Does Vote Buying Undermine Confidence in Ballot Secrecy? Theory and Experimental Evidence

Does Vote Buying Undermine Confidence in Ballot Secrecy? Theory and Experimental Evidence*

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Abstract

Why does vote buying persist under the secret ballot? We argue initiating vote-buying transactions allows politicians to undermine voter confidence in the secret ballot, and thus to induce voter compliance. Our analysis consists of three parts. First, we present evidence from a survey experiment in Mexico that shows receiving material goods from a candidate diminishes voter confidence in ballot integrity. Next, we introduce an informational theory of vote buying that explains this phenomenon. Specifically, we develop a model of vote buying as a signaling game, in which a voter who is *ex ante* uncertain about a politician's capacity to monitor voter behavior learns new information from the politician's actions. Finally, we test the key insights from the model in a lab experiment. Our results suggest that, under certain conditions, offering material goods to voters is sufficient to erode their confidence in ballot secrecy, making vote buying effective.

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Elections are a cornerstone of representative democracy. They allow citizens to make their voices heard, to influence policymaking, and to hold incumbents accountable for their performance. A precondition for elections to fulfill these vital functions is that citizens are free to signify their political preferences (Dahl 1971). This ideal is violated under several circumstances, such as when politicians are able to monitor voter behavior at the polls. If politicians can observe how voters cast their ballots, they can induce them to vote against their own preferences through the use of coercion, selective incentives, or a combination of both, as in the case of vote buying. Traditionally, the secret ballot is thought to assure that citizens will enjoy this guarantee (Schedler 2002). Yet, extensive scholarship shows the use of the secret ballot has failed to curb vote buying.

Why does vote buying persist under the secret ballot? This question has generated a vast literature that seeks to explain how politicians overcome the commitment problem inherent in vote buying (e.g., Cox and Kousser 1981; Cruz 2019; Finan and Schechter 2012; Nichter 2008; Rueda 2017; Stokes 2005). Implicit in most of these works is one of two assumptions. One is that voters actually believe the ballot is secret, and the other is that this belief is independent of parties' actions. This overlooks the facts that, even in consolidated democracies, a significant portion of the electorate believes parties can monitor their behavior at the polls (Gerber et al. 2012), and that voters' perceptions of electoral integrity depend not only on electoral administration institutions (Birch 2008; Rosas 2010) but also on idiosyncratic factors (Challú et al. 2020).

This paper challenges these assumptions to advance two ideas. First, we argue the occurrence of vote buying itself can undermine voters' perceptions of ballot secrecy. That is, once a broker approaches a voter to offer a bribe in exchange for his support at the polls, the voter might change his beliefs regarding electoral integrity and become less confident that his vote is secret. Second, we argue low trust in ballot secrecy can induce voter compliance with vote-buying exchanges. Therefore, from the perspective of the voter, it is irrelevant whether the ballot is secret or not; as long as the voter *believes* parties can monitor his behavior with high-enough probability, he should be more likely to vote as instructed by the broker. Taken together, these arguments imply that, by initiating vote-buying transactions, politicians can effectively change voters' beliefs that the ballot

is secret, increasing the likelihood that voters will comply with their demands.

We motivate our analysis by showing that there is, in fact, a relationship between the prevalence of vote buying and voters' ballot-secrecy perceptions. Using survey data from the Mexico Panel Study (2012) and the Afrobarometer (Wave 5), we show that voters who have been offered private benefits in exchange for their votes are more likely to believe that politicians can monitor their vote choices. Since this pattern could be driven by reverse causality or by various unobserved confounders, we conduct a survey experiment in Mexico, a country where electoral competition still has a strong clientelistic component (Cantú 2019b). In the experiment, respondents are presented with information from a hypothetical election and are then asked to rate how confident they are that their vote is secret. One group of respondents is presented with a scenario that involves them being offered a bribe from a broker in exchange for their vote, while the other is presented with a scenario in which the broker does not make such an offer. We find respondents in the "bribe treatment" are significantly more likely to doubt ballot secrecy.

The second part of our analysis presents an informational theory of vote buying that explains this empirical pattern. We develop a formal model of the interaction between a clientelistic candidate and a voter. In the model, the candidate chooses whether or not to offer a bribe to the voter in exchange for his vote, and then the voter decides whether to turn out to vote and, in the event he does, what candidate to support. The model's main feature is that the voter is *ex ante* uncertain about the candidate's ability to monitor his behavior. We characterize a separating equilibrium in which the candidate offers a bribe to the voter only when the candidate can monitor the voter's behavior. In this equilibrium, receiving a bribe makes the voter more likely to (1) believe the candidate can monitor his vote choice, and (2) cast his ballot in favor of the clientelistic candidate.

Finally, we present results from a lab experiment designed to test the main implications of the theory. We find behavior in the laboratory, where participants interact in a strategic environment that matches the conditions of our model, closely matches the behavior in the separating equilibrium. Specifically, receiving a bribe from a candidate makes voters more likely to both doubt the secrecy of the ballot and vote for that particular candidate. Most importantly, our experimental de-

sign allows us to identify the mechanisms driving voter compliance with vote-buying exchanges. The data indicate that the informational mechanism we propose (i.e., voters adjusting their beliefs about the secrecy of the ballot after receiving a bribe) has a sizable impact on making vote buying effective, and that this effect is independent from alternative channels studied in the literature.

Our work is part of a vast literature that studies the prevalence of vote buying in secret-ballot elections. Several authors suggest parties use their extensive knowledge of voters' preferences, socio-economic status, and social networks, to target those who are more likely to comply (Bratton 2008; Brusco et al. 2004; Cruz 2019; Mares and Young 2019; Stokes 2005), while others argue they exploit this same knowledge to engage in other types of exchanges in which compliance is more easily monitored, such as turnout and abstention buying (Cox and Kousser 1981; Morgan and Vardy 2012; Nichter 2008). Other works identify social norms, such as loyalty and reciprocity, as the mechanism driving the compliance of bribed voters (Finan and Schechter 2012; Lawson and Greene 2014). Finally, some propose different outcome-contingent mechanisms in which brokers' access to highly disaggregated electoral results enable them to enforce vote-buying transactions (Gingerich and Medina 2013; Rueda 2017; Smith and Bueno de Mesquita 2011).

We contribute to this literature by studying an unexplored mechanism that explains why, under certain conditions, vote buying can be effective despite the secret ballot. In our account, receiving a bribe changes a voter's belief about the party's capacity to monitor her behavior at the polls. In particular, we argue electoral handouts can decrease voters' confidence in the secret ballot. Thus, the mechanism we advance joins a group of theories that highlight the *informational role* of vote buying (Kramon, 2016; Muñoz, 2014). In contrast to these works, which focus on how electoral handouts shape voters' perceptions of candidate viability, we argue this practice can also change voters' beliefs about parties' capacity to monitor voter behavior at the polls.

This paper is most closely related to work by Ferree and Long (2016), who argue politicians strategically create doubts about ballot secrecy in order to engage in vote buying. Using survey data from Ghana, these authors show that voters' perceptions of ballot secrecy correlate with reports of vote buying and with different indicators of parties' campaign intensity. Two differences between

our work and theirs stand out. First, our main evidence comes from experimental data, which allows us to show that the association between vote buying and perceptions of ballot secrecy is indeed causal. Second, we propose and formalize a new theoretical mechanism to show how initiating a vote-buying transaction (i.e., giving a bribe or gift to a voter) is *sufficient* to decrease voters' confidence in ballot secrecy. This contrasts with Ferree and Long's account, according to which parties carry out several additional activities to persuade voters that their vote is not secret.[1]

Our work also contributes to the literature on voter perceptions of election integrity. Several works describe voter trust in elections as being shaped by institutional factors, such as the electoral system or independent electoral management bodies (e.g., Birch 2008; Rosas 2010). Other scholars find that supporters of winning candidates tend to show higher trust than those who voted for losing candidates (e.g., Cantú and García-Ponce 2015). We contribute to this literature by showing that vote buying can decrease voter trust in ballot integrity. While previous research finds similar associations between experiencing clientelism and voters' electoral trust (Bratton 2008; Oliveros 2019), to the best of our knowledge we are the first to both provide evidence that this relationship is causal and formalize a theory that explains this behavioral pattern.

Finally, our work has important implications for the design of policies to protect the integrity of elections. We present evidence consistent with parties being capable of eroding voter confidence in the secret ballot simply by initiating clientelistic exchanges. Therefore, institutional efforts to strengthen electoral administration (e.g., Norris et al. 2014) might be insufficient to eradicate vote buying. Instead, our findings suggest these valuable efforts should be supplemented with education campaigns to curb these practices (e.g., Hicken et al. 2018).

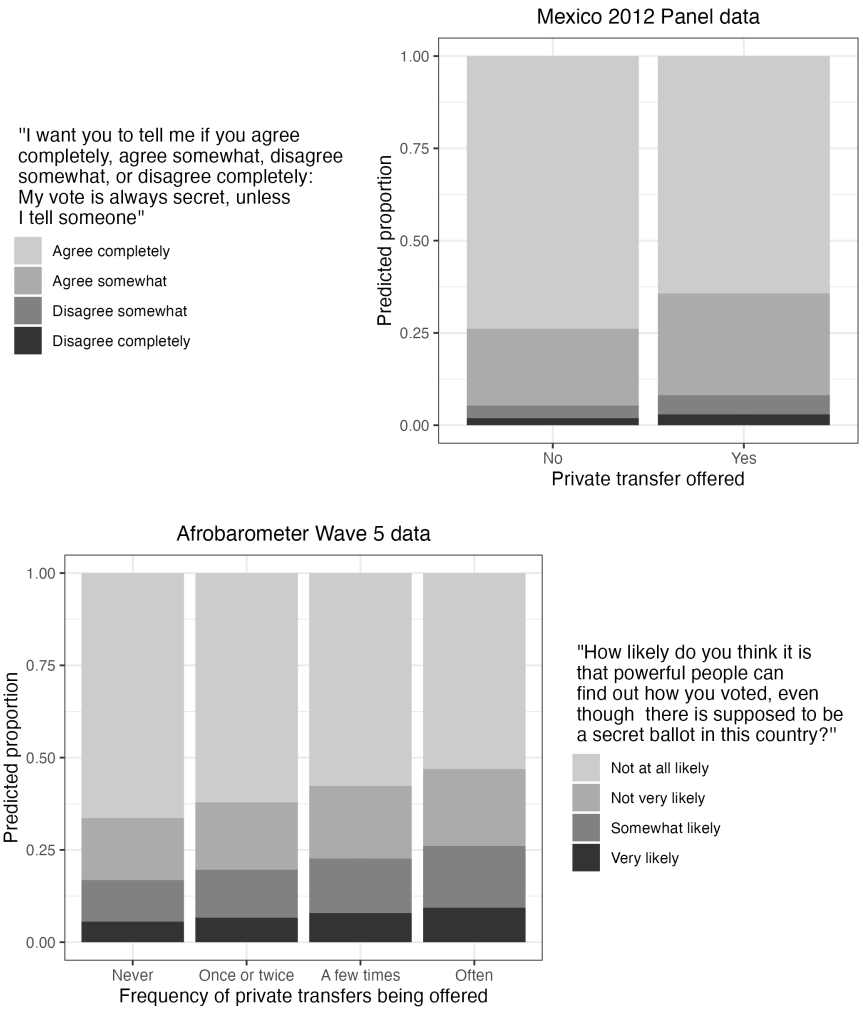
A First Cut: Observational Evidence

To motivate our analysis, we document a strong positive correlation between citizens' beliefs that politicians can monitor their vote and the likelihood of having received a private transfer (e.g., gift, bribe) during election time using two widely-studied datasets: the Mexico 2012 Panel Study and

[1] In related work, Cruz (2019) provides anecdotal evidence of politicians trying to decrease voter trust in ballot secrecy through several means.

the Afrobarometer (Wave 5). We summarize our key findings below and present information about variable measurement, descriptive statistics, and regression results in Appendices A and B.

Figure 1: Perceptions of ballot secrecy by experience with vote buying



Note: Proportions are computed using coefficients of models reported in Appendices A and B

First, data from the Mexico 2012 Panel Study show that, at the 5% significance level, respondents who answered 'Yes' when asked if anyone had done a favor for them or offered a gift in exchange for their votes in recent weeks (i.e., during the campaign) were more likely to disagree with the statement "my vote is always secret, unless I tell someone." Figure 1 (top panel) shows the predicted proportion of responses to this statement as a function of the answer to the vote-buying

question. Changing the answer from 'No' to 'Yes' decreases the proportion of respondents who 'Agree completely' with the statement, from 0.74 to 0.64. Meanwhile, for the same change of answers, the proportions of respondents who 'Agree somewhat', 'Disagree somewhat', or 'Disagree completely' increase from 0.21 to 0.28, from 0.03 to 0.05, and from 0.02 to 0.03, respectively.

Our analysis of Wave 5 of the Afrobarometer uncovers an analogous pattern (statistically significant at the 1% level). The bottom panel of Figure 1 shows predicted perceptions of ballot secrecy by the frequency with which respondents said to have received electoral handouts from politicians. As the frequency changes from 'Never' to 'Often', the proportion of respondents who said it is 'Not at all likely' that powerful people could find out how they voted decreases from 0.66 to 0.53, whereas the proportions of those who said it is 'Not very likely', 'Somewhat likely' or 'Very likely' increase from 0.17 to 0.21, from 0.11 to 0.17, and from 0.06 to 0.09, respectively.

A survey experiment in Mexico

While the patterns reported in the previous section are consistent with our claim that vote buying undermines voter confidence in ballot secrecy, interpreting this evidence as causal is not automatic. Two threats to this interpretation stand out. First, this association could be driven by omitted confounders, e.g., weak rule of law could both erode voters' perceptions of electoral integrity and facilitate parties' use of illicit electoral tactics.[2] The second threat is reverse causality. Specifically, it is possible that parties actively target voters who doubt their vote is secret. We overcome these challenges by conducting a survey experiment.

Design

We recruit a national sample of Mexican citizens via Qualtrics. The average age, household monthly income, and education level of the 1,043 participants are 39 years old, about 12,500 pesos, and the second year of high school, respectively; 50.8% of the participants are male. Appendix C provides descriptive statistics and additional information about the participants.

[2] In Appendix B.4, we show that experiencing vote buying is indeed strongly correlated with measures of corruption and institutional trust.

Upon answering a common questionnaire in Spanish, participants were randomly assigned to one of two—baseline and manipulation—vignettes that described a hypothetical election. The only difference was that in the manipulation vignette respondents were told that a broker working for a candidate they do not support offered electoral handouts to them,[3] whereas in the baseline vignette the broker did not make such an offer. The English translation of the two vignettes is as follows:

- *[Baseline] Suppose there will be an election for the Chamber of Deputies and you support one of the top two candidates in your constituency.* ***You are not offered any material goods*** *from a broker working for your candidate's rival.*

- *[Manipulation] Suppose there will be an election for the Chamber of Deputies and you support one of the top two candidates in your constituency.* ***You are offered some material goods*** *from a broker working for your candidate's rival.*

Participants were then asked: "If the broker wanted to find out who you voted for, how likely is it that he can actually find out?" Responses were recorded using a 4-point scale, from 'Not likely at all' (0) to 'Very likely' (3). Appendix C.1 shows the questionnaire in Spanish.

We highlight that the baseline condition explicitly says "You are not offered any material goods from a broker working for your candidate's rival." Although this sentence could prime respondents to think of vote buying, adding it was necessary to isolate the effect of interest. Specifically, had the baseline vignette not included this sentence, it would have differed from the manipulation vignette along two dimensions: (a) the vote-buying prime, and (b) the private-transfer information (i.e., participants being told that they *did* receive an electoral handout). This would have made it impossible to isolate the effect of the latter, which is our variable of theoretical interest, from the effect of the former. Thus, adding the sentence in question helped us ensure that the results are exclusively driven by the private-transfer information.[4] Moreover, we do not think that mentioning

[3] We use this framing to match what the literature calls *vote buying* rather than *turnout buying* (see Nichter 2008).

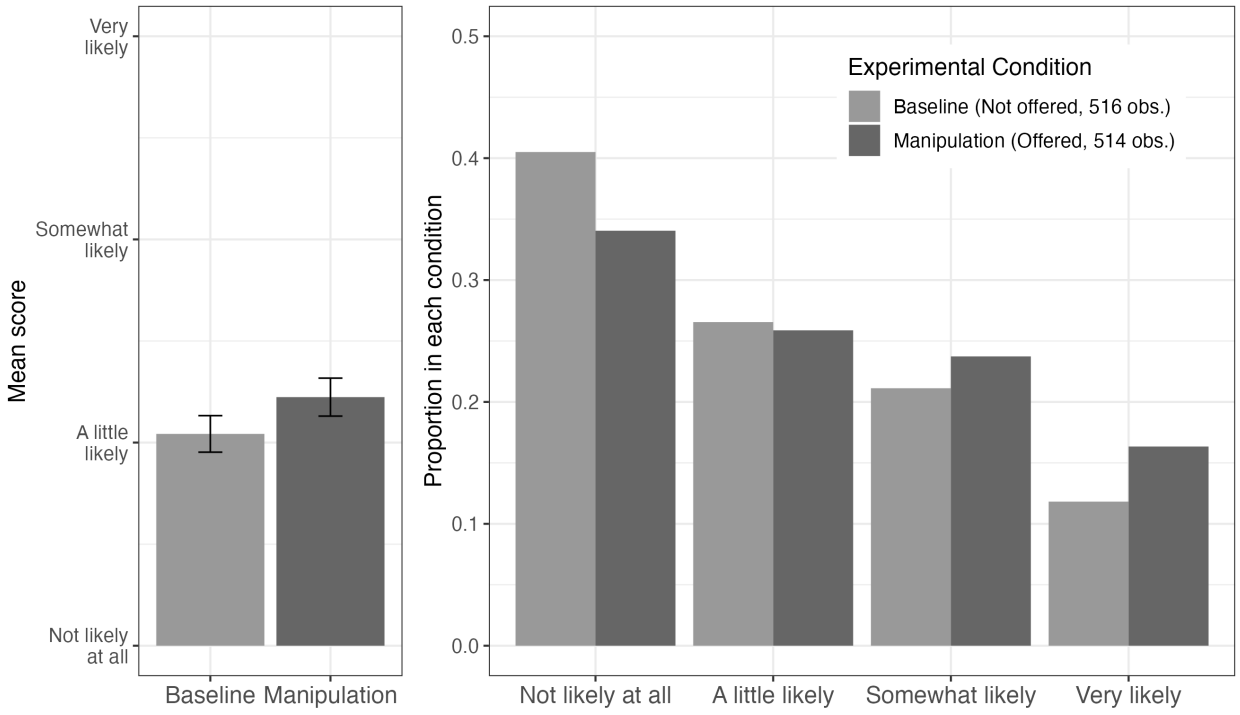
[4] Ideally, we would have had an additional experimental condition without this sentence. However, due to statistical power considerations (as well as resource constraints), we chose to only use the two conditions above, which are sufficient to isolate the effect of the private-transfer information on perceptions of ballot secrecy.

a broker in the baseline vignette is something that Mexican respondents would have perceived as surprising or unusual given the prevalence of vote buying in the country.[5]

Results

We begin by verifying that the random assignment of the experimental vignettes was well implemented. Appendix C.4 reports results of balance tests, which show participants in the baseline and manipulation conditions are statistically indistinguishable along several dimensions.[6]

Figure 2: Mean score and distribution of beliefs that votes can be monitored by experimental condition



``If the broker wanted to find out who you vote for, how likely is it that he can actually find out?"

Note: Black vertical lines in left panel indicate 95% confidence intervals.

First, we present our main results graphically in Figure 2. The left panel shows that the mean score of the outcome of interest is greater in the manipulation than in the baseline condition (1.224

[5]In a nationally representative survey fielded by the national electoral commission (*Instituto Nacional Electoral*) in 2020, 79% of respondents said they think that vote buying is a common practice in Mexico (Aziz et al., 2022).

[6]Appendices C.2-C.3 show details on the covariates used in the balance tests (e.g., definition, descriptive statistics).

vs. 1.043, p-value = 0.007). The right panel shows in greater detail how the manipulation vignette increases the share of affirmative answers to the question about the broker's monitoring capacity. In the baseline condition, the shares of participants who chose 'Not likely at all', 'A little likely', 'Somewhat likely', and 'Very likely' are 0.405, 0.266, 0.211, and 0.118, respectively. In the manipulation condition, the proportion of participants who chose 'Not likely at all' drops by 0.065, whereas for the option 'A little likely' this reduction is 0.007. Accordingly, the shares of participants who chose 'Somewhat likely' and 'Very likely' increased by 0.026 and 0.045, respectively.

Table 1: Regression results of the survey experiment data from Mexico

Dependent variable:	Belief that vote can be monitored (0/1/2/3)			
	(1)	(2)	(3)	(4)
Manipulation vignette	0.307**	0.352**	0.360**	0.342**
	(0.115)	(0.119)	(0.120)	(0.122)
Age		-0.010	-0.011	-0.009
		(0.006)	(0.006)	(0.006)
Male		0.030	0.015	0.036
		(0.121)	(0.122)	(0.127)
Education		-0.004	0.001	0.005
		(0.093)	(0.093)	(0.096)
Income		-0.013	-0.016	-0.012
		(0.029)	(0.029)	(0.030)
Any religion		0.101	0.098	0.169
		(0.151)	(0.152)	(0.157)
Employment status		0.239	0.231	0.192
		(0.188)	(0.188)	(0.193)
Positive reciprocity			-0.027	-0.026
			(0.033)	(0.033)
Negative reciprocity			-0.010	-0.013
			(0.080)	(0.081)
Confidence on the impact of my vote				0.043
				(0.078)
Trust in electoral commission				-0.124
				(0.073)
Turnout in 2018 election				-0.322
				(0.217)
Offered transfer in 2018 election				0.422**
				(0.159)
State FE	Included	Included	Included	Included
Observations	1,030	974	963	941

Note: Ordered logistic regression models (non-exponentiated coefficients); cutoffs are suppressed in the report; * p<0.05, ** p<0.01

Additionally, to assess the statistical significance of the manipulation vignette, we reports results of a series of ordered logistic regression models that gradually include controls from the wide set of variables used in the balance tests. The results, reported in Table 1, show that the manipulation vignette has a positive effect on voter perceptions that their votes can be monitored. Across all models, the coefficient of *Manipulation vignette* is positive and significant at the 1% level.

Vote buying as a signaling game

We have presented extensive evidence consistent with our claim that initiating vote-buying exchanges allows politicians to undermine voters' confidence in ballot secrecy. This section advances an informational theory of vote buying that explains this empirical pattern. Specifically, we develop a model of vote buying as a signaling game. The model's main feature is that voters are *ex ante* uncertain about the effectiveness of a candidate's clientelistic machine. Thus, our approach is most similar to models in which parties can circumvent the secret ballot with some exogenous probability (e.g., Dunning and Stokes 2008). Following existing literature, we say a machine is effective or "strong" if it has the capacity to successfully carry out two tasks that are essential to enforce vote buying: (1) monitor voter behavior at the polls, and (2) punish non-compliance. In this framework, we show how, by initiating vote-buying transactions, politicians can reveal information about the strength of their clientelistic machine, making vote buying effective.

Setup

Two candidates, A and B, run in an election. We model the interaction between A, who is a clientelistic candidate ("she"), and an arbitrary voter ("he"), denoted by V.[7] Nature begins by drawing A's type as "strong" with probability $q \in (0,1)$ and "weak" with probability $1-q$. As mentioned above, the difference between these types is that the strong type has the capacity to monitor voter behavior at the polls and punish non-compliance, whereas the weak type lacks these capabilities. Thus, one can interpret these draws as reflecting the effectiveness of the candidate's brokers or the extensiveness of her clientelistic network (e.g., local ties, knowledge) in a given

[7] This means B is not a strategic actor in the model.

community. Candidate A observes her own type but V only observes the common prior distribution.

The interaction proceeds as follows. First, candidate A takes action $a_A \in \{0,1\}$ deciding between transferring fixed amount $t > 0$ to the voter in exchange for his support ($a_A = 1$) or keeping this amount for herself ($a_A = 0$). That is, A chooses whether or not to buy V's vote at price t. Next, the voter chooses action $a_V \in \{A, B, \emptyset\}$, indicating whether he abstains ($a_V = \emptyset$), votes for the clientelistic candidate ($a_V = A$), or votes for her opponent ($a_V = B$). Turning out to vote is costly, which means that, unless he abstains, V pays cost $c > 0$.

Payoffs are as follows. First, A is compensated according to the outcome of the election, and thus her payoff is partially shaped by V's action. There is function $w : \{A, B, \emptyset\} \to \mathbb{R}_+$ that maps from the voter's set of actions to A's payment. To simplify notation, let w_{a_V} denote A's payment when the voter chooses a_V. Consistent with different broker-compensation schemes described in the literature, we assume $w_A > w_\emptyset > w_B$.[8] In words, A obtains a higher payment as the number of votes for candidate A, relative to B, increases.

Following formal work on vote buying, we assume V derives expressive utility from voting (e.g., Gans-Morse et al. 2014). He receives payoff $b_i \in \mathbb{R}$ from casting a vote in favor of $i \in \{A, B\}$ and a payoff of zero from abstaining. Private transfers aside, V prefers one of the candidates over the other. To facilitate the discussion, we assume V's utility of voting for his preferred candidate is equal to the disutility of voting for his non-preferred candidate, i.e., we assume $b_A = -b_B$.[9] Finally, if V fails to vote for A after the strong type of A paid amount t, he pays sanction $s > 0$, which represents a penalty imposed by the candidate.[10] This penalty can be interpreted in several different ways. For instance, it could result from the withdrawal of benefits (e.g., Robinson and Verdier 2013) or reflect the iterated nature of broker-voter interactions (e.g., Rueda 2017). While we do not take a stance on the nature of the sanction, we follow these works in assuming that the strong type of A can effectively punish voters who renege on their word.

[8] In practice, vote buying is carried out by brokers who are compensated based on: (1) number of votes they deliver (Camp 2017), or (2) performance relative to other brokers/past electoral results (Larreguy et al. 2016).

[9] This assumption is not necessary for any of our results and is made for expositional purposes. Moreover, this assumption is standard in this type of models (e.g., Morgan and Vardy 2012).

[10] We assume monitoring and sanctioning are costless. This is inconsequential and can be incorporated in the setup. In fact, an interpretation of our setup is that A's types face different costs.

Before presenting our analysis, we highlight that, although we analyze a one-shot exchange between a broker and a voter, several features of the model capture the repeated nature of the interactions between these actors. Most notably, V's prior belief that A is the strong type, q, can be seen as shaped by past experiences with vote buying. Similarly, as mentioned above, the sanction from reneging, s, could capture the loss of future benefits (analogous to punishment strategies in repeated games). Therefore, we believe the model can be interpreted both as a one-shot interaction or as one stage of the ongoing relationship between broker and voter.

Analysis

This is a dynamic game of incomplete information, and thus the solution concept we use is Perfect Bayesian equilibrium (henceforth equilibrium). Since our goal is to use the model to analyze how vote buying can undermine voter confidence in ballot secrecy, we focus on an equilibrium in which *vote buying is informative*. Specifically, we search for an equilibrium with two features: (1) there is vote buying, i.e., at least one type of A provides the private transfer, and (2) upon receiving the transfer, V learns information about A's type. Our main result provides a set of necessary conditions for a *separating equilibrium*, the only equilibrium with these two properties.

We first describe the equilibrium strategies and beliefs, and then discuss our main result. In a separating equilibrium with vote buying, the strong type of A offers the private transfer to the voter but the weak type does not. The voter's strategy is such that he casts his ballot for A after he receives the private transfer, and either votes for candidate B or abstains otherwise (for details, see Appendix D). Two features of this equilibrium deserve special attention. First, the players' strategies are such that vote buying is effective, i.e., when the voter receives the transfer, he votes for A. This occurs because, if vote buying were not effective, the strong type of A would be better off not providing the transfer and keeping $t > 0$ for herself. Second, this equilibrium is fully informative. Upon observing A's action, V updates his beliefs about the effectiveness of A's clientelistic machine and, in fact, learns her type, i.e., after A provides (does not provide) the transfer, V believes he is dealing with the strong (weak) type with probability one.

In the remainder of this section, we characterize the conditions under which this equilibrium

emerges. Throughout, we say the voter is a *supporter of* $i \in \{A,B\}$ if $b_i > 0$, and we say he is a *strong supporter of* i if $b_i > c$.[11]

Proposition 1. *There exists a separating equilibrium with vote buying only if the following conditions hold:*

(1) The voter is not a strong supporter of candidate A,

(2) The sanction from non-compliance is sufficiently high, and

(3) The private transfer is optimal for A.

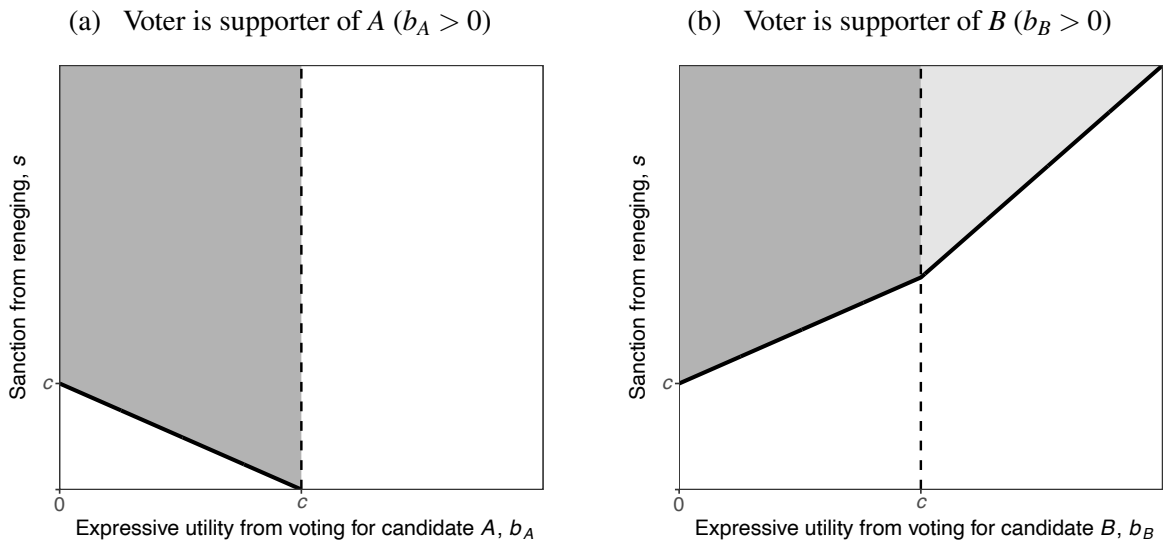
The proof is in Appendix D. Let us discuss the logic behind this result. Condition (1) identifies the set of potential targets of vote buying. The strong type of A only offers the transfer to a voter who would otherwise abstain or vote for B. To see why, notice that the behavior of a voter who is a supporter of i after he does not receive a transfer is driven by the cost of voting, c. The voter strictly prefers to cast his ballot for i than to abstain only if he is a *strong supporter of* i (i.e., only if $b_i > c$). Since a strong supporter of A is guaranteed to vote for A, whether he receives a transfer or not, A is better off not providing the transfer and keeping $t > 0$ for herself.

Figure 3 illustrates this point. In each panel, the horizontal axis shows V's utility from voting from his preferred candidate; in Panel 3a he is an A supporter (i.e., $b_A > 0 > b_B$) and in Panel 3b he supports B. The vertical dashed lines show the cost of voting, c, which drives V's behavior when he does not receive the transfer. Candidate A has incentives to provide the transfer to all voters, except those who are strong supporters of A (area to the right of the dashed line in Panel 3a).

Condition (2) indicates that vote buying affects voter behavior. The effectiveness of vote buying depends on the size of the sanction for non-compliance, s. The shaded areas in Figure 3 show the separating equilibrium emerges only if V is not a strong supporter of A *and* the sanction, s, exceeds a minimum threshold, depicted by the solid black line. Among supporters of B (see Panel 3b), this threshold is increasing in b_B. This reflects the fact that, as V derives greater utility from voting

[11] Since we assumed $b_A = -b_B$, V can be a supporter of only one candidate.

Figure 3: Parameters that support separating equilibrium described in Proposition 1



for B, it is necessary to impose a greater sanction to prevent him from reneging after receiving the transfer. In contrast, among A supporters (see Panel 3a), this minimum sanction is decreasing in b_A, meaning that as the utility of voting for A increases, the smaller the sanction required to induce V to vote for A. We highlight that the minimum sanction required for this equilibrium to emerge is always lower for A supporters than for B supporters. Thus, unless candidate A can impose a large-enough sanction from reneging, the model suggests A should target her own supporters.[12]

Finally, condition (3) establishes the optimal size of the transfer, t. Candidate A is willing to provide a larger transfer to strong supporters of B than to other voters. This is not to say A chooses an amount to transfer—recall that t is exogenous. Instead, this means the transfer that is optimal to buy the vote of a strong supporter of B is greater than the one that is optimal for other voters. The two shades in Figure 3 represent the different sizes of the optimal transfer t in equilibrium. Voters who would abstain in the absence of the transfer receive the same amount, whether they are A or B supporters (darker areas in panels 3a and 3b). Because these voters would not turn out to vote otherwise, from the perspective of A, her transfer changes an abstention into a vote for A.[13]

[12] If s is not sufficiently large (i.e., $s \in (0, c)$) only A supporters are targeted in this equilibrium. This is consistent with research that argues parties target their own suppoters (e.g., Nichter 2008).

[13] In this sense, clientelistic exchanges with moderate voters are more similar to what Gans-Morse et al. (2014) call turnout buying and double persuasion.

In contrast, when A provides the transfer to a strong supporter of B, who would otherwise vote for B, she is effectively taking a vote away from her rival. Therefore, the optimal transfer for a voter who is a strong supporter of B is greater than the one for other voters (lighter area in Panel 3a).

We conclude by briefly discussing two important differences between the separating equilibrium analyzed here and other equilibria with vote buying (see Appendix D). First, the separating equilibrium is *fully informative*, meaning the voter learns A's type upon observing her action. In equilibrium, when V observes A offering the transfer, he updates his beliefs about the effectiveness of A's clientelistic machine; specifically, his belief that A is the strong type increases from q to 1. By contrast, if A does not offer the transfer, the voter's belief that A is the weak type goes from $1-q$ to 1. It should be noted that this dynamic, which highlights the informational role of vote buying, is consistent with the empirical results presented in previous sections of the paper.

The second feature is that the conditions in Proposition 1 do not depend on V's prior beliefs about A's type, q, and thus the separating equilibrium can emerge even when q gets arbitrarily close to zero. Substantively, this means the informational mechanism we propose can operate, and contribute to making vote buying effective, even in settings in which the *ex ante* likelihood that A is the strong type, and can thus monitor voter behavior, is very low.

Hypotheses

Based on the separating equilibrium, we derive three hypotheses to be tested at a lab, where an electoral environment created artificially meets Proposition 1's conditions. Accordingly, our hypotheses are stated under the assumption that these conditions are met, and thus they refer to the interaction between a clientelistic candidate and a voter who is not a strong supporter of this candidate. The first hypothesis reflects the fact that, in the equilibrium, V's belief that A is the strong type after receiving the transfer increases from q to 1.

Hypothesis 1. *The voter is more likely to believe that his vote can be monitored when he receives the private transfer than when he does not.*

To be clear, the results of the survey experiment in Mexico provide strong support for Hypothesis 1. However, the lab offers an opportunity to test this hypothesis in a different setting, along with the other two hypotheses derived from our theoretical model. The first of these focuses on how receiving the private transfer affects the voter's choice.

Hypothesis 2. *The voter is more likely to vote for the clientelistic candidate when he receives the private transfer than when he does not.*

Our final expectation focuses on the behavior of the candidate. Typically, given that candidate (or broker) behavior is hard to observe directly, testing hypotheses of this nature would be unfeasible. However, we take advantage of the fact that in our lab experiment participants play the role of clientelistic candidates, to test the following hypothesis:

Hypothesis 3. *The clientelistic candidate is more likely to offer the private transfer when she is the "strong" type (i.e., when she can monitor voter behavior and punish non-compliance) than when she is the "weak" type.*

Lab experiment

We conduct a lab experiment to evaluate the three hypotheses derived from our theory. As mentioned above, all experimental parameters are set to meet the conditions from Proposition 1's separating equilibrium.[14] We first describe the experimental design and then report the main results.

Design

The experiment consists of several incentivized tasks, which we describe in the order of play at a session. At the start of each session, participants are asked to play the first task, which measures their strategic sophistication (Carpenter et al. 2013). The task is a standard p-beauty contest in which participants, who are randomly grouped, individually choose an integer between 0 and 100. The contest's winner is the participant whose number is closest to p times the average of

[14] We highlight that this parameter setup does not prevent the possibility that subjects' behavior in the lab is inconsistent with our theory. For example, consistent with reciprocity-based accounts (e.g., Lawson and Greene 2014), subjects could evaluate the electoral handout as a kind gesture and support the candidate who provided it without updating their beliefs about the candidate's capacity to monitor their behavior at the polls.

all numbers chosen by members of their group (we set p to 2/3). The winner is rewarded with 100 experimental tokens (hereafter, tokens). The number chosen by each participant is used as an indicator of their strategic sophistication.

The second task, called the election game, begins without informing participants of whether or not they won the beauty contest. The election game consists of two candidates—one *clientelistic* and the other *programmatic*—and a *voter*. The programmatic candidate does not play a strategic role in the interaction, and is thus played by a computer. The roles of clientelistic candidate and voter are played by participants. Thus, unless there is potential for ambiguity, throughout we refer to the clientelistic candidate as *the candidate*. The strategic environment, described below, is set to meet the conditions in Proposition 1 and is common knowledge to the candidate and the voter.[15]

Initially, the candidate and the voter are endowed with 120 and 40 tokens, respectively. The candidate can be either a weak or a strong type. As before, the difference between these types is that the strong type has the capacity to monitor voter behavior and sanction non-compliance. The candidate is strong with exogenously given probability, which we set to 0.4. At the beginning of the game, the candidate learns his type, but the voter remains uninformed. The interaction proceeds as follows. First, the candidate chooses whether or not to offer a private transfer (40 tokens) to the voter. After observing this action, the voter chooses one option among 'voting for *clientelistic* candidate', 'abstention', and 'voting for *programmatic* candidate.' Turning out costs 40 tokens.

The voter's choice affects the probability that the clientelistic candidate wins. This probability is set at 0.6 if he votes for the clientelistic candidate, at 0.4 if he votes for the programmatic candidate, and at 0.5 if he abstains.[16] If the clientelistic candidate wins the election, then he earns 200 tokens, while the voter earns 0 tokens. Otherwise, the clientelistic candidate and the voter receive 0 and 120 tokens, respectively. This payoff structure is such that the voter is what we

[15] Participants are informed of the strategic environment before being assigned their roles and playing the game.

[16] While the impact of a single vote on election outcomes is negligible in large electorates, empirical research shows a considerable number of voters overestimate their vote's impact (e.g., Duffy and Tavits 2008). This tendency to overestimate is exaggerated in the experiment as the starting point of empirical research. Including this probabilistic component in the theoretical model does not affect the substantial characteristics of the separating equilibrium.

called a strong supporter of the programmatic candidate.[17] The voter is deducted 40 tokens only if the following conditions are simultaneously met: (1) the candidate offered the 40 tokens to the voter, (2) the voter abstained or voted for the programmatic candidate, and (3) the clientelistic candidate is the strong type. If any of these conditions is not met, the voter is not sanctioned.

After the voter chooses an action, the candidate and the voter receive feedback about both the outcome of the election and their payoffs. Additional feedback, in particular regarding potential punishments for the voter, is provided in a way that reflects how this interaction would operate in the field. The candidate learns the voter's action, and thus whether or not he was punished, only if (i) the candidate offered the 40 tokens to the voter, and (ii) the candidate is the strong type. The voter is never directly informed about the candidate's type, but his payoffs can potentially reveal this information. If the voter received the transfer and then chose an option other than 'voting for clientelistic candidate,' the voter pays the sanction of 40 tokens only if the candidate is the strong type. Thus, receiving a punishment unequivocally means that the candidate is strong. In contrast, if the voter receives the transfer and then chooses 'voting for clientelistic candidate,' he is never punished, regardless of the candidate's type. In this case, the voter is unable to distinguish if the lack of punishment results from his choice or from the candidate's type.

Since the candidate's type is determined by chance, the election game is played multiple times. This allows us to collect observations from a diverse range of situations that vary not only by the players' actions but also by whether the candidate has weak or strong monitoring capacity. Before the beginning of the first round, participants are randomly divided into two roles of clientelistic candidate and voter. Roles are fixed for the first six rounds and then switched between the sixth and the seventh rounds for the next six rounds. One clientelistic candidate and one voter are randomly and anonymously matched at every round.

[17] Although our model assumes voters derive expressive utility, we do not employ the experimental setup used in studies that attempt to isolate the impact of expressive motives on voting (e.g., Wiese and Jong-A-Pin 2017). While our setup deviates from this assumption, we emphasize that the strategic environment used in the experiment is exactly analogous to that introduced in the theory section; the only difference is the *interpretation* of the voter's payoffs. Most importantly, this setup preserves all the substantial characteristics of Proposition 1's separating equilibrium.

Finally, to avoid potential experimenter effects, participants' beliefs about the candidate's monitoring capacity are separately measured in a third task, called the guessing game (or belief-elicitation task), performed after the twelfth round of the election game.[18] The guessing game begins with two participants being randomly selected and asked to, once again, play the election game as the candidate and the voter.[19] The remaining participants are asked to indicate their beliefs about the candidate's monitoring capacity (or type) in each of two hypothetical situations—one in which the candidate chooses to offer 40 tokens to the voter and another in which the candidate chooses not to do so (i.e., within-subject design)—using binary options ("No, she/he is unable to monitor" and "Yes, she/he is able to monitor"). Every participant who correctly guesses the candidate's type under the hypothetical scenario that matches the action of the participant playing the role of the candidate receives 320 tokens. To obtain more nuanced measures of the participants' beliefs, respondents are also asked to indicate their confidence in their choices on a scale from 0 to 10, where greater values indicate more confidence. The guessing game is played only once and its result is revealed only at the last stage, in which final payments are reported to participants.

Before the payment stage, participants are asked to fill out a short questionnaire including questions regarding age, gender, religion, altruism, and positive reciprocity. We also measure participants' cognitive ability using a three-question cognitive reflection test (CRT) (Frederick 2005). Appendix E shows the exact wording of the questions. Finally, participants leave the experimental lab with cash that is determined as the sum of earnings from the played tasks; in the case of the second task, the election game, one of the twelve rounds is randomly selected for payment.

Main results

The lab experiment was conducted at [blinded for peer review] (with students from over 100 countries). Instructions on the beauty contest and guessing game were provided on computer screens, while those of the election game were provided on paper (for details see Appendix E.1). Overall, 70 undergraduate students participated in one of five sessions. Observations for the guessing game,

[18] If asked about their beliefs during the election game, participants may learn that researches are interested in how their beliefs affect their behavior and change their behavior in response.

[19] This setup maximizes the number of observations on the beliefs of the remaining participants.

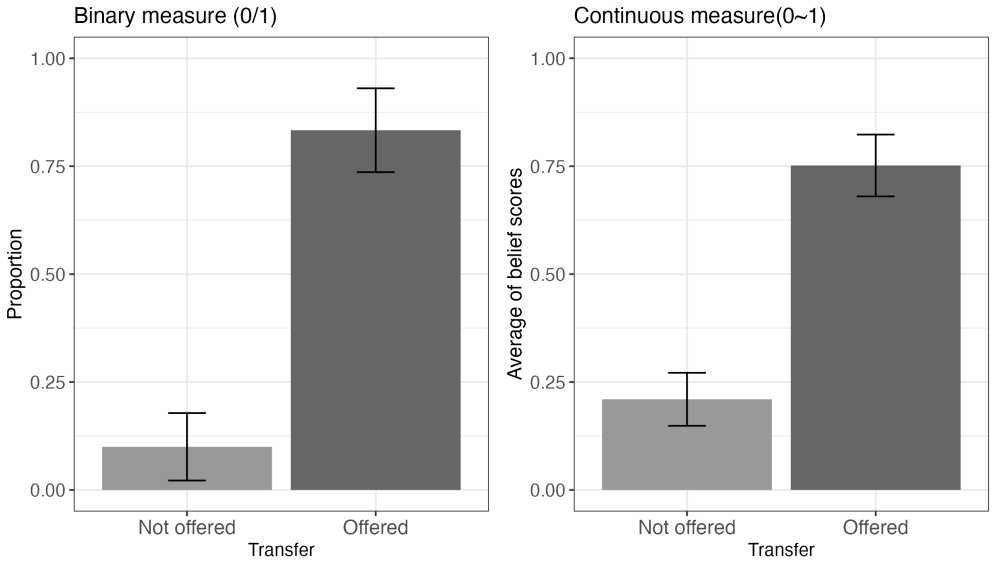
used to elicit beliefs about the candidate's type, were collected from only 60 participants, since two participants are excluded from this task in each session. The average payment was $29.41.

We first report results from the guessing game. As explained above, we elicited the beliefs of 60 participants regarding the candidate's monitoring capacity, once under the hypothetical scenario that the candidate offered a transfer to the voter and once under the scenario that the candidate did not offer a transfer. In total, then, this game generated 120 ($= 60 \times 2$) observations. The left panel of Figure 4 shows the share of participants who believe the candidate can monitor voter behavior in each hypothetical scenario. The data provide strong support for Hypothesis 1. Under the scenario in which the candidate did not offer the transfer, only 10% of participants believe the candidate has strong monitoring capacity, whereas 83% do so under the scenario in which the candidate did offer the transfer. Disaggregating these data shows that 78% of participants believed the candidate had strong monitoring capacity only under the scenario in which the candidate offered the transfer, which is exactly as expected in Hypothesis 1. The breakdown of the data for the rest of the participants is as follows: 12% (5%) believed the candidate had strong (weak) monitoring capacity under both hypothetical scenarios, and the remaining 5% believed the candidate had strong monitoring capacity only under the scenario in which she *did not* offer the transfer to the voter.

In the guessing game, participants were also asked to indicate their confidence in their choices. We use these reported confidence levels to measure the participants' beliefs along a continuous scale between 0 and 1. This scale assumes that a participant who is completely uncertain about the candidate's monitoring capacity chooses one of the two options with probability 0.5. Under each hypothetical scenario, a participant's score is calculated as $\frac{100-5\times(10-\text{Confidence})}{100}$ if the respondent said they believe the candidate is able to monitor, and as $\frac{5\times(10-\text{Confidence})}{100}$ if they believe the candidate is unable to monitor. The average beliefs using this continuous scale, reported in the right panel of Figure 4, are 0.75 (s.d.: 0.28) and 0.21 (s.d.: 0.24) under the scenario that the transfer was and was not offered, respectively.[20]

[20] In the experiment, the *ex ante* probability that the candidate has strong monitoring capacity is 0.4, so participants who were completely unsure, might have guessed accordingly. Thus, Appendix E.2 shows results of an alternative

Figure 4: Beliefs about candidate's monitoring capacity according hypothetical scenario



Note: The bars on the left and right panels show the share of participants who believe the clientelistic candidate has strong monitoring capacity and the averages of belief scores measured along a continuous scale (0∼1), respectively, according to the two hypothetical scenarios. The black vertical lines are 95% confidence intervals.

The graphical evidence above is consistent with Hypothesis 1. To provide a more rigorous test, we conduct regression analyses using the two beliefs measures as dependent variables; for each one, we run three models that vary by the set of controls used and report the results in Table 2. Importantly, we control for the participant's cognitive ability by including *Choice in beauty contest* and *Number of correct answers in CRT*, which were constructed using responses to the beauty contest game and the CRT. Appendices E.3-E.4 show the survey questions used to construct these variables and report descriptive statistics. We also include *Role in first six rounds* to control for ordering effects associated with the role participants played first in the election game.

The estimates in Table 2 confirm that participants' assessment of the candidate's monitoring capacity is stronger under the scenario in which the candidate offers the transfer. Substantively, the coefficient of *Hypothetical scenario of transfer provision* in Model 3 indicates that the likelihood a respondent believes the candidate has strong monitoring capacity increases from 0.06 to 0.80 when

continuous scale that assumes respondents choose the option 'Yes, she/he is able to monitor' with probability 0.4 when they are completely uncertain. This alternative measure produces substantively identical results to those in Figure 4.

Table 2: Regression results regarding belief updating

	Dependent variable:					
	Binary belief (0/1)			Continuous belief (0∼1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Hypothetical scenario of transfer provision	3.859**	4.048**	4.158**	0.542**	0.542**	0.542**
	(0.568)	(0.608)	(0.637)	(0.047)	(0.048)	(0.048)
Role in the first six rounds	0.539	0.575	0.735	0.043	0.046	0.065
	(0.569)	(0.636)	(0.737)	(0.048)	(0.052)	(0.059)
Age		0.016	-0.015		0.003	0.001
		(0.177)	(0.187)		(0.014)	(0.015)
Female		-0.159	-0.118		-0.028	-0.018
		(0.513)	(0.551)		(0.045)	(0.046)
Christian		0.841	1.031		0.059	0.085
		(0.648)	(0.786)		(0.053)	(0.064)
Muslim		1.358	1.581		0.085	0.120
		(0.922)	(0.883)		(0.079)	(0.076)
Choice in beauty contest			-0.002			0.0001
			(0.011)			(0.001)
Number of correct answers in CRT			0.086			0.022
			(0.366)			(0.029)
Altruism			-0.016			-0.012
			(0.230)			(0.019)
Positive reciprocity			-0.311			-0.022
			(0.195)			(0.018)
Observations	120	120	120	120	120	120

Note: Observations are pooled from the *guessing game*: beliefs of 60 participants under two hypothetical scenarios, ($N = 120 = 60 \times 2$); Models 1-3 and 4-6 use logit (non-exponentiated coefficients) and OLS, respectively; standard errors shown in parentheses; cutoff and constant are suppressed in the report; * p<0.05, ** p<0.01.

the hypothetical scenario changes from the one where the candidate does not offer the transfer to the one where she does. The results using the continuous measure of beliefs are equivalent. The coefficient of interest in Model 6 reveals a similar gap in continuous beliefs across hypothetical scenarios (from 0.17 to 0.72). Appendix E.5 shows these findings are robust to using the alternative continuous measure of beliefs as the dependent variable.

Next, we turn to the remaining expectations. To reiterate, Hypothesis 2 establishes the voter should be more likely to vote for the clientelistic candidate when he receives the private transfer, while Hypothesis 3 states the clientelistic candidate should be more likely to offer the private transfer when she has strong monitoring capacity. We test these hypotheses by analyzing the behavior of participants in the election game. Recall that each of our 70 participants played six rounds of

this game *in each role* (voter or candidate), for a total of 12 rounds. The unit of observation in the analyses that follow is the participant-round. We use random-effects models to address the fact that participants were repeatedly exposed to the same strategic environment across rounds. The models also control for learning effects with a round indicator, *Round*.

Table 3 shows the main results. In Models 1–3, which test Hypothesis 2, the dependent variable is the voter's action in the round: it takes a value of 1 (-1) if the voter cast their ballot for the clientelistic (programmatic) candidate, and equals zero if the voter abstained.[21] Similarly, we test Hypothesis 3 in Models 4–6, where the dependent variable is an indicator that equals 1 if the candidate offered the transfer, and equals zero otherwise. The main explanatory variables are *Private transfer offered*, which is an indicator of whether the respondent playing the role of the voter was offered the transfer in the round, and *Monitoring capacity*, which indicates if the respondent playing the role of the candidate had strong monitoring capacity in the round.

These results provide strong support for Hypotheses 2 and 3. The coefficients of *Private transfer offered* and *Monitoring capcity* are consistently positive and significant across all our specifications. Substantively, the coefficient of *Private transfer offered* in Model 3 indicates that receiving the private transfer increases the likelihood that the voter votes for the clientelistic candidate from 0.06 to 0.63. Likewise, the coefficient of *Monitoring capacity* in Model 6 implies that the probability the candidate offers the transfer to the voter is 0.64 when she has strong monitoring capacity, but only 0.18 when her capacity is weak.

Mechanism: the informational effects of vote buying

So far, we have found the experimental data to be strongly consistent with the separating equilibrium in Proposition 1. However, we have not explored one of the model's key insights, which is that vote buying affects the behavior of the voter by revealing information about the candidate's monitoring capacity. Therefore, although the participants' behavior matches the expectations from

[21] Results from random-effects multinomial logistic regressions are reported in Appendix E.6. The results show that offered private transfers increase the likelihood of voting for the clientelistic candidate but decreases the one for the programmatic candidate.

Table 3: Regression results regarding vote choice and transfer provision

	Dependent variable:					
	Vote choice (-1/0/1)			Transfer offer (0/1)		
	(1)	(2)	(3)	(4)	(5)	(6)
Private transfer offered	3.317**	3.286**	3.329**			
	(0.343)	(0.342)	(0.343)			
Monitoring capacity				2.062**	2.063**	2.077**
				(0.357)	(0.357)	(0.358)
Role in the first six rounds	-0.228	-0.289	-0.408	-0.308	-0.453	-0.588
	(0.582)	(0.554)	(0.549)	(0.699)	(0.709)	(0.725)
Age		-0.031	0.015		-0.282	-0.266
		(0.165)	(0.159)		(0.214)	(0.212)
Female		1.525**	1.571**		-0.152	0.010
		(0.562)	(0.568)		(0.700)	(0.727)
Christian		0.105	-0.313		0.503	0.442
		(0.620)	(0.630)		(0.786)	(0.806)
Muslim		0.866	0.797		-0.128	-0.096
		(0.757)	(0.752)		(0.968)	(0.984)
Choice in the beauty contest			-0.017			-0.011
			(0.012)			(0.017)
Num. of correct answers in the CRT			-0.339			0.249
			(0.259)			(0.333)
Altruism			-0.203			0.157
			(0.208)			(0.270)
Positive reciprocity			0.249			0.376
			(0.221)			(0.285)
Round	0.090	0.087	0.089	-0.485**	-0.484**	-0.487**
	(0.074)	(0.074)	(0.074)	(0.096)	(0.096)	(0.096)
Participant random effects (Variance):	4.596	3.847	3.426	6.520	6.265	5.903
	(2.144)	(1.961)	(1.851)	(2.553)	(2.503)	(2.430)
Observations	420	420	420	420	420	420

Note: Each observation is a participant-round in the election game; Models 1-3 use the six rounds that each of the 70 participants played as voters ($N = 420 = 70 \times 6$), and Models 4-6 use the six rounds that each of the 70 participants played as clientelistic candidates ($N = 420 = 70 \times 6$); All models use random effect regressions (ologit for Models 1-3 and logit for 4-6); standard errors in parentheses; cutoffs are suppressed in the report; * p<0.05, ** p<0.01

the separating equilibrium, it is possible that the observed patterns are driven by channels other than the informational mechanism we propose.

In this subsection, we provide evidence for our mechanism by analyzing the relationship between the participants' beliefs, which we elicited in the guessing game, and their behavior in the election game. We expect the behavioral patterns described in Hypotheses 2 and 3, and documented in Table 3, to be significantly stronger among participants whose beliefs are consistent

with Proposition 1's separating equilibrium.

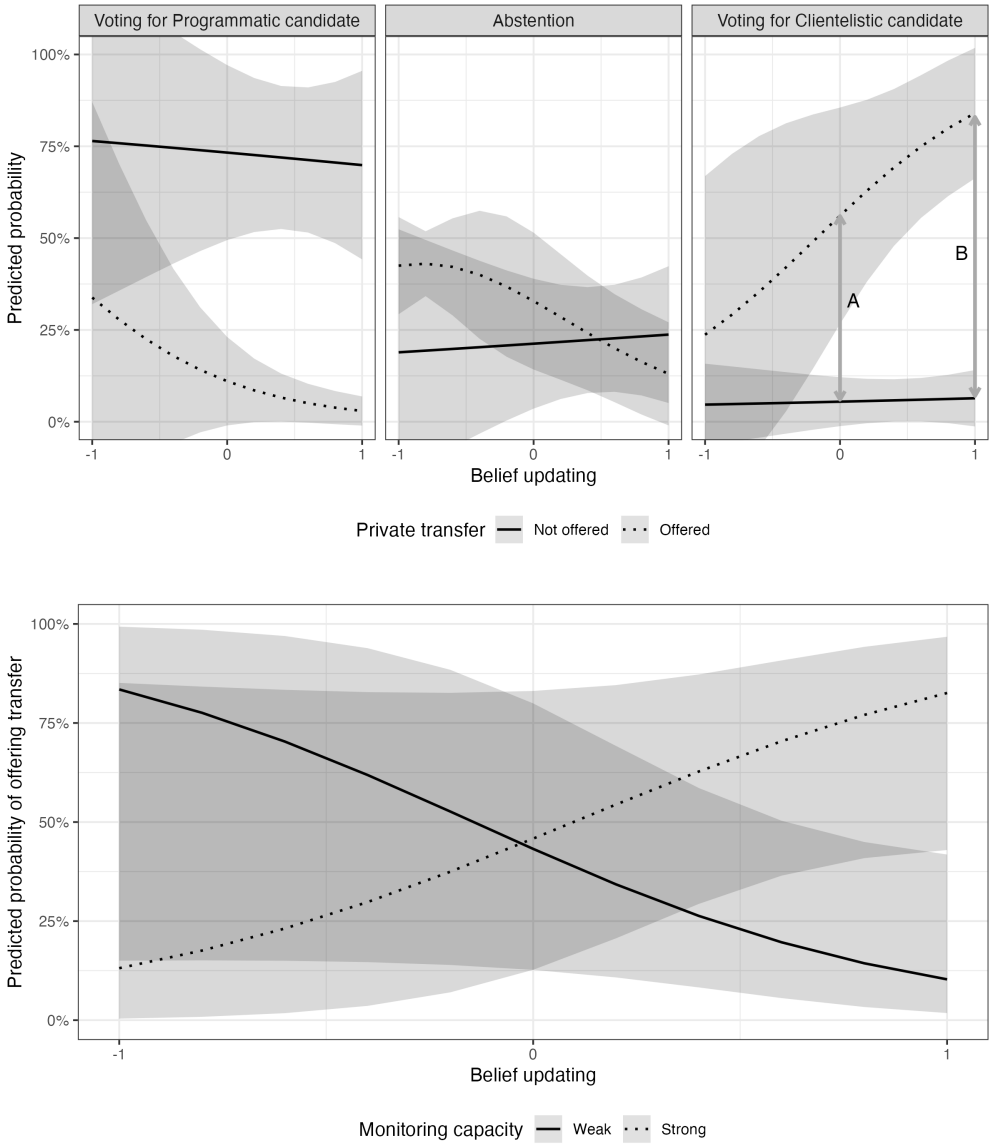
First, we use the respondents' *continuous* measure of beliefs to create a variable that captures the type of belief updating required by the separating equilibrium. Throughout, we refer to this variable as *Belief updating*. This measure is equal to the respondent's belief under the hypothetical scenario in which the candidate offered the transfer minus his/her belief under the hypothetical scenario in which the candidate did not offer the transfer. It ranges from -1 to 1, with greater (lower) values corresponding to beliefs that are more (less) consistent with the voter's beliefs in the separating equilibrium. A score of 1 indicates the respondent is fully confident that the candidate is able to monitor (i.e., strong type) in the transfer scenario and unable to monitor (i.e., weak type) in the no-transfer scenario, while a score of -1 means the respondent is fully confident that the opposite is the case. The score equals 0 when the respondent has the same belief (and confidence level) about the candidate's monitoring capacity under the two scenarios.[22] Appendix E.7 shows the distribution of *Belief updating* in our sample.

We replicate Table 3's models but including *Belief updating* and its interaction with the main explanatory variables, *Private transfer offered* and *Monitoring capacity*. Figure 5 shows a visual representation of our results (Appendix E.8 shows regression estimates). The top panel shows predicted probabilities for the voter's actions as a function of (1) the candidate's choice, and (2) the voter's belief updating score. Consistent with Hypothesis 2, voters are more likely to support the clientelistic candidate when they receive the transfer than when they do not. More importantly, as expected, the impact of receiving the private transfer on the probability of voting for the clientelistic candidate is increasing in the value of *Belief updating* (see dotted line in rightmost panel).

Substantively, the predicted behavior of a voter with a belief-updating score equal to 0 serves as a benchmark. As described above, a score of 0 means that receiving the transfer did not change the voter's belief about the candidate's monitoring capacity. At this level, we see the voter is more likely to vote for the clientelistic candidate after they receive the private transfer; specifically, the

[22] Scores between -1 and 0, and between 0 and 1, indicate respondents are more confident about their beliefs under one hypothetical scenario than under the other.

Figure 5: Predicted probabilities of players' actions according to *Belief updating*



Note: Lines and gray areas show predicted probabilities and 95% confidence intervals, respectively.

marginal effect of *Private transfer offered* equals 0.51 ($= 0.56 - 0.05$; marked as A in the upper right panel of Figure 5). This effect cannot be explained by the informational mechanism we propose, and thus must be driven by other channels (e.g., positive reciprocity, voters assuming the candidate can always monitor their vote). We can compare this to a respondent with a belief-updating score equal to 1, which represents the ideal case in which the respondent's beliefs exactly match the beliefs of the voter in the separating equilibrium. In this case, the marginal effect of the

transfer on the likelihood of voting for the clientelistic candidate is 0.78 ($= 0.84 - 0.06$; marked as B in the upper right panel of Figure 5). The difference between these two marginal effects is 0.27 ($= 0.78 - 0.51$; subtracting A from B), which indicates that, even after accounting for the effect of *Private transfer offered* through any non-informational mechanisms (which we estimated to be of size 0.51), the informational mechanism we advance still has a sizable impact on voter behavior.

Similarly, the lower panel shows predicted probabilities of the candidate's actions by (1) the candidate's type, and (2) the candidate's belief-updating score. Consistent with the informational mechanism, we find the evidence for Hypothesis 3 reported in Table 3 is, in fact, fully driven by participants with high belief-updating scores. The marginal effect of *Monitoring capacity* on the probability that the candidate provides the transfer is negative (although not statistically significant) for most negative values of *Belief updating*. In contrast, this marginal effect is positive and statistically significant for high-enough belief-updating scores. The magnitude of this effect is substantial, reaching a maximum of 0.73 ($= 0.83 - 0.10$) when *Belief updating* equals 1.

Finally, to verify the robustness of our results, we replicate the models in Table 3 and those used to generate Figure 5 (see Appendix E.8 for regression estimates) in several ways. First, we use two alternative measures of respondents' beliefs: the binary measure (Appendix E.9) and the alternative continous measure (Appendix E.10). Second, although the fact that the experiment uses a within-subject design reduces the concern about the use of post-manipulation variables in the analysis (Montgomery et al. 2018), we replicate the models but excluding all post-manipulation variables (Appendix E.11). Finally, we address the potential that feedback from previous rounds affects participants' choices in the current round by adding lagged variables (Appendix E.12). All results are substantively equal to those reported in Table 3 and Figure 5.

Conclusion

This paper studies an unexplored mechanism that explains why, under certain conditions, vote buying can be effective even in secret-ballot elections. We argue that, by initiating vote-buying exchanges, politicians can undermine voter confidence in ballot integrity, which in turn may contribute to making vote buying effective. We formalize this intuition by modelling the interaction

between a clientelistic candidate and a voter as a signaling game. In the model, the voter is *ex ante* uncertain about the candidate's ability to monitor her behavior. We characterize a separating equilibrium in which receiving a handout from the candidate makes the voter more likely to believe the candidate can monitor his vote choice, and thus to comply with the vote-buying exchange. Thus, in our account, electoral handouts serve a purely informational role.

We highlight that the theoretical result described above can emerge even when the *ex ante* probability that the candidate can in fact monitor the voter's behavior is extremely low (i.e., arbitrarily close to zero). This has substantive implications regarding the types of real-world cases in which the informational mechanism we identify could be at play. First, the model applies to settings in which contextual or institutional features make monitoring voter behavior at the individual level feasible, however rare this may be (e.g., Cruz, 2019; Magaloni, 2006). For instance, qualitative evidence shows that factors such as ballot type (Brusco et al., 2004; Stokes, 2005), the presence of party agents at polling stations (Mares and Young, 2019, 127), and even the introduction of cell phones with cameras (e.g., Montaño, 2021), occasionally allow parties to monitor individual vote choices. Second, the model also captures situations in which monitoring is imperfect (Dunning and Stokes, 2008). For example, it is well documented that clientelistic parties can and do monitor turnout at the individual level (e.g., Ascencio and Rueda, 2019; Larreguy et al., 2016; Nichter, 2008) and vote choices at the group level using aggregate election results (e.g., Chandra, 2004; Rueda, 2017; Schaffer and Schedler, 2007). All types of monitoring described above are carried out by political operatives on the ground—e.g., brokers or party agents at the polls— who are part of a political machine, and require a considerable amount of campaign resources and organizational capacity (Nichter, 2008; Larreguy et al., 2016; Stokes, 2005). Therefore, we think a natural interpretation of our model is that voters are *ex ante* uncertain about whether a candidate's clientelistic machine has the resources and organizational strength to carry out some type of monitoring in their own polling stations or communities.

We conclude by highlighting two avenues for future empirical research. The first has to do with the scope of our findings. In this paper, our focus is on assessing whether experiencing vote

buying affects a very specific outcome: confidence in ballot secrecy. However, we acknowledge that exposure to vote buying could more generally erode voter perceptions of electoral integrity (i.e., beyond ballot secrecy). While we are not able to test this possibility with the data at hand, we believe that understanding the extent to which vote buying shapes public opinion has important practical implications. For instance, this knowledge could inform the design of educational campaigns aimed at curbing electoral malpractice (e.g., Hicken et al. 2018).

The second one relates to the generalizability of our findings. The external validity or generalizability of experiments using online convenience and student samples is well documented in existing studies (e.g., Coppock and McClellan 2019; Lupton 2019; Mullinix et al. 2015). Although it is important to acknowledge that participants in our experiments are different from people who typically participate in clientelistic exchanges in several important respects, such as income and educational attainment, we also highlight that *a priori* it is unclear whether and how our findings would change if we replicated this study with more representative samples.

Perhaps more important, while we document a positive correlation between experiencing vote buying and trust in the secret ballot using data from multiple countries, the evidence from our survey experiment comes from one country. There are clear advantages to using the Mexican case. Notably, it is a country in which, despite major reforms, vote buying continues to be an important component of electoral politics (Cantú 2019b). However, the results of the survey experiment may have been driven by features of the Mexican case, such as the long history of electoral malpractice (Ascencio and Rueda 2019; Cantú 2019a) or the fact that, for years, the country's hegemonic party could effectively violate the secret ballot in many regions (Magaloni 2006). While the results of the lab experiment ameliorate this concern, replicating this study in other settings could provide additional insights about the effectiveness and limits of our theory.

References

Ascencio, S. J. and Rueda, M. R. (2019). Partisan poll watchers and electoral manipulation. *American Political Science Review*, 113(3):727–742.

Aziz, A., Castro Cornejo, R., Gilas, K., Isunza, E., de la Peña, R., and Somuano, F. (2022). Informe país 2020. el curso de la democracia en méxico.

Birch, S. (2008). Electoral institutions and popular confidence in electoral processes: A cross-national analysis. *Electoral Studies*, 27(2):305–320.

Bratton, M. (2008). Vote buying and violence in nigerian election campaigns. *Electoral Studies*, 27(4):621–632.

Brusco, V., Nazareno, M., and Stokes, S. C. (2004). Vote buying in argentina. *Latin American Research Review*, 39(2):66–88.

Camp, E. (2017). Cultivating effective brokers: A party leader's dilemma. *British Journal of Political Science*, 47(3):521–543.

Cantú, F. (2019a). The fingerprints of fraud: Evidence from mexico's 1988 presidential election. *American Political Science Review*, 113(3):710–726.

Cantú, F. (2019b). Groceries for votes: The electoral returns of vote buying. *Journal of Politics*, 81(3):790–804.

Cantú, F. and García-Ponce, O. (2015). Partisan losers' effects: Perceptions of electoral integrity in mexico. *Electoral Studies*, 39:1–14.

Carpenter, J., Graham, M., and Wolf, J. (2013). Cognitive ability and strategic sophistication. *Games and Economic Behavior*, 80:115–130.

Challú, C., Seira, E., and Simpser, A. (2020). The quality of vote tallies: Causes and consequences. *American Political Science Review*, 114(4):1071–1085.

Chandra, K. (2004). *Why Ethnic Parties Succeed: Patronage and Ethnic Head Counts in India*. Cambridge Studies in Comparative Politics. Cambridge University Press.

Coppock, A. and McClellan, O. A. (2019). Validating the demographic, political, psychological, and experimental results obtained from a new source of online survey respondents. *Research & Politics*, 6(1):2053168018822174.

Cox, G. W. and Kousser, J. M. (1981). Turnout and ruralcorruption: New york as a test case. *American Journal of Polit-ical Science*, 25(4):646–663.

Cruz, C. (2019). Social networks and the targeting of vote buying. *Comparative Political Studies*, 52(3):382–411.

Dahl, R. A. (1971). *Polyarchy: Participation and Opposition*. Yale University Press.

Duffy, J. and Tavits, M. (2008). Beliefs and voting decisions: A test of the pivotal voter model. *American Journal of Political Science*, 52(3):603–618.

Dunning, T. and Stokes, S. C. (2008). Clientelism as persuasion and as mobilization. Prepared for delivery at the 2008 Annual Meeting of the American Political Science Association.

Ferree, K. E. and Long, J. D. (2016). Gifts, threats, and perceptions of ballot secrecy in african elections. *Affrican Affairs*, 115(461):621–645.

Finan, F. and Schechter, L. (2012). Vote-buying and reciprocity. *Econometrica*, 80(2):863–881.

Frederick, S. (2005). Cognitive reflection and decision making. *Journal of Economic perspectives*, 19(4):25–42.

Gans-Morse, J., Mazzuca, S., and Nichter, S. (2014). Varieties of clientelism: Machine politics during elections. *American Journal of Political Science*, 58(2):415–432.

Gerber, A. S., Huber, G. A., Doherty, D., and Dowling, C. M. (2012). Is there a secret ballot? ballot secrecy perceptions and their implications for voting behaviour. *British Journal of Political Science*, 43(1):77–102.

Gingerich, D. W. and Medina, L. F. (2013). The endurance and eclipse of the controlled vote: A formal model of vote brokerage under the secret ballot. *Economics & Politics*, 25(3):453–480.

Hicken, A., Leider, S., Ravanilla, N., and Yang, D. (2018). Temptation in vote-selling: Evidence from the philippines. *Journal of Development Economics*, 131:1–14.

Kramon, E. (2016). Electoral handouts as information: Explaining unmonitored vote buying. *World Politics*, 68(3):454–498.

Larreguy, H., Marshall, J., and Querubín, P. (2016). Parties, brokers and voter mobilization. *American Political Science Review*, 110:160–79.

Lawson, C. and Greene, K. F. (2014). Making clientelism work: How norms of reciprocity increase voter compliance. *Comparative Politics*, 47(1):61–77.

Lupton, D. L. (2019). The external validity of college student subject pools in experimental research: A cross-sample comparison of treatment effect heterogeneity. *Political Analysis*, 27(1):90–97.

Magaloni, B. (2006). *Voting for Autocracy: Hegemonic Party Survival and Its Demise in Mexico*. Cambridge University Press.

Mares, I. and Young, L. E. (2019). *Conditionality and Coercion: Electoral clientelism in Eastern Europe*. Oxford University Press.

Montaño, M. T. (2021). Alertan posible compra de votos el 6 de junio en edomex; pedirán foto. URL: https://bit.ly/47w48O8 (Accessed: December 18, 2023).

Montgomery, J. M., Nyhan, B., and Torres, M. (2018). How conditioning on posttreatment variables can ruin your experiment and what to do about it. *American Journal of Political Science*, 62(3):760–775.

Morgan, J. and Vardy, F. (2012). Negative vote buying and the secret ballot. *Journal of Law, Economics, and Organization*, 28(4):818–849.

Mullinix, K. J., Leeper, T. J., Druckman, J. N., and Freese, J. (2015). The generalizability of survey experiments. *Journal of Experimental Political Science*, 2(2):109–138.

Muñoz, P. (2014). An informational theory of campaign clientelism: The case of peru. *Comparative Politics*, 47(1):79–98.

Nichter, S. (2008). Vote buying or turnout buying? machine politics and the secret ballot. *American Political Science Review*, 102(1):19–31.

Norris, P., Frank, R. W., and Martínez i Coma, F., editors (2014). *Advancing Electoral Integrity*. Oxford University Press.

Oliveros, V. (2019). Perceptions of ballot integrity and clientelism. In Lupu, N., Oliveros, V., and Schiumerini, L., editors, *Campaigns and Voters in Developing Democracies: Argentina in Comparative Perspective*, pages 213–238. University of Michigan Press.

Robinson, J. A. and Verdier, T. (2013). The political economy of clientelism. *The Scandinavian Journal of Economics*, 115(2):260–291.

Rosas, G. (2010). Trust in elections and the institutional design of electoral authorities: Evidence from latin america. *Electoral Studies*, 29(1).

Rueda, M. R. (2017). Small aggregates, big manipulation: Vote buying enforcement and collective monitoring. *American Journal of Political Science*, 61(1):163–177.

Schaffer, F. C. and Schedler, A. (2007). What is vote buying? In Schaffer, F. C., editor, *Elections for sale : the causes and consequences of vote buying*. Lynne Rienner Publishers.

Schedler, A. (2002). Elections without democracy: The menu of manipulation. *Journal of Democracy*, 13(2):36–50.

Smith, A. and Bueno de Mesquita, B. (2011). Contingent prize allocation and pivotal voting. *British Journal of Political Science*, 42(2):371–392.

Stokes, S. (2005). Perverse accountability: A formal model of machine politics with evidence from argentina. *American Political Science Review*, 99(3):315–325.

Wiese, R. and Jong-A-Pin, R. (2017). Expressive voting and political ideology in a laboratory democracy. *European Journal of Political Economy*, 50:54–74.

ONLINE SUPPLEMENTARY MATERIALS

DOES VOTE BUYING UNDERMINE CONFIDENCE IN BALLOT SECRECY? THEORY AND EXPERIMENTAL EVIDENCE

Contents

A Analysis of Mexico 2012 Panel Study Data

A.1 Variable measurement

Doubt about ballot secrecy: "I want you to tell me if you agree completely, agree somewhat, disagree somewhat, or disagree completely: My vote is always secret, unless I tell someone": 0=Agree completely; 1=Agree somewhat; 2=Disagree somewhat; 3=Disagree completely.

Private transfer offered: "In the last few weeks, has anyone done a favor for you or offered a gift or service in exchange for your vote? (YES) What did they offer you?" 0=No, 1=Yes.

Age: "How old are you?"

Female: "Sex (NOTE WITHOUT ASKING)" 0=Male, 1=Female.

Education: "What is the highest level of education you have completed? (IF STILL A STUDENT, MARK THE CURRENT LEVEL OF EDUCATION)" 0=No formal education, 1=Incomplete primary school, 2=Complete primary school, 3=Incomplete secondary/technical school, 4=Complete secondary/technical school, 5=Incomplete preparatory equivalent, 6=Complete preparatory equivalent, 7=Incomplete university, 8=Complete university or more; recoded as 0 if 1 or 2 is chosen, 1 if 3 or 4 is chosen, 2 if 5, 6, 7, or 8 is chosen, and 3 if 9 is chosen.

Urban: "Type" 0=Rural, 1=Urban.

Economic hardship: "Counting the whole family's earnings, would you say you…" 0=Easily cover expenses and can save, 1=Just cover expenses, but without great difficulty, 2=Have trouble covering expenses, 3= Have great difficulty covering expenses.

Num. of family benefit sources: "Do you or anyone in your family that lives in this house receive benefits from a) Seguro Popular, b) The Programa Oportunidades, c)Another government program?" The number of positive answers is counted.

Threat of benefit withdrawal: "Has anyone threatened to withhold benefits from any of the programs you participate in unless you vote a certain way? 0=No, 1=Yes.

Duration of community residence: "How long have you lived in your neighborhood?"

Catholic: "What is your religion?" 1=Catholic, 2=Christian, but not Catholic, 3=Protestant, 4=Other, 5=None; recoded as 1 if 1 is chosen and 0 otherwise.

Other religion: ""What is your religion?" 1=Catholic, 2=Christian, but not Catholic, 3=Protestant, 4=Other, 5=None; recoded as 1 if 2, 3, or 4 is chosen and 0 otherwise.

Political interest: "How interested are you in politics: a lot, some, a little, or not at all?" 0=Not at all, 1=A little, 2=Some, 3=A lot.

Partisanship: Responses to the following two questions are combined; “Generally, do you identify with the PAN, PRI or PRD? Do you identify strongly or weakly?” 1=Strong PAN, 2=Weak PAN, 3=Strong PRI, 4=Weak PRI, 5=Strong PRD, 6=Weak PRD, 7=Other, 8=None; (only those who responded ‘none’ to the previous question) “But do you sympathize a little more for one of the parties compared to the others?” 0=No, none, 1= PAN, 2=PRI, 3=PRD, 4=Other; coded as 0 if the respondent responded ‘No, none’ to the second question and 1 otherwise.

A.2 Descriptive statistics

Statistic	N	Mean	St. Dev.	Min	Max
			Wave 1		
Doubt about ballot secrecy	1,290	0.730	0.895	0	3
Private transfer offered	1,318	0.028	0.165	0	1
Age	1,328	40.365	15.747	18	90
Female	1,328	0.523	0.500	0	1
Education	1,327	1.581	0.866	0	3
Urban	1,328	0.765	0.424	0	1
Economic hardship	1,300	1.615	0.810	0	3
Num. of family benefit sources	1,328	0.779	0.815	0	3
Threat of family benefit withdrawal	1,312	0.044	0.206	0	1
Duration of community residence	1,327	21.936	16.287	0	82
Catholic	1,323	0.813	0.390	0	1
Other religion	1,323	0.116	0.321	0	1
Partisanship	1,222	0.791	0.407	0	1
Political interest	1,320	1.314	0.971	0	3
			Wave 2		
Doubt about ballot secrecy	1,123	0.662	0.817	0	3
Private transfer offered	1,150	0.055	0.228	0	1
Age	1,150	40.022	15.728	18	90
Female	1,150	0.547	0.498	0	1
Education	1,148	1.578	0.848	0	3
Urban	1,150	0.738	0.440	0	1
Economic hardship	1,136	1.682	0.801	0	3
Num. of family benefit sources	1,150	0.781	0.800	0	3
Threat of family benefit withdrawal	1,141	0.053	0.223	0	1
Duration of community residence	1,145	22.372	15.801	1	84
Catholic	1,144	0.841	0.366	0	1
Other religion	1,144	0.118	0.323	0	1
Partisanship	1,096	0.814	0.389	0	1
Political interest	1,143	1.256	0.895	0	3

Note: 923 respondents participated in both waves, and their answers are independently counted between the waves; 405 and 227 respondents participated only in the first and second wave, respectively.

A.3 Regression results: vote buying offers and beliefs about ballot secrecy

	Dependent variable:		
	Doubt about ballot secrecy		
	(1)	(2)	(3)
Private transfer offered	0.401	0.449*	0.451*
	(0.207)	(0.211)	(0.214)
Wave	-0.193*	-0.184	-0.120
	(0.092)	(0.094)	(0.098)
Panel respondent	0.052	0.111	0.062
	(0.119)	(0.123)	(0.129)
New respondent	0.486**	0.515**	0.455*
	(0.187)	(0.191)	(0.199)
Age		-0.011**	-0.010**
		(0.003)	(0.003)
Female		-0.059	-0.113
		(0.083)	(0.087)
Education		-0.063	-0.064
		(0.057)	(0.060)
Urban		-0.064	-0.094
		(0.127)	(0.132)
Economic hardship		0.059	0.064
		(0.056)	(0.058)
Num. of family benefit programs		-0.077	-0.070
		(0.055)	(0.058)
Threat of family benefit withdrawal		-0.111	-0.101
		(0.208)	(0.216)
Duration of community residence		-0.001	-0.001
		(0.003)	(0.003)
Catholic		-0.280	-0.291
		(0.180)	(0.189)
Other religion		-0.193	-0.251
		(0.212)	(0.224)
Partisanship			-0.270*
			(0.110)
Political interest			-0.101*
			(0.047)
State dummies	Included	Included	Included
Observations	2,404	2,331	2,178

Note: Ordered logistic regression models; cutoff reports are suppressed in the report; * p<0.05, ** p<0.01. The predicted probabilities in Figure 1 of the body are computed using coefficients in Model 3.

B Analysis of Afro Barometer Data (Wave 5)

B.1 Variable measurement

Belief of vote choice being monitored: "How likely do you think it is that powerful people can find out how you voted, even though there is supposed to be a secret ballot in this country?" 0=Not at all likely, 1=Not very likely, 2=Somewhat likely, 3=Very likely.

Frequency of private transfers being offered: "During the last national election in [20xx], how often, if ever did a candidate or someone from a political party offer you something, like food or a gift or money, in return for your vote?" 0=Never, 1=Once or twice, 2=A few times, 3=Often.

Poverty: Constructed as the average of responses to the following five questions, scaled between 0 and 1; "Over the past year, how often, if ever, have you or anyone in your family gone without: Enough food to eat?"; "∼Enough clean water for home use?"; "∼Medicines or medical treatment?"; "∼Enough fuel to cook your food?"; "∼A cash income?" 0=Never, 1=Just once or twice, 2=Several times, 3=Many times, 4=Always.

Age: "How old are you?"

Female: "Respondent's gender" 0=Male, 1=Female.

Education: "What is the highest level of education you have completed?" 0=No formal schooling, 1=Informal schooling only (including Koranic schooling), 2=Some primary schooling, 3=Primary school completed, 4=Some secondary school/ high school, 5=Secondary school completed/high school completed, 6=Post-secondary qualifications, other than university e.g. a diploma or degree from polytechnic or college, 7=Some university, 8=University completed, 9=Post-graduate.

Employment status: "Do you have a job that pays a cash income? If yes, is it full-time or part-time? If no, are you presently looking for a job?" 0=No (not looking), 1=No (looking), 2=Yes, part time, 3= Yes, full time.

Urban: Urban or rural primary sampling unit (answered by interviewer). 0=Rural, 1=Urban.

Evaluation of the country's democracy: "In your opinion how much of a democracy is the country today?" 0=Not a democracy, 1=A democracy, with major problems, 2=A democracy, but with minor problems, 3=A full democracy.

Turnout in the recent election: "With regard to the most recent national election in [20xx], which statement is true for you?" 0=You were not registered to vote, 1=You voted in the elections, 2=You decided not to vote, 3=You could not find the polling station, 4=You were prevented from voting, 5=You did not have time to vote, 6= You did not vote because you could not find your name in the voters' register, 7=Did not vote for some other reason, 8= You were too young to vote; recoded as 1 if 1 is chosen and 0 otherwise.

Participation in electoral campaign: "Thinking about the last national election in [20xx], did you: Attend a campaign meeting or rally?" 0=No, 1=Yes.

Contact with party: "During the past year, how often have you contacted any of the following persons about some important problem or to give them your views: A political party official?" 0=Never, 1=Only once, 2=A few times, 3=Often.

Partisanship: "Do you feel close to any particular political party?" 0=No, 1=Yes.

B.2 Descriptive statistics

Statistic	N	Mean	St. Dev.	Min	Max
Belief of vote choice being monitored	48,229	0.614	0.948	0	3
Frequency of private transfers being offered	50,536	0.275	0.707	0	3
Poverty	50,923	0.311	0.236	0	1
Age	51,143	37.192	14.594	18	105
Female	51,587	0.500	0.500	0	1
Education	51,461	3.272	2.133	0	9
Employment	51,378	0.332	0.471	0	1
Urban	50,900	0.391	0.488	0	1
Evaluation of the country's democracy	48,104	1.654	0.920	0	3
Turnout	51,389	0.730	0.444	0	1
Participation in electoral campaign	51,394	0.390	0.488	0	1
Contact with party	51,152	0.256	0.694	0	3
Partisanship	47,305	0.595	0.491	0	1

Note: 33 African countries are included

B.3 Regression results: vote buying offers and beliefs about ballot secrecy

	Dependent variable:		
	Belief of vote choice being monitored		
	(1)	(2)	(3)
Frequency of private transfers being offered	0.211**	0.201**	0.185**
	(0.013)	(0.014)	(0.015)
Poverty		0.602**	0.560**
		(0.048)	(0.052)
Age		-0.002**	-0.0005
		(0.001)	(0.001)
Female		0.019	0.037
		(0.020)	(0.022)
Education		0.019**	0.006
		(0.006)	(0.006)
Employment		0.012	0.021
		(0.022)	(0.024)
Urban		-0.010	-0.025
		(0.022)	(0.024)
Evaluation of the country's democracy			-0.155**
			(0.013)
Turnout			-0.246**
			(0.026)
Participation in electoral campaign			-0.002
			(0.025)
Contact with party			0.095**
			(0.015)
Partisanship			-0.008
			(0.024)
Country dummies	Included	Included	Included
Observations	47,443	45,741	40,155

Note: Ordered logistic regression models; cutoff reports are suppressed in the report; * p<0.05, ** p<0.01. The predicted probabilities in Figure 1 of the body are computed using coefficients in Model 3

B.4 Regression results: vote buying and other attitudes (perceived corruption and political trust)

	Dependent variable: XXX is/are involved in corruption					
	President	Parliament	Gov. officials	Police	Tax officials	Judge
	(1)	(2)	(3)	(4)	(5)	(6)
Frequency of private transfers being offered	0.126**	0.131**	0.185**	0.157**	0.187**	0.206**
	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.015)
Poverty	0.744**	0.604**	0.576**	0.516**	0.499**	0.544**
	(0.050)	(0.050)	(0.049)	(0.047)	(0.049)	(0.049)
Age	−0.003**	−0.003**	−0.002*	−0.003**	−0.002**	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Female	−0.050*	−0.028	−0.056**	−0.069**	−0.049*	−0.048*
	(0.021)	(0.021)	(0.020)	(0.020)	(0.020)	(0.021)
Education	0.066**	0.037**	0.056**	0.053**	0.045**	0.044**
	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)
Employment	0.055*	0.110**	0.110**	0.084**	0.081**	0.098**
	(0.023)	(0.023)	(0.022)	(0.021)	(0.022)	(0.022)
Urban	0.178**	0.190**	0.158**	0.208**	0.198**	0.120**
	(0.023)	(0.023)	(0.022)	(0.021)	(0.022)	(0.022)
Evaluation of the country's democracy	−0.491**	−0.345**	−0.349**	−0.279**	−0.281**	−0.265**
	(0.013)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Turnout	−0.123**	−0.101**	−0.086**	−0.073**	−0.100**	−0.120**
	(0.026)	(0.025)	(0.025)	(0.024)	(0.025)	(0.025)
Participation in electoral campaign	−0.019	−0.014	0.017	0.039	0.021	0.032
	(0.023)	(0.023)	(0.023)	(0.022)	(0.023)	(0.023)
Contact with party	0.014	−0.023	−0.014	−0.021	−0.024	−0.016
	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)
Partisanship	−0.108**	−0.122**	−0.103**	−0.049*	−0.006	−0.035
	(0.023)	(0.023)	(0.022)	(0.021)	(0.022)	(0.022)
Country dummies	Included	Included	Included	Included	Included	Included
Observations	35,869	37,052	38,349	39,353	36,835	37,415

Note: Ordered logistic regression models; cutoff reports are suppressed in the report; * p<0.05, ** p<0.01; responses to Q60A, Q60B, Q60C, Q60E, Q60F, and Q60G are analyzed.

	Dependent variable: Trust					
	President	Parliament	Electoral commission	Tax officials	Police	Court
	(1)	(2)	(3)	(4)	(5)	(6)
Frequency of private transfers being offered	−0.153**	−0.123**	−0.126**	−0.114**	−0.123**	−0.128**
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Poverty	−0.370**	−0.384**	−0.507**	−0.550**	−0.425**	−0.413**
	(0.046)	(0.046)	(0.047)	(0.047)	(0.045)	(0.046)
Age	0.005**	0.002**	0.003**	0.002**	0.004**	0.0001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Female	−0.077**	−0.060**	−0.082**	−0.058**	−0.001	−0.041*
	(0.019)	(0.019)	(0.020)	(0.019)	(0.019)	(0.019)
Education	−0.077**	−0.061**	−0.059**	−0.035**	−0.068**	−0.054**
	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)
Employment	0.035	−0.008	0.001	−0.005	−0.054**	−0.067**
	(0.021)	(0.021)	(0.021)	(0.021)	(0.020)	(0.021)
Urban	−0.230**	−0.263**	−0.253**	−0.203**	−0.304**	−0.184**
	(0.021)	(0.021)	(0.021)	(0.021)	(0.020)	(0.021)
Evaluation of the country's democracy	0.663**	0.519**	0.575**	0.447**	0.417**	0.406**
	(0.012)	(0.011)	(0.012)	(0.012)	(0.011)	(0.011)
Turnout	0.208**	0.140**	0.192**	0.125**	0.038	0.091**
	(0.023)	(0.023)	(0.024)	(0.024)	(0.023)	(0.023)
Participation in electoral campaign	0.053*	0.061**	0.090**	0.050*	0.023	0.089**
	(0.022)	(0.021)	(0.022)	(0.022)	(0.021)	(0.021)
Contact with party	0.018	0.055**	0.043**	0.033*	0.052**	0.023
	(0.014)	(0.014)	(0.014)	(0.014)	(0.013)	(0.014)
Partisanship	0.247**	0.270**	0.242**	0.168**	0.136**	0.154**
	(0.021)	(0.021)	(0.021)	(0.021)	(0.020)	(0.021)
Country dummies	Included	Included	Included	Included	Included	Included
Observations	41,055	40,108	37,463	38,447	41,512	40,703

Note: Ordered logistic regression models; cutoff reports are suppressed in the report; * p<0.05, ** p<0.01; responses to Q59A, Q59B, Q59C, Q59D, Q59F, and Q59J are analyzed.

C Mexico Survey Experiment

C.1 Exact wording of experimental vignettes and question (in Spanish)

[Baseline] Vamos a imaginarnos otra situación. Supongamos que va a haber una elección para la Cámara de Diputados y usted apoya a uno de los dos candidatos principales de su distrito. El operador electoral (de los a veces llamados "mapaches" electorales) que trabaja para el rival de su candidato no le ofrece ningún tipo de bienes materiales (regalos, dinero, etc.).

[Manipulation] Vamos a imaginarnos otra situación. Supongamos que va a haber una elección para la Cámara de Diputados y usted apoya a uno de los dos candidatos principales de su distrito. El operador electoral (de los a veces llamados "mapaches" electorales) que trabaja para el rival de su candidato le ofrece algunos bienes materiales (regalos, dinero, etc.).

Question: *Si el operador electoral (el "mapache") quisiera saber por quién votó usted ¿qué tan probable es que pueda descubrirlo? Nada probable/Poco probable/Algo probable/Muy probable*

C.2 Variable measurement

Belief of vote being monitored: "If the broker wanted to find out who you voted for, how likely is it that he can actually find out?" 0=Not at all, 1=A little likely, 2=Somewhat likely, 3=Very likely.

Age: "How old are you?"

Male: "What is your gender?" 0=Female, 1=Male.

Education: "What is your final education level?" 0=Never studied at a formal institution, 1=Elementary school, 2=Middle school, 3=High school, 4=Undergraduate degree, 5=Graduate degree.

Income: "What is your family's monthly income? (in Mexican pesos)" 1=Less than 2700, 2=2701 to 4100, 3=4101 to 5300, 4=5301 to 6600, 5=6601 to 8100, 6=8101 to 10000, 7=10001 to 12500, 8=12501 to 16600, 9=16601 to 30000, 10=More than 30000.

Any religion: "What is your religion? 0=No religion, 1=Catholic, 2=Evangelic, Christian not Catholic, 3=Pentecostal Church, 4=Seventh Day Adventist, 5=Mormon, 6=Jehovah Witness, 7=Other (Muslim, Jewish, etc.); recoded as 0 if 0 is chosen and 1 otherwise.

Employment status: "What type of job do you have?" 0=No job, 1=Part-time, 2=Full-time, 3=Retired; recoded as 1 if 1 or 2 is chosen and 0 otherwise.

Positive reciprocity: "Imagine the following situation: you are shopping in an unfamiliar city and realize you lost your way. You ask a stranger for directions. The stranger offers to take you with their car to your destination. The ride takes about 30 minutes and costs the stranger about 100 Mexican Peso in total. The stranger does not want money for it. You carry six bottles of beer, each of which you bought at 20 Mexican Peso. You decide to give some of the bottles to the stranger as a thank-you gift. How many bottle are you willing to give?" 0=No bottle, 1=1 bottle, 2=2 bottles, 3=3 bottles, 4=4 bottles, 5=5 bottles, 6=6 bottles.

Negative reciprocity: "How willing are you to punish unpleasant behavior even if this results in some disadvantage to you?" 0=Not at all, 1=Slightly willing, 2=Somewhat willing, 3=Very willing.

Confidence in the impact of my vote: "Generally speaking, how confident are you that your vote will be respected and considered in the final outcome of the election?" 0=Not confident at all, 1=A little confident , 2=Somewhat confident, 3=Very confident.

Trust in electoral commission: "We are going to show you a list of institutions in Mexican society. Please tell us how much confidence you, yourself, have in each one: The Electoral Commission" 0=Very little, 1=Some, 2=Quite a lot, 3=A great deal.

Turnout in the 2018 election: "Now let's talk about the last federal elections in July 2018 for a while. Did you participate in the elections?" 0=I was not eligible to vote, so I could not participate in the elections, 1=I was eligible to vote but I did not participate in the elections, 2=I was eligible

to vote and I did participate in the elections; recoded as 1 if 2 is chosen and 0 otherwise.

Offered in the 2018 election: "Were you offered any material goods for your vote in the last elections of July?" 0=No, 1=Yes.

C.3 Descriptive statistics

Statistic	N	Mean	St. Dev.	Min	Max
Manipulation	1,043	0.501	0.500	0	1
Belief of vote choice being monitored	1,030	1.133	1.069	0	3
Age	1,043	39.348	11.737	18	76
Male	1,041	0.508	0.500	0	1
Education	1,043	2.704	0.721	0	4
Income	1,004	7.551	2.392	1	10
Any religion	1,027	0.794	0.405	0	1
Employment status	1,032	0.854	0.354	0	1
Positive reciprocity	1,034	3.888	1.852	0	6
Negative reciprocity	1,029	2.266	0.793	0	3
Confidence in the impact of my vote	1,031	1.831	0.921	0	3
Trust in electoral commission	1,037	1.344	0.960	0	3
Turnout in the 2018 election	1,033	0.894	0.307	0	1
Offered in the 2018 election	1,026	0.185	0.389	0	1

C.4 Balance check

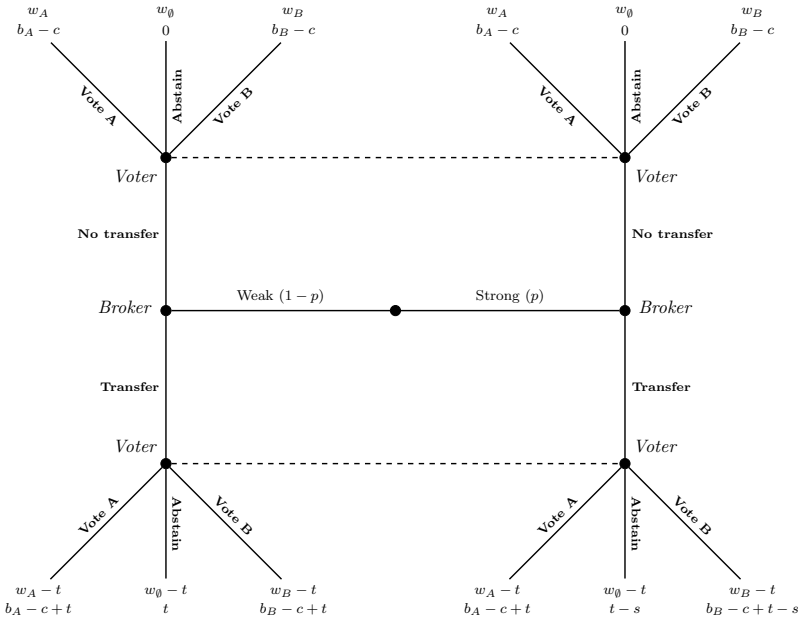
Variable	Control Mean	Manipulation Mean	Difference in Mean
Age	39.452	39.245	0.207
Male	0.486	0.531	-0.045
Education	3.677	3.730	-0.053
Income	7.572	7.530	0.042
Any religion	0.807	0.781	0.026
Employment status	0.855	0.853	0.002
Positive reciprocity	3.948	3.829	0.119
Negative reciprocity	2.277	2.255	0.022
Confidence in the impact of my vote	1.815	1.847	-0.033
Trust in electoral commission	1.291	1.398	-0.107
Turnout in the 2018 election	0.901	0.888	0.013
Offered in the 2018 election	0.196	0.175	0.021

Note: T-test used; * 0.05, ** 0.01; no statistically significant difference is detected

D Vote buying as a signaling game: proofs and other results

This is a dynamic game of incomplete information, and thus the solution concept we use is Perfect Bayesian equilibrium (henceforth equilibrium). Figure D.0.1 shows the game tree of the vote buying game. Because our goal is to illustrate how vote buying can undermine voter confidence in ballot secrecy, we focus on equilibria with vote buying, i.e., equilibria in which at least on type of candidate A offers a private transfer to the voter. We first describe the equilibrium strategies and beliefs of all equilibria with vote buying, and then present and discuss our main results, which provide necessary conditions for these equilibria to emerge.

Figure D.0.1: Game Tree



There are to two types of equilibria with vote buying. There is a *separating equilibrium* in which the strong type of candidate A offers a private transfer to the voter but the weak type does not. In this equilibrium, the voter casts his ballot for candidate A after he receives the private transfer, and either votes for candidate B or abstains otherwise (see Lemma 1). Notice that the players' strategies are such that vote buying is effective, that is, when given the private transfer the voter complies with his part of the vote-buying exchange. The reason for this is straightforward. If vote buying were not effective, then the strong type of candidate A would be better off not providing the transfer and keeping $t > 0$ for herself.

For the purposes of this paper, the most relevant feature of this equilibrium is that it is fully informative. This means that, upon observing candidate A's actions, V updates his beliefs about the effectiveness of A's clientelistic machine and, in fact, learns the candidate's type. Thus, after candidate A provides the private transfer, the voter believes he is dealing with the strong type with probability one. Similarly, after A does not offer the transfer, the voter believes A is the weak type with probability one.

There is also a *pooling equilibrium* in which both types of candidate A offer the transfer to the voter. The voter's strategy is such that he votes for candidate A after he receives the private transfer, and either votes for candidate B or abstains when he does not. Notice that V's strategy is identical to that in the separating equilibrium, and thus vote buying is effective in this equilibrium too. As explained above, this occurs because if vote buying were not effective, candidate A would be better off not providing the transfer.

Finally, we highlight that this equilibrium is not informative. Thus, after A provides the transfer, the voter believes he is dealing with the strong type with probability equal to his prior belief, $\mu_T = q$, and after candidate A does not offer the transfer, the voter believes A is the strong type with probability $\mu_N \in [0,1]$. Therefore, in contrast with the separating equilibrium, in the pooling equilibrium A's actions reveal no information about her type.

Throughout, we say the voter is a *strong supporter of* $i \in \{A,B\}$ if $b_i > c$. Recall we assumed $b_A = -b_B$. This implies that if the voter is a strong supporter of i, then he is not a strong supporter of $-i$. If the voter is neither a strong supporter of A nor a strong supporter of B, which implies $0 < b_i < c$ for $i \in \{A,B\}$, we say the voter is *moderate*. For simplicity, we assume $b_i \neq c$ for $i \in \{A,B\}$, which means the voter must be either a strong supporter of i or a moderate (i.e., these cases are exhaustive). Before proving Proposition 1, we introduce two intermediate results.

Lemma 1. *In any equilibrium of the game, the voter's strategy is such that after all histories in which candidate A does not offer the private transfer is as follows: vote for i if he is a strong supporter of candidate i, and abstains otherwise.*

Proof. First, suppose the voter is a strong supporter of candidate $i \in \{A,B\}$. Then,

$$U_V(A|\sigma,\mu,h_N) = b_i - c > U_V(\emptyset|\sigma,\mu,h_N) = 0 > U_V(B|\sigma,\mu,h_N) = b_{-i} - c$$

for all σ and all μ, where the first inequality holds because the voter is a strong supporter of i and the second from the fact that $b_i = -b_{-i}$. Therefore, if voter is a strong supporter of i, he votes for i after any history in which A does not offer the transfer.

Next, suppose the voter is not a strong supporter of candidate i. Then,

$$U_V(\emptyset|\sigma,\mu,h_N) = 0 > \max\{U_V(A|\sigma,\mu,h_N), U_V(B|\sigma,\mu,h_N)\} = \max\{b_i - c, b_{-i} - c\}$$

for all σ and all μ, where the inequality holds from the fact that the voter is not a strong supporter of i and the fact that $b_i = -b_{-i}$. Therefore, if voter is not a strong supporter of i, he abstains after any history in which A does not offer the transfer. □

Let μ_{a_A} denote voter's belief that the candidate is the strong type after the candidate chooses a_A.

Lemma 2. *If the voter is a strong supporter of i, then voting for i strictly dominates abstention.*

Proof. Suppose the voter is a strong supporter of i. By Lemma 1, we only need to consider histories in which the voter does receive the transfer. Then,

$$\begin{aligned} U_V(i|\sigma,\mu,h_T) &\geq (1-\mu_T)(b_i - c + t) + \mu_T(b_i - c + t - s) = b_i - c + t - s\mu_T \\ U_V(\emptyset|\sigma,\mu,h_T) &= (1-\mu_T)(t) + \mu_T(t-s) = t - s\mu_T, \end{aligned}$$

and notice that $b_i > c$ implies $U_V(i|\sigma,\mu,h_T) > U_V(\emptyset|\sigma,\mu,h_T)$ for all μ_T. Therefore, if the voter is a strong supporter of i, voting for i strictly dominates abstention. □

Next, we restate and prove Proposition 1.

Proposition 1. *There exists a separating equilibrium with vote buying only if the following hold:*

(1) The voter is not a strong supporter of candidate A, i.e., $b_A \leq c$,

(2) The sanction from non-compliance is sufficiently high, i.e., $s \geq s^*$, and

(3) The private transfer is optimal for A, i.e., $t = t^*$,

where s^* and t^* are defined as follows

$$s^* \equiv \begin{cases} b_B - b_A & \text{if } b_B > c \\ c - b_A & \text{otherwise} \end{cases} \quad ; \quad t^* \equiv \begin{cases} w_B - w_A & \text{if } b_B > c \\ w_\emptyset - w_A & \text{otherwise} \end{cases}$$

Proof. Suppose (σ,μ) is a separating equilibrium in which the strong type of the candidate offers the private transfer and the weak type does not. Thus, σ is such that $\sigma_A(T|\text{Strong}) = \sigma_A(N|\text{Weak}) = 1$, and Bayesian updating implies $\mu_T = 1$ and $\mu_N = 0$. There are three cases.

Case 1: Voter is a strong supporter of A. By Lemma 1, we know $\sigma_V(A|h_N) = 1$. Therefore, for either type of the candidate, the expected payoff from not offering the transfer is w_A, which is strictly greater than the largest possible payoff from offering the transfer, $w_A - t$. This means that, in equilibrium, it must be that $\sigma_A(T|\text{Strong}) = \sigma_A(T|\text{Weak}) = 0$, which contradicts our initial assumption. Therefore, if the voter is a strong supporter of A, there cannot be a separating equilibrium. This implies condition *(1)*.

Case 2: Voter is a strong supporter of B. By Lemma 1, know $\sigma_V(B|h_N) = 1$. Therefore, for either type of the candidate, the expected payoff from not offering the transfer is w_B. Next, consider the voter's decision after she receives the transfer. By Lemma 2, voting for B strictly dominates abstention, so in equilibrium it must be that V either: (i) votes for B or (ii) votes for A.

Suppose (i) she votes for B. Then, the candidate's expected payoff from offering the transfer is $w_B - t$. This means the strong type of the candidate has a profitable deviation, contradicting the assumption that $\sigma_A(T|\text{Strong}) = 1$ is part of an equilibrium.

Suppose (ii) she votes for A, i.e., $\sigma_V(A|h_T) = 1$. For this to be the case, it must be that,

$$U_V(A|\sigma,\mu,h_T) = b_A - c + t > b_B - c + t - s = U_V(B|\sigma,\mu,h_T),$$

which simplifies to $s > b_B - b_A$. This implies the first part of condition *(2)*. Now, for either type of the candidate, the expected payoff from offering the transfer is $w_A - t$. For this to be an equilibrium, it must be that neither type of the candidate has a profitable deviation. For the strong type, this means $w_A - t \geq w_B$, and for the weak type, this means $w_B \geq w_A - t$. Therefore, it must be that $w_A - t = w_B$. This implies the first part of condition *(3)*.

Case 3: Voter is a moderate. By Lemma 1, know $\sigma_V(\emptyset|h_N) = 1$. Therefore, for either type of the candidate, the expected payoff from not offering the transfer is $w_\emptyset$. Next, consider the voter's

decision after she receives the transfer. In equilibrium, it must be that the V either: (i) does not for A or (ii) votes for A.

Suppose (i) she does not vote for A. Then, the candidate's expected payoff from offering the transfer is less or equal to $w_\emptyset - t$. This means the strong type of the candidate has a profitable deviation. This means the strong type of the candidate has a profitable deviation, contradicting the assumption that $\sigma_A(T|\text{Strong}) = 1$ is part of an equilibrium.

Suppose (ii) she votes for A, i.e., $\sigma_V(A|h_T) = 1$. For this to be the case, it must be that,

$$U_V(A|\sigma,\mu,h_T) = b_A - c + t > b_B - c + t - s = U_V(B|\sigma,\mu,h_T),$$

and

$$U_V(A|\sigma,\mu,h_T) = b_A - c + t > t - s = U_V(\emptyset|\sigma,\mu,h_T),$$

which simplifies to $s > c - b_A$, since the second inequality implies the first due to the fact that the voter is a moderate. This implies the remaining part of condition *(2)*. For this to be an equilibrium, it must be that neither type of the candidate has a profitable deviation. For the strong type, this means $w_A - t \geq w_\emptyset$, and for the weak type, this means $w_\emptyset \geq w_A - t$. Therefore, it must be that $w_A - t = w_\emptyset$. This implies the remaining part of condition *(3)*. □

Finally, the next result provides a set of necessary conditions for a pooling equilibrium with vote buying, i.e., an equilibrium in which both types of the candidate offer the transfer.

Proposition 2. *There exists a pooling equilibrium with vote buying only if the following conditions hold:*

(1) The voter is not a strong supporter of candidate A, i.e., $b_A \leq c$.

(2) The sanction from non-compliance is sufficiently high, i.e., $s \geq \frac{s^*}{q}$,

(3) The private transfer is not too large for A, i.e., $t \leq t^*$.

where s^* and t^* are as defined in Proposition 1.

Proof. Suppose (σ,μ) is a pool equilibrium in which both types of the candidate offer the transfer.. Thus, σ is such that $\sigma_A(T|\text{Strong}) = \sigma_A(T|\text{Weak}) = 1$, and Bayesian updating implies $\mu_T = q$. There are three cases.

Case 1: Voter is a strong supporter of A. This case is identical to the proof of Proposition 1. We conclude that, if the voter is a strong supporter of A, there cannot be a separating equilibrium. This implies condition *(1)*.

Case 2: Voter is a strong supporter of B. Lemma 1 implies $\sigma_V(B|h_N) = 1$. Therefore, for either type of the candidate, the expected payoff from not offering the transfer is w_B. Next, consider the voter's choice after she receives the transfer. Lemma 2 implies that in equilibrium V either (i) votes for B or (ii) votes for A.

Suppose (i) she votes for B. Then, the candidate's expected payoff from offering the transfer is $w_B - t$. This means the strong type of the candidate has a profitable deviation, contradicting the assumption that $\sigma_A(T|\text{Strong}) = 1$ is part of an equilibrium.

Suppose (ii) she votes for A, i.e., $\sigma_V(A|h_T) = 1$. For this to be the case, it must be that,

$$U_V(A|\sigma,\mu,h_T) = b_A - c + t > b_B - c + t - sq = U_V(B|\sigma,\mu,h_T),$$

which simplifies to $sq > b_B - b_A$. This implies the first part of condition *(2)*. Now, for either type of the candidate, the expected payoff from offering the transfer is $w_A - t$. For this to be an equilibrium, it must be that neither type of the candidate has a profitable deviation. For the strong type, this means $w_A - t \geq w_B$, and for the weak type, this means $w_B \geq w_A - t$. Therefore, it must be that $w_A - t = w_B$. This implies the first part of condition *(3)*.

Case 3: Voter is a moderate. Lemma 1 implies $\sigma_V(\emptyset|h_N) = 1$. Therefore, for either type of the candidate, the expected payoff from not offering the transfer is $w_\emptyset$. Next, consider the voter's decision after she receives the transfer. In equilibrium, it must be that the V either: (i) does not for A or (ii) votes for A.

Suppose (i) she does not vote for A. Then, the candidate's expected payoff from offering the transfer is less or equal to $w_\emptyset - t$. This means the strong type of the candidate has a profitable deviation. This means the strong type of the candidate has a profitable deviation, contradicting the assumption that $\sigma_A(T|\text{Strong}) = 1$ is part of an equilibrium.

Suppose (ii) she votes for A, i.e., $\sigma_V(A|h_T) = 1$. For this to be the case, it must be that,

$$U_V(A|\sigma,\mu,h_T) = b_A - c + t > b_B - c + t - sq = U_V(B|\sigma,\mu,h_T),$$

and

$$U_V(A|\sigma,\mu,h_T) = b_A - c + t > t - sq = U_V(\emptyset|\sigma,\mu,h_T),$$

which simplifies to $sq > c - b_A$, since the second inequality implies the first due to the fact that the voter is a moderate. This implies the remaining part of condition *(2)*. For this to be an equilibrium, it must be that neither type of the candidate has a profitable deviation. For the strong type, this means $w_A - t \geq w_\emptyset$, and for the weak type, this means $w_\emptyset \geq w_A - t$. Therefore, it must be that $w_A - t = w_\emptyset$. This implies the remaining part of condition *(3)*. □

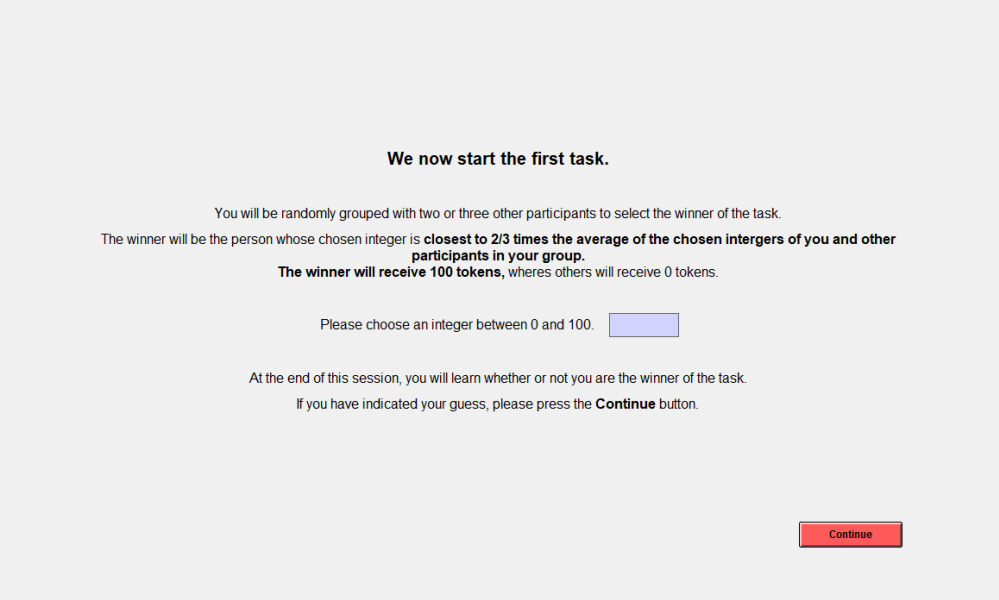
As can be seen, the conditions under which the separating and pooling equilibria emerge are similar. In fact, there is a set of parameters under which both types of equilibria can emerge. Condition (1) is identical in both propositions. This simply reflects the fact that candidate A would never buy a vote she is guaranteed to get, since doing wastes resources. Similarly, in both propositions, condition (3) caps the amount candidate A is willing to spend to buy V's vote.

One of the main substantive differences between the two equilibria with vote buying is captured by condition (2). As discussed above, in the pooling equilibrium, A's actions provide no information to the voter. After receiving the transfer, V still believes candidate A is the strong type with probabilty q. For vote buying to be effective in this case, the sanction s has to be large enough to compensate for the fact that he could be dealing with the weak type of candidate A (with probability $1-q$), and thus could renege without fear of punishment. Consistent with this intuition, condition (2) in Proposition 2 shows that the minimum sanction required for this equilibrium to emerge is inversely proportional to q. Therefore, as the voter's prior belief that A is the strong type (q) goes to zero, the sanction s would have to approach infinity for the pooling equilibrium to emerge. This stands in stark contrast with the separating equilibrium, which does not depend on the voter's prior beliefs, and can thus emerge even when q gets arbitrarily close to zero.

E Lab Experiment

E.1 Instructions

Task 1: Screen instructions for the p*-beauty contest*



Task 2: Paper instructions for the election game

General Instructions

1. This task concerns an election in which Citizen has to make a vote choice between Candidates A and B.
2. At Period 1, participants will be randomly divided into two groups - one for Candidate A and the other for Citizen –and they will be asked to play the task for six periods (from Period 1 to 6). After switching their roles (i.e., from Candidate A to Citizen or from Citizen to Candidate A) as Period 7 starts, participants will be asked to play the task for another six periods (from Period 7 to 12).
3. Participants will never be assigned to the role of Candidate B during the 12 periods.
4. At each period, there will be only one election. For the election, the computer will randomly and newly match two participants, one from the Candidate A group and one participant from the Citizen group. Participants will remain uninformed of the identity of their matched partners.
5. At every period, Candidate A will be newly endowed with 120 tokens and Citizen will be newly endowed with 40 tokens, independently of the election results at previous periods.
6. As each period starts, the computer will newly determine Candidate A's monitoring technology; Candidate A will be equipped with monitoring technology at a chance of 0.4, independently of previous periods. Below, monitoring technology is explained in detail.

7. Once the entire session is completed, the computer will randomly select one period to determine participants' earnings in Task 2. Earnings at the selected period will be counted as part of final earnings.

Election

1. Once an election starts at a period, Candidate A will be informed of whether or not she/he is equipped with monitoring technology. Then, Candidate A will be asked to make one decision regarding whether or not to offer a gift – 40 tokens – to Citizen.

2. If Candidate A chooses to offer a gift to Citizen, it will result in deducting 40 tokens from the Candidate A's endowment; the 40 tokens will be automatically added to the Citizen's endowment as her/his earnings.

3. After Candidate A's gift decision, Citizen will be informed of it before being asked to choose one of three options, which will affect the chance that the Candidate A wins the election. Yet, the Citizen will remain uninformed of whether or not the Candidate A is equipped with monitoring technology as the Citizen makes a vote choice.

4. The default chance of Candidate A's winning is 0.5 (i.e., Candidate B wins with a chance of 0.5), but the chance will increase to 0.6 if Citizen chooses voting for the Candidate A, whereas it will decrease to 0.4 if the Citizen chooses voting for Candidate B. The chance will remain same as 0.5 if the Citizen chooses abstention.

5. Voting for Candidate A and Voting for Candidate B are costly in the sense that they will result in deducting 10 tokens from Citizen's endowment. Abstention will not incur any cost to Citizen.

6. Candidate A will earn 200 tokens if she/he wins and 0 tokens if she/he loses.

7. Citizen will earn 0 tokens if Candidate A wins. However, Citizen will earn 120 tokens if Candida A loses (i.e., Candidate B wins).

Monitoring technology

1. Monitoring technology allows Candidate A to find out Citizen's vote choice.

2. However, its operation depends on whether or not Candidate A offered a gift to Citizen; Candidate A's monitoring technology will lead her/him to find out Citizen's vote choice only when she/he offered Citizen a gift.

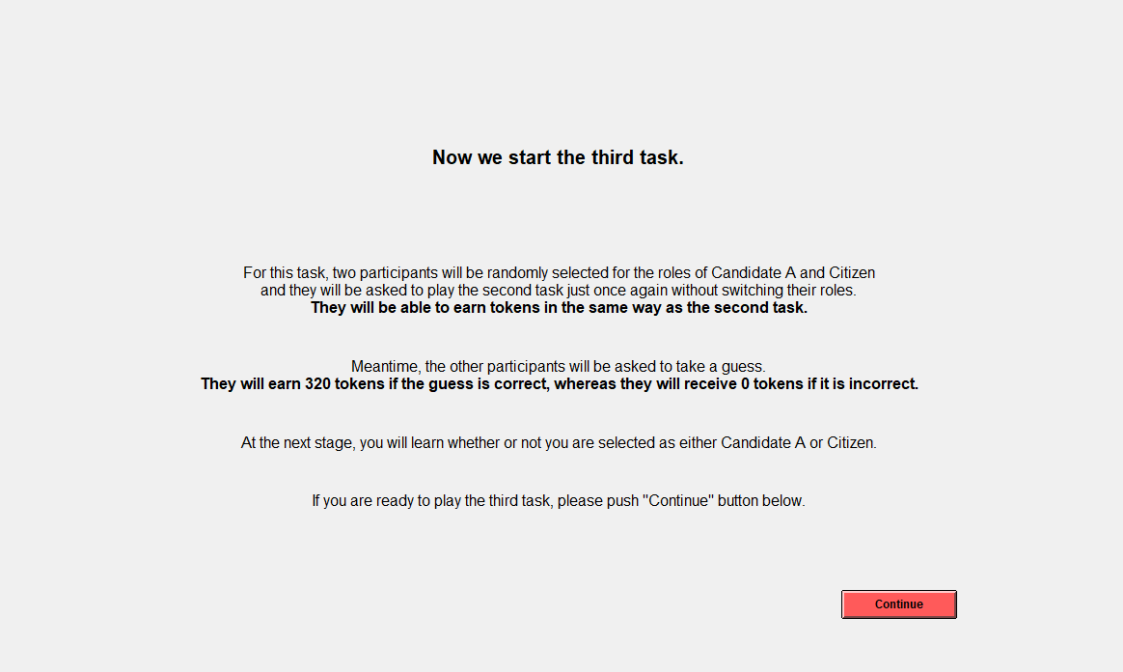
3. If Citizen receives a gift from Candidate A, the Citizen will be sanctioned (i.e., she/he will lose 40 tokens) when the Candidate A finds out that the Citizen voted for Candidate B or abstained; voting for Candidate B or abstention will not incur any sanction to Citizen as long as (i) the Citizen does not receive a gift from Candidate A or (ii) Candidate A offering a gift is not equipped with monitoring technology.

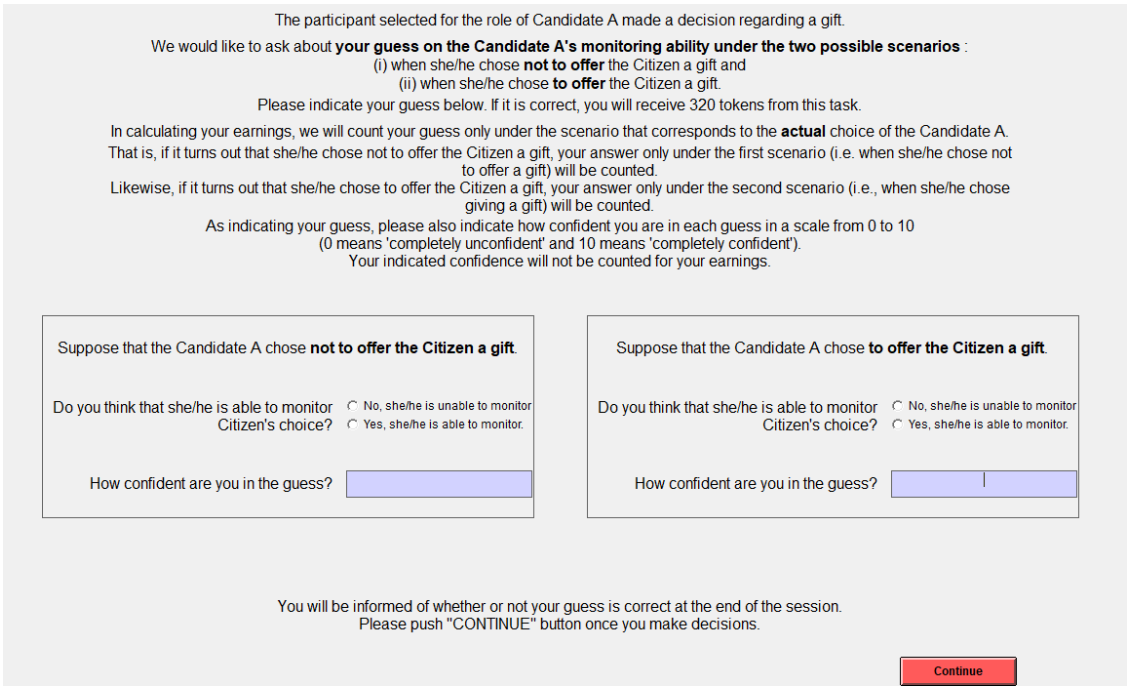
Feedback

1. At the end of each period, Candidate A and Citizen will receive a period report about the election result and their earnings. When Candidate A with monitoring technology offered Citizen a gift, the Candidate A will be further informed of Citizen's vote choice and whether or not the Citizen was sanctioned. Citizen will be informed of whether or not she/he was sanctioned.

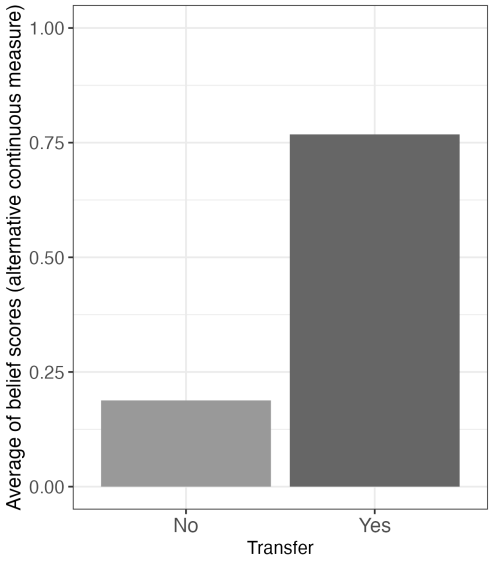
2. In addition, when Candidate A and Citizen are asked to make decisions, they will always find on their computer screen tables summarizing results at the previous periods.

Task 3: Screen instructions for the measurement of belief updating




The participant selected for the role of Candidate A made a decision regarding a gift.
We would like to ask about your guess on the Candidate A's monitoring ability under the two possible scenarios :
(i) when she/he chose not to offer the Citizen a gift and
(ii) when she/he chose to offer the Citizen a gift.
Please indicate your guess below. If it is correct, you will receive 320 tokens from this task.
In calculating your earnings, we will count your guess only under the scenario that corresponds to the actual choice of the Candidate A.
That is, if it turns out that she/he chose not to offer the Citizen a gift, your answer only under the first scenario (i.e. when she/he chose not to offer a gift) will be counted.
Likewise, if it turns out that she/he chose to offer the Citizen a gift, your answer only under the second scenario (i.e., when she/he chose giving a gift) will be counted.
As indicating your guess, please also indicate how confident you are in each guess in a scale from 0 to 10
(0 means 'completely unconfident' and 10 means 'completely confident').
Your indicated confidence will not be counted for your earnings.
Suppose that the Candidate A chose not to offer the Citizen a gift.
Do you think that she/he is able to monitor Citizen's choice?
No, she/he is unable to monitor
Yes, she/he is able to monitor.
How confident are you in the guess?
Suppose that the Candidate A chose to offer the Citizen a gift.
Do you think that she/he is able to monitor Citizen's choice?
No, she/he is unable to monitor
Yes, she/he is able to monitor.
How confident are you in the guess?
You will be informed of whether or not your guess is correct at the end of the session.
Please push "CONTINUE" button once you make decisions.
Continue

E.2 Alternative measure of beliefs along continuous scale



Note: The bars indicate the averages of belief scores about Clientelistic candidate's monitoring capacity according to the hypothetical scenario of private transfers

E.3 Variable measurement

Age: Survey question, "Age (in years)"

Female: Survey question, "What is your gender?" 0=Male; 1=Female.

Christian and *Muslim*: Survey question,"What best describes your religious affiliation?" 1= Christian - Protestant; 2= Christian - Catholic; 3= Christian - Other; 4=Jewish; 5= Muslim; 6= Buddhist; 7= Hindu; 8= Agnostic; 9=Atheist; 10=Other.

Choice in the beauty contest: Behavioral measure (Task 1), "You will be randomly grouped with two or three other participants to select the winner of the task. The winner will be the person whose integer is closest to 2/3 times the mean of the chosen integers of you and other participants in your group. The winner will receive 60 tokens, whereas tohers will receive 0 tokens. Please choose an integer between 0 and 100."

Num. of correct answers CRT: Survey question,"Below are several problems that vary in difficulty. Try to answer as many as you can. 1. A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost? (in cents); 2. If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets? (in minutes); 3. In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake? (in days)"

Altruism: Survey question,"How do you assess your willingness to share with others without expecting anything in return when it comes to charity? Please use a scale from 0 to 6, where 0 means you are 'completely unwilling to share' and a 6 means you are 'very willing to share'. You can also use the values in- between to indicate where you fall on the scale."

Positive reciprocity: Survey question,"Imagine the following situation. You are shopping in an unfamiliar city and realize you lost your way. You ask a stranger for directions. The stranger offers to take you with their car to your destination. The ride takes about 20 minutes and costs the stranger about $20 in total. The stranger does not want money for it. You carry six bottles of wine with you. The cheapest bottle costs $5, the most expensive one $30. You decide to give one of the bottles to the stranger as a thank-you gift. Which bottle do you give?" 1=$5 bottle; 2=$10 bottle; 3=$15 bottle; 4=$20 bottle; 5=$25 bottle; 6=$30 bottle.

E.4 Descriptive statistics

Statistic	N	Mean	St. Dev.	Min	Max
Age	70	20.643	1.694	18	25
Female	70	0.543	0.502	0	1
Christian	70	0.329	0.473	0	1
Muslim	70	0.171	0.380	0	1
Choice in beauty contest	70	43.086	21.583	2	100
Num. of correct answers in the CRT	70	1.800	1.111	0	3
Altruism	70	4.257	1.337	1	6
Positive reciprocity	70	3.971	1.262	1	6

E.5 Replication of Models 4-6 in Table 2 of the body

	Dependent variable:		
	Alternative measure of continuous belief ($0 \sim 1$)		
	(1)	(2)	(3)
Hypothetical scenario of transfer provision	0.580**	0.580**	0.580**
	(0.050)	(0.050)	(0.050)
Role in the first six rounds	0.047	0.049	0.068
	(0.051)	(0.055)	(0.062)
Age		0.002	0.0004
		(0.015)	(0.016)
Female		-0.026	-0.017
		(0.046)	(0.048)
Christian		0.065	0.090
		(0.056)	(0.067)
Muslim		0.097	0.129
		(0.082)	(0.079)
Choice in the beauty contest			0.00004
			(0.001)
Num. of correct answers in the CRT			0.020
			(0.031)
Altruism			-0.010
			(0.020)
Positive reciprocity			-0.024
			(0.018)
Observations	120	120	120

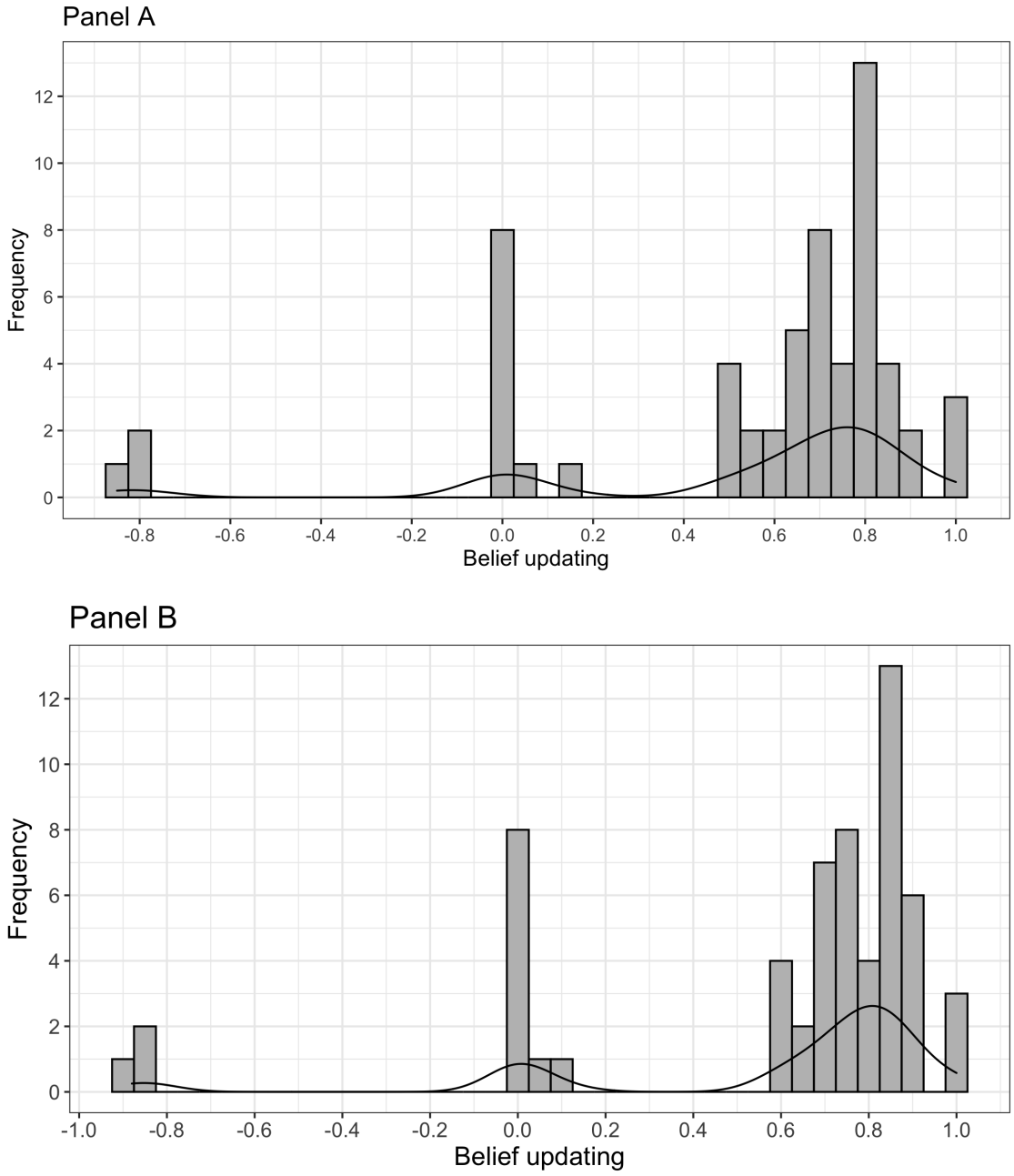
Note: All models use OLS regressions; standard errors, clustered at the individual level, in parentheses; cutoff and constant are suppressed in the report; * p<0.05, ** p<0.01

E.6 Replication of Models 1-3 in Table 3 of the body using random-effects multinomial logistic regressions

	(1) model1	(2) model2	(3) model3
Voting for the programmatic candidate			
Private transfer offered	-1.352**	-1.192*	-1.208*
	(0.480)	(0.480)	(0.484)
Role in the first six rounds	-0.238	-0.334	-0.285
	(0.772)	(0.681)	(0.697)
Age		-0.198	-0.218
		(0.209)	(0.209)
Female		-3.029**	-2.843**
		(0.740)	(0.749)
Christian		-1.189	-0.932
		(0.753)	(0.797)
Muslim		-2.475**	-2.328*
		(0.933)	(0.956)
Choice in the beauty contest			-0.000
			(0.015)
Num. of correct answers in the CRT			0.474
			(0.326)
Altruism			0.132
			(0.268)
Positive reciprocity			0.014
			(0.283)
Baseline: Abstestion			
Voting for the clientelistic candidate			
Private transfer offered	4.495**	4.468**	4.512**
	(0.734)	(0.735)	(0.736)
Role in the first six rounds	-0.910	-1.056	-1.276
	(0.880)	(0.877)	(0.879)
Age		-0.327	-0.254
		(0.265)	(0.253)
Female		-1.349	-0.962
		(0.908)	(0.921)
Christian		-1.219	-1.684
		(0.969)	(0.998)
Muslim		-1.720	-1.549
		(1.180)	(1.176)
Choice in the beauty contest			-0.031
			(0.020)
Num. of correct answers in the CRT			-0.075
			(0.398)
Altruism			-0.134
			(0.333)
Positive reciprocity			0.491
			(0.358)
Observations	420	420	420

Note: All models use random-effects logit regressions; standard errors in parentheses; abstention is the baseline; constants are suppressed in the report; * p<0.05, ** p<0.01

E.7 Distributions of belief updaing



Note: The bars indicate the numbers of participants according to belief-updating scores; the curves are density graphs; Panels A and B assume that the chance of choosing the option 'Yes, she/he is able to monitor' is 0.5 and 0.4, respectively, when participants are completely uncertain

E.8 Mechanisms: the informational effects of vote buying

	Dependent variable:	
	Vote choice (-1/0/1)	Transfer offer (0/1)
	(1)	(2)
Belief-updating score	0.168	-1.892
	(0.774)	(1.089)
Private transfer offered	3.096**	
	(0.467)	
Belief-updating score × Private transfer offered	1.248*	
	(0.625)	
Monitoring capacity		0.105
		(0.606)
Belief-updating score × Monitoring capacity		3.615**
		(0.953)
Role in the first six rounds	-0.180	-0.521
	(0.580)	(0.841)
Age	0.036	-0.418
	(0.171)	(0.251)
Female	1.911**	-0.156
	(0.621)	(0.865)
Christian	-0.410	0.188
	(0.673)	(0.929)
Muslim	1.040	-0.939
	(0.886)	(1.306)
Choice in the beauty contest	-0.012	-0.020
	(0.014)	(0.020)
Num. of correct answers in the CRT	-0.161	0.111
	(0.269)	(0.383)
Altruism	-0.053	0.155
	(0.217)	(0.308)
Positive reciprocity	0.355	0.313
	(0.240)	(0.336)
Round	0.072	-0.588**
	(0.081)	(0.117)
Participant random effects :		
Variance	3.206	6.892
	(1.791)	(2.625)
Observations	360	360

Note: Models 1 and 2 use random effect regressions (ologit for Model 1 and logit for Model 2); standard errors in parentheses; cutoffs are suppressed in the report; * p<0.05, ** p<0.01

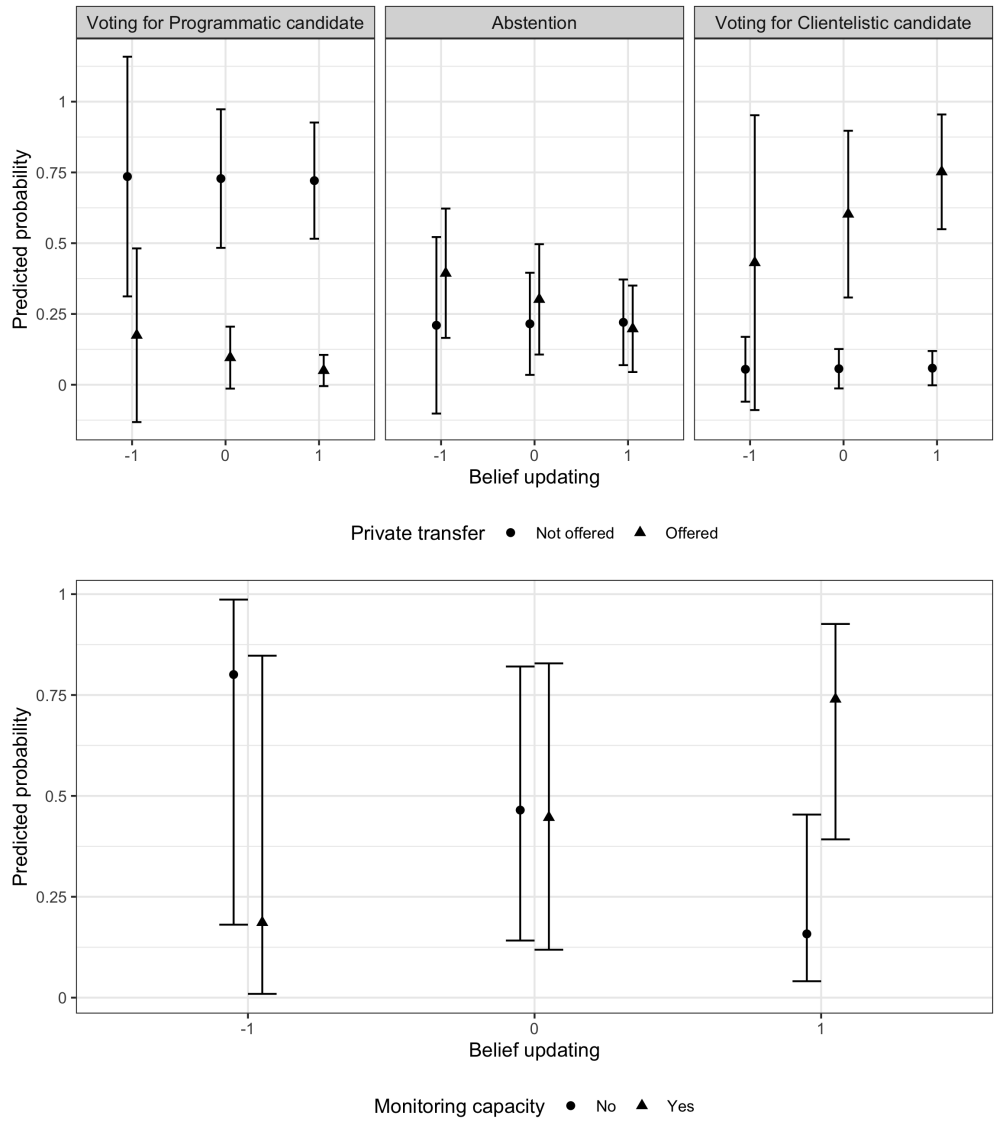
E.9 Replication of key results (Section E.8) with the binary measure of a belief

Table E.9.1: Regression results

	Dependent variable:			
	Vote choice (-1/0/1)		Transfer offer (0/1)	
	(1)	(2)	(3)	(4)
Belief-updating score (binary measure)	0.380	0.036	-0.619	-1.532
	(0.532)	(0.595)	(0.712)	(0.815)
Private transfer offered	3.650**	3.231**		
	(0.387)	(0.487)		
Belief-updating score (binary measure)		0.657		
× Private transfer offered		(0.492)		
Monitoring capacity			2.004**	-0.074
			(0.383)	(0.639)
Belief-updating score (binary measure)				2.792**
× Monitoring capacity				(0.726)
Role in the first six rounds	-0.138	-0.158	-0.457	-0.546
	(0.567)	(0.578)	(0.759)	(0.825)
Age	0.026	0.022	-0.421	-0.425
	(0.166)	(0.169)	(0.226)	(0.246)
Female	1.785**	1.807**	-0.288	-0.204
	(0.600)	(0.613)	(0.776)	(0.844)
Christian	-0.438	-0.437	0.316	0.221
	(0.660)	(0.673)	(0.843)	(0.914)
Muslim	0.972	1.036	-0.841	-0.867
	(0.867)	(0.887)	(1.181)	(1.284)
Choice in the beauty contest	-0.009	-0.009	-0.015	-0.019
	(0.013)	(0.014)	(0.018)	(0.020)
Num. of correct answers in the CRT	-0.155	-0.156	0.133	0.121
	(0.264)	(0.268)	(0.348)	(0.376)
Altruism	-0.074	-0.068	0.222	0.170
	(0.212)	(0.216)	(0.278)	(0.302)
Positive reciprocity	0.300	0.308	0.263	0.275
	(0.230)	(0.235)	(0.298)	(0.325)
Round	0.064	0.067	-0.489**	-0.590**
	(0.080)	(0.080)	(0.104)	(0.116)
Participant random effects :				
Variance	3.036	3.190	5.531	6.612
	(1.742)	(1.786)	(2.352)	(2.571)
Observations	360	360	360	360

Note: Models 1 to 4 use random effect regressions (ologit for Models 1 and 2 and logit for Models 3 and 4); standard errors in parentheses; cutoffs are suppressed in the report; * p<0.05, ** p<0.01

Figure E.9.1: The predicted probabilities of vote choices and private transfer offers according to belief updating, using Models 2 and 4 in Table E.9.1



Note: Predicted probabilities in the upper and lower panels are computed using coefficients in Models 2 and 4 of the previous table, respectively; dots and vertical lines indicate predicted probabilities and 95% confidence intervals.

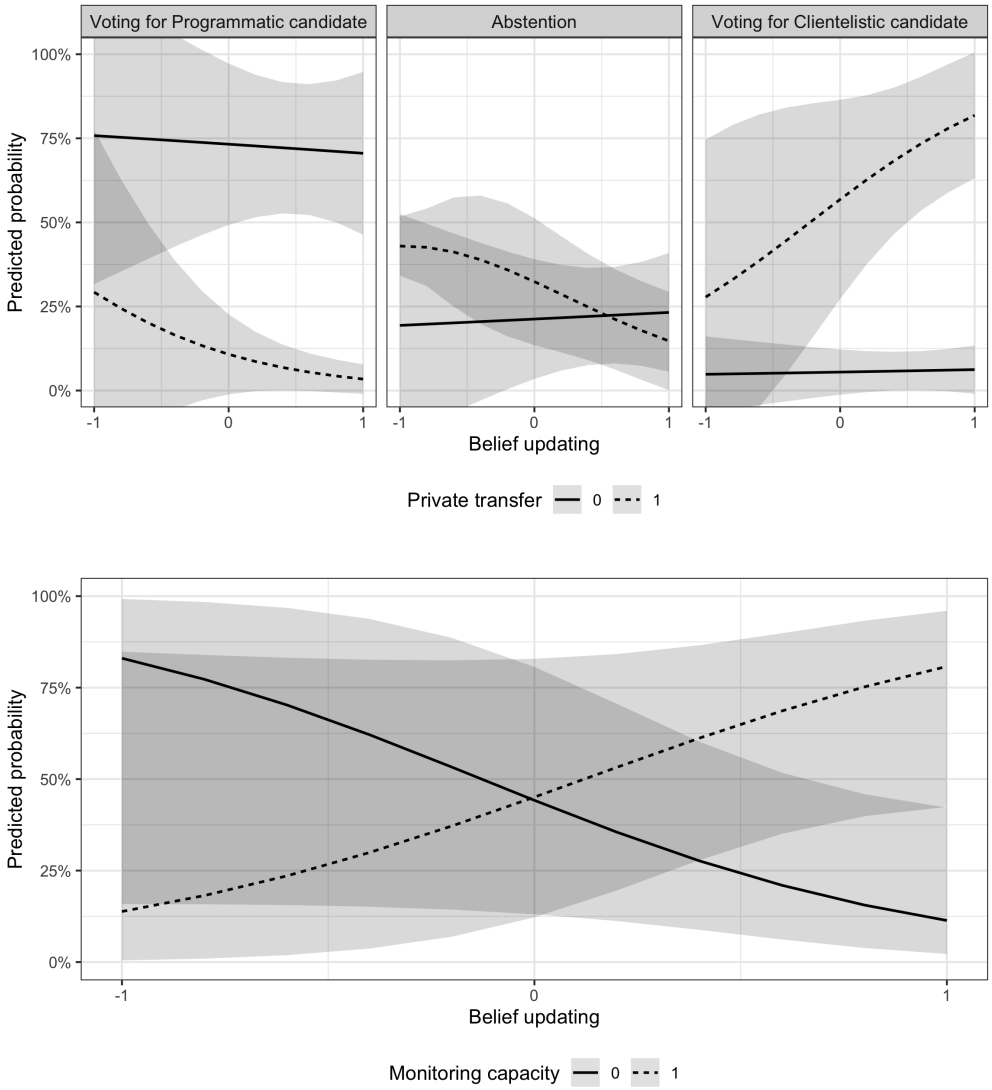
E.10 Replication of key results (Section E.8) with the alternative measure of a belief along a continuous scale

Table E.10.1: Regression results

	Dependent variable:			
	Vote choice (-1/0/1)		Transfer offer (0/1)	
	(1)	(2)	(3)	(4)
Belief-updating score (alternative measure)	0.703	0.134	-0.660	-1.821
	(0.661)	(0.734)	(0.884)	(1.028)
Private transfer offered	3.662**	3.121**		
	(0.387)	(0.472)		
Belief-updating score (alternative measure)		1.096		
× Private transfer offered		(0.594)		
Monitoring capacity			2.000**	0.036
			(0.383)	(0.619)
Belief-updating score (alternative measure)				3.454**
× Monitoring capacity				(0.904)
Role in the first six rounds	-0.129	-0.173	-0.461	-0.527
	(0.565)	(0.580)	(0.760)	(0.837)
Age	0.042	0.033	-0.419	-0.419
	(0.166)	(0.171)	(0.227)	(0.250)
Female	1.840**	1.885**	-0.282	-0.167
	(0.603)	(0.620)	(0.781)	(0.861)
Christian	-0.417	-0.415	0.338	0.195
	(0.658)	(0.674)	(0.843)	(0.926)
Muslim	0.947	1.045	-0.779	-0.920
	(0.862)	(0.887)	(1.178)	(1.301)
Choice in the beauty contest	-0.010	-0.011	-0.015	-0.020
	(0.013)	(0.014)	(0.018)	(0.020)
Num. of correct answers in the CRT	-0.156	-0.159	0.135	0.113
	(0.263)	(0.269)	(0.348)	(0.381)
Altruism	-0.070	-0.058	0.216	0.158
	(0.212)	(0.217)	(0.278)	(0.307)
Positive reciprocity	0.327	0.342	0.256	0.304
	(0.232)	(0.239)	(0.302)	(0.334)
Round	0.065	0.070	-0.489**	-0.590**
	(0.080)	(0.081)	(0.104)	(0.117)
Participant random effects :				
Variance	3.017	3.208	5.554	6.832
	(1.737)	(1.791)	(2.357)	(2.614)
Observations	360	360	360	360

Note: Models 1 to 4 use random effect regressions (ologit for Models 1 and 2 and logit for Models 3 and 4); coefficients are non-exponentiated; standard errors in parentheses; cutoffs are suppressed in the report; * p<0.05, ** p<0.01

Figure E.10.1: The predicted probabilities of vote choices and private transfer offer according to belief updating (alternative measure of a belief along a continuous scale), using Models 2 and 4 in Table E.10.1



Note: Predicted probabilities in the upper and lower panels are computed using coefficients in Models 2 and 4 of the previous table, respectively; lines and grey areas indicate predicted probabilities and their 95% confidence intervals, respectively.

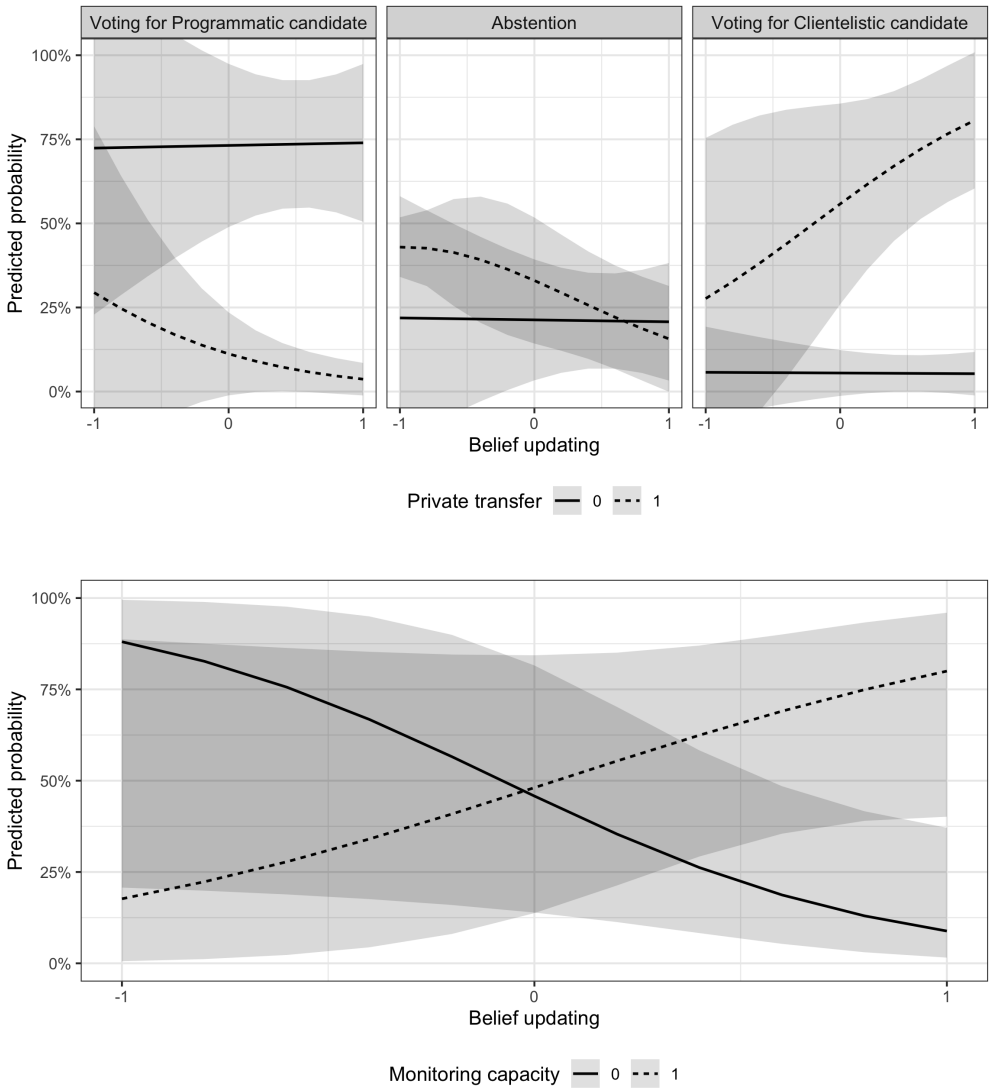
E.11 Replication of key results (Section E.8) excluding post-manipulation variables

Table E.11.1: Regression results

	Dependent variable:			
	Vote choice (-1/0/1)		Transfer offer (0/1)	
	(1)	(2)	(3)	(4)
Belief-updating score	0.614	-0.040	-0.884	-2.165*
	(0.689)	(0.770)	(0.918)	(1.078)
Private transfer offered	3.639**	3.074**		
	(0.387)	(0.467)		
Belief-updating score × Transfer offered		1.235*		
		(0.624)		
Monitoring capacity			1.989**	0.092
			(0.382)	(0.606)
Belief-updating score × Monitoring capacity				3.628**
				(0.951)
Role in the first six rounds	0.027	-0.015	-0.372	-0.408
	(0.559)	(0.574)	(0.737)	(0.812)
Age	-0.004	-0.017	-0.432	-0.443
	(0.166)	(0.170)	(0.225)	(0.249)
Female	1.850**	1.904**	-0.309	-0.205
	(0.607)	(0.625)	(0.778)	(0.857)
Christian	-0.150	-0.137	0.328	0.205
	(0.625)	(0.641)	(0.807)	(0.888)
Muslim	1.155	1.281	-0.591	-0.777
	(0.833)	(0.859)	(1.129)	(1.249)
Choice in the beauty contest	-0.009	-0.011	-0.016	-0.020
	(0.013)	(0.014)	(0.018)	(0.020)
Round	0.064	0.070	-0.488**	-0.586**
	(0.080)	(0.081)	(0.104)	(0.117)
Participant random effects :				
Variance	3.190	3.396	5.739	7.057
	(1.786)	(1.843)	(2.396)	(2.656)
Observations	360	360	360	360

Note: Models 1 to 4 use random effect regressions (ologit for Models 1 and 2 and logit for Models 3 and 4); standard errors in parentheses; cutoffs are suppressed in the report; * p<0.05, ** p<0.01

Figure E.11.1: The predicted probabilities of vote choices and private transfer offers according to belief updating, using Models 2 and 4 in Table E.11.1



Note: Predicted probabilities in the upper and lower panels are computed using coefficients in Models 2 and 4 of the previous table, respectively; lines and grey areas indicate predicted probabilities and their 95% confidence intervals, respectively.

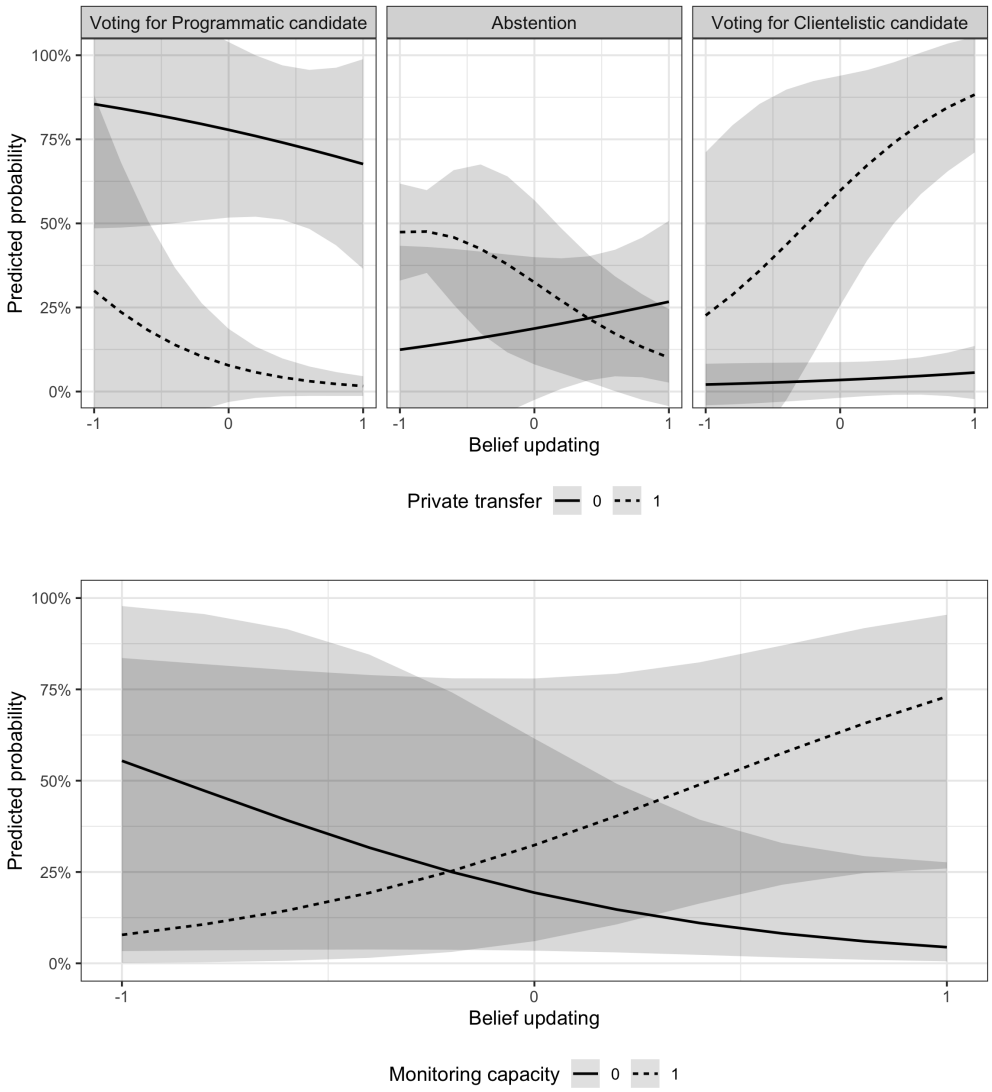
E.12 Replication of key results (Section E.8) with lagged variables

Table E.12.1: Regression results

	Dependent variable:			
	Vote choice (-1/0/1)		Transfer offer (0/1)	
	(1)	(2)	(3)	(4)
Belief-updating score	1.081	0.517	-0.575	-1.646
	(0.800)	(0.906)	(0.943)	(1.146)
Private transfer offered	4.245**	3.729**		
	(0.525)	(0.623)		
Belief-updating score × Private transfer offered		1.108		
		(0.809)		
Monitoring capacity			2.420**	0.691
			(0.499)	(0.724)
Belief-updating score × Monitoring capacity				3.380**
				(1.180)
Private transfer offered in the previous round	0.463	0.593		
	(0.677)	(0.684)		
Vote choice in the previous round	0.022	-0.056		
	(0.400)	(0.405)		
Punished in the previous round	-1.076	-1.234		
	(0.832)	(0.842)		
Monitoring capacity in the previous round			-0.533	-0.455
			(0.484)	(0.504)
Offered a private transfer in the previous round			0.995	0.821
			(0.604)	(0.609)
Voter was punished in the previous round			-0.204	0.002
			(0.627)	(0.669)
Participant random effects :				
Variance	3.738	3.994	5.247	7.068
	(1.933)	(1.999)	(2.291)	(2.659)
Observations	300	300	300	300

Note: Models 1 to 4 use random effect regressions (ologit for Models 1 and 2 and logit for Models 3 and 4); standard errors in parentheses; cutoffs are suppressed in the report; * p<0.05, ** p<0.01; coefficients on *Role in the first six rounds*, *Age*, *Female*, *Christian*, *Muslim*, *Choice in the beauty contest*, *Num. of correct answers in the CRT*, *Altruism*, *Positive reciprocity*, and *Round* are suppressed in the report

Figure E.12.1: The predicted probabilities of vote choices and private transfer offers according to belief updating, using Models 2 and 4 in Table E.12.1



Note: Predicted probabilities in the upper and lower panels are computed using coefficients in Models 2 and 4 of the previous table, respectively; lines and grey areas indicate predicted probabilities and their 95% confidence intervals, respectively.