# Why people give to their governments: The role of outcome-oriented norms

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# Why people give to their governments: The role of outcome-oriented norms[*]

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**ABSTRACT**: The social and economic factors leading to selfless acts such as charitable donations have been a central concern in the social sciences. We contribute to this scholarship with an artefactual field experiment in Peru where subjects anonymously decide how much of their endowment they freely 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. Further, individual donations depend positively on the level of support to the government and beliefs about the average donation. Additional evidence on the role of beliefs comes from one treatment in which these beliefs are exogenously shaped, resulting in a change in the distribution of donations. Our results are consistent with a utility theory based on outcome-oriented social norms, which we develop in detail, and suggest that people are willing to contribute to their governments if they believe that enough others give as well and that the money is not wasted or 'stolen' by the government, but used to promote social welfare.

**Keywords**: Altruism, Donations, Norms, Public Goods, Social Information.

**JEL classification codes**: D64; D91; H41.

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# 1. Introduction

Government revenue in most countries around the world is derived from several sources, including taxes. One of those sources are voluntary donations, although they are possibly among the most atypical and less well-known. In the United States, for instance, citizens can donate to their government via contributions to an account called "Gifts to the United States" (https://fiscal.treasury.gov/public/gifts-to-government.html). In many US states, similarly, income tax forms have ''check-off'' programs enabling taxpayers to contribute to specific causes; consult Slemrod (2003) and Li et al. (2011) for more details. In Spain, taxpayers can renounce to their *whole* income tax refund by checking the corresponding box in the form. In the year 2016, for instance, around 52,000 taxpayers did so, and the Spanish tax agency increased as a result its receipts in one million Euros (out of total receipts of 186,249 millions).[1]

As Li et al. (2015) note, the revenue-raising potential of this type of donations seems underutilized. Further, their determinants are still unclear. This is of course of practical importance for administrations, provided they are interested in fostering citizens' voluntary donations to finance part of their expenditures. We explore here whether people's gifts to their government are influenced by their perceptions about (i) the efficiency and competency of the government and (ii) the average behavior of others. For this, we run a very simple artefactual field experiment in Peru: Each subject is endowed with 30 Soles (around $10) and can voluntarily and anonymously donate some of this endowment to the Peruvian government, more specifically to the Peruvian Public Treasury.[2] Some characteristics of the experiment are relatively unusual in the literature on donations. To start with, it was run as said in Peru, a middle-income country. Second, subjects were not graduate students, but a representative sample of the taxpayer population of Metropolitan Lima regarding age, gender, and socio-economic conditions.[3] In our experiment, that is, real taxpayers freely decide on a contribution to their government.

A very substantial share of our subjects give something (around ¾ of them; the average donation across treatments amounts to 14% of the endowment). Hence we replicate early findings in the literature on voluntary donations to government (to be reviewed later). Further, our results show that the voluntary financial support for the government applies beyond the sample of college students who are relatively inexperienced with paying taxes, but have been the norm in prior experimental

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[1] See https://www.lainformacion.com/management/renuncia-a-su-devolucion-en-favor-del-tesoro-publico-52-000-personas-si/6349167/. The motivation behind these donations is uncertain. While we believe that altruism is a major motive, mistakes in checking the appropriate box might also operate, although the fact that most individual donations range between 13 and 18 Euros suggests some intentionality. Alternatively, some taxpayers might (wrongly) believe that renouncing to the refund prevents any posterior audit.

[2] Our design resembles that of Eckel and Grossman (1996), although with a different focus: they showed that using a well-known charity as a recipient rather that an anonymous subject increases donations in a dictator game.

[3] This arguably makes our experiment an artefactual field experiment as defined by Harrison and List (2004, p. 1014), i.e. "the same as a conventional lab experiment but with a nonstandard subject pool".

studies. Our results also show that people give to their governments even in middle-income countries.[4]

Moreover, giving is correlated with a number of variables. On one hand, our regression analysis shows that donations co-move with the subject's stated level of support of the current president. For further evidence on this point and as a robustness check, we have run sessions at different points in time. The first set of sessions, called for simplicity Session 1 henceforth, were run when the Peruvian president at that time, Pedro Pablo Kuczynski, enjoyed relatively high levels of popularity. In contrast, his popularity was substantially lower one year later, when the second group of sessions, called Session 2, were run.[5] In line with our account, we observe a significant reduction of 32.8% in the average donation (from 4.67 to 3.14 Soles) across the two sets of sessions. Changes in the political sentiment, it seems, affect gifts substantially.

On the other hand, we also report evidence in line with the hypothesis that donations to government are influenced by the agent's perceptions about the average donation. First of all, we elicit each subject's belief/estimate of the average donation and find it significantly correlated with her donation –interestingly, the slope of the fitted regression line is smaller than one, that is, donations under-respond to increases in the subjects' estimates. Most relevantly, second, we also have evidence from an additional INFO treatment in which the *reference* average donation is exogenously fixed. Specifically, players are informed about the rounded average donation made by the participants in Session 1. This new treatment was conducted around the same time as Session 2. Despite the dramatic decrease in donations in Session 2 compared to Session 1, donations in INFO (4.7 Soles in average) are comparable to those of Session 1. It seems to suggest that the positive impact of social information offsets the drop in donations due to the declining public's support for the president. Note finally that we find no significant correlation between donations to the government and variables like gender, political ideology, religiosity, age, income level, and education.

We believe that social norms are crucial to account for behavior in our experiment. To make our argument precise, we develop a utility theory with norms, based in López-Pérez (2008), and apply it to a donation problem. In this account, agents suffer a utility cost, i.e., some painful emotion like guilt or shame, if they deviate from an internalized norm, say, a utilitarian norm prescribing to choose an act maximizing the social surplus. Further, this cost increases in size as the average deviation among the reference group members decreases, thus implying a social influence effect.

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[4] This is perhaps surprising because 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.

[5] 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.

Intuitively, if others are expected to contribute to the public good in our experiment and *the norm commends so*, I feel badly for not doing my part.[6] Among the many norms that subjects could find binding, further, we presume that some of them are of a consequentialist or outcome-oriented character, e.g., the utilitarian norm just cited. In our scenario, this means that the same norm may select different acts depending on the subject's idiosyncratic perceptions about the efficacy of the government. This idea fits well with our finding that donations co-move with the subject's level of support of the government.

The rest of the paper proceeds as follows. The next section reviews some related literature. Section 3 describes our experimental design and procedures. Then we present in Section 4 our model, from which hypotheses are later derived. These hypotheses are tested in Section 5, which reports the experimental data. In turn, the last section discusses our main contributions and some potential implications.

## 2. Related literature

This paper contributes to at least four related bodies of economic research; most prominently to a recent experimental literature on giving to governments. Using a design with a series of donation decisions, Li et al. (2011) compare giving to specific U.S. government agencies and private charities with similar missions, e.g., Cancer Research or Parks and Wildlife. Subjects were undergraduate students and donated on average 22% of their endowment to government agencies, significantly lower than the 27% to private charities; see also Jones (2017) and Luccasen et al. (2020). Li et al. (2011) report that the organizations more likely to attract funds are those that are perceived as serving an important cause, as being trustworthy and efficient, and providing a high quality of service. In turn, Li et al. (2015) use a similar setting as Li et al. (2011) to compare giving to the US federal general revenue fund with directed giving to government organizations focused on (a) disaster relief and (b) cancer prevention and research. The average donation to the general fund is 8.4% of the endowment, whereas directed giving more than doubles the size of contributions, a significant difference.[7] We contribute to this literature with an experiment run in a middle-income country, using a representative sample of taxpayers. While giving was not directed to some specific

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[6] In addition, beliefs about average behavior could affect donations if the (expected) donations by others signal something about the quality of the public goods provided by the government, e.g., Vesterlund, 2003. This is compatible with the theory presented here, as it assumes incomplete information about the value of the public good. While a careful evaluation of the importance of this informational channel, relative to the "motivational" one, is out of the scope of this paper, we later explore the issue in a bit of detail.

[7] In a companion paper, López-Pérez and Ramírez-Zamudio (2020b), we report data from an additional treatment in which participants can give to a well-known and reputed Peruvian charity, the League against Cancer (LAC). This treatment was run at the same time as Session 1. When we compare donations to the government in Session 1 with those to the LAC, we find to our surprise that subjects give more on average to the Peruvian Public Treasury than to the LAC (although not significantly so). This suggests that gifts to the government can be as strong as those to a charity, at least if the government enjoys sufficient public support.

public project or government agency, subjects still give around 14% of the endowment. Further, we offer evidence that giving depends on social information, i.e., what others do, and on the subject's support to the government.

We contribute as well to the experimental literature on public goods –Fehr and Gächter 2000; Zelmer, 2003; Chaudhuri, 2011. In the well-known VCM game, a selfish player has a dominant strategy not to contribute any of her tokens to a public project, even though the socially efficient outcome is obtained when everyone contributes her entire endowment. In contrast with this standard prediction, a robust result from this literature is conditional cooperation (CCO henceforth): Subjects contribute more if they expect high contributions from their co-players; Keser and van Winden, 2000; Fischbacher et al., 2001. Our finding that beliefs about average donation correlate with giving has clear parallelisms with CCO, showing that real taxpayers are conditional even in a one-shot, anonymous interaction with their governments. The fact that donations under-respond to beliefs in our experiment is also coherent with the "self-serving bias" that characterizes CCO, i.e., when a conditional cooperator expects others to contribute $x$ to the public good, she tends to contribute less than $x$; Fischbacher et al., (2001), Fischbacher and Gächter (2010). In some sense, therefore, giving to government in the lab exhibits many of the patters observed in VCM experiments.

In this vein, our paper is also related to the many experimental studies in the lab and the field that address motives for charitable giving; see Vesterlund (2016) for a survey.[8] Three utility models have received particular attention in this literature. **I**: pure altruism as in Becker (1974) assumes that individuals benefit from the aggregate level of the public good. **II**: warm glow is a private benefit that derives from the act of giving, irrespectively of the subsequent output or the recipients' well-being; Andreoni, 1989. **III**: impure altruism considers both I and II simultaneously (Andreoni, 1989, 1990). The evidence from INFO showing that social information affects behavior speaks against pure altruism as applied to government giving. The correlation between beliefs and giving is also at odds, as pure altruism predicts that the contributions by others should crowd out one's own giving, under the assumption of diminishing marginal utility for the public good (Warr, 1982). If all *givers* in our experiments were pure altruists, that is, beliefs and donations should be negatively correlated, contrary to what we observe. Regarding warm-glow, in turn, our regression analysis indicates that individuals care about the government's output. In effect, a subject's donation to the government is significantly correlated with her level of support of the current president, arguably a proxy for the government's perceived competency and efficiency. Overall, our results give support to impure

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[8] Relatedly, recent papers like Deb et al. (2014), Drouvelis and Marx (2019), and Fielding et al., 2019, show the importance of social comparisons in charitable giving. There are several differences between these studies and ours: (i) subject pool (undergraduate students vs. taxpayers); (ii) location (high vs. middle income country), and (iii) recipient of donation (private charity vs. government). In our experiment, further, subjects make a one-shot decision, and not a series of donation decisions conditional, say, on income, average giving by others, or the level of some tax or subsidy. This means that we cannot categorize subjects by giving type, a point that we leave for further research.

altruism, in line with a substantial literature on charitable donations, e.g., Andreoni, 1993; Bolton and Katok, 1998; Eckel et al., 2005; Ottoni-Wilhelm et al., 2017, although at a population level, of course, the three motives cited above may be present to some extent. More specifically, our findings *suggest* the importance of social norms in both a descriptive and injunctive sense –Cialdini et al. 1990; Bicchieri, 2005; López-Pérez, 2008; Krupka and Weber, 2013.

Finally, our research also speaks how social comparisons and information affect human behavior. In the first place, a substantial literature on consumer behavior has analyzed the influence of relative consumption; e.g., Veblen (1899), Duesenberry (1949), Frank (1985), and Luttmer (2005). Further, there is abundant field evidence that donations to charities are influenced by social comparisons –see Frey and Meier (2004), and Shang and Croson (2009), among many others–, as well as lab evidence –Deb et al. (2014), Drouvelis and Marx (2019), and Fielding et al., 2019. In addition, Slemrod (2003), Fellner et al. (2013), and Alm et al. (2016) provide or review evidence on the importance of social influences on tax compliance. Such type of effects have also been observed in experimental studies on deception –see Gino et al. (2009), Innes and Mitra (2013), and López-Pérez and Spiegelman (2013)– as well as in bargaining games, e.g., Bohnet and Zeckhauser (2004).

## 3. Experimental design and procedures

We consider a very simple, one-shot decision problem where each subject is endowed with 30 Soles and can voluntarily donate some of this endowment to the Peruvian government.[9] 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 some subjects acting as witnesses, as standard in donation experiments, e.g., Eckel and Grossman, 1996). 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 promote common information.[10] 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.

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 and public projects as taxes do; subjects were also informed in this manner about the Banco de la Nación account number

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[9] We note that the public sector in Peru is relatively small, as government spending averaged around 16.5% of total output (GDP) over the years 2014 to 2017 (source: Central Bank of Peru).

[10] The translated instructions, decision forms and questionnaires can be found in the web appendix.

mentioned above, writing as well that number in a blackboard. In turn, the instructions recalled subjects that the Peruvian government offers different public services. While informing subjects about the goals of the institutions to which they can donate is far from unusual in the literature, e.g., Li et al (2011, 2015), one must keep this aspect in mind when drawing conclusions outside this context. For instance, a more negative statement mentioning, say, corruption or waste in the public sector could have motivated few giving. It seems to us, though, that in what regards our research questions, our precise framing induces no confounds.

When subjects had decided on their donation, decision sheets were collected and an elicitation sheet given. Here we elicited some estimates that were designed so as to test several hypotheses, to be presented in detail in Section 5. In particular, we asked each subject to estimate the average donation among all participants in the session.[11] After all subjects had their estimates elicited, we collected the corresponding sheet. Then, subjects answered a brief questionnaire on socio-demographics, frequency of use of public services, support to the current presidential team, concern for inequity, etc.; many of these questions appear in similar terms in the World Values Survey (www.worldvaluessurvey.org). The experiment ended with the completion of this questionnaire. Subjects were then paid in private by an assistant who knew only the subject's ID number and her/his final payoff –this means, obviously, that the assistant was not informed about the details of the experiment.[12]

To further confidence in our procedures, subjects were told that at the end of the experiment they would be asked to volunteer as witnesses and that, if there were no volunteers, two participants would be randomly chosen. 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 four sessions at Universidad de Lima. The first two ones had 30 participants each and took place respectively on October 29 and November 12, 2016. In what follows, we pool this data (N = 60) under the name Session 1. The last two sessions had 25 subjects each, and both took place in November 4, 2017; this experimental group (N = 50) is called Session 2 henceforth –as we have noticed in the introduction, the gap between sessions helped us to obtain some additional insights on

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[11] These estimates were not incentivized. In a parallel study (López-Pérez and Ramírez-Zamudio, 2020a), though, we study two policies to increase donations. In the control treatment used there, subjects faced the same decision problem as in our control here but received a prize for the accuracy of their estimates. Comparing the relevant regressions in both studies, we observe that the significance and strength of the correlation between beliefs and giving is remarkably similar. We conclude therefore that the lack of incentives is not the cause of the correlation reported here. In any case, the INFO treatment provides further evidence of the role of social comparisons on giving.

[12] Following a usual practice in experiments on giving, we therefore chose a design in which subjects' perceived degree of scrutiny of their choices was most likely very low, if not nil. It is yet an open question whether the social influence effects that we observe are conditional on the degree of experimenter's scrutiny.

the subjects' motives for giving. Subjects were always between 25 and 55 years old and economically active. In Session 1, they were selected by IMASEN following precise instructions,[13] 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. Recruiters never disclosed any detail about the experiment to the subjects, except that this was a "focus group" meeting about topics like 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 one treatment called INFO. It 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 consisted of two sessions with 27 people each; each session was run in parallel to one of the two sessions of Session 2, but in a different classroom.[14] It must be noted that providing information on others' prior choices is not an unusual manipulation in the literature. In the sequential dictator game of Cason and Mui (1998), for instance, subjects act first as dictators, learn the dictator decision of another subject and then make a second dictator decision. In ultimatum games, Bohnet and Zeckhauser (2004) report that both the size of offer and the probability of rejections vary when responders are told the average offer received by others. Bicchieri and Xiao (2009) inform participants in their dictator games about the majoritarian choice in prior dictator games. As in any lab study, experimenter demand effects are a potential concern in these studies: if subjects guess that the experimenter wants them to alter their behavior in response to the information provided, they might behave accordingly, maybe out of altruism or conformity with authority. Still, such effects should be stronger in repeated games, and hence of a relatively reduced size when there is little perceived scrutiny and participants are extremely unlikely to have any future interactions with the experimenter, as in our sample pool. Theoretically, however, demand effect can also appear in one-shot games, and our instructions attempted to diminish them by stating 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

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[13] IMASEN is a Peruvian research-based consulting company, well-known for its market studies, surveys and polls: http://www.imasenperu.com/. Subjects had to be literate adults, could not be another participant's relative, and were asked not to come accompanied by other people.

[14] The questionnaire in INFO and Session 2 of Control was a small variation of the one we used in Session 1 of Control, 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. We leave an analysis of this data for further research. 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.

constraints on her choice. To finish, we note that the 54 participants in INFO earned on average a total payoff of 45.30 Soles, and that no subject attended more than one session or treatment.

# 4. A utility model with norms

We here first present a general utility model so as to clarify its key hypotheses and scope. We later consider an application of the model to choice of donations, useful as well to study behavior in our experiment.

## 4.1 General setting

Consider a decision-maker called Zoe. Let $\Omega$ denote a finite state space, where a state $\omega \in \Omega$ fully specifies all relevant features of Zoe's environment, and O denote the set of outcomes. An act is defined as a function $t: \Omega \to O$. Zoe's choice set $\mathbb{C}$ is a subset of the set of all acts, or mappings from $\Omega$ to O. Zoe 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 $(\mathbb{C}, \pi)$.

Intuitively, a norm states what one *ought* to do in a choice scenario, in line with the idea of an injunctive norm. The requirement that a norm applies in any scenario may look demanding at first sight. Indeed some actual norms look very specific, e.g., wear black in funerals. Definition 1, however, allows for that type of norms: in those scenarios where they are not relevant, these norms 'select' the whole choice set, i.e., restrict nothing. In this regard, 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* (from $\psi$) in that scenario. Without loss of generality, we assume that Zoe has internalized some norm $\psi_U$ (to be described later), which means that she dislikes deviating from it. More than this, Zoe 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 $t \in \mathbb{C}$.

Zoe 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 Zoe considers what any g *would do if he were in her position*. Further, Zoe 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 $\psi_U$ (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 Zoe might be uncertain about $d_G$; to make this point clear, we use sometimes the more specific notation $d_G(\omega)$.

To specify Zoe's utility function, let $x_z$ denote her material payoff at outcome $o = t(\omega)$. That is, $x_z$ represents the material utility that Zoe 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 Zoe's monetary wealth. Zoe's utility function $u: O \rightarrow \mathbb{R}$ on the set of outcomes takes then the form

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

Since $d_G(\omega) \in [0, 1]$ by construction, note that $1 - d_G(\omega)$ represents average *compliance* in G. Parameter $\gamma \in \mathbb{R}$ represents how deeply Zoe has internalized the norm.[15] Finally, we postulate that Zoe'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 $\Omega$.

### 4.2 Examples of norms and deviation functions

For some summary illustration, consider a society, group or set of agents $S = \{1,.., i,.., I\}$; Zoe 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) $W: X \rightarrow \mathbb{R}$ assigns a number to each material allocation according to its 'social desirability'. While infinite examples can be considered, a prominent SWF in this paper will be:

$$W^U(x) = \sum_{i \in S} x_i \tag{2}$$

If we make the simplifying assumption that subjects are risk-neutral (which does not seem very restrictive in our experiment), this is a utilitarian SWF, as it increases with the social surplus (i.e., the sum of material payoffs) of allocation x. Thus we refer to SWF (2) as the 'utilitarian' SWF. See López-Pérez (2008, 2010) for additional examples of SWFs.

Importantly, Zoe'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 Zoe chooses $t$ and state is $\omega$. Given any social welfare function W, the expected social welfare of act $t$ is then defined as

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

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

The definition implicitly assumes that the choice set $\mathbb{C}$ is compact, so that an optimum is well defined. An outcome-oriented norm that will be pivotal in our analysis is one based on SWF (2) above; this was called before $\psi_U$ and we will also refer to it as the *utilitarian norm*. Observe that

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[15] We will posit that $\gamma$ is positive, so that Zoe does not want to be a 'rebel', deviating from the norm when others respect it. We note also that our model extends the model in 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 below.

outcome-oriented norms allow the introduction of very natural deviation functions. In effect, 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 Zoe 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.

### 4.3 Application: Donations

Zoe is an agent with initial wealth $w_0$ and must decide the amount t that she will donate out of some endowment T; for expositional purposes, we take the recipient to be the government. The choice set $\mathbb{C}$ is the interval [0, T]. In principle, Zoe may have access to some public goods financed with the donations 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 donates t units –implicitly, this term depends on the donations made by her and other potential donators. If Zoe chooses $t \in [0, T]$, therefore, her monetary wealth in state $\omega$ is $w_0 - t + m(\omega, t)$. To derive predictions, however, we simplify and posit that the marginal effect of each monetary unit donated by Zoe on the amount of public services enjoyed by her is negligible, so that $m(\omega, t)$ does not vary with t. While this assumption is not realistic in general, it is plausible in our experiment.

Without loss of generality, assume that Zoe has internalized the utilitarian norm and her deviation function takes the form of a remorse function. We also posit for simplicity that donations have a linear effect on social welfare. That is, each unit donated increases SWF (2) in $\Delta$ units (*net of donations*). Further, there are just two states of the world. In state 1 (probability $\pi_1$), the government is inefficient and donations 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 $\pi_2 = 1 - \pi_1$.

To derive predictions, observe first that the utilitarian norm selects act t = T if $E[W^U| t] = (\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2) > 0$, and act t = 0 if $(\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2) < 0$ –any choice is normative if the expected effect on the social surplus of any Sol donated is nil. The analysis is direct if $(\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2) \leq 0$: Since a nil donation respects the norm and has no monetary cost, it is the optimal choice. The most complex case appears therefore when $(\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2) > 0$. Since 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 represented as $d[(T - t)(\Delta_1 \cdot \pi_1 + \Delta_2 \cdot \pi_2)]$, and Zoe's utility if she chooses t in state $\omega$ is:

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

Zoe's goal is to choose t so as to maximize the *expectation* of (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., Zoe 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, we hence get the following first order condition:

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

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 $d'_z(\cdot) > 0$, so that Zoe suffers a higher psychological cost or remorse as t decreases, that is, the less she gives. If we moreover posit that $d_z$ is strictly convex, i.e., '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 below clarifies the determination of the optimum level of donation 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 the donation t increases. The illustrative shape chosen in Figure 1 plays no role in the analysis.
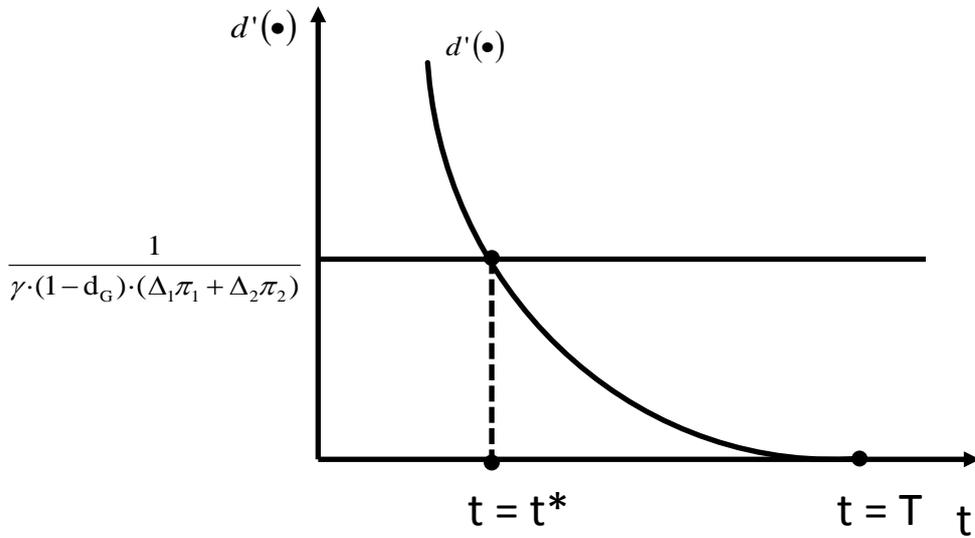


**Figure 1: Determination of the optimal donation**

Comparative statics are straightforward from condition (6). Assume for instance that donators have heterogeneous perceptions about the effectiveness of their donations, 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, donations decrease if $\Delta_1$, $\pi_2$ or $\Delta_2$ decrease, as we can also check with Figure 1 (graphically, the horizontal line moves upwards, thus changing the optimal choice t*).

# 5. Research hypotheses and data analysis

This section starts with a brief summary and discussion of the subjects' decisions in each treatment. Afterwards, we study by means of a regression analysis what variables affect donations to the government. We later study in some detail the effect of social information in the INFO treatment. In 5.4, finally, we explore several potential explanations for our findings, alternative to the outcome-oriented norms account presented in Section 4.

## 5.1 Summary of results

Table 1 presents some descriptive data regarding the distribution of donations in each experimental group; we distinguish throughout the paper between Sessions 1 and 2 of Control because, as we noted in the introduction, there are significant differences across these groups.

| 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] |
| 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) |

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

We observe the highest average donations in Session 1 and the INFO treatment, whereas the lowest is found in Session 2. We also find differences across groups in the distribution of donations, e.g., the fraction of subjects who donate less than 5 Soles is above 60% in Session 2, but below 40% in INFO and Session 1. A Kolmogorov-Smirnov test indeed finds a significant distributional difference when comparing Session 2 to any other experimental group ($p \leq 0.012$ always). In contrast, the test does not report a significant difference in the comparison between Session 1 and INFO. For further illustration, Figure 2 below depicts the distribution of donations in each experimental group –we distinguish five 'intervals' for the donations; the left-hand bar in each graph indicates the frequency of nil donations. Perhaps the most noticeable difference is that the distribution in Session 2 has a clear mode on zero donations.
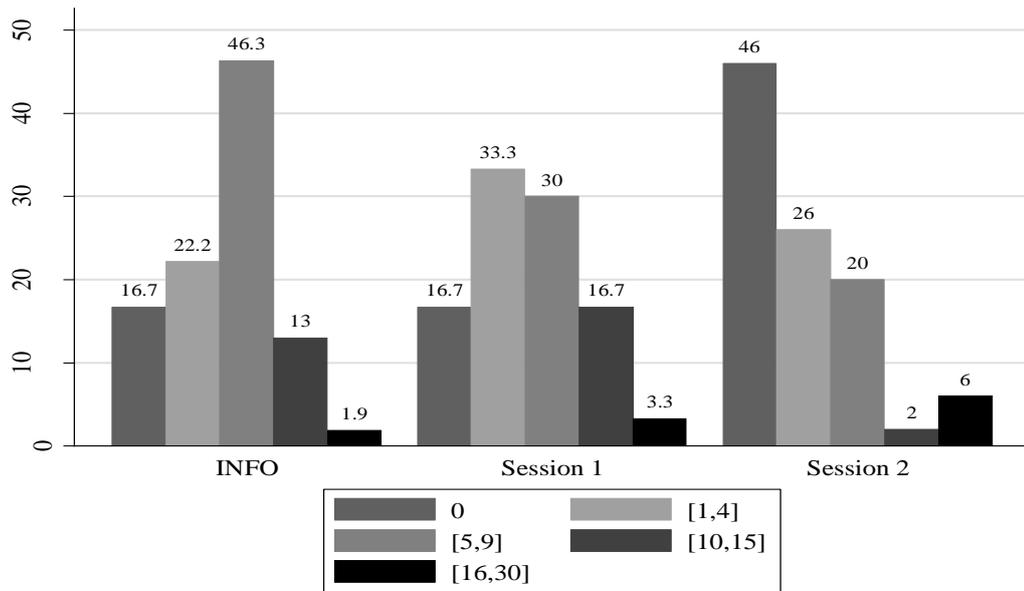
**Figure 2: Distribution of donations in each experimental group**

Finally, Table 2 below provides some information about the average participant in each experimental group, as well as her responses to some questions. For instance, Corruption indicates the position where that subject places Peru in the Transparency International ranking, out of the 168 countries analyzed in 2015. Clearly, the average subject in all groups believes that Peru is a rather corrupt country. On a different issue, when we perform all pairwise comparisons of the distributions of gender, political ideology, socio-economic status, and religiosity across the 3 experimental groups, we observe no significant differences except in the distribution of ideology across Sessions 1 and 2 (two-sample Mann-Whitney test; $p = 0.043$). Further, the distribution of status across INFO and Session 2 is different as well ($p = 0.040$; we note though that a Kolmogorov-Smirnov test does not report significant differences across treatments or sessions). While we cannot reject the possibility that these differences might had induced some behavioral variations across experimental groups (although our regression analysis below suggests otherwise), they do not seem to compromise our main findings. We provide more details below. Note also that the average subject in INFO expects a rather high average donation by the other subjects in her group; in what regards the median subject, however, there is no significant difference between INFO and Session 1 (median test; p-value = 0.715), and a significant difference between Session 2 and any of the other two experimental groups (p-value ≤ 0.004 always).

| Variable | Experimental group | | |
|---|---|---|---|
| | INFO | Session 1 | Session 2 |
| Corruption (1: least - 168: most) | 125.56 | 124.53 | 136.56 |
| Estimate average donation others | 11.18 | 5.85 | 6.49 |
| Political ideology | 5.00 | 6.07 | 5.40 |
| Support to current president | 3.85 | 6.25 | 4.92 |
| Level of religiosity | 5.20 | 5.42 | 5.68 |
| Children | 0.78 | 0.73 | 0.82 |
| Education level | 3.83 | 3.60 | 3.74 |
| Socio-economic level | 2.94 | 3.00 | 3.32 |
| Gender | 0.44 | 0.48 | 0.52 |
| Age (years) | 42.68 | 38.36 | 40.20 |
| Car ownership | 0.05 | 0.20 | 0.32 |
| **Note**: Political ideology is measured from 0 (extreme left) to 10 (extreme right); support to president from 1: not at all to 10: entirely; religiosity from 1: least to 10: most; Children is a dummy, i.e., 0 = no children; Education level from 1: Incomplete primary school to 5: University higher education; Socio-economic level from 1: lowest to 5; highest; Gender: 0 = male; car ownership is a binary variable (NO = 0). The number of respondents is slightly different across cells, as some subjects left empty some questions. | | | |

**Table 2: Descriptive statistics of the subject pool in each experimental group**

## 5.2 What affects giving: A regression analysis

As we explained (see Figure 1), the model presented in Section 4 predicts a direct relationship between a subject's donations and her perceptions about $\Delta_1$, $\pi_2$ or $\Delta_2$. This is in part because in our theory the binding utilitarian norm is consequentialist or outcome-oriented, which means that its prescriptions are conditional on how effective donations are. If a subject believes that the government is very inefficient and corrupt, in particular, the norm prescribes no giving; in this scenario, the money is better kept in the subject's pocket.

**Hypothesis 1 (quality of government & giving)**: In all treatments, the amount donated directly depends on the subject's perceptions about the quality, honesty, and competence of the government.

**Evidence**: Table 3 below shows the results from several regressions. In Model 1, we pool the data from Control and INFO, while Models 2 and 3 pool the data from (a) Sessions 1 and 2 and (b) Session 2 and INFO, respectively. The dependent variable is always a subject's donation to the Government, in Soles; given the censored nature of this variable, we run Tobit regressions. The models include several key variables, and in particular those related to Hypothesis 1. Specifically, we considered three potential measures of the subject's perceptions in this respect. **1**: a subject's estimate of Peru's position in the corruption index of 2015 by Transparency International (TI). **2**: In the "opinion question" 12, subjects were also asked their 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

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that they are relatively competent. **3**: 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). We observe that the coefficients of variables (1) and (3) in Models 1, 2, and 3 are never significant. In contrast, variable (2), support to current president, is statistically significant (p = 0.026, 0.009, and 0.022 in Models 1, 2, and 3, respectively), a finding replicated by López-Pérez and Ramírez-Zamudio (2020a) with a different dataset. Hypothesis 1, therefore, seems vindicated, although for some specific perceptions.

| Dependent  variable: Donation censored from below at zero | | | |
|---|---|---|---|
| **Independent variable** | **Model 1 (Control + INFO)** | **Model 2 (Sessions 1 & 2)** | **Model 3 (Session 2 + INFO)** |
| 1.  Corruption (1: least - 168: most) | -0.0117 | -0.0163 | -0.005 |
| | (0.011) | (0.014) | (0.0167) |
| 2. Support to current president (0: not at all, 10: entirely) | 0.578** | 0.584*** | 0.687** |
| | (0.172) | (0.218) | (0.295) |
| 3.  Government is controlled by (0: few interests, 10: works only for the people) | -0.0116 | -0.116 | -0.012 |
| | (0.202) | (0.254) | (0.327) |
| 4. estimate average donation others | 0.3157*** | 0.5133*** | 0.303*** |
| | (0.067) | (0.119) | (0.084) |
| 5.  Treatment dummy | | -2.987** | 2.695* |
| | | (1.320) | (1.470) |
| 6. Intercept | -0.647 | -0.129 | -4.075 |
| | (2.077) | (2.710) | (3.418) |
| Sigma | 5.756 | 6.058 | 6.536 |
| | (0.384) | (0.514) | (0.586) |
| Obs. | 163 | 109 | 104 |
| Pseudo R-squared | 0.0356 | 0.0586 | 0.0410 |
| **Note**: Robust standard errors in parentheses. Models 1, 2 and 3 are estimated by TOBIT. Treatment dummy, i.e.,, variable 6, takes value 1 in Model 2 (3) if subject participated in Session 2 (INFO), and zero otherwise, ***, **, and * indicate significance at 1%, 5 %, and 10% levels, respectively. | | | |

**Table 3: Regression analysis of determinants of donation to government**

We make two remarks. *First*, the differences in the average donation between Sessions 1 and 2 of Control, which were run approximately with one year of difference, are consistent with Hypothesis 1. 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 president Kuczynski's government suffered during his first year of mandate (Session 1 was run shortly afterwards the president was elected). Still, the decrease in the

average donation from Session 1 to Session 2 is perhaps not entirely due to this factor: In Model 2 we introduce a binary variable for Session 2 and find a significant negative effect (p-value = 0.026).

*Second*, we have received the comment that the correlation between an individual's degree of support for the government and her donation might be due to reverse causation: Subjects adjust their support in response to the amount they have just given, to avoid cognitive dissonance. For instance, a subject who donates x Soles and is later asked about her support to the president, might feel uncomfortable if she states a very low support. To prevent this feeling, she might state a higher support. In our opinion, however, the premises of our theory are somehow implicit in this argument. In effect, if the subject feels dissonant when she gives *and* has a bad opinion of the government, does not this mean that she considers this opinion a relevant conditional of choice? In other words, if the subject finds uneasy by giving money to an incompetent government, this seems a signal that perceptions affect donations.[16]

Before commenting on Variable 4, we note that we have also considered an extension of regression model 1 including several socio-demographic controls, i.e., age, gender, socio-economic status, education level, political ideology, religiosity, having children, and car ownership (YES/NO). Several results are worth to mention. First of all, we find that political ideology, religiosity and education have no significant effect on the donation. Still, we note that donations increase as we move to the right wing of the ideological spectrum (p-value = 0.133), which is perhaps natural given that president Kuczynski's political party (*Peruanos Por el Kambio*) has been described as either centre-right or conservative. Second, support for the president is still significant, but only marginally so (p-value = 0.089). 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.[17] 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 (in fact, other variables that we elicited to measure wealth are also non-significant in our sample). The following result summarizes our discussion so far.[18]

**Result 1**: Donations directly depend on the subject's perceptions about the competency of the government, measured by the subject's support for the current government. In contrast, donations are not explained by the subject's age, gender, religiosity, political ideology, wealth, and education level.

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[16] We do not exclude however the possibility that cognitive dissonance might have reinforced the *strength* of the correlations. Further research is warranted.

[17] This variable takes five possible values (A, B, C, D and E), A being the highest; for more methodological details, see http://www.apeim.com.pe/wp-content/themes/apeim/docs/nse/APEIM-NSE-2016.pdf. Our recruiters chose our sample of participants so that it was representative of the taxpayers' population also with respect to this variable.

[18] As said, the extended model also controls for the subject's age, gender car ownership, and whether he/she has children. Neither of these variables is significant (not even marginally).

We move now to a different issue. The utility theory presented in Section 4 posits that subjects compare with each other, so that a subject's reference group contains all the other participants in the session. This seems at least a plausible assumption in our Control treatment, i.e., Sessions 1 and 2. In this case, the average donation appears to be a natural benchmark, and the following hypothesis is straightforward:

**Hypothesis 2 (beliefs & giving)**: In Control, the amount donated directly depends on the subject's estimate about the average donation.

**Evidence**: Model 2 in Table 3 pools the data from Sessions 1 and 2, and includes the variable related to Hypothesis 2 (i.e., Variable 4 in the left-hand column of the table). As we observe, this hypothesis is largely vindicated by the data. In effect, the estimated coefficients for this variable is positive and moreover significant at the 1% level (this is unchanged if we include controls in the regression model). For further illustration, Figure 3 below includes graphs for Sessions 1 and 2 of the Control 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 see in the three graphs a regression line, showing that beliefs and donations positively correlate in all sessions and treatments considered. The reader can also perceive that such correlation is far from perfect: donations are often smaller than beliefs. Indeed, the corresponding coefficient in Model 2 indicates that an increase in the beliefs in one unit leads to an increase in the donation of around 0.51 Soles, which is significantly smaller than 1 (p-value = 0.0001). Although not part of Hypothesis 2, we must also note that the effect of beliefs on giving is less strong in the INFO treatment, as confirmed by a regression analysis focused on this treatment (results available upon request; compare also the coefficients of Variable 4 in Models 2 and 3, Table 3).
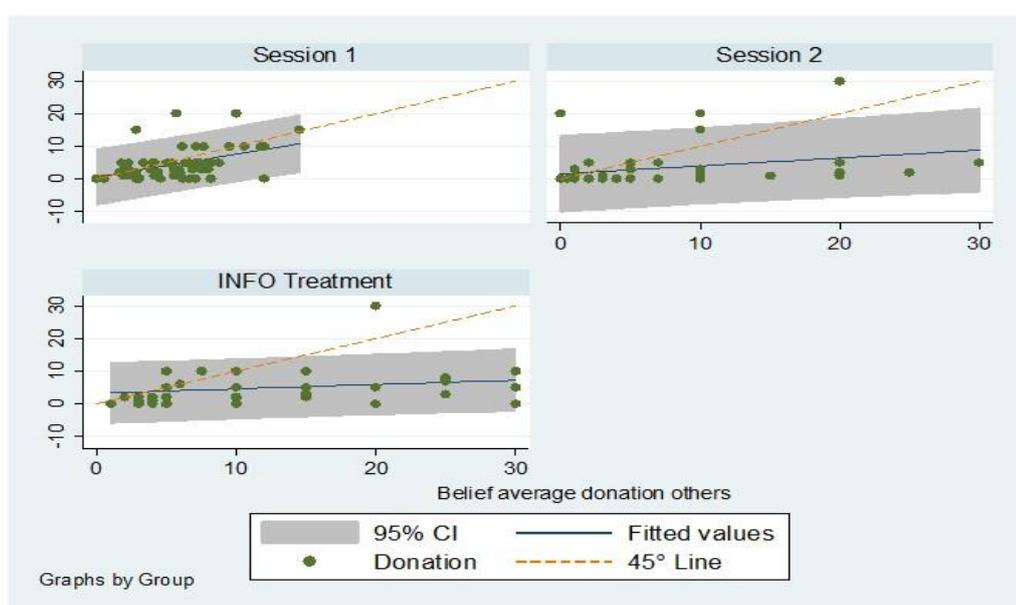


**Figure 3: The relation between donations to the goverment and beliefs**

**Result 2 (beliefs & donations)**: Donations co-move with beliefs about the average donation in the reference group, and the relation is highly significant.

A problem in the previous analysis is that the correlation between estimates 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/estimates 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 the estimates (see Figure 3 above): Subjects tend to believe that others give more. More substantially, however, the results from the INFO treatment, which we conducted to explore how social information affects giving, are at odds with the idea that beliefs are irrelevant for choice.

### 5.3 The role of social information: The INFO treatment

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, as we have shown. 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, recall from Section 5.1 that a two-sample Kolmogorov-Smirnov test indicates that the two donation distributions are statistically different (p $\approx$ 0.001). This is therefore evidence that social information affects giving to the government. Model 3 in Table 3 above, pools the data from Session 2 and INFO, to explore this issue a bit further. On one hand, we can see that the treatment dummy is (marginally) significant (p-value = 0.07). Yet it is also possible that some of the effect of social information operates via higher expectations about average giving (Variable 4). Indeed, as we saw in 5.1, the median expectation in INFO is significantly higher than that in Session 2.

A second rationale for the INFO treatment is that our model in Section 4 predicts a specific change in the distributions across groups, at least under certain assumptions on how social comparison effects operate. 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 (expected) average

donation by other subjects in INFO.[19] 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. 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. The effect on dispersion follows. When we compare the distribution in INFO and Session 2, in fact, a Levene's test for differences in variances indicates a lower dispersion in INFO ($p > 0.0432$).

Note well that our model predicts 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 possible a priori –e.g., if subjects in Session 2 had beliefs systematically higher than 5, they would give more. Yet 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 similar. In this respect, we 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 is possibly very conjectural, we view it as less relevant though than the dispersion result in the previous paragraph.

**Result 3 (social information effect)**: The distribution of donations changes if subjects receive information about others' average behavior. As hypothesized, there is less dispersion in the donations when subjects have a common reference belief. Further, the median donation seems to be shaped by that reference point.

### 5.4 Why do subjects give? A discussion of several utility models

We presented above a utility theory, based on outcome-oriented norms, and argued how it can account for giving and social information effects in our experiment. What about other utility models? We observe first that the standard neoclassical model, with selfish agents who care exclusively about their own material welfare, cannot explain those effects, as it predicts that nobody should donate anything in any of our treatments, a prediction largely at odds with our data.

We hence 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 subjects may sacrifice part of their material payoff to reduce

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[19] In this account, the reference group is not fixed, but shaped by the context: Zoe 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).

differences in monetary gains between themselves and other subjects. However, Fehr and Schmidt (1999) cannot explain social information effects and in fact giving in any treatment, as donating only increases the disadvantageous inequity with those subjects who do not donate.[20] 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 person. Yet this hypothesis of belief-based guilt-aversion cannot explain either any donations because, arguably, donations are totally unexpected by the receptor. In short, these theories can only explain nil donations. While people are for sure heterogeneous and some of the nil donations could be due to the motivations just analyzed, we need to add further motives into the mix to improve predictions.

Alternatively, subjects could give in our experiment to obtain a warm-glow, i.e., a utility payoff independent of the consequences of the donation, Andreoni (1989). Yet warm-glow arguably predicts no correlation between a subject's donation and her/his support for the government (Result 1). For another possibility, models of reciprocity like Rabin (1993) 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 'good' prior interactions with government employees or politicians then she would treat them kindly, i.e., donate something in our Control or INFO treatments. Perhaps this might also explain our Result 1, on the relation between giving and support for the government. Models of pure altruism as in Andreoni (1989) can also explain this, as arguably an altruistic subject would be more willing to donate if he expects the gift not to be wasted or stolen. However, neither reciprocity nor pure altruism can explain the effect of social information (Result 3) or anticipate the correlation between beliefs and donations. Altruistic or reciprocal people should give money (or not) independently of what the average other is 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. But this behavior should not be affected by the expectation, say, that other subjects are not giving anything to the government.

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[20] 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 (almost) equal to zero. Proposition 4 in Fehr and Schmidt (1999) then implies no donations. Note well that the model in Fehr and Schmidt (1999) assumes that subjects compare with other subjects, and not with other people out of the lab. In this regard, we cannot rule out the possibility that people give in our experiment to reduce overall inequality in the population. In López-Pérez and Ramírez-Zamudio (2020a), however, we report data from additional treatments and find little evidence for such idea.

Note that the discussion so far has implicitly assumed that subjects have perfect information about the quality of the public goods provided by the Peruvian government and hence about the efficacy of the prospective donation. If an altruistic/reciprocal subject in INFO is uncertain in this respect, however, she could use the information on prior average donations as an indication of the government's efficiency –see Vesterlund (2003) for a similar argument. More generally, beliefs could affect donations if others' donations signal something about quality. But do subjects in INFO learn something about quality when they are told that others donated 5 Soles in a previous session? While a careful analysis of this question is out of the scope of this paper, we can offer some preliminary evidence. For this, we compare responses across Session 2 and INFO to several questions that provide information about subjects' perceptions of the government's performance. These are the 'waste' and 'Transparency International' questions in the elicitation sheet, i.e. Part 2, and questions 6, 7, 8, 9, 11, and 12 in the questionnaire, i.e., Part 3. If subjects in INFO learnt something from the average donation in Session 1, one could expect systematic differences between Session 2 and INFO. Out of the eight considered questions, however, a Wilkoxon signed-rank test only finds significant differences in the 'waste' question ($p = 0.0279$) and question 12, that is, subjects' support to current government ($p = 0.0437$). So, on one hand, the effect is far from systematic; in particular subjects have similar perceptions across groups regarding the quality of public services like education, health, and security, i.e., questions 7, 8, and 9. But on the other hand we observe an effect on one variable that, as we saw above, is correlated with giving, i.e., the subjects' support to the government. The issue warrants further research, so as to clarify the relative importance of the informational and motivational channels.

## 6. Conclusions

This paper makes several contributions to the literature on public goods and donations, particularly on giving to the government. First of all, we run artefactual field experiments in Peru and offer evidence on conditional behavior. That is, although people are heterogeneous in their behavior and we control for an extensive number of a priori relevant variables, we observe that people very significantly condition their donations on how others are expected to behave. The results from the INFO treatment, where the reference point is arguably fixed, suggest furthermore a causal impact of social information on giving. We stress that participants in our study were a representative sample of the taxpayer population in Lima, and not just university students, which might be an important point in evaluating the external validity of our results.

Some applications of our study are relatively straightforward. For instance, our findings suggest that revenue-raising through voluntary donations is more propitious when people expect others to give as well (and some anecdotal evidence in countries like Peru and Spain suggests that

taxpayers possibly have over-pessimistic and inaccurate beliefs in this respect). Further, since donations are correlated with the taxpayers' support for the government/president, giving can fluctuate highly through time with the president or government's approval rate, as the comparison of average giving in Sessions 1 and 2 suggests as well.

We also feel that our evidence provides insights as well on the *non-selfish* motives why people pay their taxes. In our experiment, for granted, there was no formal obligation to give, and sanctions play most likely an essential role in accounting for actual tax compliance and evasion. However, our findings show that people have motives to contribute voluntarily to public projects, conditional on some factors, and such motives might not be *fully* crowded out or 'deactivated' when there is compulsion –e.g., when people decide on paying their taxes.[21] In this regard, our results might potentially contribute to the abundant literature on "Tax Morale", which analyzes the importance of psychological and cultural elements to explain taxpayers' behavior (Scholz and Witte, 1989; Alm and Jackson, 1993; Andreoni et al., 1998; Feld and Frey, 2002; Luttmer and Singhal, 2014; Alm, 2019).[22] In a nutshell, we conjecture that, as subjects in our study, taxpayers might be willing to contribute (some) money to the government –e.g., voluntarily paying (part of) their taxes–, particularly if they have *relatively* positive perceptions about its performance and believe that other taxpayers comply as well. This conjecture seems supported by previous survey evidence from Latin America –e.g., Torgler (2005), and Ortega et al. (2016).[23]

If the conjecture is correct, our experiment might help to better understand tax compliance, and suggests several ways in which governments could affect giving, including paying taxes. For instance, a straightforward moral is that tax evasion would ceteris paribus decrease if taxpayers improve their perceptions about how efficient and honest the government is, or about how generalized tax evasion is. For granted, improving such perceptions can be extremely difficult in some countries. But knowing that it might pay in terms of higher tax receipts is not irrelevant, and sometimes it might be achieved at a relatively low cost for the tax administration, which often has limited resources to pursue a very strict control strategy, e.g., Hallsworth et al., 2017. 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

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[21] In this vein, some neurological evidence suggests that both taxation and voluntary donations activate similar neural substrates: Harbaugh, Mayr, and Burghart (2007) show that both voluntary donations and mandatory transfers to a charity elicit activity in the same brain region associated with processing rewards.

[22] This literature indeed operates under the implicit assumption that non-standard motivations like peer effects, reciprocity, and social norms, to name a few, are not deactivated when tax evaders risk punishment.

[23] Several Latinobarómetro reports also find that the payment of taxes has a high statistical relationship with the citizens' perception that governments work for the well-being of all. 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 conjecture also hints that, in a cross-country comparison, aggregate tax evasion will be relatively high in countries where the average or modal perception is negative, like Peru. Similarly, the differences in the rates of tax evasion normally observed between developed and other economies should be *partly* due to differences in these perceptions and social comparison effects.

beneficial, we predict that evasion will be relatively diminished. The conjecture also suggests that some of the differences in the levels of tax evasion observed across countries are due to differences in the taxpayers' perceptions.

This lengthy aside leads to a third contribution. That is, our results provide an additional test of the standard, homo economicus, model together with several models of non-selfish preferences. Overall, we provide evidence in line with impure altruism, or more specifically, for a utility theory based on outcome-oriented social norms. Having documented social information effects, we plan in future research to explore how giving to the government varies when income increases and when it is previously earned by the subjects. 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, their endowment was five times higher and had been earned previously?[24]

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[24] We note that the average income tax rate in Peru was equal to 17.8% in 2017. For details, see (in Spanish): http://renta.sunat.gob.pe/2017/assets/pdf/caso_practico_Renta_trabajo_Fuente_Extranjera_2017.pdf

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# Web appendix: Translated instructions, decision sheet, and questionnaires

**(Those parts that appeared only in INFO treatment are in brackets)**

# <u>Instructions</u>

Thank you for participating in this Experimental Economics study, financed by a research project. There are no tricky questions; 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 talk to 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 consists 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 Peruvian Government. 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 government, 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 public treasury 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.

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.

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 Peruvian government. 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.**

# Decision sheet

Part 1                                                                ID number:

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

How much are you willing to contribute to the Peruvian Government?

**S/.** _____

**Note:** You must write an **integer number** (no decimals) between 0 and 30 Soles, inclusive; otherwise, you will not be paid. Your payment 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 the following questions:

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

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

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

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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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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 from 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 | | Technical Higher Education | |
| Completed Primary School | | University Higher Education | |
| Completed Secondary School | | | |

**Current job:**

| | | | |
|---|---|---|---|
| Student | | Employed | |
| Business Admin./Owner | | Currently unemployed | |
| Housewife | | | |

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)?

| Far left | o | O | o | o | o | o | o | o | o | o | o | Far right |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |

**Opinion questions:**

1. What does a person's income depend on – chance (good luck) or other people's influences, or the extent to which the person strives to work hard in life? Indicate your opinion using a number between 0 and 10, number 0 means that chance or external influences are the only important factor, and 10 means that personal endeavor is the only important factor. Mark with a cross (x) on the circle with the number that represents your opinion.

| Resulting from chance or influences of others | O | o | o | o | o | o | o | o | o | o | o | Resulting from one's endeavor to work hard in life |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |

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 | We may trust anyone under any circumstance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |

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 | Completely agree |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |

4. To what extent do you agree that the State should directly participate in the Economy 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 | Completely agree |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |

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?

| Completely disagree | o | o | o | o | o | o | o | o | o | o | o | 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 sentence and 10 indicating complete agreement with the second one, make a mark (X) in the circle corresponding to the number that represents your opinion.

| Controlled by selfish interests | o | o | o | o | o | o | o | o | o | o | o | Governs for the benefit of the people |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |

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 in taxes? (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)*