, in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table 4:** Instrumental variable second stage Probit regression of propensity to cheat given the opportunity to do so.  $B_k, k \in \{b, t\}$ , denoting beliefs about the income not declared by, respectively, bottom and top incomes, is instrumented by: i) the condition indicators, ii) the “perception gap”, and iii) their interaction. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

The first and second columns in Table 4 display the puzzling finding that the propensity to cheat *decreases* with upward belief updates about the bottom income earners but appears unaffected by beliefs about the top income earners. Columns 3 to 6 however repeat the analysis by splitting the sample according to income as illustrated earlier. We again see

---

that the relationship observed at aggregate level is driven entirely by the respondents earning incomes above the median. The negative impact of updates about tax malpractice at the bottom of the income distribution remains visible and sizeable. We however now also observe the *positive* impact of updates about tax malpractice at the top of the income distribution. Despite not being able to fully account for the negative effect of updates about the bottom of the income distribution, we conjecture that such effect might be an artifact of the concomitant influence of i) the simultaneous shifting of beliefs about the two groups in opposite directions and ii) the different informativeness of the experimental variation in information about tax malpractice among the two groups: contextless in HH and LL and contextualised in HL and LH.

We summarise these findings in Result 2.

**Result 2.** *Cheating rates increase significantly with posterior beliefs about tax malpractice of high income individuals.*

Result 2 further strengthens the arguments in support for Hypothesis 2a.

## 5 Broader impact

In this section we review our findings of the broader impact of our intervention beyond cheating behaviours.

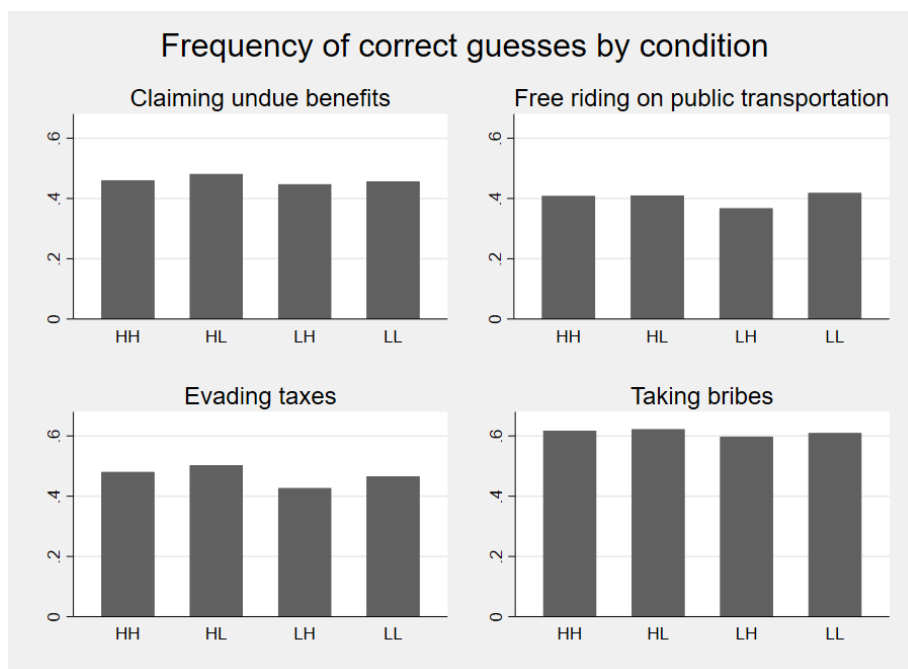
### 5.1 Perceived norms of tax compliance

To gather information about perceived norms of tax compliance, we adopted and adapted the well-known method proposed by Krupka and Weber (2013) to the data collected in the 5th wave World Value Survey (WVS) in Italy (Inglehart et al., 2014). Each respondent was told that a previous survey of a representative sample of the Italian population asked the participants to rank the appropriateness of 4 actions by assigning them a number between 1 (totally inappropriate) and 10 (totally appropriate). The actions to be evaluated were: “Claiming undue benefits”, “Free riding on public transportation”, “Evading taxes”, “Taking bribes in the exercise of one’s duty”.

We asked our respondents to provide their best guess of the most frequently assigned appropriateness level in that survey and incentivised correct guesses with 10 additional Points. Given the ordinal nature of the ranking, greater guesses correspond to perceptions of greater acceptance of the action, or conversely perceptions of weaker social norms prohibiting it.

Figure 3 displays the proportion of respondents who correctly identify the norm, for each action, by experimental condition. Because the modal value assigned to all four items in the WVS is 1, the proportion of respondents correctly identifying it is an appealing first, crude measure of norm perceptions: Incorrect guesses can only be assigning greater appropriateness norms. We notice that the proportion of correct guesses is fairly stable

across conditions, with the exception of norms about tax evasion where the proportion of correct guesses seems to be lower in condition LH.



**Figure 3:** Proportion of respondents correctly identifying the norm (lowest appropriateness rating) for each action, by experimental condition.

We henceforth focus on perceived norms about tax evasion.<sup>18</sup> Table 5 performs an analysis analogous to the one presented in Section 4. Perceived norms of tax compliance seem to weaken with Condition LH. This finding, while at odds with our hypothesis, could be rationalized in light of the specific nature of the outcome measured and suggests that our respondents perceive the “bottom” income earners are a far larger group than the top income earners.<sup>19</sup> As a result, receiving information that the former hide a much larger share of their income than the latter will adversely shift perceptions of tax compliance norms. Alternatively, this finding could be a consequence of (the majority of respondents) identifying more strongly with the group of bottom income earners than with those at the top. In this case, their perceptions of social norms would respond most strongly to

<sup>18</sup>The analysis of the other items (in Appendix C.2) doesn’t yield any insight and is hence not reported. The output is available on request.

<sup>19</sup>We are deliberately vague as to how the two groups (top and bottom income earners) are defined and how big those two groups are in our information conditions. If people think in terms of top and bottom percentiles, they might think that the two groups are of equal size. Should they instead have a skewed income distribution in mind, they might think that “bottom income earners” are a larger group compared to “top income earners”.

what the people at the bottom of the income distribution do. Further evidence for this conjecture comes from the following sample split investigations.

VARIABLES	(1)	(2)
	Perceived norm of tax compliance	
HH	0.096 (0.156)	0.071 (0.155)
LH	0.364*** (0.092)	0.369*** (0.093)
LL	0.021 (0.116)	-0.004 (0.125)
Constant	3.948*** (0.122)	3.756*** (0.231)
Controls		✓
Observations	3,421	3,421
R-squared	0.002	0.020

Robust standard errors,  
clustered at region level, in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table 5:** OLS regression of tax compliance norm perceptions. Greater values of the outcome variable denote perceptions of a *weaker* tax compliance norm (greater acceptance of tax malpractice). Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

We dig deeper into this result by performing split sample and instrumental variables investigations, reported in Tables 6 and C6. We again see strong evidence for income heterogeneity. Condition HL stands out compared to the other conditions among low income respondents. It is associated with perceptions of a *stronger* norm of tax compliance compared to the other conditions (in contrast with the greater incidence of cheating observed earlier). To make sense of this surprising finding, it helps to keep in mind that condition HL is not only the condition presenting top income earners as engaging in more tax malpractice than the bottom income earners: It is also the condition presenting the bottom income earners as engaging in *less* tax malpractice than the top. This distinction is perhaps consequential in individuals' formation of a norm perception and hints at identity playing a role: The results are consistent with low income respondents' norm perceptions reacting mostly to what people at the bottom of the income distribution do. It is particularly

revealing that perceived norms in condition LH (presenting the bottom income earners as engaging in more tax malpractice than the top) are (almost) as weak as in condition HH. We advise caution, however in drawing conclusions based on conditions HH and LL because, as cautioned earlier, these are the most problematic in terms of the respondents' understanding of the phenomenon to them presented.

Results for the high income subsample are more nuanced. Notice that while low income respondents display a systematically stronger norm in condition HL than in any other condition, the same is not true for high income respondents. Coefficient comparisons of condition LH with conditions HH and LL reveal however that norm perceptions are indeed weakest in condition LH for these respondents too.

VARIABLES	(1)	(2)	(3)	(4)
	Perceived norm of tax compliance			
	Low income		High income	
HH	0.482** (0.215)	0.473** (0.207)	-0.315 (0.212)	-0.346 (0.215)
LH	0.470*** (0.147)	0.510*** (0.152)	0.258 (0.159)	0.249 (0.147)
LL	0.381* (0.193)	0.396* (0.192)	-0.355 (0.208)	-0.430** (0.195)
Constant	3.612*** (0.142)	3.622*** (0.178)	4.300*** (0.187)	3.650*** (0.490)
Coefficient equality tests (p-val):				
$H_0 : LH = HH$	0.960	0.862	0.014	0.015
$H_0 : LH = LL$	0.577	0.439	0.014	0.006
Controls		✓		✓
Observations	1,787	1,787	1,634	1,634
R-squared	0.004	0.038	0.006	0.026

Robust standard errors, clustered at region level, in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 6:** OLS regression of tax compliance norm perceptions by income split. Greater values of the outcome variable denote perceptions of a *weaker* tax compliance norm (greater acceptance of tax malpractice). Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

Finally, Table 7 reports the output of instrumental variable regressions investigating the mediating role of belief updating on norm perceptions. These regressions reveal that up-

dates on beliefs about the bottom income earners' share of hidden income strongly and significantly weaken perceived norms of tax compliance. Again, this is driven mainly by low income respondents, providing further support for the conjecture that people's norm perceptions might depend on who they identify with.<sup>20</sup>

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Perceived norm of tax compliance					
	Full sample		Low income		High income	
$B_p$	0.011*** (0.003)	0.010*** (0.003)	0.016*** (0.004)	0.016*** (0.005)	0.006 (0.004)	0.006 (0.004)
$B_r$	-0.003 (0.004)	-0.002 (0.004)	-0.006 (0.005)	-0.007 (0.005)	0.000 (0.006)	0.002 (0.005)
Constant	3.740*** (0.215)	3.533*** (0.311)	3.545*** (0.325)	3.621*** (0.405)	3.915*** (0.313)	3.089*** (0.596)
Controls		✓		✓		✓
Observations	3,421	3,421	1,787	1,787	1,634	1,634
R-squared	0.002	0.020	0.004	0.037	0.001	0.022

Robust standard errors, clustered at region level, in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 7:** Instrumental variable second stage regression of tax compliance norm perceptions. Greater values of the outcome variable denote perceptions of a *weaker* tax compliance norm (greater acceptance of tax malpractice).  $B_k$ ,  $k \in \{b, t\}$ , denoting posterior beliefs about the income not declared by, respectively, bottom and top incomes, is instrumented by: i) the condition indicators, ii) the “perception gap”, and iii) their interaction. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

## 5.2 Generalised social trust

We elicited the respondents' level of generalised social trust by borrowing the question used in the World Value Survey (Inglehart et al., 2014). We asked the respondents to answer the question “In general, would you say that most people can be trusted or that one can never be careful enough?” on a scale from 1 (complete distrust) to 10 (complete trust).<sup>21</sup>

<sup>20</sup>Notice as pointed out earlier, the puzzling sign of updates on beliefs about the top income earners. As mentioned earlier (see Section 4.1), this effect might be an artefact of the simultaneous and opposite belief updating induced by conditions HL and LH, and of the lack of context in conditions HH and LL.

<sup>21</sup>For the purpose of the analysis, we inverted the scale used in the survey for larger values to correspond to greater trust.



Table 8 presents the result of an OLS regression of the respondents' stated level of generalised social trust on our condition indicators. We find no robust evidence for our information per se having an effect on stated generalised trust. We thus further explore this channel using the instrumental variable technique used earlier to tie the exogenous component of belief updating to stated trust in Table 9.

VARIABLES	(1)	(2)	Generalised social trust			(6)
	Full sample		Low income		High income	
HH	-0.049 (0.106)	-0.025 (0.092)	0.001 (0.134)	-0.077 (0.137)	0.037 (0.138)	-0.060 (0.122)
LH	0.055 (0.101)	0.025 (0.102)	0.151 (0.139)	-0.042 (0.118)	0.139 (0.141)	-0.096 (0.117)
LL	0.186 (0.120)	0.157 (0.116)	0.096 (0.189)	0.287* (0.138)	0.071 (0.172)	0.254* (0.146)
Constant	-6.651*** (0.105)	-6.414*** (0.157)	-6.859*** (0.131)	-6.433*** (0.117)	-6.760*** (0.215)	-5.847*** (0.379)
Controls		✓		✓		✓
Observations	3,421	3,421	1,787	1,634	1,787	1,634
R-squared	0.001	0.052	0.001	0.004	0.053	0.055

Robust standard errors, clustered at region level, in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table 8:** OLS regression of generalised social trust. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

From Table 9 we observe upward belief updates about the tax malpractice of higher income groups significantly eroding social trust among both high and low income respondents. Only high income respondents appear to lower their social trust with upward belief updates about tax malpractice at lower incomes.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Full sample		Generalised social trust Low income		High income	
$B_p$	-0.005 (0.004)	-0.004 (0.004)	0.003 (0.005)	0.004 (0.005)	-0.013*** (0.005)	-0.012*** (0.004)
$B_r$	-0.017*** (0.005)	-0.015*** (0.005)	-0.020*** (0.006)	-0.019*** (0.006)	-0.016** (0.006)	-0.013* (0.007)
Constant	-5.493*** (0.260)	-5.451*** (0.226)	-5.925*** (0.369)	-6.106*** (0.336)	-5.000*** (0.227)	-4.332*** (0.326)
Controls		✓		✓		✓
Observations	2,847	2,847	1,504	1,504	1,343	1,343
R-squared	0.004	0.061	0.000	0.055	0.005	0.059

Robust standard errors, clustered at region level, in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 9:** Instrumental variable regression of generalised social trust. The table displays the second stage regressions in an instrumental variable analysis of generalised social trust.  $B_k, k \in \{b, t\}$ , denoting beliefs about the income not declared by, respectively, bottom and top incomes, is instrumented by: i) the condition indicators, ii) the “perception gap”, and iii) their interaction. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

### 5.3 Worldviews on wealth accumulation

Finally, our last set of outcome variables investigate whether individuals’ worldviews on wealth and wealth accumulation.<sup>22</sup> We have asked our respondents to state their degree of agreement with the following three statements:

- i) “*Wealth can only be accumulated at the expense of others*” (henceforth labelled “richness”),
- ii) “*Hard work is the only way to achieve success in life*” (henceforth labelled “hard-work”),
- iii) “*Redistribution is one of the most important functions of a government*” (henceforth labelled “redistrib”).

All three questions could be answered on a scale ranging from 1 (complete disagreement) to 10 (complete agreement).

<sup>22</sup>Our survey also elicited the respondents’ perception of the appropriateness of their own tax burden. The results from their analysis are available upon request: As we did not find any effect of our experimental conditions on this outcome, we excluded it from this article for concision.

Table 10 offers a first investigation of the systematic influence of our experimental conditions on individuals' endorsement of these worldviews. Though some patterns seem to emerge, they are weak and hard to interpret: The largest coefficients are those associated with condition LL, which does not allow the respondent to contextualise the information provided in a meaningful way as discussed in Section 4.1. We hence turn to instrumental variable analyses of the effect of belief updating in Table 11.

VARIABLES	(1)	(2)	(3)	Worldviews on wealth accumulation			(7)	(8)	(9)
	richness	Full sample hardwork	redistrib	richness	Low income hardwork	redistrib	richness	High income hardwork	redistrib
HH	-0.023 (0.138)	0.076 (0.131)	-0.034 (0.118)	0.052 (0.187)	0.094 (0.187)	0.011 (0.173)	-0.073 (0.199)	0.037 (0.164)	-0.040 (0.175)
LH	-0.035 (0.105)	0.159 (0.157)	0.034 (0.094)	-0.006 (0.133)	0.232 (0.221)	0.342* (0.184)	-0.043 (0.158)	0.067 (0.163)	-0.279* (0.158)
LL	-0.249** (0.095)	0.263* (0.127)	0.136 (0.079)	-0.167 (0.135)	0.332** (0.155)	0.160 (0.159)	-0.327** (0.125)	0.168 (0.188)	0.134 (0.132)
Constant	3.927*** (0.216)	5.517*** (0.216)	7.912*** (0.207)	4.240*** (0.352)	5.386*** (0.345)	7.579*** (0.357)	3.573*** (0.301)	5.397*** (0.300)	8.357*** (0.296)
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	3,421	3,421	3,421	1,787	1,787	1,787	1,634	1,634	1,634
R-squared	0.018	0.027	0.049	0.023	0.034	0.045	0.020	0.036	0.076

Robust standard errors, clustered at region level, in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 10:** OLS regression of individual worldviews about wealth and wealth accumulation. Greater values of the outcome variable denote greater agreement with the statements that i) wealth accumulation comes at the expense of others, ii) success can be achieved only via hard work, and iii) redistribution is among a government's most important functions. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

Here we again observe strongly significant effects of upward updating of beliefs about tax malpractice at the top rather than at the bottom of the income distribution in two out of the three surveyed worldviews despite the small size of the effect.<sup>23</sup> Notably, greater posterior beliefs about tax malpractice at the top increase endorsement of the opinion that wealth can be accumulated only at others' expense (see column 1) and that the government should be entrusted with the fundamental task of redistribution (see column 3). The only unaffected worldview is that of attributing to hard work the key to success in life. Notice the difference between the latter and the two former attitudes: "Success in life" need not necessarily be measured in monetary terms nor need it be in any way linked to the adherence to rigorous tax compliance. Being somewhat more distant than the others from the problem of tax malpractice, it does not appear surprising that it is the sole not being systematically impacted. On the contrary, the other two exhibit effects running in the expected direction: Exposure to information increasing beliefs about tax malpractice at the top strengthens agreement with the fact that wealth accumulation necessarily implies

<sup>23</sup>The results presented in Table 11 are roughly similar across income groups, and therefore omitted for the sake of concision.

subtraction of those resources from others (as is the case when achieved through tax evasion and/or avoidance), and heightens reliance on the government to restore a more equitable state of the world.

VARIABLES	(1)	(2)	(3)
	richness	hardwork	redistrib
$B_p$	0.005 (0.003)	0.002 (0.004)	-0.002 (0.003)
$B_r$	0.013*** (0.003)	-0.008 (0.005)	0.007** (0.003)
Constant	2.954*** (0.231)	5.957*** (0.204)	7.647*** (0.271)
Controls	✓	✓	✓
Observations	3,421	3,421	3,421
R-squared	0.028	0.024	0.051

Robust standard errors,  
clustered at region level, in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table 11:** Instrumental variable second stage regression of individual worldviews about wealth and wealth accumulation. Greater values of the outcome variable denote greater agreement with the statements that i) wealth accumulation comes at the expense of others, ii) success can be achieved only via hard work, and iii) redistribution is among a government’s most important functions.  $B_k, k \in \{b, t\}$ , denoting beliefs about the income not declared by, respectively, bottom and top incomes, is instrumented by: i) the condition indicators, ii) the “perception gap”, and iii) their interaction. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

## 6 Concluding remarks

This paper presents large-scale experimental evidence from a representative sample of the Italian population offering an insight into whether systematic asymmetric (conditional) shifts in behaviours and in norms of behaviour can be observed in response to variation in information about tax evasion at the top and at the bottom of the income distribution. We find that high income respondents’ propensity to cheat (towards the experimenter) increases when tax malpractice is presented as more severe among high income than low income individuals. Instrumenting the participants’ posterior beliefs with the experimental

---

conditions, their “perception gap” and the interaction between the two, we find that larger beliefs about tax malpractice among high income individuals are associated with a greater propensity to cheat among high income respondents. The opposite holds true for norm perceptions: Here, the greater the posterior beliefs about tax malpractice among low income individuals, the weaker the norm about tax morale perceived by low income respondents. We moreover, find broader effects of information about tax malpractice which go beyond the effects on cheating behaviours and norm perceptions. We observe for instance a significant decline in social trust associated with greater posterior beliefs about tax malpractices on behalf of high income individuals across income groups, and an impact on pessimistic worldviews on wealth accumulation.

The salience of tax (dis)honesty has risen sharply in the past few years following the data leaks about tax evasion and avoidance via international tax havens (Garside, 2016). Since unethical practices in tax compliance are most profitable and diffuse among the highest income ranks (Alstadsæter et al., 2019), news reporting on the topic has naturally mainly been centred on the upper end of the income distribution. As a result tax malpractice on behalf of the upper echelons of our societies has received greater resonance and political and popular interest than tax dishonesty on behalf of lower portions of the income distribution. Our article shows that heightened focus might well be consequential for the behavioural responses to tax malpractice throughout society, particularly on the propagation of (un)ethical behaviours.

---

## References

- Allcott, H. (2011). Social norms and energy conservation. Journal of Public Economics, 95(9):1082–1095.
- Alstadsæter, A., Johannesen, N., and Zucman, G. (2019). Tax evasion and inequality. American Economic Review, 109(6):2073–2103.
- Bicchieri, C. (2010). Norms, preferences, and conditional behavior. Politics, Philosophy & Economics, 9(3):297–313.
- Diekmann, A., Przepiorka, W., and Rauhut, H. (2015). Lifting the veil of ignorance: An experiment on the contagiousness of norm violations. Rationality and Society, 27(3):309–333. Publisher: SAGE Publications Ltd.
- Falk, A. and Heckman, J. J. (2009). Lab Experiments Are a Major Source of Knowledge in the Social Sciences. Science, 326(5952):535–538.
- Fischbacher, U. and Föllmi-Heusi, F. (2013). Lies in disguise-an experimental study on cheating. Journal of the European Economic Association, 11(3):525–547.
- Fischbacher, U., Gächter, S., and Fehr, E. (2001). Are people conditionally cooperative? evidence from a public goods experiment. Economics letters, 71(3):397–404.
- Frey, B. S. and Meier, S. (2004). Social Comparisons and Pro-social Behavior: Testing Conditional Cooperation in a Field Experiment. American Economic Review, 94(5):1717–1722.
- Frey, B. S. and Torgler, B. (2007). Tax morale and conditional cooperation. Journal of comparative economics, 35(1):136–159.
- Fuster, A. and Zafar, B. (2022). Survey Experiments on Economic Expectations. Technical Report w29750, National Bureau of Economic Research, Cambridge, MA.
- Garside, J. (2016). A world of hidden wealth: why we are shining a light offshore. The Guardian.
- Gino, F., Ayal, S., and Ariely, D. (2009). Contagion and Differentiation in Unethical Behavior: The Effect of One Bad Apple on the Barrel. Psychological Science, 20(3):393–398. Publisher: SAGE Publications Inc.
- Haaland, I., Roth, C., and Wohlfart, J. (2020). Designing Information Provision Experiments. SSRN Scholarly Paper ID 3644820, Social Science Research Network, Rochester, NY.

- 
- Henrich, J. and Gil-White, F. J. (2001). The evolution of prestige: freely conferred deference as a mechanism for enhancing the benefits of cultural transmission. Evolution and Human Behavior, 22(3):165–196.
- Inglehart, R., Haerpfer, A., Moreno, C., Welzel, K., Kizilova, J., Diez-Medrano, M., Lagos, P., Norris, E., and Puranen, B. (2014). World Values Survey: Round Five - Country-Pooled Datafile Version: [www.worldvaluessurvey.org/WVSDocumentationWV5.jsp](http://www.worldvaluessurvey.org/WVSDocumentationWV5.jsp). JD Systems Institute, Madrid.
- Isler, O. and Gächter, S. (2022). Conforming with peers in honesty and cooperation. Journal of Economic Behavior & Organization, 195:75–86.
- Jacobsen, C., Fosgaard, T. R., and Pascual-Ezama, D. (2018). Why Do We Lie? A Practical Guide to the Dishonesty Literature. Journal of Economic Surveys, 32(2):357–387. eprint: <https://onlinelibrary.wiley.com/doi/pdf/10.1111/joes.12204>.
- Kocher, M. G., Cherry, T., Kroll, S., Netzer, R. J., and Sutter, M. (2008). Conditional cooperation on three continents. Economics Letters, 101(3):175–178.
- Kocher, M. G., Schudy, S., and Spantig, L. (2018). I lie? we lie! why? experimental evidence on a dishonesty shift in groups. Management Science, 64(9):3995–4008.
- Koski, J. E., Xie, H., and Olson, I. R. (2015). Understanding social hierarchies: The neural and psychological foundations of status perception. Social Neuroscience, 10(5):527–550.
- Kroher, M. and Wolbring, T. (2015). Social control, social learning, and cheating: Evidence from lab and online experiments on dishonesty. Social Science Research, 53:311–324.
- Krupka, E. L. and Weber, R. A. (2013). Identifying social norms using coordination games: Why does dictator game sharing vary? Journal of the European Economic Association, 11(3):495–524.
- Martinangeli, A. F. and Meiske, B. (2021). The Influence Premium of Monetary Status. Working Paper of the Max Planck Institute for Tax Law and Public Finance No. 2021-10.
- Martinangeli, A. F. M. (2021). Do What (You Think) the Rich Will Do: Inequality and Belief Heterogeneity in Public Good Provision. Journal of Economic Psychology, 83:102364.
- Martinangeli, A. F. M. and Windsteiger, L. (2019). Immigration vs. poverty: Causal impact on demand for redistribution in a survey experiment.
- Martinsson, P., Pham-Khanh, N., and Villegas-Palacio, C. (2013). Conditional cooperation and disclosure in developing countries. Journal of Economic Psychology, 34:148–155.

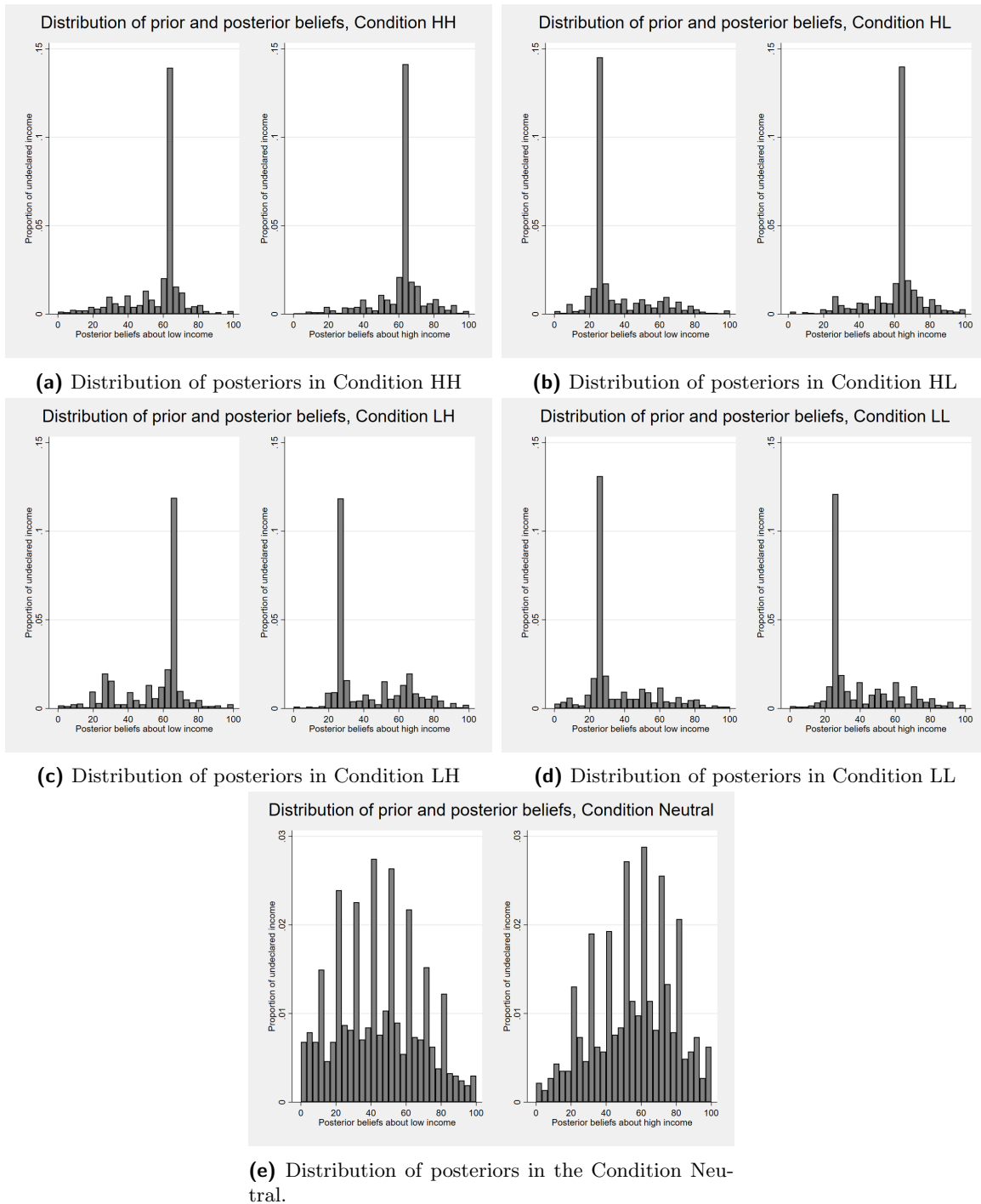
- 
- Rauhut, H. (2013). Beliefs about Lying and Spreading of Dishonesty: Undetected Lies and Their Constructive and Destructive Social Dynamics in Dice Experiments. PLOS ONE, 8(11):e77878.
- Rockenbach, B., Tonke, S., and Weiss, A. R. (2021). Self-serving behavior of the rich causes contagion effects among the poor. Journal of Economic Behavior & Organization, 183:289–300.
- Thaler, C. R. and Sunstein, R. H. (2009). Nudge. Penguin Random House.
- Traxler, C. (2010). Social norms and conditional cooperative taxpayers. European Journal of Political Economy, 26(1):89–103.
- Zitek, E. M. and Tiedens, L. Z. (2012). The fluency of social hierarchy: The ease with which hierarchical relationships are seen, remembered, learned, and liked. Journal of Personality and Social Psychology, 102(1):98. Publisher: US: American Psychological Association.

## Appendix

### A Manipulation

Figure A1 displays the distribution of posteriors in each of the experimental condition, visibly centred around the distributed values. By contrast, posteriors in Condition Neutral are significantly dispersed in a pattern similar to those of the prior beliefs in Figure 2. Further manipulation checks are provided by the first stage regressions of the instrumental variable analyses presented in Section 4. These are reported in Appendix C.1. There we observe posterior beliefs being significantly increased (decreased) by information presenting a high (low) estimate for tax malpractice in the relevant income group.



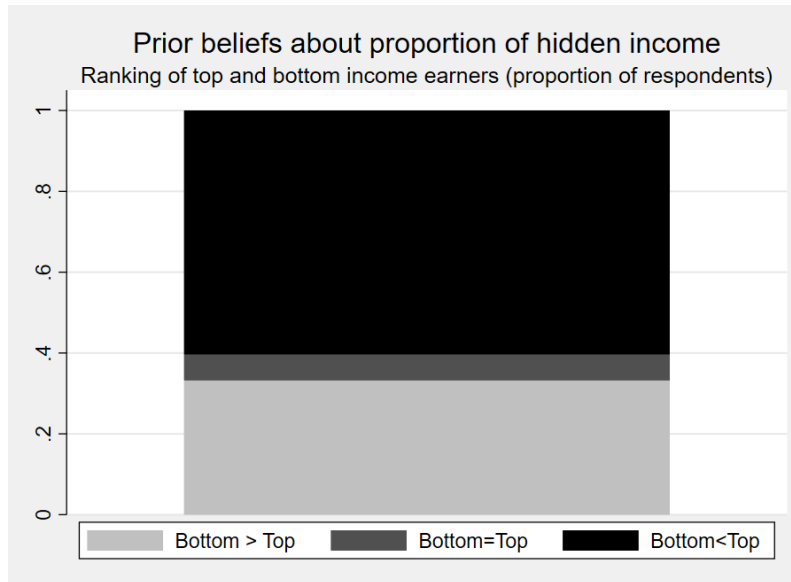


**Figure A1:** Distribution of posterior beliefs by condition and income group.

---

## B Graphs

Figure B2 shows how the respondents rank top and bottom income earners in terms of their tax behaviours: 60.3% reported prior beliefs assigning greater proportions of unreported income to the top income earners than to the bottom income earners (“Bottom > Top”), 33.2% stated prior beliefs assigning greater proportions of hidden income to bottom earners (“Bottom<Top”), and a small minority (6.4%) stated equal beliefs about the two groups (“Bottom=Top”).



**Figure B2:** Proportion of subjects ranking top and bottom income earners according to the size of the share of hidden income. prior “Bottom > Top”: prior beliefs assign greater proportions of unreported income to top than to bottom income earners; “Bottom < Top”: prior beliefs assign greater proportions of hidden income to bottom rather than top income earners; “Bottom=Top”: prior beliefs assign equal proportions of unreported income to top and bottom income earners.

## C Further analyses

### C.1 First stage instrumental variable regressions

### C.2 Further norms of behaviour

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	<b>Further norms of behaviour</b>					
	Claming undue benefits		Free riding on public transport		Taking bribes on duty	
HH	0.103 (0.207)	0.092 (0.204)	-0.060 (0.164)	-0.069 (0.143)	-0.126 (0.114)	-0.155 (0.110)
LH	0.139 (0.166)	0.166 (0.170)	0.160 (0.154)	0.191 (0.149)	0.025 (0.106)	0.024 (0.104)
LL	0.011 (0.110)	0.008 (0.110)	-0.058 (0.141)	-0.061 (0.128)	-0.045 (0.122)	-0.064 (0.112)
Constant	3.979*** (0.140)	3.739*** (0.241)	4.325*** (0.136)	5.216*** (0.175)	3.207*** (0.120)	3.153*** (0.207)
Controls		✓		✓		✓
Observations	3,421	3,421	3,421	3,421	3,421	3,421
R-squared	0.000	0.036	0.001	0.056	0.000	0.041

Robust standard errors, clustered at region level, in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

**Table C1:** OLS regression of norm perceptions. Greater values of the outcome variable denote perceptions of a *weaker* norm (greater acceptance of behaviour). Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

:

	(1)	(2)	(3)	(4)	(5)	(6)
	<b>Further norms of behaviour, low income</b>					
VARIABLES	Claming undue benefits	Free riding on public transport	Free riding on public transport	Free riding on public transport	Taking bribes on duty	Taking bribes on duty
HH	0.482* (0.242)	0.473** (0.224)	0.312 (0.220)	0.311 (0.197)	0.300 (0.187)	0.249 (0.173)
LH	0.454 (0.264)	0.497* (0.277)	0.340 (0.230)	0.389* (0.214)	0.175 (0.162)	0.183 (0.163)
LL	0.368 (0.244)	0.369 (0.241)	0.271 (0.238)	0.275 (0.207)	0.408 (0.268)	0.388 (0.263)
Constant	3.722*** (0.189)	3.599*** (0.351)	4.020*** (0.195)	5.400*** (0.237)	2.868*** (0.144)	3.141*** (0.271)
Controls	✓	✓	✓	✓	✓	✓
Observations	1,787	1,787	1,787	1,787	1,787	1,787
R-squared	0.003	0.051	0.002	0.086	0.003	0.060

Robust standard errors, clustered at region level, in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table C2:** OLS regression of norm perceptions, low income subsample. Greater values of the outcome variable denote perceptions of a *weaker* norm (greater acceptance of behaviour). Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

	(1)	(2)	(3)	(4)	(5)	(6)
	<b>Further norms of behaviour, high income</b>					
VARIABLES	Claming undue benefits	Free riding on public transport	Free riding on public transport	Taking bribes on duty	Taking bribes on duty	Taking bribes on duty
HH	-0.312 (0.250)	-0.303 (0.254)	-0.459** (0.213)	-0.453* (0.223)	-0.585*** (0.181)	-0.573*** (0.200)
LH	-0.191 (0.223)	-0.145 (0.211)	-0.027 (0.163)	0.012 (0.171)	-0.127 (0.222)	-0.105 (0.215)
LL	-0.363 (0.236)	-0.380 (0.241)	-0.402** (0.141)	-0.406** (0.148)	-0.521*** (0.159)	-0.546*** (0.149)
Constant	4.248*** (0.210)	3.441*** (0.371)	4.644*** (0.113)	4.696*** (0.360)	3.562*** (0.210)	3.055*** (0.401)
Controls	✓	✓	✓	✓	✓	✓
Observations	1,634	1,634	1,634	1,634	1,634	1,634
R-squared	0.002	0.041	0.004	0.047	0.007	0.043

Robust standard errors, clustered at region level, in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table C3:** OLS regression of norm perceptions, high income subsample. Greater values of the outcome variable denote perceptions of a *weaker* norm (greater acceptance of behaviour). Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Undue benefits	Low income Free riding	Taking bribes	Undue benefits	High income Free riding	Taking bribes
$B_p$	0.018*** (0.006)	0.010** (0.005)	0.010*** (0.004)	0.003 (0.005)	-0.000 (0.006)	0.003 (0.004)
$B_r$	-0.010 (0.008)	-0.007 (0.007)	-0.003 (0.006)	0.010** (0.005)	0.005 (0.006)	0.009 (0.006)
Constant	3.630*** (0.578)	5.514*** (0.384)	3.072*** (0.420)	2.530*** (0.531)	4.147*** (0.518)	2.026*** (0.509)
Controls	✓	✓	✓	✓	✓	✓
Observations	1,787	1,787	1,787	1,634	1,634	1,634
R-squared	0.036	0.082	0.062	0.049	0.047	0.048

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table C4:** Instrumental variable second stage regression of tax compliance norm perceptions. Greater values of the outcome variable denote perceptions of a *weaker* tax compliance norm (greater acceptance of tax malpractice).  $B_k, k \in \{b, t\}$ , denoting posterior beliefs about the income not declared by, respectively, bottom and top incomes is instrumented by: i) the condition indicators, ii) the “perception gap”, and iii) their interaction. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

### C.3 Robustness: Alternative belief updating analyses

We here explore an alternative way of investigating the impact of belief updating. In building our belief updating measure, we want to weight the observations such that analogous updates are weighted by the size of the posterior they lead to. Concretely, imagine a person  $i$  updating their belief about the income hidden by some income group group upwards by 5%. This update is relatively larger if it leads to a posterior belief of 20% (1/4 of the posterior) than if it leads to a posterior of 50% (1/10 of the posterior). For this reason, we construct our measure of belief update ( $\Delta$ ) by dividing the absolute size of update (posterior - prior) by the posterior itself:  $\Delta_k = \frac{(posterior_k - prior_k)}{posterior_k}, k \in \{b, t\}$  with  $p$  and  $r$  denoting respectively beliefs about tax malpractice at bottom and top incomes. Notice that  $\Delta_k$  is positive whenever beliefs are updated upwards (towards a greater proportion of unreported income). In the first stage of the two-stages-least-squares approach we regress our measure of belief updating on the experimental condition indicators, and regress the outcome variables on the first stage predicted belief update values (thus netted out of any endogenous components) in the second stage.

Notice that in first stage regressions, beliefs are updated in the expected direction by experimental conditions:  $\Delta_p$  is lower in HL and LL and higher in HH and LH, and  $\Delta_r$  is lower in LH and LL and higher in HH and HL, with  $p < 0.01$  in all cases.<sup>24</sup>

<sup>24</sup>First stage regressions are available upon request.

---

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Probability of misreporting given roll $\neq 6$					
	Full sample		Low income		High income	
$\Delta_p$	-0.108* (0.064)	-0.114* (0.068)	0.061 (0.100)	0.055 (0.100)	-0.304*** (0.103)	-0.334*** (0.117)
$\Delta_r$	0.052 (0.077)	0.050 (0.076)	-0.070 (0.096)	-0.054 (0.107)	0.163** (0.082)	0.150* (0.080)
Constant	-0.537*** (0.042)	-0.349*** (0.112)	-0.556*** (0.037)	-0.127 (0.184)	-0.479*** (0.073)	-0.607*** (0.178)
Observations	2,838	✓ 2,834	1,499	✓ 1,496	1,339	✓ 1,335

Robust standard errors, clustered at region level, in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table C5:** Instrumental variable second stage probit regression of propensity to cheat given the opportunity to do so. Our belief updating measure,  $\Delta_k = \frac{(posterior_k - prior_k)}{posterior_k}$ ,  $k \in \{b, t\}$  and  $p$  and  $r$  denoting respectively bottom and top incomes is instrumented by the condition indicators. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Perceived norm of tax compliance					
	Full sample		Low income		High income	
$\Delta_p$	0.367*** (0.142)	0.370*** (0.134)	0.517*** (0.177)	0.549*** (0.174)	0.128 (0.223)	0.136 (0.220)
$\Delta_r$	-0.213** (0.102)	-0.212** (0.105)	-0.286 (0.188)	-0.343* (0.203)	-0.030 (0.157)	0.018 (0.143)
Constant	4.062*** (0.072)	3.747*** (0.207)	3.941*** (0.106)	3.815*** (0.176)	4.213*** (0.127)	3.424*** (0.482)
Observations	3,410	3,410	1,780	1,780	1,630	1,630
Controls		✓		✓		✓
Observations	3,410	3,410	1,780	1,780	1,630	1,630

Robust standard errors, clustered at region level, in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table C6:** Instrumental variable second stage regression of tax compliance norm perceptions. Greater values of the outcome variable denote perceptions of a *weaker* tax compliance norm (greater acceptance of tax malpractice). Our belief updating measure,  $\Delta_k = \frac{(posterior_k - prior_k)}{posterior_k}$ ,  $k \in \{b, t\}$  and  $p$  and  $r$  denoting respectively bottom and top incomes is instrumented by the condition indicators. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.



	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Full sample		Stated social trust			
			Low income		High income	
$\Delta_p$	-0.130 (0.130)	-0.113 (0.124)	0.046 (0.149)	0.092 (0.163)	-0.281** (0.141)	-0.291** (0.119)
$\Delta_r$	-0.178* (0.103)	-0.123 (0.102)	-0.164 (0.158)	-0.122 (0.144)	-0.212** (0.105)	-0.143 (0.114)
Constant	-6.674*** (0.064)	-6.397*** (0.138)	-6.842*** (0.089)	-6.814*** (0.218)	-6.489*** (0.066)	-5.764*** (0.349)
Controls		✓		✓		✓
Observations	3,410	3,410	1,780	1,780	1,630	1,630
R-squared		0.033		0.038		0.010

Robust standard errors, clustered at region level, in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table C7:** Instrumental variable second stage regression of stated social trust. Our belief updating measure,  $\Delta_k = \frac{(posterior_k - prior_k)}{posterior_k}$ ,  $k \in \{b, t\}$  and  $p$  and  $r$  denoting respectively bottom and top incomes is instrumented by the condition indicators. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

---

	(1)	(2)	(3)
	Worldviews		
	Full sample		
VARIABLES	Richness	Hardwork	Redistrib
$\Delta_p$	0.210 (0.204)	0.139 (0.143)	-0.065 (0.111)
$\Delta_r$	-0.063 (0.142)	-0.119 (0.153)	-0.057 (0.127)
Constant	3.751*** (0.214)	5.179*** (0.144)	3.082*** (0.192)
Controls	✓	✓	✓
Observations	3,410	3,410	3,410
R-squared	0.027	0.046	0.040

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table C8:** Instrumental variable second stage regression of worldviews. Greater values of the outcome variable denote greater agreement with the statements that i) wealth accumulation comes at the expense of others, ii) success can be achieved only via hard work, and iii) redistribution is among a government's most important functions. Our belief updating measure,  $\Delta_k = \frac{(posterior_k - prior_k)}{posterior_k}$ ,  $k \in \{b, t\}$  and  $p$  and  $r$  denoting respectively bottom and top incomes is instrumented by the condition indicators. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

	(1)	(2)	(3)	(4)	(5)	(6)
	Worldviews					
	Low income			High income		
VARIABLES	Richness	Hardwork	Redistrib	Richness	Hardwork	Redistrib
$\Delta_p$	0.546** (0.267)	0.396 (0.242)	0.105 (0.127)	-0.176 (0.222)	-0.173 (0.203)	-0.295 (0.228)
$\Delta_r$	-0.309 (0.279)	-0.267 (0.223)	-0.223 (0.204)	0.231 (0.224)	0.095 (0.157)	0.208 (0.200)
Constant	3.823*** (0.301)	5.551*** (0.243)	3.235*** (0.224)	3.272*** (0.344)	4.487*** (0.327)	2.799*** (0.364)
Controls	✓	✓	✓	✓	✓	✓
Observations	1,780	1,780	1,780	1,630	1,630	1,630
R-squared		0.059	0.047	0.008	0.047	0.033

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table C9:** Instrumental variable second stage regression of worldviews, split sample analysis. Greater values of the outcome variable denote greater agreement with the statements that i) wealth accumulation comes at the expense of others, ii) success can be achieved only via hard work, and iii) redistribution is among a government's most important functions. Our belief updating measure,  $\Delta_k = \frac{(posterior_k - prior_k)}{posterior_k}$ ,  $k \in \{b, t\}$  and  $p$  and  $r$  denoting respectively bottom and top incomes is instrumented by the condition indicators. Controls include: age, gender, education level (=1 if complete high school), equivalent household income, worker (=1 if in the labour force), political orientation and region fixed effects.

## D Experimental conditions

**Condition Neutral** Condition Neutral mentions tax malpractice to make the phenomenon salient to the individual, without providing any further information.

---

The media usually provide discussions on many topics of current interest, including tax malpractice.

Please answer the following questions.

**Figure D3:** Information provided in the Neutral condition

**Condition HH** Condition HH instead adds information about the proportion of income which remains undeclared by the top and bottom income earners. The proportion provided is high (65%) for both groups. We randomised the order of presentation to control for order effects.

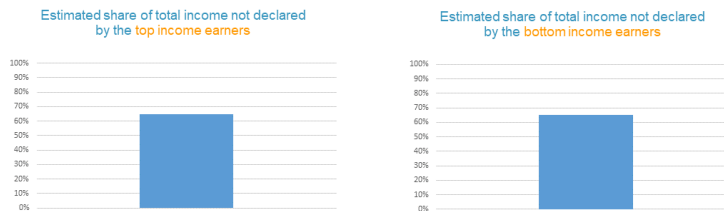
---

The media usually provide discussions on many topics of current interest, including tax malpractice.

We have recently surveyed a group of economists in Italy. Some of them estimate that:

(a)

Among top and bottom income earners in Italy more than half (around 65%) of their total income remains undeclared



(b)

**Figure D4:** Information provided in Condition HH

**Condition HL** Condition HL adds information about the proportion of income which remains undeclared by the top and bottom income earners. This time proportion provided is high (65%) for top income earners and low (25%) for low income earners. We randomised the order of presentation to control for order effects.

---

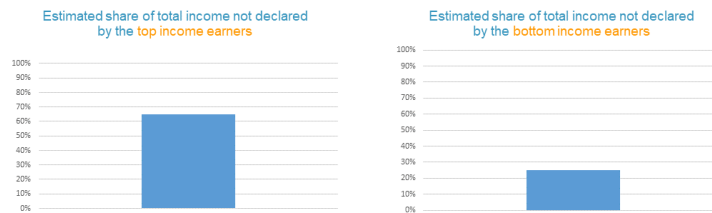
The media usually provide discussions on many topics of current interest, including tax malpractice.

We have recently surveyed a group of economists in Italy. Some of them estimate that:

(a)

Among top income earners in Italy more than half (around 65%) of their total income remains undeclared

Among bottom income earners in Italy less than half (around 25%) of their total income remains undeclared



(b)

Figure D5: Information provided in Condition HL

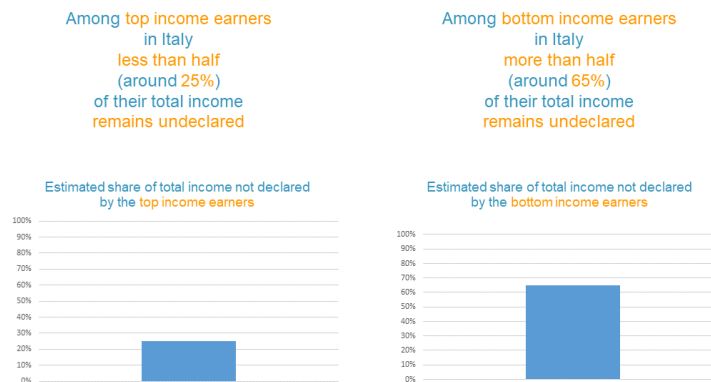
**Condition LH** Condition LH adds information about the proportion of income which remains undeclared by the top and bottom income earners. This time proportion provided is low (25%) for top income earners and high (65%) for low income earners. We randomised the order of presentation to control for order effects.

---

The media usually provide discussions on many topics of current interest, including tax malpractice.

We have recently surveyed a group of economists in Italy. Some of them estimate that:

(a)



(b)

**Figure D6:** Information provided in Condition LH

**Condition LL** Condition LL instead adds information about the proportion of income which remains undeclared by the top and bottom income earners. The proportion provided is low (25%) for both groups. We randomised the order of presentation to control for order effects.

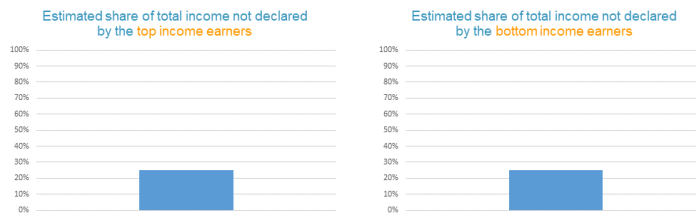
---

The media usually provide discussions on many topics of current interest, including tax malpractice.

We have recently surveyed a group of economists in Italy. Some of them estimate that:

(a)

Among top and bottom income earners in Italy less than half (around 25%) of their total income remains undeclared



(b)

Figure D7: Information provided in Condition LL

## E Survey questionnaire



**Notes for the reader:**

- Below is a transcription of the survey text, translated into English.
- Statements closed into [...] are comments included for the reader and were not displayed in the actual survey

**We are non-partisan researchers from an independent research institute.**

We would like to know your **personal views** on matters of public interest.

It is very important that you provide your **true opinion**, and that you **read all the questions very carefully before answering**. If you do not know the answer to some question, please provide us with your best guess.

It is very important that you **complete the entire survey**, once you've started. Not completing the survey will cause you not to receive your payment. The entire survey should take approximately 10 minutes to complete.

Note: Your participation in this study is purely voluntary. No identifying information will be recorded by the researchers. Results may include summary data, but you will never be identified. The data will be stored on our servers and will be kept confidential. The anonymous data collected may be made available to other researchers for replication purposes.

1.
  - a. Yes, I would like to participate
  - b. No, I don't want to participate
2. What is your gender? (M/F)
3. Please indicate your age:
4. What is your province of residence?
5. What is your marital status?
  - a. Single (Never Married/Widowed/Separated/Divorced)
  - b. Married /Civil partnership/Cohabiting
6. Where do you see yourself on the political spectrum, where 1 represents the left and 10 represents the right?
7. Please indicate how many people live in your household (including yourself): Adults... Children...
8. What is the combined **monthly** income of your **household, after taxes**?  
[Please include all your household income sources: salaries, scholarships, pension and Social Security benefits, dividends from shares, income from rental properties, child support and alimony etc. We are not interested in the type of income source, only in the total monthly income earned by all the members of your household together.]
  1. <1000
  2. 1000-2000
  3. 2000-3000
  4. 3000-4000
  5. 4000-5000
  6. 5000-6000
  7. 6000-8000
  8. 8000-10000
  9. >10000

The next question is about your household and how you think it compares to other households of the same size across Italy. When we say 'same size' we mean number of people rather than the physical size of a home. As a reminder, you have stated that your household contains **<INSERT FROM TOTAL NUMBER FROM HHSIZE>** people, including any children.

When answering these questions please think about how your household of **<INSERT FROM TOTAL NUMBER FROM HHSIZE>** people, compares to other households of **<INSERT FROM TOTAL NUMBER FROM HHSIZE>** people.

You previously said your monthly household income is **<INSERT>**.

9. What percentage of Italian households of your size, if any, do you think had a **higher** household income than your household income?  
If you are unsure, please give your best estimate.

The mass media generally offer debates on many topics, including tax malpractice.

**[Prior belief elicitation, randomized order]**

10. Please provide your best estimate of the share of total income that remains undeclared in Italy by:  
a. Those who earn the highest incomes
11. Please provide your best estimate of the share of total income that remains undeclared in Italy by:  
a. Those who earn the highest incomes

**[Information condition display here (see Information conditions Appendix)]**

**[Attention questions, randomized order]**

Please re-enter the information you have seen on the previous page.

12. The surveyed economists estimate that those earning the highest incomes don't declare what percentage of their total income?  
a. Around <enter amount>%
13. The surveyed economists estimate that those earning the highest incomes don't declare what percentage of their total income?  
a. Around <enter amount>%
14. Which media do you most frequently get information on world happenings from?  
(If you don't find your preferred outlet, please indicate the one that most closely represents it)
- a. TV News
  - b. Social media (social networks, blogs)
  - c. Radio/podcasts
  - d. Online newspaper/newspaper app
  - e. Print newspaper
  - f. I don't follow the news
15. What is the highest level of education you have completed?
- a. Primary school
  - b. Junior high school (middle school)
  - c. Professional education
  - d. High school (science/humanities)
  - e. Bachelor degree
  - f. Master's degree
  - g. Doctoral degree
16. Which party would you vote for should national general elections happen next week?
- a. Partito Democratico
  - b. Lega
  - c. Movimento a 5 Stelle
  - d. Forza Italia
  - e. Italia Viva
  - f. Fratelli d'Italia
  - g. Other
  - h. I wouldn't vote

17. What is your current employment status?
- Employed full-time
  - Employed part-time
  - Self-employed/small business owner
  - Unemployed and looking for a job
  - Not working and not looking for a job/Long-term sick or disabled
  - Full-time parent, homemaker
  - Retired
  - Student/Pupil

18. Were you born in Italy?

19. Were both of your parents born in Italy?

20. Which party would you vote for if there were elections on Sunday?

The video displayed just above was randomly selected by the software among the six videos displaying the six possible outcomes of a six faced die roll.

The result you see was hence obtained as if a die had been actually rolled. You can watch the video again if necessary.

Your task is to tell us what result you are seeing.

**You will receive an additional payment of 25 Points by reporting that the outcome is 6.**

Should you tell us that the outcome is not 6, you receive no additional payment.

21. What is the outcome of the die roll?

**You can receive an additional payment of 15 Points by answering the 4 questions below correctly. Read the instructions carefully.**

In a previous survey study conducted in Italy, a representative sample of the resident population was asked for their opinion about a number of actions. In particular, for each of the following actions they were asked on a scale from 1 to 10 whether they thought it can always be justified (10), never be justified (1), or something in between.

**Your task is to guess which evaluation was provided most frequently in that survey.**

One of the four questions will be **randomly selected** once you've completed the questionnaire.

**If your answer to the selected question will turn out to be correct** (that is, if you've correctly guessed which evaluation was most frequently assigned to it in the previous survey), you will receive an additional payment of 15 Points.

Because you don't know which question will be selected, you should answer each question as if that question will be the one determining your payment.

22. Claiming government benefits to which you are not entitled.

The most frequent answer in the previous survey was that "claiming government benefits to which you are not entitled" is:

23. Avoiding a fare on public transport.

The most frequent answer in the previous survey was that "avoiding a fare on public transport" is:

24. Cheating on taxes if you have a chance.

The most frequent answer in the previous survey was that "Cheating on taxes if you have a chance" is:

25. Someone taking a bribe in the course of their duty.

The most frequent answer in the previous survey was that "Someone taking a bribe in the course of their duty" is:

Now we would like to ask you for your opinion on the following statements. Please rate them on a scale from 1 to 10, where 1 means you completely disagree and 10 that you completely agree.

26. People can only get rich at the expense of others.
27. Hard work is one of the most important values to succeed in life.
28. Redistribution is among the most important tasks for a government.
29. Would you say your tax rate is too high, somewhat high, correct, somewhat low or too low? [The answers were randomly flipped]
  - a. Too high
  - b. Somewhat high
  - c. Correct
  - d. Somewhat low
  - e. Too low
30. More generally, would you say that the tax rate in Italy is too high, somewhat high, correct, somewhat low or too low? [The answers were randomly flipped]
  - a. Too high
  - b. Somewhat high
  - c. Correct
  - d. Somewhat low
  - e. Too low

Now we would like to ask you for your opinion on the following statements.

31. Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people? ( $1=most\ people\ can\ be\ trusted/10=Need\ to\ be\ very\ careful$ )
32. Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair? ( $1=most\ people\ would\ take\ advantage/10=people\ would\ be\ fair$ )

**[Posterior belief elicitation, randomized order]**

33. Please provide your best estimate of the share of total income that remains undeclared in Italy by:
  - a. Those who earn the highest incomes
34. Please provide your best estimate of the share of total income that remains undeclared in Italy by:
  - b. Those who earn the highest incomes

Not long ago you saw a video with the outcome of a die roll and you were asked to report the outcome. With an outcome of 6, you would receive an additional payment.

35. Did you realise that you could have lied without consequence?  
(That is, that you could have reported an outcome of 6 independent of the outcome actually displayed, and thus receiving the additional payment without any consequence?)
  - a. Yes, I had realised
  - b. No, I hadn't realised
36. Still in the question about the die roll, we are able to check the truthfulness of the report by matching the report with the video displayed (though without being able to identify who made the report).

Regardless of whether you had realised you could have lied, did you realise we could have checked the truthfulness of the report?

- a. Yes, I had realised
- b. No, I hadn't realised

**[Debriefing information, displayed to all participants]**

The information you received during this survey are based solely on **subjective** estimates provided by a group of economists on the proportion of undeclared income among different income segments of the Italian population.

These estimates do not reflect the opinion of all the interviewed economists, nor the opinion of the researchers who designed this survey.

Moreover, these estimates are not based necessarily on scientifically or statistically sound evidence.

There is a great deal of uncertainty among the scientific community about the actual incidence of tax evasion or avoidance in Italy, and a lively debate is ongoing on how to correctly measure it. Official estimates and evidence are hence hard to gather.

Nonetheless, plausible estimates based on scientific and statistical evidence place the proportion of undeclared income in Italy **between 10 and 20% of total income**.