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Social norms and tax compliance:

Experiments and theory

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# DEPARTAMENTO DE ANÁLISIS ECONÓMICO:

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# Social Norms and Tax Compliance: Experiments and Theory [*]

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**ABSTRACT**: We report data from an experiment in Peru where subjects anonymously decide how much of their endowment they donate to the Peruvian Government. The standard rational choice model and several well-known models of non-selfish preferences predict zero giving. Yet we observe that around 75% of the subjects give something (N = 164), with substantial heterogeneity. Our data is consistent with an account based on social norms: If compliance is not too costly, people comply with norms if (i) they perceive that such behavior sufficiently promotes social welfare and (ii) others are expected to respect norms as well (peer effects). Our paper contributes to a recent literature on tax morale emphasizing the importance of non-standard motivations on tax compliance and suggests that taxpayers are willing to give money to the government (e.g., paying taxes) if they believe that enough others give as well and that taxes are not wasted or 'stolen' by the government, but used to promote social welfare.

**Keywords**: Corruption, Evasion, Peer Effects, Social Norms, Tax Compliance, Tax Morale.

**JEL classification codes**: C91, D91, H26, H30

# 1. Introduction

The question of why people evade or pay their taxes is a crucial one for economic research and public policy because taxes support most of public investment and expenditures around the world (Andreoni et al., 1998). Indeed, tax evasion has been an important research topic for many years, starting from the seminal paper by Allingham and Sandmo (1972), who adapted the Becker (1968) model of crime deterrence to study tax evasion. Their model assumes that taxpayers are standard economic agents focused on their own material interest and hence stresses dissuasion as the main reason behind tax compliance. In other words, people pay taxes if the expected punishment for evasion is large enough, that is, if the probability of detection and the ensuing material sanction are sufficiently high.

While the model by Allingham and Sandmo (1972) is remarkable for its parsimony, its empirical validity has been often contested (Alm et al, 1992; Andreoni et al., 1998; Frey, 2003; Luttmer and Singhal, 2014). In effect, since prevailing sanctions and detection probabilities around the world are arguably low, the model seems to be inconsistent with the relatively low levels of tax evasion observed in most developed economies (Alm et al. 1992; Torgler, 2002). In short, dissuasion cannot explain by itself the actual levels of voluntary tax compliance. This fact has caused the birth of an abundant literature that analyzes the importance of psychological and cultural elements to explain taxpayers' behavior (Scholz and Witte, 1989; Alm et al, 1993; Pommerehne et al, 1994; Feld and Frey, 2002; Torgler, 2005; Luttmer and Singhal, 2014).

These not-related-to-the-dissuasion arguments have been grouped under the ample concept of "Tax Morale", which includes varied non-standard motivations like loss aversion, peer effects, reciprocity, and social norms, to name a few, but also cognitive aspects like biased perceptions, bounded rationality, and the application of mental heuristics. One of the appeals of a better understanding of these elements is that they might suggest ways to reduce tax evasion at a relatively low cost for the tax administration, which often has limited resources to pursue a very strict control strategy (for examples, see Del Carpio, 2014 and Hallsworth et al., 2017).

Focusing on the motivational side, what motives affect the will of the citizens to comply with their tax obligations? This paper offers some insights on this point by means of a utility model of tax morale and data from a lab experiment. The model

extends the approach in López-Pérez (2008) and makes two key hypotheses.[1] First, there is a social norm that commends to act so as to maximize social welfare, understood as a weighted sum of social efficiency and equity, that is, the size of the cake and its distribution. If people deviate from this 'E-norm', second, they suffer a utility cost that depends directly on (a) the magnitude of the deviation, i.e., the expected 'harm' or decrease in social welfare that the deviation causes and indirectly on (b) the average deviation among the reference group members (peer effects). These hypotheses are in line with ideas emphasized by previous studies. To start, the importance of peer effects and social influences on tax compliance has been highlighted by Slemrod (2002), Luttmer and Singhal (2014), and Alm et al. (2016) –see also Del Carpio (2014), who reports experimental field evidence from Peru in this line. These effects have also been observed in experimental lab studies on deception, of which false filling of tax forms is an instance; see Gino et al. (2009), Fosgaard et al. (2013), Innes and Mitra (2013), and López-Pérez and Spiegelman (2013). In turn, the role of moral rules and long-run cultural effects reflecting internalized social norms has been also stressed by Andreoni et al. (1998), Luttmer and Singhal (2014), and DeBacker et al. (2015).

We use experimental methods to test our model in a controlled manner. The experiment was run in Peru and is very simple: Each subject is endowed with 30 Soles (around $10) and can voluntarily and anonymously donate some of this endowment to the Peruvian government. Somehow surprising to us, a very substantial share of our subjects gives something (around ¾ of them). Moreover, giving is correlated with a number of variables, as predicted by our model. First, we elicit each subject's beliefs about the average donation by other subjects and find it significantly correlated with her/his donation (peer effects). The reader might object that this could be due to a false consensus effect, so that subjects believe that others tend to donate as much as them – Ross, Greene, and House (1977). Evidence from a treatment in which *reference* beliefs are arguably fixed, however, suggests that beliefs do affect donations. Second, we predict that giving will be (non-linearly) correlated with the subject's perceptions about how efficient and competent the government is. Intuitively, people would feel no remorse for not giving if they thought that most taxes are stolen or squandered. We ask subjects at least two questions that approximate those perceptions: (a) the ranking of

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[1] López-Pérez (2008) and López-Pérez (2010) discuss in length the psychological underpinnings of the model. In addition, López-Pérez (2008) shows that the model can explain a large number of robust experimental facts, including some at odds with other models of non-selfish preferences like Rabin (1993) and Fehr and Schmidt (1999).

Peru in the International Transparency index of corruption,[2] and (b) the level of support of the current president. A non-linear regression analysis shows that donations are significantly correlated with the responses to these two questions: Within the group of subjects who are (relatively) more positive about the government and the public sector, donations co-move *ceteris paribus* with their positive perceptions. On the other hand, we do not find a correlation between donations and other variables like gender, political ideology, religiosity, age, income level, and education.

While due caution is warranted in extrapolating this evidence to the realm of tax compliance, our data suggests that dissuasion is not the only factor explaining compliance. Taxpayers are willing to give (some) money to the government, particularly if they have *relatively* positive perceptions about its performance and believe that others taxpayers comply as well. The external validity of our results seems also supported by additional evidence and some prior literature. First, participants in our study were a representative sample of the population of taxpayers in Lima, and not just university students. Second, previous survey evidence from Latin America is consistent with our results. To start, the *Latinobarómetro* reports from 2009, 2013 and 2015 find that the payment of taxes has a high statistical relationship with the citizens' perception that governments work for the well-being of all.[3] Similar results are found by Ortega et al. (2016), who study citizens' attitudes to tax obligations by means of surveys implemented in 17 cities of Latin America. Third, our results are in line with the remarks by many researchers on tax compliance. For instance, Andreoni et al. (1998) reckon that citizens' perceptions about government spending and level of corruption are relevant elements in understanding compliance, and Torgler (2002) hypothesizes that a higher degree of trust in the president leads to higher tax morale.

The rest of the paper proceeds as follows. The next section presents a formal and detailed exposition of the theory. The experimental design and procedures described in

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[2] Peru is a country with relatively high levels of perceived corruption. Indeed, in the International Transparency report of 2017, Peru has the 96th position out of 180 analyzed countries, worsening its position of the previous three years and below the regional average. On a different topic, we note that the public sector in Peru is relatively small, as government spending has amounted to around 16.5% of total output (GDP) over the years 2014 to 2017 (source: Central Bank of Peru).
[3] See http://www.latinobarometro.org/lat.jsp. It must be noted that such perceptions tend to be negative in most Latin American countries, particularly in Argentina, Dominican Republic and Peru. In this respect, while we find that Peruvian taxpayers differ in their willingness to give money to the government, our model also hints that, in a cross-country comparison, aggregate evasion will be relatively high in countries where the average or modal perception is negative, like Peru. Similarly, the model implies that the differences in the rates of tax evasion normally observed between developed and other economies are partly due to differences in these perceptions and peer effects.

Section 3 aim to test some predictions that follow from the model, as explained in Section 4, which reports as well the experimental data. The last section concludes with a discussion of our main contributions.

# 2. A utility model with norms

## 2.1 General setting

We study the choice under uncertainty of a decision maker (called Zara), following as closely as possible Savage's (1954) analytical framework. Let $\Omega$ denote a finite state space, where a state $\omega \in \Omega$ fully specifies all relevant features of Zara's environment. Further, let O denote the set of outcomes. An act is defined as a function t: $\Omega \to O$. Zara's choice set $\mathbb{C}$ is a subset of the set of all acts, or mappings from $\Omega$ to O. Zara has prior beliefs on $\Omega$, quantified by a finitely additive probability measure $\pi$ mapping each state $\omega$ to a probability $\pi(\omega) \in [0, 1]$. Pair $(\mathbb{C}, \pi)$ is the *choice scenario*.

**Definition 1 (norm)**: A norm is a correspondence $\psi$ that assigns a nonempty subset of $\mathbb{C}$ to any choice scenario $(\mathbb{C}, \pi)$.

Norms are *exogenous* rules that select acts in choice scenarios, and can be interpreted as prescriptions on how one should behave in them.[4] In this line, act $t \in \mathbb{C}$ respects norm $\psi$ in scenario $(\mathbb{C}, \pi)$ if $t \in \psi[(\mathbb{C}, \pi)]$, where $\psi[(\mathbb{C}, \pi)] \subseteq \mathbb{C}$ is the image of $(\mathbb{C}, \pi)$ according to $\psi$. If act $t \in \mathbb{C}$ is not selected by $\psi$ in $(\mathbb{C}, \pi)$, in contrast, it constitutes a *deviation* (of $\psi$) in that scenario. Without loss of generality, we assume that Zara has internalized some norm $\psi_E$ (to be described later), which means that she dislikes deviating from it. More than this, Zara has a metric for deviations so that some are 'worse' or 'more deviated' than others.

**Definition 2 (deviation function)**: For any scenario $(\mathbb{C}, \pi)$ and norm $\psi$, a deviation function d: $\mathbb{C} \to [0, 1]$ is such that $d(t) = 0$ if t respects $\psi$ in $(\mathbb{C}, \pi)$, and $d(t) \geq 0$ for any other $t \in \mathbb{C}$.

Zara cares about the deviation $d_z$ of her choice, but also about others'. More precisely, there is a reference group $G = \{1,.., g,.., n\}$ and Zara considers what any g *would do if he were in her position*. Further, Zara compares her deviation with the deviations of the members of G. To formalize this last idea, let $d_g \in [0, 1]$ be g's deviation from $\psi_E$ (according to function d) and $d_G$ some function of vector $[d_1,.., d_g,.., d_n]$, increasing in each $d_g$. In short, $d_G$ is a measure of the aggregate deviation in G;

while other specifications are possible, our applications assume that $d_G$ is the average deviation in G. Note that Zara might be uncertain about $d_G$; to make this point clear, we use sometimes the more specific notation $d_G(\omega)$.

We can now specify Zara's utility function. For this, let $x_z$ denote her material payoff at outcome $o = t(\omega)$. That is, $x_z$ represents the material utility that Zara gets from consumption and leisure if o is achieved (or, equivalently, if act t is chosen when state is $\omega$); for simplicity, we take $x_z$ to be equal to Zara's monetary wealth. Zara's utility function $u$: O → ℝ on the set of outcomes takes then the form

$$u[t(\omega)] = x_z - \gamma \cdot [1 - d_G(\omega)] \cdot d_z \quad (1)$$

Since $d_G(\omega) \in [0, 1]$ by construction, note that $1 - d_G(\omega)$ represents average *compliance* in G. Hence the intuition behind function (1) is straightforward: Zara likes to get a high material payoff but also not to deviate, particularly if others do not deviate 'much'. Parameter $\gamma \in ℝ$ represents how deeply Zara has internalized the norm.[5] Finally, we postulate that Zara's preference relation $\succsim$ over the set of acts can be represented by a subjective expected utility evaluation $E[u(t)] = \sum_{\omega \in \Omega} u[t(\omega)] \cdot \pi(\omega)$, where $\pi$ is the probability over the states of $\Omega$.

### 2.2 Examples of norms and deviation functions

To illustrate briefly these concepts, consider a society, group or set of agents S = {1,.., i,.., I}; Zara belongs to S. Further let x = [$x_1$,.., $x_i$,.., $x_I$] denote an allocation of material payoffs in S, where $x_i$ denotes agent i's material/monetary payoff, and X the set of material allocations. A social welfare function (or SWF) W: X → ℝ assigns a number to each material allocation according to its 'social desirability'. A prominent example in this paper is ($\delta > 0$):

$$W^E(x) = \sum_{i \in S} x_i - \delta \big( \max_{i \in S}\{x_i\} - \min_{i \in S}\{x_i\} \big) \quad (2)$$

Observe that this SWF depends positively on the social efficiency (i.e., the sum of material payoffs) of allocation x but also negatively on its inequity, here measured most parsimoniously, as the maximal distance between two material payoffs of allocation x. Thus we refer to SWF (2) as the 'efficiency and equity' SWF, or E-SWF. Parameter $\delta$ represents how sensitive to inequity the SWF (2) is. If $\delta < 1$, for instance,

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[5] We will posit that γ is positive, so that Zara does not want to be a 'rebel', deviating from the norm when others respect it. We note also that our model extends López-Perez (2008), who assumes a 0-1 deviation function, i.e., any deviation is equally worse. One reason to relax this assumption is that it cannot explain interior solutions in the optimization problem to be analyzed in 2.3 below.

social efficiency is over-weighted relative to equity. See López-Pérez (2008, 2010) for additional examples of SWFs.

Importantly, Zara's choice need not only affect her own material payoff $x_z$, but also $x_i$ ($i \in S$). Let $x(t, \omega)$ denote the allocation of material payoffs in S if Zara chooses t and state is $\omega$. Given any social welfare function W, the expected social welfare of act t is then defined as

$$E[W|t] = \sum\nolimits_{\omega \in \Omega} W[x(t, \omega)] \cdot \pi(\omega) \qquad (3)$$

**Definition 3**: The fairness norm $\psi_W$ selects in scenario $(\mathbb{C}, \pi)$ the act(s) that maximize the expected social welfare (3). Non-optimal acts constitute deviations.

Some remarks on the concept follow. First, the definition implicitly assumes that the choice set $\mathbb{C}$ is compact, so that an optimum is well defined. Second, a fairness norm that will be pivotal in our analysis is one based on SWF (2); this was called before $\psi_E$ and we will refer to it as the *E-norm* too. Third, note that fairness norms allow the introduction of very natural deviation functions. That is, if act $t_\psi$ respects norm $\psi_W$ in some scenario, rendering an expected social welfare of $E[W|t_\psi]$, the difference

$$E[W|t_\psi] - E[W|t] \qquad (4)$$

represents the (expected) decrease in social welfare if Zara instead chooses t. A deviation function d(t) that positively depends on this difference (a *remorse function* hereafter) hence models the idea that a norm breaker's feelings depend on the 'social damage' caused by her actions.

For further illustration, we finally consider two norms that, contrary to the fairness norms of Definition 3, prescribe acts without explicit consideration of their *actual* (expected) consequences. The first example is 'follow the law under any circumstances'. In its simplest form, any act expressly forbidden by the law constitutes a deviation from this 'legalistic' norm, whereas any other acts respect the norm. The second example is Kant's Categorical Imperative –i.e., 'act only according to that maxim whereby you can, at the same time, will that it should become a universal law'. Given any SWF W* that we find normatively compelling, a more formal rendering of the imperative might be 'choose the act t that would maximize $E[W^*|t]$ if everybody respected this maxim'.[6]

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[6] This possibly makes more sense in an interactive setting; see López-Pérez (2008).

## 2.3 Application: A toy model of tax compliance with norms

Zara is a taxpayer with initial wealth $w_0$ and tax liability T and must decide the amount t of taxes that she will pay.[7] The choice set $\mathbb{C}$ is the interval [0, T], so that t = 0 means full evasion. In principle, Zara has access to public goods financed with taxes and may receive transfers; let $m(\omega, t) \geq 0$ denote the monetary value of the services and transfers enjoyed in state $\omega$ if she pays t units in taxes –implicitly, this term depends on the taxes paid by her and other contributors. Further, she can be sanctioned; let $p(\omega, t)$ denote the sanction or penalty given choice t and state $\omega$ –this includes any potential payment: evaded taxes, fines, interest payments, etc. If Zara chooses $t \in [0, T]$, therefore, her monetary wealth in state $\omega$ is $w_0$ - t + $m(\omega, t)$ - $p(\omega, t)$. To derive predictions, however, we simplify and posit that the marginal effect of each unit of taxes paid by Zara on the amount of public services enjoyed by her is negligible, so that $m(\omega, t)$ does not vary with t. In addition, we also assume $p(\omega, t) = 0$ for any $\omega$ and t. These assumptions are not realistic in general but simplify the analysis of tax morale (our focus here) and are plausible in our experiment.

Without loss of generality, assume that Zara has internalized the E-norm and her deviation function takes the form of a remorse function. We also posit for simplicity that taxes have a linear effect on social welfare. That is, each unit of taxes paid increases SWF (2) in $\Delta$ units (net of taxes). Further, there are just two states of the world. In state 1 (probability $\pi_1$), the government is inefficient and taxes squandered so that $\Delta$ takes on a low (possibly negative) value, $\Delta_1$. In state 2, in contrast, the government delivers and $\Delta = \Delta_2 > \Delta_1$. The probability of state 2 is $\pi_2 = 1 - \pi_1$. Thus E[SWF| t] is maximized for t = T if $\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2 > 0$, and the value of difference (4) when the act chosen is t equals $(T - t)(\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2)$. The remorse function can be hence represented as $d[(T - t)(\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2)]$, and Zara's utility if she chooses t in state $\omega$ is:

$$u = w_0 - t + m(\omega) - \gamma \cdot [1 - d_G(\omega)] \cdot d_z[(T - t)(\Delta_1\pi_1 + \Delta_2\pi_2)] \qquad (5)$$

Zara's goal is to choose t so as to maximize the *expectation* of function (5). We make two remarks in this respect. On one hand, we simplify and assume that the aggregate deviation $d_G(\omega)$ gets the same value in the two states of the world; i.e., Zara is not uncertain in this respect. Further, the remorse function $d_z$ depends on an expectation and hence takes on the same value in any state of the world. Assuming function $d_z$ to be twice differentiable, the following first order condition hence follows:

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[7] A point that we leave for further research is whether the tax liability T is perceived as fair (i.e., in line with fairness norms) by Zara, and how these perceptions affect tax compliance.

$$d'_z(\cdot) = \frac{1}{\gamma \cdot (1 - d_G) \cdot (\Delta_1 \pi_1 + \Delta_2 \pi_2)} \tag{6}$$

where $d'_z(\cdot)$ is the first derivative of the remorse function with respect to the (expected) decrease in social welfare, i.e., $[(T - t)(\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2)]$. We assume $d'_z(\cdot) > 0$, which implies that Zara suffers a higher psychological cost or remorse as t decreases, that is, when she evades more taxes. If we moreover posit that $d_z$ is strictly convex, so that 'large' deviations from the norm are relatively more painful than 'small' deviations, the second order condition

$$-\gamma \cdot (1 - d_G) \cdot (\Delta_1 \pi_1 + \Delta_2 \pi_2)^2 \cdot d''_z(\cdot) < 0$$

is sufficient for a local maximum, which moreover happens to be an interior solution if we also assume $d_G < 1$ and $d'_z(\cdot) = 0$ when $t = T$. Figure 1 may help to better understand the determination of the optimum level of tax compliance $t^*$, graphically located where function $d'_z(\cdot)$ and the horizontal line at level (6) intersect. Note that the critical point about $d'_z(\cdot)$ is that it decreases as compliance, i.e., choice variable t, increases. The illustrative shape chosen is Figure 1 does not play a role in the analysis.
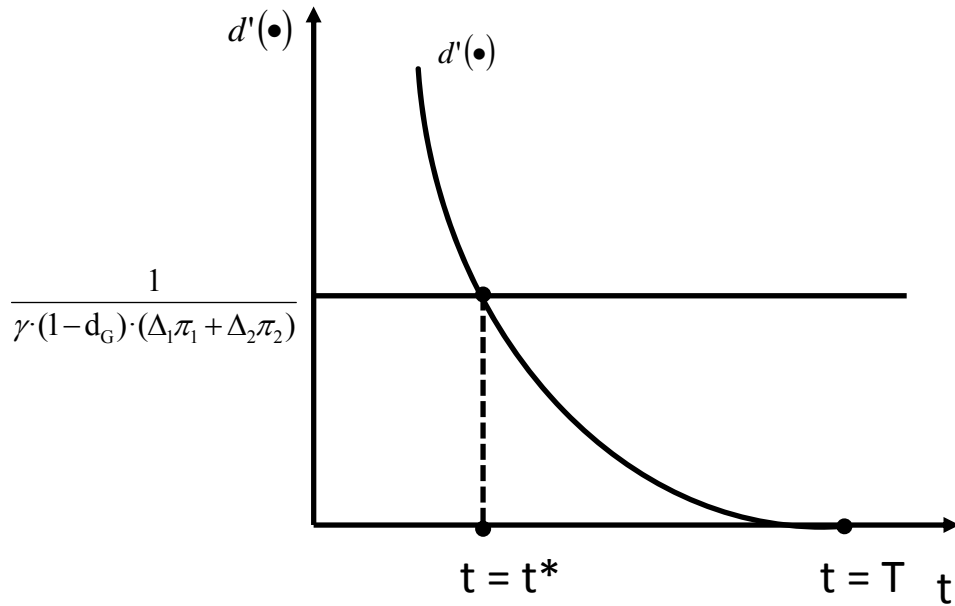


**Figure 1: Determination of the optimal level of tax compliance**

## 3. Experimental design and procedures

The main goals of our experiment are to test several implications of condition (6) above, to be explained in Section 4. For all this, we focus on a very simple, one-shot decision problem where each subject is endowed with 30 Soles (around $US 10) and can voluntarily donate some of this endowment to the Peruvian government. This

donation is implemented by means of an actual bank deposit to an account of the Peruvian Public Treasury (Banco de la Nación account number 00000-299294), made anonymously by two of the experimenters after all participants have finished their choices (with two subjects acting as witnesses). Any subject's payoff equals the initial endowment minus the donation, plus a 20 soles (around $US 7) show-up fee.

Each session was conducted as follows. Before it started, the instructions and a decision sheet were distributed in conveniently separated seats across the room so as to avoid communication between subjects. Then every subject entered the room and chose one of those seats. They first read the instructions at their own pace; subsequently, the experimenter read them aloud to ensure common knowledge.[8] Questions were privately clarified. All decisions were taken with pencil and paper. Any subject was identified by an individual ID number, included in her/his decision sheet.

Instructions attempted to diminish potential demand effects or other confounds. For instance, we used neutral language and stated that there were no tricky questions, so that subjects should choose as they preferred. A potential motivation by any subject to behave so as to 'please' the experimenters, therefore, arguably put no constraints on her choice. The instructions also recalled that the Peruvian government offers different public services, collecting taxes to finance them. In this respect, the experimenter noted verbally, while reading aloud the instructions, that the subject's donation would be used by the Public Treasury to finance similar expenditures as those taxes do; subjects were also informed in this manner about the Banco de la Nación account number mentioned above, writing as well that number in a blackboard.

When subjects had decided on their donation, decision sheets were collected and an elicitation sheet given. Here we elicited some beliefs that were designed so as to test several predictions, to be presented in detail in Section 4. Two of these beliefs are particularly relevant. First, we asked each subject to estimate the average donation among all participants in the session. Second, we also elicited beliefs about the position of Peru in the corruption index of 2014 by Transparency International.

After all subjects had their beliefs elicited, we collected the corresponding sheet. Then subjects answered a brief questionnaire which requested some socio-demographic information and made some questions about frequency of use of public services, support to the current presidential team, concern for inequity, etc.; many of them appear in similar terms in the World Values Survey (www.worldvaluessurvey.org). The

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[8] The translated instructions, decision forms and questionnaires can be found in Appendix I.

experiment ended with the completion of this questionnaire. Subjects were then paid in private by an assistant who was not informed about the details of the experiment.

Anonymity was guaranteed since any sheet was identified only by the corresponding subject's ID number, thus containing no personal information. Additionally, to further subjects' confidence in our procedures, they were told that at the end of the experiment two subjects would be asked to volunteer as witnesses. After all subjects had been paid, these witnesses checked the decision sheets and recorded the sum of all individual donations. Afterwards, the experimenters and the witnesses went to the bank office situated in the commercial center in front of the University campus, where an anonymous deposit was made for the total amount donated.

We run two sessions (1 and 2) at Universidad de Lima with 60 and 50 participants in each, respectively. Subjects were between 25 and 55 years old and economically active. In Session 1, they were selected by IMASEN following precise instructions,[9] so that the random sample was representative of the taxpayer population of Metropolitan Lima regarding age, gender, and socio-economic conditions. University of Lima's market research department selected with a similar methodology the participants for Session 2, run approximately one year later than Session 1. In any case, recruiters did not disclose any detail about the experiment to the subjects, except that this was a "focus group" meeting to collect opinions about government, institutions and other social issues. Each session lasted approximately 90 minutes, including paying the subjects individually. The average payoff in Sessions 1 and 2 was 45.33 Soles and 46.86 Soles, respectively, including always the mentioned show-up fee of 20 soles.

Aside from the control treatment described above, our design included an NGO Treatment with other 60 subjects (selected by IMASEN again; this experiment was run approximately at the same time as Session 1 of Control). This NGO treatment was identical to the Control except that the donation was not made to the Public Treasury but to the "Liga contra el Cancer" ("League against Cancer"), a private, well reputed NGO that helps cancer patients all around Peru.[10] The average payoff for the participants in NGO was 46.78 Soles. The deposit of 193 Soles was made in the Banco de Crédito del Perú account number 193-110188-0-80.

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[9] IMASEN is a Peruvian research-based consulting company, well-known for its market studies, surveys and polls: http://www.imasenperu.com/

[10] The League was founded in 1950. It has received important awards and prizes in Peru and Latin America as recognition of its accomplishments; see http://www.ligacancer.org.pe/reconocimientos.html.

Finally, a third treatment (INFO) consisted of a slight variation of Control, as we included in the decision form the rounded average donation made by the participants in Session 1 of Control. This INFO treatment was run at the same time as Session 2 of Control. The 54 participants in INFO earned in average a total payoff of 45.30 Soles.[11] We note that no subject attended more than one session or treatment.

## 4. Data analysis

In this section, we start with a brief summary and discussion of the subjects' decisions in each treatment. Afterwards, we explore several potential explanations for these results, including most prominently the model presented in Section 2.

### 4.1 Summary of results

Table 1 presents some descriptive data regarding the distribution of donations in each treatment and session.

| Treatments and Sessions | | Number of Subjects | Average Donation | Standard Deviation | Subjects by interval of donation (% in parentheses) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | 0 | [1,4] | [5,9] | [10,15] | [16,30] |
| NGO | | 60 | 3.22 | 2.92 | 13 (21.7) | 25 (41.7) | 18 (30.0) | 4 (6.7) | 0 (0.0) |
| Control | Session 1 | 60 | 4.67 | 4.67 | 10 (16.7) | 20 (33.3) | 18 (30.0) | 10 (16.7) | 2 (3.3) |
| | Session 2 | 50 | 3.14 | 5.94 | 23 (46.0) | 13 (26.0) | 10 (20.0) | 1 (2.0) | 3 (6.0) |
| INFO | | 54 | 4.7 | 4.66 | 9 (16.7) | 12 (22.2) | 25 (46.3) | 7 (13.0) | 1 (1.9) |
| Control + INFO | | 164 | 4.21 | 5.1 | 42 (25.6) | 45 (27.4) | 53 (32.3) | 18 (11.0) | 6 (3.7) |
| All treatments and sessions | | 224 | 3.95 | 4.64 | 55 (24.6) | 70 (31.3) | 71 (31.7) | 22 (9.8) | 6 (2.7) |

Note: The NGO session and Session 1 of Control were run at the same time. The INFO session and Session 2 of Control were run around one year later.

**Table 1: Descriptive statistics of each treatment and session**

We observe the highest average donations in Session 1 of Control and the INFO treatment, whereas the lowest are found in the NGO treatment and Session 2 of Control. We also find differences across sessions/treatments in the distribution of donations. For instance, the fraction of subjects who donate less than 5 Soles is above 60% in NGO

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[11] The questionnaire in INFO and Session 2 of Control was a small variation of the one we used in Session 1 of Control and NGO, as we elicited the subjects' beliefs about the eventual donations of members of some of their daily-life reference groups e.g. family, co-workers, classmates, neighbors, close friends and even members of the same church if applicable. In addition, we omitted some questions that appeared in the former questionnaire because subjects had apparently problems to fully understand them; the full questionnaire is available under request.

and Session 2 of Control, but below 40% in INFO and Session 1 of Control. The causes of these differences are explored below.

We also note that the average subject (N = 224) for all treatments and sessions (i) was around 40 years-old, slightly oriented to the right side in politics (5.63 out of 10), and more religious than the half line (5.3 out of 10). Further, he/she tends to distrust others (in a scale from 0 to 10, 0 being the minimum, average trust is 3.19), believes that Peru is a rather corrupt country (position 126 out of 168 countries), and thinks that personal income depends more on personal effort than luck or influences: If 0 (10) means that income depends on luck (effort), the average subject evaluates in 7.49 the relative importance of both factors. The average subject also believes that the Peruvian government mostly pursues individual and selfish interests instead of working for the people (3.36 in a scale from 0 to 10, 0 being the most pessimistic opinion). We provide more details below.

### 4.2 Testing several potential explanations of donations to government

Note that the standard neoclassical model is a special case of our model in 2.1. In effect, a selfish Zara only cares about her own material payoff, which implies $\gamma = 0$. In our experiment, this means that selfish subjects suffer no psychological cost whatever they do. Similarly, a subject who has internalized only the legalistic norm described in 2.2, moreover, considers appropriate any behavior, because the law does not forbid any choice in our experiment. The following result is hence immediate:

**Hypothesis 1**: If all subjects are selfish or have internalized the legalistic norm, nobody donates anything in any treatment.

**Evidence**: As Table 1 indicates, 42 subjects donate nothing to the government (around 26%) and 13 to the NGO (22%). The fact that most subjects do not act as the standard model predicts suggests the importance of tax morale. Indeed, a Wilcoxon signed-rank test indicates that the donation to the NGO is statistically significant (p-value > 0.0001), and the same is true for the donation to the government in Control (sessions 1 and 2 pooled; p-value > 0.00001) and INFO (p-value > 0.00001). In summary, we reject Hypothesis 1.

Since the evidence strongly suggests that not all subjects are selfish, we consider alternative motivations for giving. A priori, natural candidates are several utility theories of other-regarding preferences. Models of inequity aversion like Fehr and Schmidt (1999), for instance, predict that some individuals may sacrifice part of their material payoff to reduce differences in monetary gains between themselves and other

individuals. However, Fehr and Schmidt (1999) cannot explain donations in any treatment, as donating only increases the disadvantageous inequity with those subjects who do not donate.[12] For another model, Dufwenberg and Gneezy (2000) and Battigalli and Dufwenberg (2007) assume that people suffer a utility cost if they believe they have let down the payoff expectations of another. Yet this hypothesis of belief-based guilt-aversion cannot explain either any donations because, arguably, donations are totally unexpected by the receptor (the government or the NGO).

Potentially more promising approaches are reciprocity models like Rabin (1993) and (unconditional) altruism and warm-glow as in Andreoni (1998), which we will discuss afterwards in more detail. For the moment, however, let us focus on an explanation based on social norms as modeled in Section 2. More precisely, suppose that some subjects find binding the E-norm. The toy model in 2.3 then indicates that the normative choice is $t = T$ if $(\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2) > 0$ and $t = 0$ if $(\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2) < 0$ –any choice is normative if the expected effect on social welfare of any Sol donated is nil. The interesting case is $(\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2) > 0$, so that the remorse function $d(t)$ gets value 0 for $t = T$. If this function is convex, further, condition (6) is sufficient for an optimum:

$$d_z'(\cdot) = \frac{1}{\gamma \cdot (1 - d_G) \cdot (\Delta_1 \pi_1 + \Delta_2 \pi_2)} \tag{6}$$

Assume then that subjects have heterogeneous perceptions about the effectiveness of their donations or "taxes", that is, about parameters $\Delta_1$, $\pi_1$, and $\Delta_2$. Clearly, the value of $t$ satisfying (6) decreases when $\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2$ decreases. In other words, "evasion" increases if $\Delta_1$, $\pi_2$ or $\Delta_2$ decrease (or $\pi_1$ increases) as we can also check with Figure 1 above (graphically, the horizontal line moves upwards, thus changing the optimal choice $t^*$). The intuition is simple: If the subject believes that the expected effect of her donation on social welfare is small, she feels less remorse for not donating.

Under what circumstances will a subject believe such a thing? We can think of several reasons. A first one obviously refers to the subject's beliefs about how effective public expenditure is on promoting SWF (2). For an example, consider a subject or "taxpayer" who believes that public funds are embezzled/wasted by corrupt/inept politicians, high-rank public officers or public workers –e.g., she might believe that public employees like those working in social programs waste resources or simply steal

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[12] More formally, our experimental decision problem has the payoff structure of a VCM public good game with a marginal per capita return of the public good equal to zero. Proposition 4 in Fehr and Schmidt (1999) then implies no donations.

food or transfers aimed to the poorest. Since she believes that public spending does not help the poor or promote economic growth, and can even foster further inequities, this taxpayer's remorse function should be basically flat.[13] Hence, she should not feel much remorse for not paying her taxes. More generally, evasion should increase when the agent believes that corruption and inefficiency are rampant. If the level of expected corruption and waste is sufficiently high, in fact, condition $(\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2) \leq 0$ holds and there is full evasion; this suggests a non-linear relation between $\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2$ and the optimal choice t*.

**Hypothesis 2**: A subject's decision to donate to the government indirectly (but non-linearly) depends on her perceptions about the level of waste, incompetence, and corruption in the public sector. The amount donated analogously depends on these variables.

**Evidence**: The answers to several questions in our questionnaire should be correlated with these perceptions; most obviously, the belief about Peru's position in the Transparency International ranking. Other things equal, we indeed expect a non-linear negative correlation between that belief and the amount donated to the Peruvian government. On the other hand, we expect a positive, non-linear relation between the subject's donation and her/his support to the current presidential team, as it is plausible that most people who sympathize with a president and her/his ministers tend to believe that they are relatively competent. In the questionnaire, finally, subjects were also asked their agreement with the following two statements: (i) The Peruvian government is controlled by a few interests who are only concerned with themselves, and (ii) the Peruvian government governs for the benefit of all. Answers were numerical, from 0 (complete agreement with the first statement) to 10 (indicating complete agreement with the second one). This question, while possibly highly collinear with the corruption question, can be used as a further robustness test of our model. We predict a positive relation between the subject's answer and her/his donation.

For some *preliminary* evidence, Table A in Appendix II shows the subjects' average responses to several items in our questionnaire, conditional on their individual donation D. Our focus here is on variables 1 to 3 (see left-hand column). Compared with those subjects who donate something (D > 0), we observe that non-donators (D =

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[13] The implicit, plausible assumption here is that most taxpayers believe that corruption does not further economic growth or equity. Hypothesis 2 below does not apply for subjects who believe otherwise, which arguably should be a minority.

0) believe in average that the Peruvian government is relatively more corrupt. Moreover, they support less the current president. For further evidence suggesting the relevance of Hypothesis 2, we see that beliefs about corruption, general trust in the government and support for the current president *frequently* improve as the donation increases. A remarkable exception to this pattern comes from the 6 subjects who make the largest donations (D > 15), as they tend to have very pessimistic views about corruption and distrust the government in general. Yet this seems to be compensated by the fact that they support most the president. Of course, the behavior of these subjects does not invalidate Hypothesis 2, which implicitly operates under a *ceteris paribus* clause, but reflects that a proper regression analysis is required.

This is what we do in Table 2, pooling the data from Control and INFO. Models (1) and (2) are *linear* OLS models where the dependent variable is a subject's donation to the Government, in Soles. Model 1 includes the main explanatory variables considered by our model, and in particular those related to Hypothesis 2 (variables 1 to 3 in the left-hand column). Model 2 adds some other variables collected in the experiment.[14] In these models, we observe that the coefficients of the variables (1) corruption and (2) support to current president have the expected sign (negative and positive, respectively). Only the second variable is however significant. Variable 3, measuring trust in the government, has not the expected sign, but is never significant.

None of the models in Table 2 seem to present multicollinearity problems, based on the analysis of variance inflation factors (VIF) –the mean VIF is never larger than 1.33. In Models 1 and 2, however, we reject the null hypothesis of constant variance of errors then questioning linearity (Breusch-Pagan test, p-value < 0.0001). Since our theory also predicts a non-linear relation between these variables and the donation, we hence run regressions 3 and 4. These are non-linear models where the dependent variable is D* = Ln(D+1), D being the subject's actual donation to the government. In short, we assume an exponential relation between the donation and each explanatory variable. Hence any estimated coefficient can be interpreted as a growth rate, i.e., if the coefficient of X equals $\beta$, the donation changes at a rate of $100 \cdot \beta\%$ as X marginally increases. In these Models 3 and 4, variables 1 to 3 all have the hypothesized sign.

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[14] We do not report the whole analysis here, as models (2) and (4) also control for the subject's age, gender, general trust on others (0: never, 10: always), perceptions about the government's performance in the last 5 years (0: Lousy, 10: Excellent), willingness to pay more taxes if government improves public services (0: No, 1: Yes), car ownership (no:0, yes:1), and whether he/she has children (0: No, 1: Yes). Neither of these variables is significant in any model (not even marginally).

Moreover, the first and second variables (corruption and support for current president) are significant in both models (either at 1%, 5% or 10% levels).[15] Variable 3 is never statistically significant, possibly indicating that its net effect is not relevant once variables 1 and 2 are taken into account.

| Dependent variable | Donation | | Log (donation + 1) | | Donation |
|---|---|---|---|---|---|
| Independent variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
| 1. Corruption (1: least - 168: most) | -0.00748 | -0.0130 | -0.0029* | -0.00341** | -0.001 |
| | (0.009) | (0.009) | (0.002) | (0.002) | (0.005) |
| 2. Support to current president (1: not at all, 10: entirely) | 0.448*** | 0.360** | 0.067*** | 0.0556* | 0.378*** |
| | (0.141) | (0.166) | (0.025) | (0.029) | (0.104) |
| 3. Government is controlled by (0: few interests, 10: works only for the people) | -0.046 | -0.058 | 0.0188 | 0.0162 | 0.036 |
| | (0.162) | (0.192) | (0.028) | (0.034) | (0.127) |
| 4. belief average donation others | 0.233*** | 0.257*** | 0.045*** | 0.0461*** | 0.201*** |
| | (0.054) | (0.057) | (0.009) | (0.010) | (0.045) |
| 5. Beliefs in a just world (0: only luck, 10: only personal effort) | -0.0671 | -0.103 | 0.006 | 0.0038 | -0.066 |
| | (0.147) | (0.155) | (0.026) | (0.027) | (0.082) |
| 6. Equality preferences (0: none, 10: maximum equality) | -0.0697 | -0.067 | -0.0024 | -0.0001 | -0.065 |
| | (0.133) | (0.134) | (0.023) | (0.024) | (0.089) |
| 7. Weekly frequency of watching news (in tv, internet, and others) | | -1.084** | | -0.137 | -1.085*** |
| | | (0.477) | | (0.085) | (0.407) |
| 8. Political preferences (0: extreme left, 10: extreme right) | | 0.276 | | 0.046 | |
| | | (0.234) | | (0.042) | |
| 9. Education | | -0.0920 | | 0.038 | |
| | | (0.474) | | (0.084) | |
| 10. Socio-economic level | | 0.315 | | -0.026 | |
| | | (0.530) | | (0.095) | |
| Intercept | 2.143 | 3.635 | 0.843** | 0.787 | 5.141*** |
| | (2.153) | (3.819) | (0.377) | (0.681) | (1.490) |
| Obs. | 163 | 160 | 163 | 160 | 164 |
| R-square | 0.163 | 0.253 | 0.20 | 0.252 | 0.191 |

Note: Robust standard errors in parentheses. All models are estimated by OLS. The median dummy model 5 uses the medians of the variables to generate binary variables (if variable < median, then dummy = 0, whereas, dummy = 1 otherwise). Models 1, 2 and 5 do not satisfy homocedasticity, while Models 3 and 4 do accomplish it. ***, **, and * indicate significance at 1%, 5 %, and 10% levels, respectively.

**Table 2: Regression analysis of determinants of donation to government**

While we postpone for the moment the discussion on variables 4 to 6, we make a brief comment on the other variables that appear in Models 2 and 4. First of all, we find

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[15] We note that both variables become marginally significant when we control for religiosity and the size of the subject's home (in square meters). A problem here however is that we lose around 50 observations, as many subjects did not respond at least one of these questions. We further note that these two explanatory variables are never significant in the regressions: It seems that religiosity and wealth (possibly co-linear with the home size) do not determine choice in our experiment.

that political ideology and education have not significant effect on the donation in the model. In turn, the socio-economic level is a variable constructed by the Peruvian Market Research Firms' Association (APEIM) that depends on the subject's income but also on her/his neighborhood of residence, the number of vehicles that he/she owns, the education level, having a (private) health insurance, and other characteristics.[16] It seems a fairly good approximation to the level of wealth and income of the subject's household, and we find it not to be correlated with the amount donated (as we have noted before in a footnote, other variables that we elicited to measure wealth are also non-significant). Finally, a relatively remarkable result is that the subject's weekly frequency of watching the news (see appendix I for the exact wording of the question) *negatively* correlates with the donation in some regressions: More informed subjects donate less. While the significance of this coefficient is at most 5%, it seems that some factors not considered by our model might play an explanatory role; we leave them for future research.

We have also considered an alternative non-linear model, where D is the dependent variable. For any explanatory variable X, moreover, we assume a nil effect until X reaches some threshold X*. From that point on we hypothesize a significant linear relationship between D and X, as Figure 2 indicates for an increasing case.
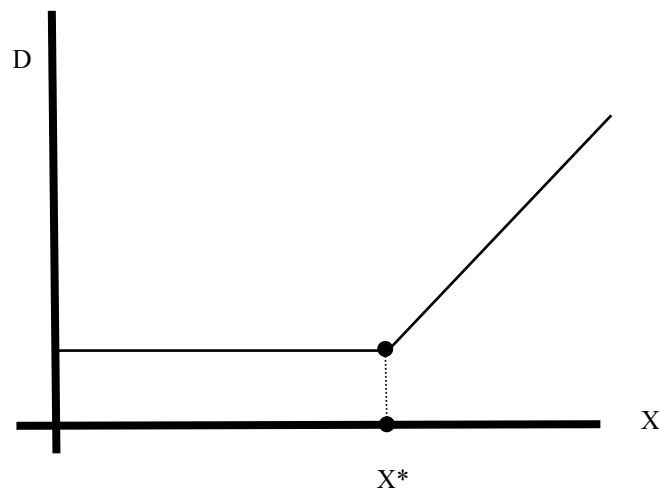


**Figure 2: A non-linear relation between donation and X**

While many potential values for threshold X* can be considered, we find that a possibly natural one is the median m(X) of the distribution of X for all subjects in

Control and INFO. If only one variable X were considered, formally, the model would be therefore of the type:

$$D_i = \alpha + \beta \cdot Z_{Xi} \cdot X_i$$

Where $D_i$ is subject's i donation, $X_i$ is the value that variable X takes for subject i (e.g., her/his perceived ranking of Peru in the Transparency International Index), $Z_{Xi}$ is a dummy variable taking value zero if $X_i$ is lower than m(X), and value one otherwise, and $\alpha$ and $\beta$ are the coefficients to be estimated. As we see in Model 5 of Table 3, variables 1 to 3 have the hypothesized sign, but only support for the president is significant among them. In spite of this, we overall interpret the evidence in Table 2 as not rejecting Hypothesis 2. The following result summarizes our discussion so far.

**Result 1**: Donations depend non-linearly on the subject's perceptions about the competency of the government. That is, among those subjects who have more positive perceptions in this respect, donations increase as perceptions improve. In contrast, donations are not explained by the subject's age, gender, religiosity, political ideology, wealth, and education level.

We finally remark that the differences in the average donation between Sessions 1 and 2 of Control, which were run approximately with one year of difference, can be explained *in part* by our model. In effect, we have seen that support for the current president is a significant explanatory variable, and this variable has a significantly lower median value in Session 2 (median support in Sessions 1 and 2 was 7 and 5, respectively; Mann-Whitney, $p > 0.017$), possibly reflecting the fall in popular support that the government of president Kuczynski suffered during his first year of mandate (note that Session 1 was run shortly afterwards the president was elected).[17] Yet we also note that there seems to be some idiosyncratic effect in Session 2: If we include two dummy variables in regression Model 4 of Table 2 above, one for the INFO treatment and another for Session 2, we observe that the last dummy is negative and significant at the 1% level.[18]

On a different issue, our model does not only suggest a relation between the donation and the subject's perceptions about corruption and inefficiency in the public sector. A less obvious relationship is predicted between a subject's $\delta$ –i.e., her concern

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[17] His support at the time of Session 1 in November 2016 was 51% but decreased to 27% by the time of Session 2 in November 2017 (source: IPSOS Market Research). By March 21st, 2018 President Kuczynski resigned his presidency after being involved in a vote-buying scandal.

[18] The INFO dummy is non-significant. In comparison to Model 4 in Table 2, further, the level of significance of the other explanatory variables remains unchanged in this expanded model. Detailed results are available upon request from the authors.

for equity and need– and her donation. In effect, consider those subjects who have a large $\delta$. If they *moreover* believe that a large share of the collected taxes is used to fund redistribution and anti-poverty programs, these subjects should contribute relatively more because they believe that their taxes are more 'useful' in social welfare terms, as they help to reduce inequity. In other words: The perceived social effect of taxes, measured by the subject's perceptions about $\Delta_1$ and $\Delta_2$, is ceteris paribus larger for subjects with relatively high $\delta$, particularly if they believe that a large part of the public budget is oriented to these programs. Intuitively, these subjects care about equity and think that a substantial share of her taxes addresses poverty and inequity. Hence, deviations from the E-norm are relatively painful for them.

**Hypothesis 3**: Ceteris paribus, the amount donated directly depends on the subject's $\delta$ and her expectations about the share of the public budget focused on social programs. The relation is non-linear.

**Evidence**: While our questionnaire (see appendix I) elicited a subject's belief about the percentage allocated to social programs in the Peruvian national budget, this data seems of doubtful quality.[19] Given this, we opt not to use it and work under the assumption that subjects expect a sufficiently large share of the budget to be allocated to fight poverty and inequity.[20] Under this assumption, we hence predict a positive relation between the subject's donation and her/his answer to the following question (see appendix I): "Do you believe that the distribution of income in a society should be as egalitarian as possible?", which subjects had to answer using a number from 0 (completely disagree) to 10 (completely agree). In this respect, the data in Table A in appendix II shows that non-donators are less concerned about equality than other subjects. In the regression analysis in Table 2, however, Variable 6 is never significant and the sign of the estimated coefficient happens to negative, contrary to our presumptions. For these reasons, we reject Hypothesis 3.

An even more subtle determinant of donations refers to what psychologists call the *Just World Hypothesis* (Lerner, 1980): People have a strong desire or need to believe that the world is an orderly, predictable, and just place, where individuals get

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[19] The question was apparently not understood by many of the subjects since their responses did not make sense, e.g., the fractions of the budget allocated to social programs, investment in public infrastructure, etc. were supposed to sum 100% but for many subjects failed to do so. We decided not to intervene and explain in detail this point since the experiment was in progress and we could distract the subjects.

[20] In a sense, this assumption plays devil's advocate, as public spending on Social Assistance Programs was 1.4 % of the Peruvian GDP in 2015, an arguably limited amount; see http://datatopics.worldbank.org/aspire/country/peru.

what they deserve. For instance, they may believe that income is mostly determined by effort, and not by chance. Strong believers in this hypothesis might conclude that social programs are not fair, as they reward those who do not deserve it. This is basically equivalent in our model to having a small δ.

**Hypothesis 4**: Ceteris paribus, a subject's donation indirectly depends on the strength of her/his beliefs in a just world and her expectations about the share of the public budget focused on social programs. The relation is non-linear.

**Evidence**: In the questionnaire, subjects were asked to indicate numerically their opinion about the relative importance of two factors in determining a person's income: (a) Chance and influences of other people and (b) the extent to which the person strives to work hard in life. Opinions could range from 0, that is, factor (a) is the only important one, and 10, signifying that personal endeavor (b) is the unique determinant. While subjects tend to believe that effort is the main determinant of personal income, the answers to question 5 in Table A in Appendix II show that non-donators believe that chance plays a relatively larger role than donators. This already suggests that Hypothesis 4 lacks predictive power, which is confirmed by the regression analysis in Table 4. We hence reject the hypothesis and sum up our discussion on Hypotheses 3 and 4 as follows:

**Result 2**: Neither a preference for equity nor a perception that income depends on chance (and not effort) explain donations. It seems therefore that fairness considerations do not account for behavior.

Another goal of our study is to explore peer effects. Our starting hypothesis is that subjects compare with each other, so that a subject's reference group contains all the other participants in the session. In this case, the average donation appears to be a natural benchmark.

**Hypothesis 5**: The amount donated directly depends on the subject's belief about the average donation from others.

**Evidence**: As we can see in Table 2 and Table A (see Appendix II), this hypothesis is largely vindicated by the data, for several reasons. First, non-donators expect a lower average donation than donators (see question 4, Table A), and this difference is statistically significant (Mann-Whitney k-sample test; $p > 0.001$). Second, the data in Table A already shows a neat correlation across the intervals between the donation and the beliefs. Third, the regression analysis in Table 2 confirms this point.

The estimated coefficients for this variable are positive in all regressions and moreover significant at 1% level.

For further illustration, Figure 3 below includes three graphs, one for Session 1, Session 2 and the INFO treatment. In each graph, a dot corresponds to a participant in the corresponding session/treatment, located according to her/his beliefs and donation to the government (vertical axis). We can observe in the three graphs a regression line, showing that beliefs and donations positively correlate in all sessions and treatments considered. The reader can also possibly perceive that such correlation is far from perfect. In fact, donations are often smaller than beliefs. Indeed, the coefficients of Models 1 and 2 in Table 2 above indicate that an increase in the beliefs in one unit leads to an increase in the donation of around 0.25 Soles, which is significantly smaller than 1 (with such a null hypothesis, the p-value happens to be 1).
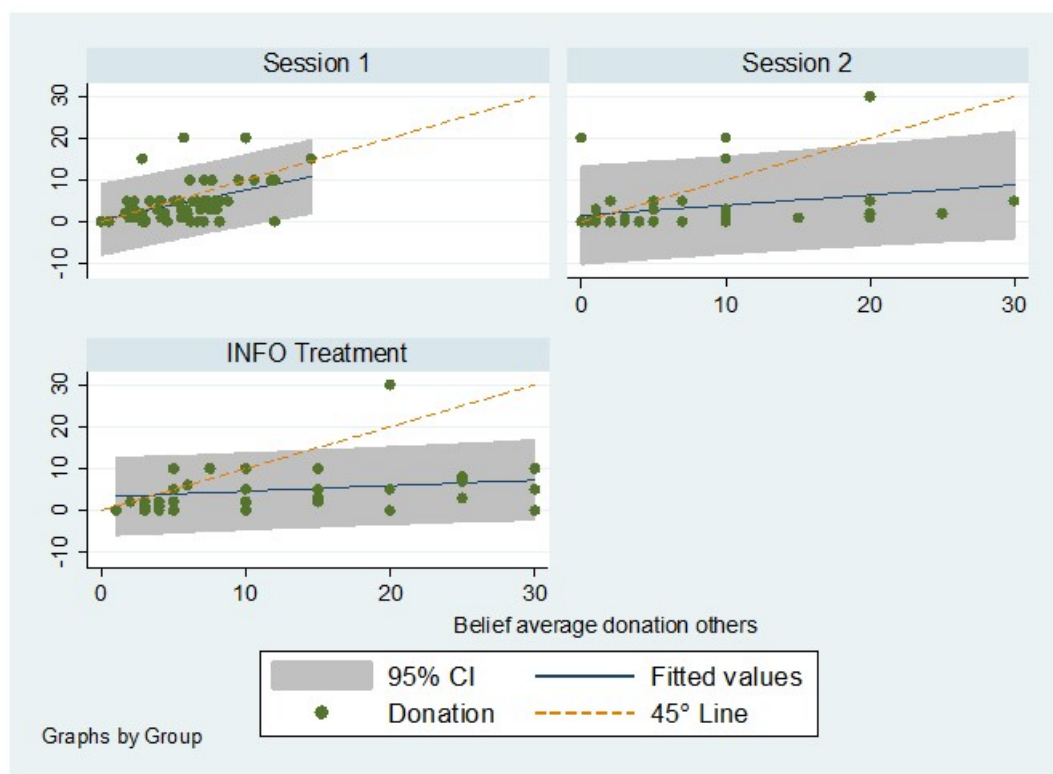


**Figure 3: The relation between donations and beliefs**

A problem in the previous analysis is that the correlation between beliefs and donations can be spurious. A potential reason is the so-called false consensus effect, which captures the tendency of an individual to think that others are similar to her – Ross et al. (1977), Marks and Miller (1987). That is, donations might not be affected at all by the subject's beliefs and yet be co-linear with them, just because people tend to think that others are like themselves and hence donate similar amounts. For a number of

reasons, we believe that our results are not driven by the false consensus (at least entirely). To start, we recall that donations are systematically lower than beliefs (see Figure 3 above): Subjects tend to believe that others give more. In addition, the results from the INFO treatment, which we conducted to explore further whether beliefs affect donations, are at odds with the idea that beliefs are irrelevant for choice. Recall that subjects in INFO were informed in the donation sheet –that is, before choosing– about the (rounded) average donation to the government in Session 1 of Control, i.e., 5 Soles (the actual average was of 4.67 Soles).

The rationale behind this treatment is twofold. On one hand, the *distribution* of donations in INFO and Control should not be statistically different if beliefs are inconsequential for behavior, other things equal. Note that the last proviso indicates that some caution must be taken when comparing data from both treatments. For instance, Session 1 of Control and the INFO session were run with a year of difference, and a significant variable like the support for the president changed during that time. Hence, the proper comparison is that between Session 2 of Control and the INFO session, as both were run at a similar time. In this respect, a two-sample Kolmogorov-Smirnov test indicates that the two donation distributions are statistically different ($p > 0.001$). This is therefore evidence that beliefs do affect behavior.

In this vein, a second rationale for the INFO treatment is that our model predicts a specific change in the distributions across treatments, at least under certain ancillary assumptions. In effect, suppose that a significant fraction of subjects in INFO use the average donation in Session 1 of Control as the reference point, and not the average donation by other subjects in INFO.[21] In this case, many subjects in INFO would have the same reference point. In Session 2, in contrast, we suppose that subjects compare with each other; in principle, reference beliefs should be more heterogeneous. Since reference beliefs affect donations by assumption and they are more heterogeneous in Session 2, a contraction of the distribution of donations is expected in INFO ceteris paribus. When we compare this distribution in INFO and Session 2, in fact, a Levene's test for differences in variances indicates a lower dispersion in INFO ($p > 0.0432$).

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[21] In this account, the reference group G is not fixed, but shaped by the context: Zara does not always compare with the same people, but with those who happen to be salient (see Gino et al., 2009, for a similar idea and evidence). Alternatively, we could assume that subjects in INFO compare among themselves, but that their expectations are influenced by the information provided, so that they tend to believe that others donate in average an amount similar to that in Control, Session 1. As we report later, however, this idea seems in contradiction with our data on beliefs.

Note well that we predict a difference in the dispersion, but not *necessarily* in the median or average donation. Although the average donation in Session 2 happened to be smaller than that in INFO, other results were theoretically possible –e.g., if subjects in Session 2 had beliefs systematically higher than 5, they would give more.[22] However, we can say something when comparing Session 1 and INFO: *If subjects in INFO tend to move towards a donation of 5 Soles*, the average donation in INFO and Session 1 of Control should be very similar. In this respect, we must note that the median donation in INFO is indeed not significantly different than that in Session 1 (Mann-Whitney k-sample test; $p > 0.854$). Since this result follows from the italicized assumption just cited, which in turn is implied only by some specific parameterizations of our model, we view it as less relevant though than the dispersion result in the previous paragraph.

In summary, the core of our argument is that the reference point in INFO is fixed (at least for a substantial share of subjects), whereas subjects in Control do not have such fixed reference.[23] The effect on dispersion follows. A subtle, although collateral, point in this respect is whether subjects in INFO anticipate this phenomenon, that is, do people anticipate peer effects? The answer seems to be negative, which is somehow paradoxical: Behavior is apparently shaped by the fixed reference point, but then subjects fail to capture this treatment effect.

To illustrate the point, Figure 4 depicts the distribution of beliefs about the average donation to the government in each session and treatment. If many participants in INFO anticipated the effects, the distribution of beliefs would be less dispersed than in Session 2, with a mean around 5 Soles. To the contrary, we find that the standard deviation is equal to 7.13 in Session 2 but equals 9 in INFO; the difference is marginally significant according to Levene's test (p-value = 0.0504). In Session 2, further, the average and median belief equals 6.49 and 5, respectively, while they respectively amount to 11.18 and 9 in INFO, again a marginally significant difference ($p = 0.068$). We yet stress that the subjects' failure to anticipate the peer effects does not invalidate

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[22] The discussion hence stresses that peer effects may just operate through other statistics than the median or the average. This is possibly related to the results by Del Carpio (2014) in a field experiment on property tax collection in Peru. She sent letters to taxpayers in two conditions: (a) including only payment reminders, and (b) containing as well, information about previous peer compliance, and found a small and statistically insignificant increase in tax compliance in condition (b).

[23] Playing again devil's advocate, one could insist that beliefs do not shape behavior, arguing instead that the 5 Soles reference in INFO acts as an anchor (Tversky and Kahneman, 1974). Anchoring occurs when someone who has to estimate an unknown quantity observes a number, to the effect that the posterior estimation orbits around that number. However, what estimation could be shaped by the 5 Soles reference, other than that of some reference belief, irrelevant by assumption in this argument?

from our point of view the argument about the existence of such effects: A person can be affected by the reference point and yet believe that others are not. Even more, the effect of such reference on her decision might be somehow unconscious to her.
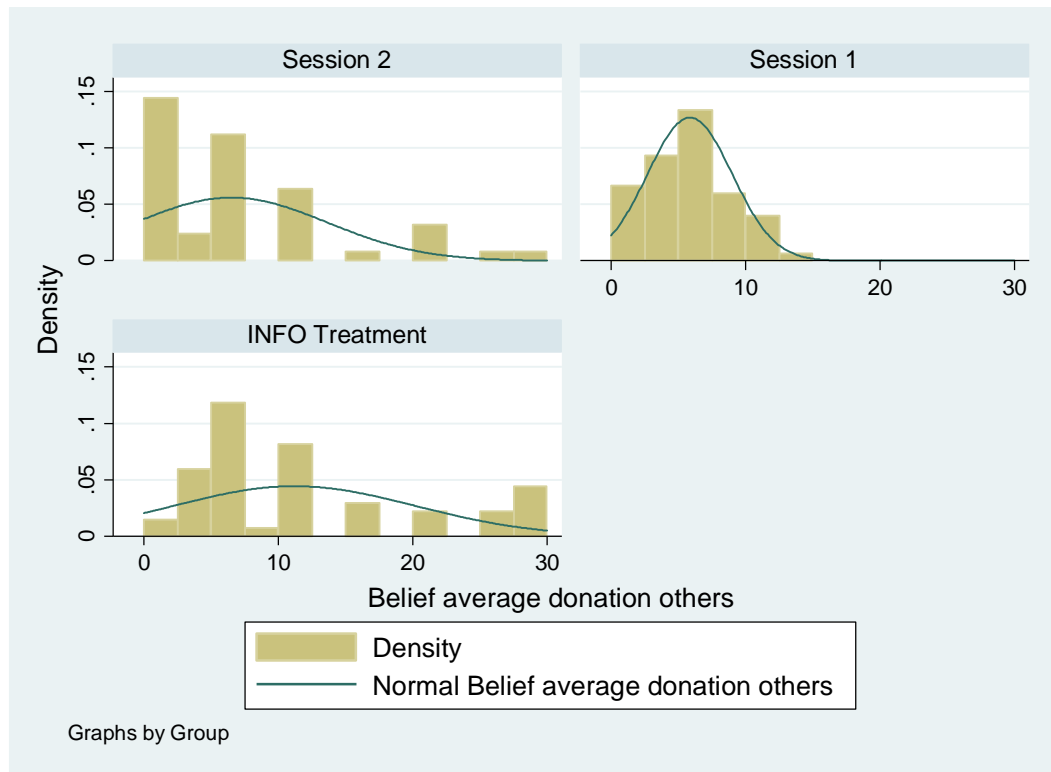


**Figure 4: Distribution of beliefs about average donation to government**

**Result 3 (peer effects)**: Donations co-move with beliefs about the average donation in the reference group, and the relation is highly significant. Beliefs seem to play a causal role because the distribution of donations changes if subjects tend to have homogeneous reference beliefs, as arguably occurs in INFO. As hypothesized, we observe less dispersion in the donations when subjects have a common reference belief. Further, the average donation seems to be shaped by that reference point. Subjects apparently do not anticipate peer effects.

On a different topic, FOC (6) indicates that donations should be ceteris paribus higher for an agent with a high $\gamma$, the parameter measuring the intensity of norm internalization. In order to test this prediction, we could have asked subjects what they consider normative in the donation decision, or some similar question. We were afraid, however, that their responses could be biased, possibly in a self-serving manner. Therefore, we have used a more indirect alternative. In effect, the post-decision questionnaire in INFO and Session 2 included questions about the hypothetical average

donation of relatives, co-workers, university or college partners, close friends and neighbors if they had chosen in the donation decision.[24] Now, it can be argued that social norms are partly internalized during infancy and adolescence within the family, and that people tend to share their normative values with close friends. In contrast, norms are less likely shared with co-workers, classmates, and neighbors, who are not 'chosen' as friends are. The larger a subject's expectations about relatives' or close friends' average donation, therefore, the larger the subject's donation because he/she is likely to find the same norms binding. On the opposite, we hypothesize no *specific* relation between a subject's donation and his/her beliefs about the average donation by co-workers, classmates or neighbors, who need not share the same norms (leaving aside family business). Regarding members of the subject's church (if any), further, one might expect them to have similar norms as the subject, although the relation would be possibly less strong than the relation with relatives or friends.

To check our hypotheses, Table 3 reports the results of a regression analysis. Most of the models are non-linear, of an exponential character as Models 3 and 4 in Table 2. The dependent variables always include the subject's belief about the average donation by other participants in the session, which remains always significant in Models 1 to 6. The other variables have also a positive effect on donations, but only significant for the beliefs about the average donation by relatives, close friends and co-workers. Hence our hypotheses are not rejected. When we consider models with several beliefs like Models 7 and 8, however, some of the mentioned variables fail to have a significant effect. We can venture at least two potential reasons. The first one is the low number of observations (due in turn to the reduced number of responses to some of our questions). A second one is multicollinearity, as some of the independent variables seem highly correlated –the VIF of some predictors is around 5 in regressions 7 and 8; we note that such problem does not exist at all in regressions 1 to 6 (the maximum VIF never surpasses 1.2). In short, our preliminary evidence is in line with our hypotheses, although further research is warranted.

**(Preliminary) Result 4 (norms)**: People give more if they expect close relatives and friends to give substantially as well. Groups whose members are not chosen by the subject or do not play a role in her education have no systematic effect.

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[24] More precisely, the question was: "How much do you think would be the average donation (between 0 and 30 soles) of your: a) Co-workers, b) College / University classmates, c) Neighbors, d) closest friends, e) family, and f) Church members?" Depending on their personal circumstances, subjects could leave some answers unanswered.

| Independent variable: Beliefs about average donation by… | Non-Linear Models. Dependent variable: Log (Donation + 1) | | | | | | | Linear model |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| 1. Other subjects | 0.0267** (0.012) | 0.0363*** (0.009) | 0.0371*** (0.011) | 0.342** (0.016) | 0.0331*** (0.011) | 0.0493*** (0.015) | 0.0394** (0.018) | 0.131 (0.092) |
| 2. Co-workers | 0.0334** (0.015) | | | | | | 0.00986 (0.032) | 0.315* (0.159) |
| 3. Family members | | 0.0386*** (0.011) | | | | | -0.0146 (0.04) | -0.068 (0.199) |
| 4. Neighbors | | | 0.0202 (0.014) | | | | 0.071 (0.042) | 0.476** (0.209) |
| 5. University /college mates | | | | 0.0101 (0.022) | | | -0.0403 (0.035) | -0.451** (0.176) |
| 6. Close friends | | | | | 0.0284** (0.014) | | 0.0465 (0.039) | 0.394* (0.195) |
| 7. Same church members | | | | | | 0.0151 (0.013) | -0.0376 (0.028) | -0.430*** (0.144) |
| Intercept | 0.721*** (0.164) | 0.526*** (0.138) | 0.710*** (0.151) | 0.821*** (0.21) | 0.688*** (0.153) | 0.742** (0.182) | 0.620** (0.224) | 0.592 (1.118) |
| Obs. | 78 | 99 | 95 | 47 | 96 | 65 | 36 | 36 |
| R-square | 0.19 | 0.248 | 0.157 | 0.133 | 0.161 | 0.177 | 0.45 | 0.61 |

Note: Data comes from Session 2 and INFO. Robust standard errors in parentheses. All models are estimated by OLS. All non-linear models satisfy homocedasticity, and models 1, 3, 4, 5, and 7 accomplish the residual error's normal distribution assumption. *** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.1$.

**Table 3: Regression analysis of the 'shared-norms' argument**

As a final remark, the correlations observed admit at least two other interpretations aside from the 'shared norms' argument just cited. In effect, we have assumed so far that subjects compare with other subjects when deciding their donations. However, it could be that subjects have in mind additional reference groups when deciding, like family members or co-workers. This could create additional peer effects to the one we studied in Hypothesis 5. However, this argument cannot explain why some groups happen to be significant in the regression analysis and others do not, particularly when we focus on those groups for which the number of observations is relatively large. A second interpretation is that people feel badly if they believe that their actions differ from what close friends or relatives would do. To reduce such dissonance, their beliefs are 'transmuted' into something more palatable. In this

interpretation, hence, people do not share actually norms with friends or relatives, but believe so.

### 4.3 The NGO treatment

We run this treatment as a further test of our toy model of Section 2.3. To derive predictions, let $\Delta_{NGO}$ denote the increase in SWF (2) per monetary unit donated to the NGO. We made three ancillary assumptions. First of all, there is no uncertainty regarding the effect of a donation, so that $\Delta_{NGO}$ takes the same value in all states of the world. As a result, the first order condition (6) becomes:

$$d_z'(\cdot) = \frac{1}{\gamma \cdot (1 - d_G) \cdot \Delta_{NGO}}$$

Second, subjects in NGO consider donations to be very effective, in particular $\Delta_{NGO} > \Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2$. Further, their beliefs about the average donation are higher than in Control or INFO. It follows that subjects should donate more to the NGO than the Government. As Table 1 indicated, however, this is not the case (the difference is not significant, though; Mann-Whitney test, $p = 0.319$). This result was puzzling to us, although in retrospect we believe that some of our ancillary a prioris were possibly wrong. Even if subjects trust the NGO and believe that their donations will not be stolen or wasted, first, they might think that the expected increase of SWF (2) per Sol donated is not as high as we expected. In particular, they might consider that a Sol donated to the government is more effective because, although part of it is wasted, the rest goes to fund a diverse list of goods and services that are much needed (including attention to cancer patients). Briefly, the government is more "important" than the NGO. Another possibility (although one we do not find very convincing) is that the NGO does not actually enjoy a good reputation, and a third one that subjects expected a low average donation in this treatment. Since beliefs are exogenous in our model, however, this is not very telling and begs the question: Why are they lower? Note that some of the mentioned reasons might be interrelated: Low beliefs, for instance, might be due to the fact that donations are not perceived as very socially effective. In any case, we note that median beliefs are not lower in NGO (Mann-Whitney test, $p = 0.880$).

| Independent variable | Dependent variable | | |
|---|---|---|---|
| | Donation | Donation | Log (Donation + 1) |
| | (1) | (2) | (3) |
| 1. Corruption (1: least - 168: most) | -0.010* | -0.015** | -0.003 |
| | (0.005) | (0.006) | (0.002) |
| 2. Support to current president (1: not at all, 10: entirely) | 0.124 | 0.151 | 0.058* |
| | (0.097) | (0.103) | (0.032) |
| 3. Government is controlled by (0: few interests, 10: works only for the people) | -0.063 | 0.039 | (0.025 |
| | (0.108) | (0.144) | (0.045) |
| 4. Belief average donation others | 0.395*** | 0.413*** | 0.087*** |
| | (0.088) | (0.091) | (0.028) |
| 5. Beliefs in a just world (0: only luck, 10: only personal effort) | -0.192* | -0.243** | -0.0275 |
| | (0.106) | (0.119) | (0.037) |
| 6. Equality preferences (0: none - 10: maximum equality) | 0.045 | 0.075 | 0.009 |
| | (0.093) | (0.092) | (0.029) |
| 7. Weekly frequency of watching news (in tv, internet, and others) | | -0.0968 | -0.0091 |
| | | (0.299) | (0.094) |
| 8. Gender (0: Male, 1: Female) | | 0.153 | 0.106 |
| | | (0.643) | (0.203) |
| 9. Age | | 0.0746 | 0.0276* |
| | | (0.048) | (0.015) |
| 10. Political preferences (1: extreme left, 10: extreme right) | | 0.0925 | 0.0379 |
| | | (0.156) | (0.049) |
| 11. Trust others (1: never, 10: always) | | -0.257* | -0.095** |
| | | (0.141) | (0.044) |
| 12. Education | | -0.721* | -0.188 |
| | | (0.415) | (0.131) |
| 13. Socio-economic level | | 1.102** | 0.317** |
| | | (0.429) | (0.135) |
| Intercept | 2.691* | -0.192 | -0.818 |
| | (1.382) | (2.292) | (0.722) |
| Obs. | 58 | 54 | 54 |
| R-square | 0.36 | 0.62 | 0.56 |

Note: Robust standard errors in parentheses. All models are estimated by OLS. Models 2 and 3 control as well for the subject's perceptions about the government's performance in the last 5 years (0: Lousy, 10: Excellent), willingness to pay more taxes if government improves public services (0: No, 1: Yes), car ownership (no:0, yes:1), and whether he/she has children (0: No, 1: Yes). Neither of these variables is significant in any model (not even marginally). All models accomplish homocedasticity (Breusch-Pagan Test) and residual error's normal distribution assumptions. The mean VIF equals 1.7 in models 2 and 3. ***, **, and * indicate significance at 1%, 5 %, and 10% levels, respectively.

**Table 4: Regression analysis of determinants of donation to NGO**

On the positive side, our model predicts ceteris paribus a positive relation between a subject's donation and her/his beliefs, and this is indeed supported by the data.[25] Table 4 reports the results of a regression analysis focused on this treatment. Models 1 and 2 are OLS linear regressions where the dependent variable is the subject's donation to the League against Cancer. We can see that the sign of the estimated

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[25] The ceteris paribus clause assumes that subjects have similar perceptions regarding the effectiveness of one Sol donated to the NGO; this is implicit in our analysis. If subjects were heterogeneous, in contrast, a subject with low beliefs but a perception that the effectiveness is high might donate more than another who expects a large average donation but thinks that the effectiveness is low.

coefficient of variable 2 (beliefs) is positive, as predicted, and the coefficient itself highly significant. Our model does not predict other correlations, and hence the (marginally) significant correlations additionally observed in these models are left unexplained. Note however that some of these correlations become non-significant in Model 3, a non-linear model of an exponential character (as Models 3 and 4 in Table 2 above). In contrast, beliefs are still highly significant in this non-linear model. Observe as well that the coefficient of determination or R-squared is larger in these models than in the models used to analyze donations to the government.

**Result 5 (NGO; peer effects)**: A subject's beliefs about the average donation to the NGO by other subjects co-move with her donation.

For more detail on our results in this treatment consult Table B in appendix II, which is the correlate of Table A, now for the NGO treatment.

**4.4 What about altruism, warm-glow, and reciprocity?**

We finish with a brief discussion about the empirical relevance of other utility models not discussed in detail before. To start, altruistic subjects should condition their donation on the efficiency of the government in the provision of public goods, as they care about social efficiency ('size of the cake'). For the same reasons, altruistic subjects should condition the donation on their perceptions of corruption, at least if they believe that corruption does not foster growth. Hence Result 1 above seems well in line with a theory of altruism. The non-effect of fairness considerations on donations, as described in Result 2, is also consistent with this theory.

Models of reciprocity like Rabin (1993), in turn, predict that people will be kind (unkind) towards someone who treated them kindly (unkindly). If we analyze our experiment as a one-shot decision problem, this general idea of reciprocity predicts zero donations to the government. Alternatively, one could find more sensible to embed the donation decision into a 'super-game' in which subjects first interact with some other 'players' (public sector employees, taxpayers, etc.) and then decide how much to donate. In this setting, one might argue that if a reciprocal subject had 'bad' prior interactions with corrupt government employees or politicians then she would treat them unkindly, i.e., donate nothing. Although we tend to view this argument too vague to be falsifiable, Results 1 and 2 seem basically consistent with it. Note yet that this type of argument hardly explains donations to the NGO, as interactions with the League are likely to be infrequent in our sample.

In any case, the main problem of these two theories is that they cannot anticipate the correlation between beliefs and donations (Results 3 to 5). Altruistic or reciprocal people should give money (or not) independently of what others are expected to do. For instance, a reciprocal subject with a good record of interactions with government officials and employees would like to reward them, hence giving money to the government in the hope that some of that money helps those employees. This behavior would not be affected by the expectation, say, that other subjects are not giving anything to the government. In this respect, Results 3 and 4 are therefore the strongest evidence in favor of a social norms account.

## 5. Conclusions

This paper makes three main contributions to the literature on tax compliance and tax morale. First of all, we formally explore how social norms and a dislike to deviate (much) from them affect tax evasion. Consistent with much of the literature on social norms (e.g., Bicchieri, 2005), the model incorporates norms both in a descriptive and prescriptive sense, i.e., people care about what the norm prescribes or commends but also whether others respect the norm. The model helps to explore in a precise manner the several forces that shape tax compliance together with their net effects. Further, it suggests several ways in which governments could affect tax compliance, although they may not be easy to implement. For instance, a straightforward moral from the model is that evasion would ceteris paribus decrease if taxpayers improve their perceptions about how efficient, corrupt or wasteful the public sector is, or about how generalized tax evasion is. For granted, improving such perceptions can be extremely difficult. But knowing that it might pay in terms of higher tax receipts is not irrelevant. Another implication is that transparency in how government revenues are spent is not irrelevant: If taxpayers are ensured that some taxes will be used to fund specific public goods that they deem socially beneficial, we predict that evasion will be relatively diminished. The model also suggests that some of the differences in the levels of tax evasion observed across countries are due to differences in the taxpayers' perceptions.

As our second contribution, we run experiments in Peru and offer evidence in line with the model. We observe that people are very heterogeneous in their behavior, conditioning their donations on their perceptions about competency and corruption in the public sector, but also on how others behave. Again, we believe that our model helps to understand the complexities that derive from heterogeneity and the existence of

difference channels affecting compliance. We stress that our subjects were representative of the taxpayer population in Lima, which might be an important point in evaluating the external validity of our results. Further, our results complement those from field experiments like Blumenthal et al. (2001), who study whether including messages about (descriptive) social norms in letters sent to taxpayers before the filing deadline affect compliance. They find no effect of a message that 93% of the taxpayers report their taxes correctly. Perhaps the remaining 7% were simply unconcerned about norms, as our model concedes, or maybe they thought that tax receipts were inefficiently used by the state. Lab studies like ours can offer insights into this literature, as they allow to control the many factors that might affect compliance.

Third, our results provide an additional test of the standard, homo economicus, model together with several models of non-selfish preferences. While the standard model is valuable because it is extremely parsimonious, it seems to provide a limited account of the phenomenon of tax evasion. Of course, it is a natural question whether our results would hold as well if the subject's endowment was much larger. In our experiment, for instance, around half of the people give more than 16% of their endowment to the government, would *exactly* the same happen as well if, say, income taxes were voluntary? Although we do not have controlled data on this point, we nevertheless tend to doubt so: material incentives are indeed not to be under-estimated. However, this does not seem to us the main message from our analysis, but that social norms play a role in tax compliance and that governments can use these levers to reduce evasion, sometimes at a reduced cost −e.g., Hallsworth et al., 2017. Future research should anyway analyze the strength of these normative concerns.

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# Appendix I: Translated instructions, decision sheet, & questionnaires

**(Those parts that only appeared in Control, NGO or INFO treatment are in brackets)**

# Instructions

Thank you for participating in this Experimental Economics study, financed by a research project. There are no tricky questions here and hence we ask you to answer any questions according to your own preferences. The decisions that you make in this experiment are anonymous; in other words, no participant will know what you or any other participant has decided. We please ask you to turn off your cell phones or other electronic communication devices for a few minutes so that they do not interfere with the experiment.

At the end you will receive a money payoff. It is important that you do not speak with any other participant so that the data which will be collected remains valid. If you have any questions, please raise your hand and one of the people in charge of the experiment will gladly help you.

### Description of the Experiment

All participants in this experiment will receive a fixed sum of S/. 20 for simply taking part in the experiment; this remuneration compensates for the transportation costs involved in arriving here.

The experiment is composed of three parts (1, 2 and 3). In part 1, each of you will be endowed with S/. 30 and must decide how much he/she wishes to voluntarily donate to the [**Control & INFO**: Peruvian Government] [**NGO**: Peruvian League Against Cancer, LPLC]. In order to do so, you will anonymously and independently choose an integer number between 0 and 30 (both included) and write it on the first page of your booklet. The remainder of the money will be your payoff for part 1. That is, if you decide to donate X Soles to the [**Control & INFO**: government] [**NGO**: LPLC], you will receive a payment of 30-X Soles at the end of the experiment.

At the end of the experiment, moreover, the sums donated by the participants will be added, and the total amount subsequently deposited in an account belonging to the [**Control & INFO**: public treasury] [**NGO**: LPLC] in an entirely anonymous manner. To do so, the researcher will go to the nearest bank and make an anonymous cash deposit for this amount, without giving any information concerning the origin of the money. This deposit will be made in the presence of any participants who wish to accompany the researcher; should there be no volunteers, he will personally select two participants at random to be witnesses.

[**Control & INFO**: Keep in mind that the public sector carries out tasks such as the development of infrastructure, the provision of public goods and services such as education, health and security, or the redistribution of wealth through social programs.]

[**NGO**: Keep in mind that the Peruvian League Against Cancer (LPLC) is an institution that helps to fund the medical treatment of cancer patients with limited recourses.]

Parts 2 and 3 of the experiment are questionnaires containing various questions. Those in part 2 require some estimations, and those in part 3 involve socio-demographic information. All are completely anonymous.

In summary, your final payoff will include 20 Soles for transportation plus 30 Soles minus the amount donated by you to the [**Control & INFO**: Peruvian government] [**NGO**: LPLC]. You will be paid in private in an adjoining room by an assistant who will know only your final payoff in the experiment, but not your decisions during the experiment.

**Now, please complete part 1 (the first sheet of the booklet) and give it to one of the people in charge of the experiment before starting part 2.**

# <u>Decision sheet</u>

Part 1                                                                                                     ID number:

[**INFO: Important**: Before making your decision, we must inform you that we have already done a similar experiment with 60 people in November 2016. Average donation of those people was **5 (five soles)]**

How much are you willing to contribute to the [**Control & INFO**: Peruvian Government] [**NGO**: Peruvian League Against Cancer]?

**S/.** _____

**Note:** You must write an **integer number** (no decimals) between 0 and 30 Soles, inclusive; otherwise, you will not be paid. Your pay for part 1 will be equal to 30 Soles minus the amount you indicate on this sheet.

# Belief elicitation sheet

Part 2                                                              ID Number:

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**General instructions:** Please answer numerically to the following questions:

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1**. [INFO:** What do you think would be the average contribution (between 0 and 30 soles) of your:

a) Co-Workers S/._____
b) University/College mates S/._____
c) Neighbors S/._____
d) Close friends S/._____
e) Family members S/._____
f) Church members S/._____

**Note:**  Answer only those questions you consider are relevant for your case, for example, if you are a student and do not work leave blank ¨Co-workers¨ but fill University/College mates.**]**

---

**Direction:** Questions 2 and 3 must be answered with integers from 0 to 30.

---

2. What do you believe to be the average donation of the participants present here (between 0 and 30 soles)?

S/._____

3. Of every 100 Soles that enter to the Peruvian Government, what part do you estimate end up wasted or in corrupt hands? Answer with an integer number from 0 to 100, where 0 indicates nothing and 100 indicates everything.

S/._____

---

**Direction**: Transparency international (TI) is a global non-governmental and non-profit organization that annually publishes an index of the perceived corruption in the public sector of each of the countries studied, based on the judgment of experts around the world. In 2015, it analyzed 168 countries and stated its findings in such a way that 1st place indicates the least level of corruption and the country that ranks 168th has the highest level of corruption.

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(Questions T)

Indicate what you believe to be the position of Peru in the TI ranking for the year 2015:

N°  _____

**Part 3**                                                    ID number:


**Direction:** Please answer the following anonymous questions that will help guide our investigation. Indicate your choice with a cross (X), or the corresponding number or word.


General questions:


**Gender:**          M___F___          **Age:**          _____          **Occupation:**          _____

**Place of Birth:**

District          _____          Province          _____

City          _____          Region          _____

**Place of Residence:**

District          _____          Province          _____

City          _____          Region          _____

**Religion:**

Catholic ( ) Evangelical ( ) Other _____ None ( )

**Level of religiosity on a scale of 1 (not at all religious) to 10 (very religious):**

_____

**Marital State:**

Married _____ Single _____ Stable Relationship _____ Divorced _____ Widow(er) _____

**Living Situation:**

Own _____ Rent _____ Room_____ I have no housing _____

**If you know the answer, please give the approximate size of your main residence:**

_____ m²

**Do you have a vehicle?**

Yes _____ No _____

**Do you have children?**

Yes _____ No _____

**How many children do you have?**

_____

**Level of Education:**

Primary School incomplete _____ Completed Primary School _____ Completed Secondary School _____

Technical Higher Education _____          University Higher Education _____

**Current job:**

Student _____ Business Admin./Owner _____ Housewife _____

 Employed _____ Currently unemployed _____


How many times per week do you follow national political news in the media (TV, radio, newspapers, internet, etc.)?

0 _____                     1-3 _____                     4-6 _____               7 _____

In politics, reference is usually made to the "left" and "right." Overall, where would you place yourself on a scale of 0 (extreme left) to 10 (extreme right)?

o o o o o o o o o o o

Far Left                                                                                                          Far Right

0  1  2  3  4  5  6  7  8  9  10

**Opinion-type questions:**

1. Which do you believe to be the factor upon which someone's personal income depends – chance and influences of other people or the extent to which he strives to work hard in life? Indicate your opinion using a number between 0 and 10, the number 0 signifying that chance or external influences are the only important factor, and 10 signifying that personal endeavour is the only important factor. Make a mark (X) in the circle corresponding to the number that represents your opinion.

|  |  |  |
|---|---|---|
| resulting from chance or influences of others | o o o o o o o o o o o<br><br>0 1 2   3 4 5 6   7 8 9 10 | resulting from one's endeavour to work hard in life |

2. Would you say that it is advisable to trust people under any circumstances, or rather is it advisable to be very cautious in trusting others? Answer using a number from 0 (we should never trust anyone) to 10 (we may trust anyone under any circumstance):

|  |  |  |
|---|---|---|
| We should never trust anyone | o o o o o o o o o o o<br><br>0 1 2 3 4 5 6 7 8 9 10 | We may trust anyone under any circumstance |

3. In general, do you believe that the distribution of income in a society should be as egalitarian as possible? Answer using a number from 0 (completely disagree) to 10 (completely agree):

|  |  |  |
|---|---|---|
| Completely disagree | o o o o o o o o o o o<br><br>0 1 2 3 4 5 6 7 8 9 10 | Completely agree |

4. To what extent do you agree that the State should directly participate in the Economy, whether through public companies, banks, or industry? From 0 (completely disagree) to 10 (completely agree):

|  |  |  |
|---|---|---|
| Completely disagree | o o o o o o o o o o o<br><br>0 1 2 3 4 5 6 7 8 9 10 | Completely agree |

5. From 0 (completely disagree) to 10 (completely agree), to what extent do you agree with the following statement: In a democracy, the economy grows less than in other political systems?

o o o o o o o o o o o

Completely disagree                                                                          Completely agree

0   1   2   3   4   5   6   7   8   9   10

6. Consider the following two statements: the Peruvian government is controlled by a few interests who are only concerned with themselves; the Peruvian government governs for the benefit of all. With 0 indicating complete agreement with the first and 10 indicating complete agreement with the second, make a mark (X) in the circle corresponding to the number that represents your opinion.

o o o o o o o o o o o   Governs for the

Controlled by selfish Interests                                                    benefit of the

0   1   2   3   4   5   6   7   8   9   10   People

7. Do you believe that the Peruvian government adequately provides free public education services?
Yes _____   No____

8. Do you believe that the Peruvian government adequately provides free public health services?
Yes _____   No____

9. Do you believe that the Peruvian government adequately provides public security?
Yes _____   No____

10. In comparison with those who have a low income, how much should those with a high income pay from their personal income? (Indicate only one answer):

 Much less _____   Less _____   Equal _____   More _____   Much more _____

11. Overall, how would you rate the performance of the Peruvian government during the previous 5 years? From 1 (dismal) to 10 (excellent):_____

12. In general, do you support the new government in Peru, which was chosen in the election a few months ago? From 1 (do not support at all) to 10 (support entirely): _____

13. Would you be willing to pay a little more in taxes if the government were to make substantial improvements in the free public services it provides (such as education, health, and safety)?
Yes _____   No____

*(End, please await further instructions)*

# Appendix II

| Variable | Interval of donation (D) | | | | | |
|---|---|---|---|---|---|---|
| | D = 0 | D > 0 | D ∈ [1, 4] | D ∈ [5, 9] | D ∈ [10, 15] | D ∈ [16,30] |
| 1. Corruption (1: least - 168: most) | 139 | 125 | 141 | 113 | 121 | 131 |
| | (41.54) | (43.09) | (35.24) | (46.94) | (40.41) | (38.93) |
| 2. Support to current presidential team | 4.55 | 5.23 | 4.69 | 5.17 | 6.00 | 7.50 |
| | (2.92) | (2.93) | (2.90) | (2.79) | (3.29) | (2.26) |
| 3. Government is controlled by (0: few interests, 10: works only for the people) | 2.69 | 3.31 | 3.02 | 3.56 | 3.55 | 2.50 |
| | (2.56) | (2.48) | (2.63) | (2.28) | (2.75) | (2.26) |
| 4. Belief about average donation by others | 4.51 | 8.93 | 7.05 | 9.72 | 10.64 | 10.95 |
| | (5.71) | (7.25) | (6.14) | (8.26) | (5.74) | (7.92) |
| 5. Beliefs in a just world (0: only luck, 10: only personal effort) | 7.17 | 7.57 | 7.56 | 7.83 | 7.67 | 5.17 |
| | (3.00) | (2.52) | (2.73) | (2.12) | (2.93) | (2.04) |
| 6. Equality preferences (0: None - 10: Maximum equality) | 5.33 | 5.73 | 6.11 | 5.72 | 5.33 | 4.17 |
| | (3.18) | (2.98) | (3.04) | (2.91) | (3.24) | (2.14) |
| 7. Gender (1: Male, 2: Female) | 1.51 | 1.46 | 1.55 | 1.38 | 1.55 | 1.33 |
| | (0.51) | (0.50) | (0.50) | (0.49) | (0.51) | (0.52) |
| 8. Age | 38.48 | 40.99 | 39.91 | 41.58 | 44.67 | 32.83 |
| | (7.98) | (8.82) | (7.56) | (9.36) | (8.93) | (7.36) |
| 9. Level of religiosity (1: least, 10: most) | 5.55 | 5.39 | 5.00 | 5.91 | 5.19 | 4.40 |
| | (2.54) | (2.50) | (2.75) | (2.11) | (2.51) | (3.51) |
| 10. Political preferences (0: extreme left, 10: extreme right) | 5.32 | 5.57 | 5.33 | 5.50 | 5.94 | 6.83 |
| | (1.99) | (1.91) | (1.72) | (1.85) | (2.39) | (1.94) |
| 11. Trust others (0: never, 10: always) | 2.88 | 3.18 | 2.91 | 3.06 | 4.11 | 3.67 |
| | (2.00) | (1.99) | (1.73) | (2.03) | (2.25) | (2.25) |
| 12. Would you pay more taxes if the government improved public services? (0: No, 1: Yes) | 0.67 | 0.72 | 0.69 | 0.72 | 0.78 | 0.83 |
| | (0.48) | (0.45) | (0.47) | (0.45) | (0.43) | (0.41) |
| 13. Home size (square meters) | 118.37 | 98.01 | 84.11 | 104.53 | 114.44 | 92.33 |
| | (82.05) | (64.14) | (51.67) | (71.06) | (65.42) | (100.13) |
| Number of subjects | 42 | 122 | 45 | 53 | 18 | 6 |

**Note**: Data comes from Control and Info treatments (N = 164). Standard deviations are shown in parentheses.

**Table A: Subjects' average responses to several questions, conditional on donation to government**

| Variable | Interval of donation (D) | | | | |
|---|---|---|---|---|---|
| | **D = 0** | **D > 0** | **D ∈ [1, 4]** | **D ∈ [5, 9]** | **D ∈ [10, 15]** |
| 1. Beliefs about corruption | 131 | 117 | 124 | 115 | 70 |
| | (52.04) | (53.38) | (52.82) | (53.76) | (48.26) |
| 2. Support to current president | 5.46 | 6.17 | 5.92 | 6.58 | 6.00 |
| | (2.95) | (2.98) | (2.96) | (2.95) | (3.09) |
| 3. Government is controlled by… | 3.69 | 3.98 | 3.84 | 4.06 | 4.50 |
| | (2.79) | (2.84) | (2.76) | (2.78) | (2.88) |
| 4. Belief about average donation by others | 4.12 | 5.91 | 4.61 | 6.74 | 10.28 |
| | (3.21) | (3.28) | (3.25) | (3.21) | (3.27) |
| 5. Beliefs in a just world | 7.31 | 7.59 | 8.04 | 7.27 | 6.25 |
| | (2.71) | (2.68) | (2.70) | (2.73) | (2.79) |
| 6. Equality preferences | 6.07 | 6.94 | 7.04 | 6.72 | 7.25 |
| | (3.02) | (3.09) | (3.09) | (3.13) | (3.11) |
| 7. Gender | 1.46 | 1.51 | 1.48 | 1.61 | 1.25 |
| | (0.50) | (0.51) | (0.50) | (0.50) | (0.50) |
| 8. Age | 35.15 | 41.62 | 41.83 | 40.88 | 43.75 |
| | (8.07) | (7.69) | (7.87) | (7.94) | (7.64) |
| 9. Religiosity | 4.54 | 5.08 | 6.04 | 4.28 | 2.75 |
| | (2.61) | (2.70) | (2.65) | (2.67) | (2.69) |
| 10. Political ideology | 5.00 | 6.24 | 6.29 | 6.00 | 7.00 |
| | (2.10) | (2.05) | (2.08) | (2.06) | (2.19) |
| 11. Trust in others | 3.46 | 3.38 | 3.72 | 3.00 | 3.00 |
| | (2.43) | (2.42) | (2.42) | (2.43) | (2.52) |
| 12. Home size | 86.45 | 107.88 | 103.08 | 111.29 | 125.33 |
| | (50.23) | (46.34) | (48.65) | (49.29) | (52.86) |
| Number of subjects | 13 | 47 | 25 | 18 | 4 |

**Note**: Data comes from NGO treatment (N = 60), where no participant donated more than 15 Euros. Standard deviations are shown in parentheses.

**Table B: Subjects' average responses to several questions, conditional on NGO donation**