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Do Anti-Corruption Messages Improve Public Service Delivery? Insights from a Lab-in-the-Field Experiment in Burundi

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ABSTRACT *This paper explores the effects of anti-corruption sensitisation messages on bribe-taking and public service delivery. In a novel lab-in-the-field experiment in Burundi, 527 public servants were asked to allocate rationed vouchers between anonymous citizens; some of these citizens attempted to bribe the public servants to obtain more vouchers than entitled. Two groups of public servants were randomly exposed to similar short messages that called to either the idea of good governance or professional values of integrity. Public servants exposed to the professional identity message behaved in a more equitable manner than those not exposed to any message. We hypothesise that reflecting upon professional values increases moral costs and prompts fairer service delivery. Bribe-taking was not impacted by the messages and bribe-taking and service delivery appear to be distinct dimensions, correlated to different variables. The experiment provides new insights into the design of public service improvement and anti-corruption strategies.*

KEYWORDS: corruption; bribery; public service; service delivery; identity; governance

1. Introduction

In many low-income and ‘fragile’ countries, curbing corruption in the public service has become a key objective of reformist politicians and international aid. One of the most common and low-cost strategies to discourage citizens and public servants from engaging in bribery is to implement awareness campaigns relying on publicly displayed anti-corruption sensitisation messages. The effects of such sensitisation on people’s behaviour is, however, rarely assessed. This article looks at the efficiency of anti-corruption messages targeting public servants in the context of Burundi.

In the last decades, an extensive body of literature has been concerned with the monetary and non-monetary incentives behind corrupt actions (Rose-Ackerman, 1997; Shleifer & Vishny, 1993) and the beliefs and expectations people hold vis-à-vis the law (Basu, 2018). Experimental studies on anti-corruption have focused on various strategies such as top-down and grassroots audit and monitoring, staff rotation, sanction enforcement, or transparency of information (e.g. Abbink, 2004; Ferraz & Finan, 2008; Olken, 2007; Reinikka & Svensson, 2005). Other studies that do not focus on corruption

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also provide cues as to how to challenge unethical behaviour: natural experiments have found that the compliance of tax-payers could be improved using carefully phrased reminders (e.g. Hallsworth, List, Metcalfe, & Vlaev, 2017) while social psychology studies on dishonesty have suggested that priming people on their self- and/or professional identity may reduce their propensity to cheat (Bryan, Adams, & Monin, 2013; Cohn, Fehr, & Maréchal, 2014). Building on this body of research, our paper investigates the impact of anti-corruption sensitisation messages on public servants in a situation where they face a bribery attempt. These messages call on either (1) the general idea of good governance or (2) professional identity, understood as a person's perception of themselves as a professional (a public servant in our case). In addition to contributing to the field of corruption economics, we also seek to provide impetus to new and more efficient anti-corruption strategies.

We investigate bribery in the context of a laboratory experiment in which actual Burundian public servants were asked to allocate a rationed public service among citizens. Our experiment seeks to understand the efficacy of anti-corruption sensitisation messages on bribe-taking and the delivery of public service. Are public servants who are reminded of the core principle of good governance or of the values associated with their professional identity less likely to take a bribe? How do the messages impact the way they allocate a rationed public service? How fair are they? (In a context like ours, where it is not possible to individually identify citizens, a fair allocation would be an equal allocation among citizens; Konow, 1996).

We find evidence that anti-corruption messages, in particular those reminding public servants of their professional identity and the qualities expected from it, influence public service delivery but not the propensity to accept bribes. Participants who were exposed to the professional identity message were more likely to choose a strictly equal allocation of public service among citizen participants than those who were not exposed to any message.

The first section of the paper locates our research within the corruption literature, describes the objectives of the study, and situates the experiment in the context of Burundi and its public service. The experimental design is explained in the second section. The empirical analysis is described in the third section and the results are presented in the fourth section. The fifth section discusses the potential mechanisms that underpin the results. The last section concludes and suggests policy implications.

2. Background

The bribery of low-level public servants is possibly the most common form of corruption experienced by ordinary citizens, especially in settings that are institutionally 'fragile' (Justesen & Bjornskov, 2014). It is typically combated through different strategies: (1) audit, monitoring, and sanction enforcement measures (e.g. Ferraz & Finan, 2008; Olken, 2007); (2) information transparency and social accountability initiatives (e.g. Reinikka and Svensson, 2005) and, (3) the focus of the present paper, corruption awareness campaigns. Awareness campaigns are one of the least expensive tools of the anti-corruption arsenal, but their effectiveness is still poorly documented.

The first objective of our study is to investigate the effectiveness of anti-corruption messages by observing two behaviours: bribe-taking and service delivery. We do this using a lab-in-the-field approach – a study conducted in a naturalistic setting using a lab paradigm – that helps better understand corruption dynamics and provides first-hand information on individual corrupt behaviour (Abbink & Serra, 2012; Barr & Serra, 2009; Treisman, 2007). Specifically, lab-in-the-field provide a way to better articulate the advantages of laboratory (e.g. control over the environment) and field research (Serra & Wantchekon, 2012) and echo the concerns raised about the external validity of many corruption experiments conducted in laboratories with students playing non-contextualised games or are instructed to play as if they were public servants (Barr & Serra, 2009). Our participants are also the target subjects of the study, i.e. public servants, and they play a contextualised scenario. These elements matter: in lab experiments, Barr and Serra (2009) found evidence that framing the game with a contextualised scenario make participants more likely to reject bribes and Alatas, Cameron, Chaudhuri, Erkal, and Gangadharan (2009) found that public official participants tolerate

corruption less than student participants. Among the many lab experiments on bribery, the most relevant are probably Barr, Lindelow, and Serneels (2009) who find that professional experience and norms negatively affect behaviour in public service delivery (their experiment is with nurses in Ethiopia), as well as Köbis, Prooijen, Righetti, and Van Lange (2015). The latter found that corrupt behaviour in a corruption game significantly drops when participants receive short anti-corruption descriptive norms prior to the game.

Our second objective is to pay attention to the wording of anti-corruption messages. A natural experiment conducted in the UK finds a positive impact of short messages on tax collection when the messages targets taxpayers with specific information (Hallsworth et al., 2017) while Bursztyn, Fiorin, Gottlieb, and Kanz (2019) find that the moral appeal of a text message sent to credit card customers reduces the share of delinquent customers in Indonesia. In our experiment, which looks specifically at bribery and service delivery, we test two kind of messages. One of them is a typical general good governance message while the other one puts emphasis on the individual and the identity of the bribe-taker. Introducing Identity Economics, Akerlof and Kranton (2000) have stressed that agents make economic decisions not only on the basis of rational incentives but also in relation to their identity and self-image. Mazar et al. (2008) argue that people who take a ‘bad’ action deploy unconscious strategies to distance their self-identity from their unethical behaviour. This idea is consistent with experiments in social psychology. Bryan et al. (2013) observed a decrease in cheating behaviour when asking the participants of a game ‘not to be cheaters’, rather than ‘not to cheat’. In their seminal study set in Switzerland, Cohn et al. (2014) also highlighted the power of professional self-identity: among the professionals who played a lab game where cheating was possible, bankers were more likely to cheat than other professionals when primed on their professional identity (the authors argue that the banking culture is fundamentally more corrupt than other professions’).

Our paper contributes to the extant literature by (1) testing the effects of different types of anti-corruption messages on acceptance of bribes but also on the less studied aspect of equitable (non-preferential) treatment in service delivery and (2) seeking to better understand what exactly in anti-corruption messages has an effect, by examining between two ideal-types of message.

2.1. Public service in Burundi

Our experiment is set in Burundi, a so-called ‘fragile’ country where the delivery of public services and the corruption of public servants are significant issues. At the time of the study, Burundi ranked 159 out of 176 in the Transparency International corruption perception index with a score of 20/100 (in 2019, it ranked 165/198, scoring 19/100). Political instability and government failures in the last decades, as well as the 1993–2005 civil war, are believed to have fuelled corrupt behaviours. The dependency of residents of Bujumbura, the largest city in the country, towards rampant corruption reportedly contributed to fuelling the political, social, and economic crisis that erupted in 2015 (Humanitarian Foresight Think Tank, 2016).

A series of anti-corruption initiatives have been undertaken since the end of the civil war at the end of the 2000s: they consist in a revision of the legal framework, as well as in stricter sanctions and measures to improve law enforcement. These include the creation of an independent tax revenue authority and a special anti-corruption police brigade (International Crisis Group [ICG], 2012). These measures, however, have proven largely insufficient and corruption has been an important theme in the 2010 and 2015 electoral campaigns.

At US\$ 600 PPP (2012), Burundi’s GDP per capita is one of the lowest in the world. The administrative system is partly inherited from Belgium, the former colonial power, and has been influenced and reformed with and by international aid support over the last decades. With few opportunities in the private sector, public service positions are highly regarded and are seen as the main way to climb the social ladder and become wealthier. As in many low-income countries, citizens often directly pay fees (that are official and publicly known and should be displayed) for accessing public services. A 2016 survey found that working in the public sector was the first

professional aspiration of a majority of Burundian pupils (Jeusette & Verwimp, 2017). The capture of resources and the politicisation of the Burundi public service are significant and provide public servants with substantial power and material advantages (International Crisis Group [ICG], 2012). The East African Bribery Index compiled by Transparency International (2013) offers a detailed insight into critical public sectors, which appear to be perceived very differently: policemen score first both in terms of the likelihood to ask for a bribe and in the proportion of actual bribes paid by the population (24.7%, 52%), they are closely followed by the judiciary sector (21%, 27.8%), while those in the education sector (12.9%, 13.2%) and, even more so, those in medical services appear much less corrupt (3.1%, 0.4%).

Courts of justice, health centres, schools, and to a lesser extent police force are under-resourced and chronically under-staffed; they also often exist in insufficient number (Rwantabagu, 2014; Vandeginste, 2015). In the context of institutional fragility of Burundi, public servants find themselves having to make decisions about who is prioritised in accessing services and, during frequent shortages, who receives goods such as medicine and school equipment. Public servants typically enjoy quite some *de facto* autonomy in making such decision: the governance framework and informal practices promoted by the ruling party are quite permissive of corruption at all levels (Nicaise, 2019), (social) accountability mechanisms are very limited (Falisse & Ntakarutimana, 2020), and – as the survey data we will soon present shows – control by line managers is limited, especially for teachers and court clerks.

3. Experimental design

3.1. *The experiment*

The experiment sought to reproduce a situation of petty corruption in which a citizen bribes a public servant in the expectation of receiving more of a public service than they are entitled. We focus on the decisions of the public servant: when do they accept the bribe? When do they provide the briber what they asked?

The ‘public servants’ in the experiment were all actual public servants. They were expected to deliver a public service – in the form of allocating vouchers – to ‘citizens’ who had requested them. The citizens, recruited among the students of the University of the Great Lakes in Bujumbura, requested the vouchers in a preliminary stage, during a different experiment session that is not analysed in detail in the present paper.¹ The rest of this sub-section presents the different stages of the experiment, which are then summarised in [Figure 1](#) and in the last paragraph.

The instructions and scenario were explained to the public servants verbally: public servants were given the task of managing the distribution of vouchers giving access to a public service among citizens. It was clearly explained that (i) it is a public service that is available in limited quantity, and (ii) the public service is equally needed and deserved by each citizen. Public servants were, therefore, expected to distribute the vouchers equally among citizens requesting them, without this having been explicitly stated (see supplementary material B for details). The rationing feature –the fact that there might be more demand than supply– is crucial to test for equality in terms of service provision and mimicked real-life situations explained in [section 2.2](#).

In stage I, each public servant received an endowment of twelve vouchers that give (citizens) access to the public service. Both the oral instructions and text on the voucher made clear that vouchers cost Burundian Francs (BIF) 500 each in experiment money to the citizen and could not be cashed by public servants. Public servant participants had, therefore, no reason to keep vouchers for themselves.

In stage II, each public servant faced the same situation, which was determined by the average distribution of requests issued by citizens in the preliminary stage.² Therefore, each public

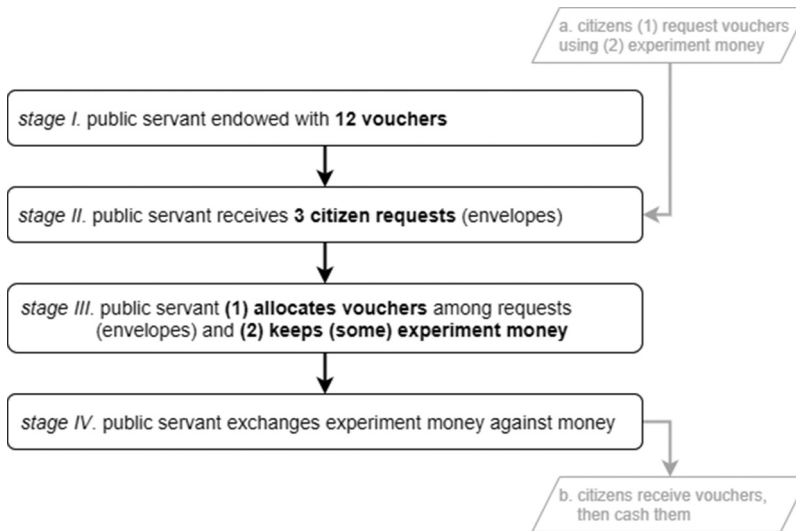


Figure 1. Experiment phases.

servant received a set of three similar envelopes corresponding to requests from three citizens; each envelope contained an anonymously written request for vouchers and payment in experiment money. Among the three envelopes, two contained a request for four vouchers and BIF 2,000 in experiment money, and one contained a request for six vouchers and BIF 6,000 in experiment money –so the last envelope contained a request for two extra vouchers, and BIF 3,000 more than the official total cost of the six vouchers it contained. In other words, in each set of three envelopes, one contained a bribe, i.e., a request for more vouchers than what a citizen was entitled to receive under an equal allocation of vouchers between citizens, as well as more money than the vouchers normally cost.

In stage III, each public servant distributed their vouchers among citizens by putting them into the corresponding envelopes. The instructions explicitly stated that the public servants should only take the amount of experiment money corresponding to the cost of the vouchers they had allocated. However, in practice, nothing (other than the instructions) prevented them from keeping whichever amount of experiment money they wanted.

To sum up, the experience of a participant would be the following: after taking place in their cubicle and hearing the experiment instruction, they would receive twelve vouchers from the experimenter (stage I), followed by three closed envelopes (stage II). Opening each envelope (stage III), they would find experiment money, as well as brief note. In two cases, the note would read ‘I am requesting 4 vouchers in exchange of BIF 2,000’ – the standard, regular – request. In one case, it would read ‘I am requesting 6 vouchers in exchange of BIF 6,000’ – the bribe attempt. Faced with requests for 14 vouchers in total when they only have 12 to allocate, and a request that clearly pays more than the set official price for vouchers but also asks more than is normally allowed, the participant would then allocate vouchers among envelopes and keep whichever amount of money they decided (which they would ultimately exchange against real money, stage IV).

3.2. *Participants and recruitment*

The participants were active Bujumbura-based public servants in non-managing positions coming from the health, (primary and secondary) education, justice (court clerks), and police. As explained earlier, the choice of categories was dictated by the desire to meaningfully represent and explore the heterogeneity of attitudes towards corruption by different professionals reported in the Transparency International bribery index. Leaflets and posters advertised our study at workplaces (health centres, schools, ministries). They promised a fee against participation in a research described in general terms as exploring the ‘the relationship between citizens and public service providers’. Pre-registration was done by phone and confirmed by show of an official public servant card. Advertising took place in a wide range of workplaces around Bujumbura, and the participants came from numerous workplaces. As in all experiments, the sample only consisted of those willing to participate (and those who came first). There is no general survey of the profile of civil servants in Burundi, but the sociodemographic characteristics presented in the appendix, as well as the relatively large sample size for an experiment of this type, suggest that the participants were similar to the average Bujumbura-based public servant.

Anonymity was guaranteed throughout the entire process, from recruitment to payment. It is a key feature of most bribery games since Abbink, Irlenbusch, and Renner (2002) have shown in one of the first experimental bribery games that even a very low probability of being identified reduces the bribe-taking level dramatically. Therefore, concerned with exploring intervention effects as cleanly as possible, we ensured a high level of anonymity by never identifying participants by their name, having them play each in individual cubicles, and processing both arrivals to the site and exit and payment individually. The experiment took place outside the professional context, and outside the participants’ working hours. As explained earlier, citizens played in a different session. It is worth noting that substantial anonymity may also be a situation many of our research participants find themselves in their professional life as they work in a city of one million inhabitant and have many, when not mostly, one-off interactions with citizens (with the exception of teachers).

3.3. *Setting*

The experiment was played in paper and pencil form and took place in December 2013 and January 2014 in a classroom equipped with individual cardboard cubicles at the public University of Burundi, in Bujumbura. 14 sessions of 19–50 participants were organised. The experiment manager and his lab assistants were all Burundians; at no point were foreign experimenters in contact with participants to avoid biasing participants’ decisions (Cilliers, Dube, & Siddiqi, 2015). The whole session was run in Kirundi to make sure that all the rules were understood and that a foreign language would not reduce the participant’s emotional response (Costa et al., 2014). After the experiment, the participants were asked to fill in a questionnaire about their sociodemographic background. It also contained questions about their opinions regarding personal and professional values but did not explicitly mention corruption. In order to link the results of the game with the sociodemographic survey, each participant was identified with a unique number during the study.

Participants received their payoff at the end of the session: a lump sum show-up and transportation fee of BIF 5,000 (then \approx \$3.25) and between BIF 6,000 to BIF 10,000 (then \approx \$3.75 to \$6.25), depending on their decisions during the experiment. The minimum amount that could be earned during the experiment (BIF 11,000 \approx \$7.00) corresponded to two to three days of daily wage for the less well-paid category of public servant participating in our experiment.³

3.4. *Outcomes*

Two dimensions were observed in the experiment: (1) bribery—the amount of money taken in excess of the fee for delivered vouchers; and (2) equality in public service delivery—the number of vouchers distributed by the public servant to each citizen, including the briber.

In our set-up, the bribee (the public servant) was then free to reject the bribe, accept and grant the favour, or accept but not grant the favour (for a similar setup, see Abbink et al., 2002's bribery game). Whenever the favour asked by the briber was granted by the public servant, other citizens lost voucher(s) and therefore money. This represents the cost of corruption. A specificity of the experiment, which may bring it closer to real-life situation than other bribery experiments, is that the briber has little leverage on the bribe-taker. As reported in contexts of widespread corruption where citizens with limited social capital have little bargaining power, there is no mechanism of automatic and proportional reciprocity between briber and bribe-taker. The income-maximising strategy for the public servant is to take all the money, bribes included. The absence of automatic reciprocity may also have consequences for voucher allocation: Fehr and Schmidt (1999) observe that most people behave in a fair manner when no personal cost is implied. The expected behaviour of our participants, and what we consider a fair allocation, should then be an equal allocation of vouchers among citizens (Cappelen, Hole, Sørensen, & Tungodden, 2007).

3.5. Intervention groups

In order to investigate the role of professional identity reminders, two message interventions were introduced. They were written in Kirundi on page 4 of an 8-page booklet containing short practical information (223 words in total) that was distributed to the participants at the very beginning of the session. Within each of the 14 sessions, the public servants were randomly assigned to one of three groups (for group characteristics, see [Table A1](#) in Appendix):

- (1) a 'no message' group;
- (2) a 'standard message' intervention group, exposed to a typical good governance statement: 'Good governance is the pillar of an equitable and uncorrupted society' (Kirundi: 'Gutwara neza ni' inkingi y'ubuntu n'iteka mu kurwanya ibiturire mu gihugu')
- (3) a 'professional identity message' intervention group, which contains a professional identity reminder and reads: 'a real public servant is equitable and incorruptible' (Kirundi: 'Umukozi wa leta w'ukuri arangwa n'ubuntu n'iteka, akirinda igiturire').

The contents of the messages do not differ ethically. Our hypothesis is that the professional identity message makes it harder for the participant to disconnect their actions from their identity, rendering participants less prone to accept bribes or to be affected in public service delivery.

4. Empirical analysis

4.1. Descriptive statistics

The sample consists of 527 public servants whose sociodemographic profile vary among sectors and is marked by high material poverty (Table S1 in the supplementary material A). In line with the fragile political situation of Burundi at the time of the experiment, 62 per cent of the participants declared that the life of their families was disturbed by violence in the year before the experiment. Access to the internet (and computer literacy) is low, which further justifies the pen and paper form of the experiment. The three intervention groups are overall well balanced with regards to those characteristics ([Table A1](#) in the appendix). Professional experience differs among sectors (Table S2, supplementary material A), with the police and nurses usually having more experience than teachers and court clerks. The satisfaction of the participants with their job is moderate, and about 30 per cent of the public servants have another job on the side (small shop, taxi, private medical practice, etc.). This figure is much lower in the case of the police who are often stationed in barracks and therefore enjoy less flexibility to engage in moonlighting.

The post-experiment questionnaire did not ask directly about corruption, but it did touch on the participants' opinion of what the main problems of the country are. Corruption and good governance topped the list, ahead of violence and leadership. The survey also asked three questions about the public servants' experience with governance training, illegal or irregular requests from citizens, and control of their work (Table S3, supplementary material A). Police received more training on 'good governance', likely as part of the Disarmament, Demobilisation, and Reintegration (DDR) and capacity-building programmes (many in the police are ex-combatants). Consistently with Transparency International (2013), the police and court clerks say that they were more exposed to irregular or illegal requests than nurses and teachers.

4.2. Identification strategy

Experimental data are primarily analysed with Ordinary Least Squares (OLS) and Logit models, with experimental session fixed effects and standard errors clustered per session (p-values are adjusted for the small number of clusters using wild bootstrap and 999 replications, following Roodman, Nielsen, MacKinnon, & Webb, 2019).

$$B_i = \alpha + \beta_1 T_1 + \beta_2 T_2 + S_i + \varepsilon_i \quad (1)$$

$$I_i = \alpha + \beta_1 T_1 + \beta_2 T_2 + S_i + \varepsilon_i \quad (2)$$

Bribery (B_i) corresponds to the bribe taken by the public servant in the OLS model. The instructions specified that the money taken should correspond to the cost of the delivered vouchers. Out of BIF 10,000 in total, a public servant is expected to take only BIF 6,000, the rest is the bribe amount. In the Logit model, B_i is a binary variable that takes the value 1 if the participant took more than BIF 6,000. Inequality (I_i) is the public servant's distribution of vouchers. The instructions specified that every citizen has an equal right to access the (rationed) public service. Out of 12 vouchers, an equitable public servant should thus deliver 4 vouchers to each citizen. In the OLS model, the inequality level is calculated as:

$$I_i = \sum_{j=1}^3 |V_j - 4| \quad (3)$$

where V_j represents the number of vouchers attributed to citizen j . If the public servant deviates from an equal allocation between the three citizens, it will deprive one player whilst favouring another. Inequality level can take values ranging from 0 to 16, according to the way vouchers are attributed, i.e. if 4 vouchers are attributed to each citizen, the inequality level is 0, but if all 12 vouchers are attributed to one citizen, leaving nothing for the others, the inequality level is 16. In the Logit model, I_i is a binary variable that takes the value 1 if the participant allocated their vouchers in any other way than the equitable 4-4-4. T_1 is a dummy indicating whether the individual was exposed to the standard message treatment (intervention) and T_2 a dummy for the professional identity message. S_i are fixed effects capturing session-level invariants: sessions were organised on different days but in the same room and by the same assistants. In alternative specifications, we also added X_i , a vector of personal covariates that cover basic sociodemographic indicators (age, education, gender, and wealth), religion, the experience of war and violence, profession and work experience, and exposure to corruption and anti-corruption. For 75 observations, there is at least one missing answer from the questionnaire. We replaced those missing values by the mean value of the variable in the professional group (and include a dummy identifying those observations in the regression model).

To estimate the heterogenous effects presented in section 5.4, the source of heterogeneity (H) is interacted with the treatment (intervention) assignments (T_1 and T_2) as in:

$$Y_i = \alpha + T_1 + T_2 + \beta_3 T_1 H + \beta_4 T_2 H + H + S_i + \varepsilon_i \quad (4)$$

5. Results

Four key results emerge from the experiment: (1) none of the messages influenced the propensity to accept a bribe; (2) the message that calls attention to professional identity makes public servants allocate vouchers in a more equal way; (3) the bribery and inequality dimensions are not correlated; and (4) the type of professional identity, as well as sociodemographic characteristics, matter.

None of the participants had taken part in a lab experiment before. Our core analysis below focuses on 492 participants in total. It excludes 35 participants who displayed a behaviour suggesting that they had not understood the instructions: they did not take the money corresponding to the vouchers distributed (such participant are, however, included in some of the robustness checks).⁴

The voucher allocations and bribe amounts are represented in Figure 2 (distribution per intervention group in the supplementary material A). The most frequent case is, by far, that of participants taking the maximum bribe amount but equally distributing the vouchers (63.2%). This is also the expected dominant behaviour. By contrast, 9.6 per cent of the participants did not take any bribe and distributed vouchers equally, as requested in the instructions. Overall, only a fifth of the participants chose to give extra vouchers to the briber (unsurprisingly, 95% of those participants had taken some or all of the bribe). Only 0.8 per cent of the participant chose the ‘lazy outcome’ and pocketed all the money while putting all the vouchers in one envelope (mostly in the briber’s envelope, which might be reciprocity drive).

5.1. Bribery

The overall level of bribe-taking is high: across groups, 87.95 per cent of the participants pocketed part of or the entirety of the bribe, taking on average 67.4 per cent of the bribe (BIF 3,373). There is no significant difference between the average amount taken in the control group and the amount

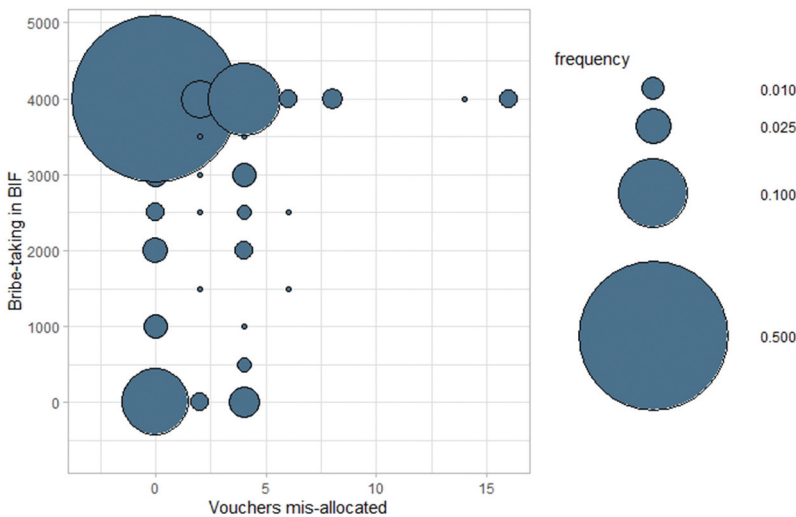


Figure 2. Distribution of behaviours.

taken in the groups exposed to the standard or professional identity messages (OLS models 1 and 4 in [Table 1](#)). The same observation holds when considering whether the participant took any part of the bribe (Logit models 2, 3, 5 and 6 in [Table 1](#)).

Table 1. Effects of the messages on bribe-taking

	(1) OLS	(2) Logit	(3) Logit	(4) OLS	(5) Logit	(6) Logit
Any message	84.54 (179.4)	0.108 (0.413)	0.184 (0.342)			
Standard message				77.80 (156.1)	-0.0744 (0.343)	0.0539 (0.359)
Professional identity message				91.50 (221.7)	0.263 (0.504)	0.292 (0.420)
Session fixed effects	yes	yes	yes	yes	yes	yes
Controls	no	no	yes	no	no	yes
<i>N</i>	492	492	492	492	492	492

Standard errors in parentheses, standard errors clustered per session. | * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. | Columns (1) and (4) use bribe-taking levels as a dependent variable. | Columns (2), (3), (5) and (6) use a binary variable with bribe-taking equal to 1 as a dependent variable. | see the last paragraph of 5.3 for details on robustness checks.

5.2. Public service delivery

Across all groups, 76.21 per cent of the participants allocated their 12 vouchers equally among the citizens. In the case of the participants who did not choose this equal allocation, 94.61 per cent gave extra voucher(s) to the briber. Among those, 16.81 per cent delivered the briber only one extra voucher, and 69.91 per cent delivered them the extra two vouchers they requested. As shown in [Table 2](#), the participants who were exposed to the professional identity message were less unequal in their voucher distribution than those not exposed to any message. There is, however, no statistical difference between the coefficients of the two intervention groups.

Table 2. Effects of the messages on inequality (in vouchers allocation)

	(1) OLS	(2) Logit	(3) Logit	(4) OLS	(5) Logit	(6) Logit
Any message	-0.462* (0.219)	-0.424** (0.203)	-0.528** (0.260)			
Standard message				-0.463 (0.306)	-0.433 (0.266)	-0.474 (0.347)
Professional identity message				-0.460** (0.165)	-0.414** (0.175)	-0.582*** (0.215)
Session fixed effects	yes	yes	yes	yes	yes	yes
Controls	no	no	yes	no	no	yes
<i>N</i>	492	492	492	492	492	492

Standard errors in parentheses, standard errors clustered per session. | * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. adjusted for wild bootstrapping | Columns (1) and (4) use inequality levels as a dependent variable. | Columns (2), (3), (5) and (6) use a binary variable with inequality equal to 1 as a dependent variable. | see the last paragraph of [section 5.3](#) for details on robustness checks.

The coefficients of both messages are negative and of similar size. However, the standard errors of the professional identity coefficient are smaller in all models, which suggests a more homogenous behaviour. The marginal effect of the Logit coefficient for the professional identity message

corresponds to a probability of being unequal in voucher allocation that is 12 per cent lower if exposed to the professional identity message.

5.3. Characteristics associated with bribe-taking and public service delivery

The different professional categories behave, on average and across groups, differently (Table A2 in Appendix). Public servants in the judiciary are significantly more equitable than in the other professions. Few other variables are consistently significant at $p < 0.05$ level: having been promoted is correlated with taking a more substantial bribe, and exposure to governance training and the level of exposure to ‘irregular’ requests from citizens in the job are associated with more equal behaviours in terms of service delivery in the Logit model only.

The robustness of the results was checked using a series of different specifications. In both the bribery-taking and service delivery cases (see Tables A3 and A4 in Appendix), we tested the models again gradually adding groups of personal characteristics covariates; (1) excluding the two sessions where the participants were exposed to only one of the three situations (no message, standard message, professional identity message); (2) including the participants who seemed to have misunderstood the experiment; (3) replacing missing control variables with sample rather than professional category averages; (4) removing both session clusters and session fixed effects; (5) removing session fixed effects; and (6) using a Probit model instead of a Logit model or (7) a count (Poisson) model instead of the OLS model. The aforementioned effects are remarkably consistent across specifications.

5.4. Heterogeneous effects

The data presented in Section 4.1 and the literature suggest possible heterogeneous effects corresponding with the socio-professional and personal characteristics of public servants. In line with Transparency International’s East Africa Bribery index and the existing literature, we focus on the socio-professional categories (see section 2.1 for the rationale for the choice of profession). The most visible effects are in terms of vouchers allocation (Figure 3).

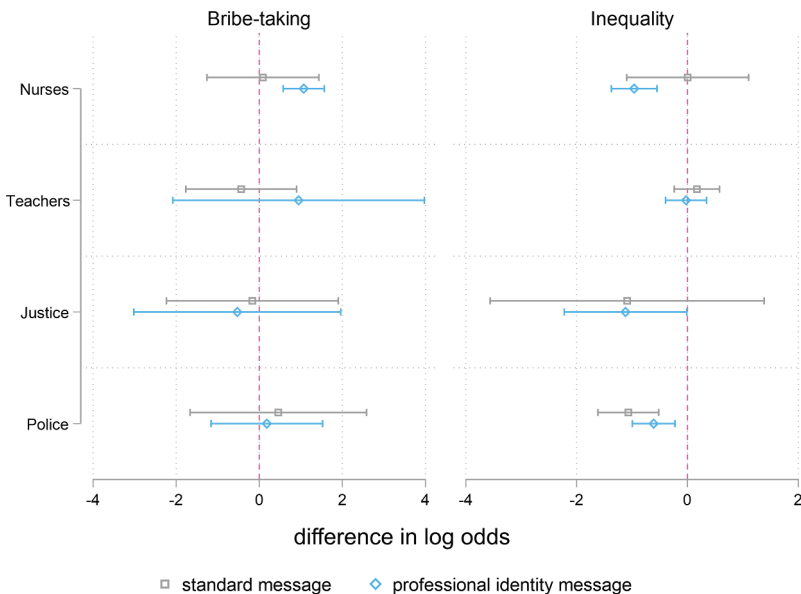


Figure 3. Heterogeneous effects (socio-professional category). Bars indicate the 95 per cent confidence interval. | Model described in equation 4, also includes the aforementioned controls as well as session fixed effects and clustered standard errors (n = 496).

After adjusting for multiple hypotheses testing (Bonferroni-Holm), the professional identity message only had an effect on nurses ($p = 0.010$) and police ($p = 0.001$). The standard message had an impact on police only ($p = 0.018$). Since the models include controls for the series of sociodemographic variables described earlier (X_{it}), thereby suggesting that the reason for those differences is not arising from the observed differences among the professional categories presented in Section 4.1. Baseline levels may be part of the explanation: in the control group, police and nurses likely had more room for improvement as they were (in the control group) almost twice more likely to be unequal than clerks and teachers (respectively 0.363 and 0.375, vs 0.179 and 0.219).

Finally, table S4 in the supplementary material A considers heterogeneous effects across characteristics defined as important in the literature such as gender and age (Armantier & Boly, 2013), experience of violence (Voors et al., 2012), and professional experience (Barr et al., 2009). We find that only the less experienced participants are sensitive to the professional identity messages, which seem to corroborate Barr et al. (2009)'s argument that the culture of corruption develops gradually.

6. Discussion

Our experiment is connected to real-life situations. Directly paying civil servants a fee for accessing public services is the norm in many low-income countries and in Burundi. Although legal dispositions exist to sanction public servants who are caught for active or passive corruption, few cases are reported (11% according to Transparency International, 2013) and when they are, sanctions are rarely enforced (UNODC, 2015). Citizens with limited social capital often have little bargaining power when attempting to obtain extra illegal services from poorly monitored public servants, and the external validity of this experiment is mostly relevant for that type of population. As demonstrated in several bribery experiments (Olken, 2007; Reinikka and Svensson, 2005; Serra & Wantchekon, 2012), the level of bribe-taking is expected to be high when the scrutiny of public servant's behaviour is low. In fact, given the context and features of the experiment (anonymity, lack of sanction, one-shot), it is remarkable that not all participants took the entirety of the bribe. Interestingly, the level of bribe acceptance is consistent with other experimental bribery games with no sanction and no risk of detection, even though these were conducted with student participants (Barr & Serra, 2009; Frank & Schulze, 2000).

There are solid reasons to believe that the participants did understand very well that the experiment involved a bribery attempt, even though the term was carefully avoided in both the oral and written instructions. In qualitative feedback collected right after the experiment, participants did mention the bribery attempt, and so did participants in anecdotal messages written on the back of the vouchers sent to the 'briber'.⁵ Two years after the experiment, we conducted more debriefing interviews and in almost all of them, people spontaneously mentioned that the experiment did involve dealing with a briber when asked, unprompted, to explain what they had to do.⁶

The messages did not significantly correlate with bribe-taking. There are a few possible explanations for this. Firstly, Burundian public servants, especially the lowly paid police and teachers, may have pocketed the money to meet their basic needs (Ndikumana, 2006). Secondly, by allowing public servant participants to be fair while pocketing a bribe, we may have given them satisfied their perception of being 'good enough' public servants (Olivier de Sardan, 1999). In fact, it is possible that some participants saw the message but failed to change their behaviour in relation to bribe-taking because of a different opinion about what constitutes a public servant's typical behaviour. The mechanism could then be similar to the one described by Cohn et al. (2014)'s study: the reminder has a negative impact on ethical behaviour. Bringing another pool of participants to the lab, such as students (as in Alatas et al., 2009) or US residents recruited on Amazon Mechanical Turk (Köbis et al., 2015) or private sector employees, for the same experiment might generate different results and help to disentangle potential social norms effect from message effect. Note that Köbis et al. (2015) experiment used descriptive social norms messages, while our experiment used statements about good governance in the public service or professional identity of a public servant. Moreover, their

participants were remunerated USD 1.00 for their participation independently of their behaviour in the game, while our participants were remunerated according to their behaviour in the game, i.e. earning more when taking a bribe.

In line with Fehr and Schmidt (1999) and Dana, Weber, and Kuang (2007), we observe that most people behave equitably when no cost is implied. In our experiment, the lack of automatic reciprocity made it financially and morally costless for the public servant to be equitable. The high level of participants who allocated vouchers equally, thereby refusing to deliver the favour asked from the briber, was somewhat expected. The one-shot nature of the experiment could also have contributed to this high figure. As shown by Abbink et al. (2002), repeating a bribery game with the same participants, and increasing the level of personal interaction with the briber, contributes to increased reciprocity.

Public servant participants who were reminded of the qualities expected from their profession allocated vouchers more equally among citizens than those not exposed to any message. Our interpretation is that the professional identity message is particularly good at increasing the salience of moral costs. Petty corruption experiments involving negative externalities, contextual framing or intermediaries have already shown that moral costs are an essential determinant in bribery decision-making (Barr & Serra, 2009; Di Falco et al., 2020; Drugov, Hamman, & Serra, 2014). Notably, Barr and Serra (2009) found that negative externalities (i.e. negative impact on others not immediately party to the transaction), combined with a corruption framing scenario, are associated with lower bribe-acceptance. In our experiment, the standard message is a soft reminder of social norms and the social cost associated with favouring the briber. The mechanism behind the effectiveness of the professional identity message is slightly different. The stress is on the damage to the public servant self-image, and it makes it harder for an agent to cope with infringing social norms maybe by disconnecting their action from the image they have of themselves (there is also no intermediary that would make disconnection easier as in Drugov et al., 2014). Another possible explanation is that the professional identity message felt more personalised than the general message and was, therefore, more effective as is documented in the case of charity giving (see for instance Chang & Lee, 2009).

Although we do not have sufficient statistical power to fully explain why some categories of public servants are more sensitive to one of the messages, it is likely associated with identity construction (Akerlof & Kranton, 2000). Police and nurses seemed more sensitive to any anti-corruption message than teachers and court clerks. Those differences among professional groups are not fully explained by the different sociodemographic characteristics. Part of the explanation may also lie in a different ethos and relationship to professional identity and social values, in line with the study of Cohn et al. (2014).

The question of the persistence of the message effect in the long run remains open. In Hallsworth et al. (2017)'s experiment on taxpaying in the UK, the significance of the message effect does decrease in magnitude over time. In our setting, the effect of the one-off professional identity message may also fade away over time. A solution worth testing would be to repeat message interventions, as it has proven effective to maintain behavioural change in other fields (Allcott & Rogers, 2014).

7. Conclusion

Our lab-in-the-field setup allows observing directly the behaviour of public servants confronted with bribery. The results help understand the personal-level dynamics of corruption and to estimate the policy leverage of anti-corruption sensitisation messages. In our experiment, reminding public servant participants of the moral values of honesty and equality associated with the public service led them to adopt a more equal, fairer, behaviour towards citizen participants. Overall, the results suggest that professional identity or the values associated with it can increase ethical behaviour, even in post-conflict societies where the public service is often perceived as corrupt, inequitable, and

inefficient. At the same time, the lack of effects on bribes suggests that sensitisation on its own may be insufficient and invites to consider other, potentially complementary, mechanisms – for instance, setting up whistleblowing mechanisms (Basu et al. 2016).

In addition to confirming the relevance of the self-perception of professional image when dealing with corruption in the public service, this paper also sheds light on the need to study different aspects of corruption mechanisms. In particular, personal financial gain and concern with equality in public service delivery are not influenced by the same factors. In our experiment, they did not even correlate.

The portability of our findings, both beyond the lab and beyond the Burundi context, needs to be explored (bearing in mind the typical issues with lab-in-the-field experiments; Alatas et al., 2009). Donors and governments spend significant amounts of money on governance initiatives. Our results need to be exploited carefully, keeping in mind the context of Bujumbura in December 2013 and January 2014. They are, however, useful to understand the rationale of public servants facing bribery in the fragile, low-income, context of Burundi. A cautious policy suggestion from our experiment is that anti-corruption sensitisation campaigns need to play on the right incentives and values to be efficient. For example, different levels of exposure to corruption may require different sensitisation messages. It is also essential for policy-makers to make decisions about the objectives of such sensitisation campaigns: is their main priority to reduce bribery or to improve access to public services? The effects of anti-corruption campaigns based on professional identity still need to be tested in a non-lab context, but our study already suggests that this non-expensive approach may improve public service delivery. It could present higher short-run cost-effectiveness than a vast, but often unenforced, anti-corruption legal arsenal.

Notes

1. Preliminary stage – In a separate session, the citizens made requests for vouchers. They were informed that (i) the official price for requesting one voucher was BIF 500, (ii) each obtained voucher could be exchanged (at the end of the experiment) against BIF 1,250, and (iii) there was a rationing situation which meant that public servants might not be able to fulfil every request. The citizens could choose to make normal requests for vouchers, sending the public servant BIF 500 per voucher, or special requests with extra money, sending the public servant BIF 1,000 per voucher. These requests, along with experiment money, were then transferred to the public servants. The transfer was operated in such a way that all public servants received an identical distribution of requests, i.e. the average distribution of citizens' requests. The citizens are passive players who are crucial for the credibility of the experiment: the public servants were informed that real people, also participating to the experiment, would be affected by their decisions in the experiment.
2. In the preliminary experiment with the citizens, slightly above one third of the requests were 'special requests', with citizens sending double the amount per voucher (also see footnote 1).
3. In the years before the experiment, court of justice clerks could earn (monthly) BIF 55,000–250,000, policemen BIF 20,000–100,000, teachers around BIF 50,000, and nurses BIF 50,000–150,000.
4. 11 did not take any money out of the envelopes. 6 participants did not answer most of the basic questions in the post-experiment survey, thereby raising suspicion regarding their literacy level.
5. Public servant participants were neither expected nor instructed to write anything to the citizen participants, but some decided to leave messages regardless. The most explicit translates as 'you have tried to bribe me, so I will keep your money and give you only what you rightfully deserve'.
6. The crisis in the country and the anonymity of the experiment made it hard to retrieve participants; we went to the places where the experiment was advertised and asked people whether they had participated in the experiment. The reporting is based on twelve people who provided enough details to be reassured that they indeed participated in the experiment.

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Data availability statement

The data and replication files that support the findings of this study are openly available on Open Science (OSF.io) at <https://osf.io/3dvvb7/> (doi 10.17605/OSF.IO/3DVB7)

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Appendix: additional results

Table A1 Sociodemographic indicators by intervention group

	(1) no message		(2) standard message		(3) prof. identity message	
	mean	sd	mean	sd	mean	sd
Gender (female) ^d	0.22	0.42	0.26	0.44	0.34*	0.48
Age (in years)	30.04	5.50	29.40	5.18	30.07	6.13
Education: primary only ^d	0.15	0.35	0.15	0.36	0.17	0.38
post-secondary ^d	0.67	0.47	0.69	0.46	0.60	0.49
Catholic ^{d1}	0.73	0.45	0.60*	0.49	0.66	0.47
Member of association ²	0.76	0.43	0.80	0.40	0.74	0.44
Internally Displaced ^{d3}	0.19	0.39	0.13	0.34	0.24	0.43
Returnee ^{d4}	0.11	0.32	0.14	0.35	0.14	0.35
Exp. of violence ⁵	0.15	0.36	0.16	0.37	0.17	0.37
Ex-combatant ^{d6}	1.91	1.51	1.69	1.44	2.20	1.49
Fish/meat per week ^{d7}	0.17	0.46	0.14	0.43	0.16	0.42
Owens motorbike/car ^d	0.97	1.13	1.13	1.30	0.99	1.12
Never accessed internet ^d	0.49	0.50	0.51	0.50	0.44	0.50
Use internet monthly at least ^d	0.29	0.46	0.31	0.46	0.22	0.41
Level of trust	1.84	0.97	1.72	0.90	1.61*	0.97
Health sector ^d	0.27	0.44	0.24	0.43	0.24	0.43
Education ^d	0.27	0.44	0.24	0.43	0.25	0.44
Justice sector (clerks) ^d	0.24	0.43	0.25	0.43	0.26	0.44
Police ^d	0.23	0.42	0.27	0.45	0.25	0.44
Observations	172		173		182	

The table includes difference relative to the control group. Stars: statistical difference between this category and all the other categories combined. T-test significance level.

* $p < 0.10$.

** $p < 0.05$.

*** $p < 0.01$.

d: binary variables.

1: non-Catholic overwhelmingly Protestant. Catholic church historically most powerful.

2: member of an association, proxy for social capital.

3: internally displaced person, left home as a consequence of the civil war.

4: civil war refugee.

5: 'In the last year, has violence prevented you from having a normal life?' 5-item Likert scale (not at all (0) – a lot (4)).

6: civil war combatant. Most benefited from reintegration programme.

7: 'How many times a week do you usually eat fish or meat in your household?'

8: 'Generally speaking, do you think one can trust people' 5-item Likert scale, proxy for the level of interpersonal trust.

Table A2 Characteristics associated with bribe-taking and voucher allocation

	(1) bribe-taking OLS	(2) bribe-taking Logit	(3) inequality OLS	(4) inequality Logit
Standard message	199.8 (152.5)	0.0539 (0.359)	-0.442 (0.342)	-0.432 (0.317)
Professional Identity message	125.1 (192.9)	0.292 (0.420)	-0.529*** (0.166)	-0.543*** (0.209)
<i>Sector</i> Education sector ^{d1}	-1545.2*** (286.0)	-16.38*** (1.249)	-0.552 (0.372)	13.45*** (1.092)
Justice sector (clerks) ^{d1}	-1289.9*** (175.6)	-2.367*** (0.393)	-1.263*** (0.140)	-0.934*** (0.175)
Police ^{d1}	694.0*** (208.4)	14.45*** (1.300)	-0.691 (0.645)	-13.44*** (1.547)
<i>Personal characteristics</i> Gender (female) ^d	49.50 (142.5)	0.324 (0.437)	-0.0913 (0.172)	-0.167 (0.224)
Age (in years)	-18.47 (11.71)	-0.0275 (0.0232)	-0.0109 (0.0166)	-0.0220 (0.0222)
Level of education ²	-82.66 (54.60)	-0.153 (0.159)	0.172 (0.150)	0.271* (0.153)
Catholic ^{d3}	313.3* (158.4)	0.568 (0.439)	-0.115 (0.247)	-0.140 (0.309)
Member of association ³	-218.5 (164.9)	-0.532 (0.357)	0.0209 (0.140)	-0.124 (0.189)
Internally Displaced ^{d3}	-70.42 (236.7)	-0.423 (0.468)	0.0701 (0.272)	-0.0457 (0.342)
Returnee ^{d3}	-134.3 (258.2)	-0.243 (0.530)	-0.207 (0.180)	-0.0613 (0.241)
Ex-combatant ^{d3}	330.7 (192.3)	1.028* (0.581)	0.700* (0.337)	0.435 (0.347)
Exp. of violence ³	50.52 (29.88)	0.131 (0.0842)	-0.0513 (0.0677)	-0.0478 (0.104)
Wealth ⁴	652.3 (662.4)	0.603 (1.677)	0.0839 (0.915)	-0.452 (1.068)
Never accessed internet ^d	32.70 (127.4)	-0.0437 (0.222)	-0.360 (0.205)	-0.474* (0.278)
Level of trust ³	22.77 (88.04)	0.00726 (0.205)	-0.156 (0.115)	-0.265 (0.167)
<i>Work experience</i> Work experience (years)	41.52* (19.21)	0.0710* (0.0375)	0.000143 (0.0282)	0.0110 (0.0319)
Ever promoted ^d	286.4 (174.3)	1.284** (0.590)	0.187 (0.156)	0.261 (0.255)
Ever had salary increase ^d	-73.79 (151.7)	-0.0114 (0.407)	-0.270 (0.223)	-0.229 (0.291)
Satisfaction with job ⁵	28.73 (66.40)	0.134 (0.161)	0.196 (0.112)	0.276 (0.173)
Job as a vocation ⁵	-88.36 (52.88)	-0.247 (0.165)	-0.0434 (0.0919)	-0.0859 (0.0978)
Also has another professional activity ^d	-212.3 (212.2)	-0.487 (0.465)	0.0547 (0.213)	-0.220 (0.252)
<i>Exposure to corruption</i> Exposure to irregularities ⁶	46.93 (75.01)	-0.0249 (0.168)	0.0469 (0.0916)	0.215** (0.102)
Ever attended governance training ^{d6}	59.99 (111.6)	0.0699 (0.221)	-0.297 (0.252)	-0.682** (0.313)
Controlled work ⁶	-53.27 (60.95)	-0.219* (0.121)	-0.0292 (0.104)	-0.0363 (0.117)
Constant	4461.1*** (664.3)		1.981* (0.946)	
Observations	492	492	492	492

Standard Errors in parenthesis. Significance level: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

d: dummy variable.

1: the professional reference category is nurses (health sector).

2: with (0) no education, (1) primary, (2) lower secondary, (3) upper secondary, and (4) tertiary

3: defined in the same way as in Table A1-A2.

4: Wealth is a mean index made of the z-scores of the following indicators: weekly consumption of fish or meat, ownership of a mobile phone, car, TV set, and radio, all weighted by the size of the household.

5: Defined in the same way as in Table A1-A2.

6: Defined in the same way as in Table A1-A2.

Table A3 Robustness checks: effects on bribe-taking

	(1) Logit	(2) Logit	(3) Logit	(4) Logit	(5) Logit	(6) Probit	(7) Poisson
Standard message	0.0608 (0.364)	0.437* (0.241)	0.0539 (0.359)	0.197 (0.375)	0.197 (0.396)	0.0509 (0.184)	0.0618 (0.0447)
Professional identity message	0.289 (0.421)	0.460 (0.464)	0.292 (0.420)	-0.101 (0.365)	-0.101 (0.403)	0.167 (0.234)	0.0389 (0.0581)
controls	yes	yes	yes	yes	yes	yes	yes
Sess. fixed effects	yes	yes	yes	no	no	yes	yes
Session clusters	yes	yes	yes	no	yes	yes	yes
N	388	527	492	492	492	492	492

Stars: statistical difference between this category and all the other categories combined. Significance level: * $p < 0.10$ ** $p < 0.05$, *** $p < 0.01$.

Table A4 Robustness checks: effects on voucher allocation

	(1) Logit	(2) Logit	(3) Logit	(4) Logit	(5) Logit	(6) Probit	(7) Poisson
Standard message	-0.432 (0.315)	-0.423* (0.256)	-0.432 (0.317)	-0.500* (0.292)	-0.500* (0.291)	-0.251 (0.192)	-0.401 (0.311)
Professional identity message	-0.551*** (0.212)	-0.618*** (0.214)	-0.543*** (0.209)	-0.465* (0.276)	-0.465** (0.225)	-0.326*** (0.126)	-0.533*** (0.121)
controls	yes	yes	yes	yes	yes	yes	yes
Sess. fixed effects	yes	yes	yes	no	no	yes	yes
Session clusters	yes	yes	yes	no	yes	yes	yes
N	388	527	492	492	492	492	492

Stars: statistical difference between this category and all the other categories combined. Significance level: * $p < 0.10$ ** $p < 0.05$, *** $p < 0.01$.