Vote-Buying and Reciprocity*

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Abstract

Vote-buying is common around much of the world. Yet, with a secret ballot, most standard models of elections would suggest that vote-buying should not exist. Votes are unobservable, and politicians' promises are unenforceable. In this paper, we argue that vote-buying is sustained by an internalized norm of reciprocity. Citizens who receive money from a candidate feel obliged to vote for him and citizens who do not receive money from a candidate feel a desire not to vote for him. Using a novel dataset that combines survey information on vote-buying with experiment-based measures of reciprocity, we find that politicians are more likely to target reciprocal individuals, and reciprocal individuals are in turn more likely to vote for the party from which they accepted a good. Overall, our results highlight the importance of social preferences in determining economic and political behavior, particularly in an environment with commitment problems.

1 Introduction

Recently, economists have begun to emphasize the importance of social preferences in determining economic behavior (Fehr & Schmidt 2006). Laboratory experiments have provided ample evidence that preferences for reciprocity, altruism, and inequity aversion can be useful in sustaining cooperative behavior or overcoming information and commitment problems that discourage economic transactions (Fehr & Camerer 2004, Fehr et al. 1993, 2002). However, whether these results can extend beyond the laboratory to real world settings is still an open question. Consequently, our understanding of how social preferences not only affect behavior, but more specifically allow individuals to overcome market frictions remains limited.

In this paper, we investigate how social preferences overcome the commitment problems implicit in vote-buying. Vote-buying is a phenomenon which is common around the world (Schaffer 2007b). Yet, most standard models of elections would suggest that vote-buying should not exist. With secret balloting, votes are unobservable, while a politician's promises are unenforceable. With this double commitment problem, there is no formal way to contract for votes in an election (Robinson & Verdier 2003).

We argue that vote-buying is sustained, in part, because of individuals' feelings of reciprocity. Voters who are offered money or material goods in exchange for their votes reciprocate because they experience pleasure in increasing the material payoffs of people who have helped them. Similarly, if they are not offered money, they also enjoy decreasing the material payoffs of people who have harmed them.

To test this claim empirically, we assemble a rich and novel dataset combining survey information on vote-buying experienced in a 2006 municipal election in Paraguay, with information on behavior in experiments carried out in 2002. Using both survey data and behavior in these experimental games to estimate measures of an individual's reciprocity, we test whether more reciprocal individuals are more likely to be targeted for vote-buying.

We find that reciprocal individuals, both in terms of overall reciprocity measured in the experiment and negative reciprocity measured in the survey, are not only more likely to experience vote-buying, but are also more likely to vote for the party from which they accepted some good. For instance, an individual who claims he would put somebody in a difficult situation if that person put him in a difficult situation is 15.4 percentage points more likely to experience vote-buying. Similarly, a one standard deviation increase in our experiment-based measure of reciprocity will increase the likelihood of experiencing vote-buying by 8.1 percentage points. Targeting reciprocal individuals appear to be a strategy

that works. Reciprocal individuals are 12.9 percentage points more likely to vote for the party from which they accepted a good.

Although our results are consistent with a simple model in which politicians target more reciprocal individuals for vote-buying, there are other potential explanations for why vote-buying exists in equilibrium which may confound our results. For instance, although votes are not observable, whether or not the individual actually votes is observable. Thus, it could be the case that instead of influencing who the voter votes for, politicians are actually paying individuals to vote, knowing full well which candidate they would prefer (Nichter 2008). Another possibility is that even if political parties do not observe how an individual votes, they do observe voting behavior at a more aggregate level and may choose to contract on these outcomes. We provide evidence against these alternative mechanisms, and also demonstrate the robustness of our results to various other potential confounding factors.

This paper makes at least two contributions to the existing literature. Although the literature is growing, our paper represents one of the few studies to link experimental measures of preferences with data on behavioral outcomes.[1] Karlan (2005) finds that individuals who are more trustworthy in a trust game are more likely to repay their microfinance loans, while individuals who are more "trusting" save less and have higher repayment problems (suggesting they are merely less risk averse). Henrich et al. (2001) use experimental data from 15 small-scale societies and find that in societies with higher market integration, people behave more cooperatively in experiments. Gneezy et al. (2009) find that men living in patriarchal societies behave more competitively in experiments than women, while women living in matrilineal societies behave more competitively than men. Benz & Meier (2006) find a correlation between individuals' behavior in lab experiments involving donations and their charitable giving behavior in natural situations. Carpenter & Seki (2005) find that Japanese fishing crews who behave more pro-socially in experiments are more productive in their fishing. Our study complements these studies in demonstrating that reciprocity measured in an experiment is correlated with political behavior in the real world. Additionally,

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[1]Papers specifically addressing reciprocity include Fehr et al. (2002) who conduct a lab experiment which suggests that food sharing is a social norm enforced by strong reciprocity. Fehr et al. (1993) conduct a lab experiment suggesting that reciprocity is important in labor relationships as employees exert more effort when they are paid more. In contrast, Lee & Rupp (2007) look at airline pilots who experienced pay cuts and only find a decrease in effort for the first week after the pay cut. This effect is only found in non-bankrupt airlines, perhaps because pilots fear things could become even worse at bankrupt carriers or because they believe pay cuts were justified by bankrupt carriers. Gneezy & List (2006) also find that higher pay only induces higher effort for the first few hours for both data entry and fundraising. Evidence in favor of negative reciprocity and the persistent effects of low wages on worker effort are found by Krueger & Mas (2004) and Mas (2006) using data from Firestone workers and policemen respectively.

and perhaps more importantly, we demonstrate how a social preference such as reciprocity can resolve commitment issues in daily life.[2]

Our study also contributes to a nascent but growing literature in economics documenting the importance and prevalence of vote-buying. The theoretical literature on vote-buying (Dal Bo 2007, Dekel et al. 2007, Dixit & Londregan 1996, Robinson & Verdier 2003) is more advanced, although to sustain vote-buying in equilibrium the authors usually assume that votes are contractible and there is no commitment problem on the part of the voter. The literature in political science recognizes that votes are not contractible and discusses the importance of reciprocity in maintaining vote-buying (Schaffer 2007b). Our study is the first to test empirically the importance of reciprocity for vote-buying.

Overall, the empirical literature on vote-buying is sparse. Recent notable exceptions include Brusco et al. (2004), Stokes (2005) and Vicente (2008). Brusco et al. (2004) and Stokes (2005) analyze vote-buying in Argentina. They argue that vote-buying is a more prevalent strategy among low-income people and in areas where political parties are better able to monitor voters' actions. Vicente (2008) conducts an innovative anti vote-buying campaign in Sao Tome and Principe to test how changes in vote-buying affect voting behavior. The study finds that the campaign increased the difference in the vote share between the incumbent and challenger. Our paper complements this literature in not only providing an alternative mechanism for why vote-buying is sustainable but also in highlighting the influence of vote-buying on political behavior.

The remainder of the paper is organized as follows. Section 2 provides some basic background information on the political situation in Paraguay. Section 3 presents a theoretical framework explaining why reciprocity may be an important feature of vote-buying. The data and an explanation of how we construct our measures of reciprocity are presented in Section 4. Section 5 presents the main findings of the paper along with a discussion of alternative mechanisms. Section 6 concludes.

2   Background

Paraguay was a dictatorship under the rule of Alfredo Stroessner of the Colorado party from 1954 to 1989. The opposition party is the Liberal party. Until 2008, when an independent bishop won the presidency ending 61 years of Colorado rule, the Colorado party was the

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[2]Andreoni (2005), Brown et al. (2004), Fehr et al. (1997) have demonstrated in a laboratory setting the importance of trust and reciprocity as a device for enforcing contracts.

longest continuously ruling party in power at the time.[3] Paraguay remains a two-party country, although smaller parties have been gaining in popularity recently. The 2006 elections discussed in this paper saw the election of 66% Colorado mayors, 30% Liberal mayors, and 4% mayors from other parties.

In contrast to other countries, political parties in Paraguay are not very ideologically oriented. According to the British newspaper the Telegraph (2008), "Policy has played little part in the campaigning for Paraguay's top job, as all the candidates are united in their analysis of the problems afflicting this landlocked nation: illiteracy, poverty and overwhelming corruption." Political scientist Rizova (2007) states that "competition among candidates is very personalized and ideological differences are unclear...Movements are formed on the basis of personal friendship rather than on the basis of ideological preferences."

Since ideological differences are small, vote-buying and reciprocity may play a larger role in influencing voters' choices. Political scientists note the importance of reciprocity for sustaining successful vote-buying campaigns. According to Schaffer (2007a, p. 193), "embedding vote-buying within ritual gift exchange helps engender feelings of obligation among recipients, and can thus lower the rate of defection." Likewise Hicken (2007, p. 157) states, "in an attempt to change the cultural norms that support vote-buying in Thailand, specifically the norm of reciprocity, a senior Buddhist monk declared that it was not immoral to take money from one candidate and vote for another."

Dunning & Stokes (2007) find indirect evidence of reciprocity in Mexico where many initially pro-PRI voters who do not receive gifts end up voting for the opposition. People who, in an earlier survey round, say they are planning on voting for the PRI in 2000, but either don't vote at all or don't vote for the PRI are less likely to have received a gift. They interpret this as evidence that party supporters have 'conditional loyalty.'

The importance of reciprocity for the effectiveness of vote-buying is also evident in Paraguay. From July to September of 2005, Transparencia Paraguay (the national branch of Transparency International) carried out a major project involving interviews and focus groups regarding the financing of electoral campaigns. A more detailed description of this project can be found in Appendix A, along with additional quotes. Here we include two quotes suggesting that reciprocity is a well-known phenomenon when it comes to vote-buying in Paraguay.

"During the campaigns we spend money on everything that campaigning involves.

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[3]Since the 2008 elections, the Chinese Communist Party has taken over the honor of longest continuously ruling party currently in power.

This includes propaganda. In addition, to enable us to obtain votes, we visit families personally and, for sure, right then and there, they are going to ask you for a favor. They first ask if you have work for one of the members of that family, help for health expenses, purchase of medicines, water bills, and electricity. They virtually force you to perform, and if you don't then you don't get their vote." -Atilio López (Liberal), head of the municipal legislature in Capiatá

"And the political operatives do their job with the money, specifically, with the money of the candidate. The operative does his work, buying the conscience of the voter with money, with alcohol, buying his id card, a little medicine, sugar, bread, tea, and in this way he goes buying and winning adherents." -Antonio Espinoza, President of the neighborhood committee in Capilla del Monte

Of course, a model in which candidates target reciprocal voters assumes that the candidate knows the level of reciprocity of each voter. In fact, this is the role of the *operador político*, or political operative, who acts as a middleman between the candidate and the voters. Although there are more relevant quotes in the appendix, here is just one.

"For the community to conform, the candidate needs an *operador político* in the field: the *operador político*, a professional in politics and leader of his community, becomes the backbone of the election campaign. Through *operadores políticos*, candidates can build their network of promises of aid, favors, and meet the expectations of the poorest people in the electorate."

According to Lehoucq (2007, p. 39) the situation is similar in Taiwan and Thailand. "Candidates circumvented the secret ballot by working with local brokers, who, in the context of small and tightly knit rural communities, could reasonably predict the behavior of voters." Likewise, according to Schaffer (2007*a*, p. 183) in the conclusion of his edited volume on vote-buying, "as several authors in this volume note, candidates who wish to undertake even moderately successful vote-buying campaigns need to know which voters are amenable to having their participation or abstention bought. Gathering this information requires extensive grassroots organizing, using local people with local knowledge."

3 Theoretical framework

The contribution of this paper is clearly empirical, but in this section we introduce a model based on Dekel et al. (2007) that demonstrates how reciprocity can be incorporated into a

model of vote-buying. Two political parties compete in an election in an attempt to win more than a certain percent of the vote.

Parties' Decision-Making

Political parties may give up-front payments to the voters in the run-up to the election in order to influence their votes. These voters are free to vote for whichever party they would like and voting behavior is anonymous.

The parties take turns, alternating to bid on the up-front payments they will make to each voter. Each offer can not be lower than the offer previously made by the same party. For example, party k offers an up-front payment $p_i^k \geq 0$ to voter i. There is a smallest monetary unit so that offers can only be made in multiples of that. Each party has a budget, B, which their total payments to voters can not exceed. The bidding ends when two rounds go by without any changes in the offers. Whatever they don't spend gets returned to the central party command.[4]

Parties observe all past offers made to the voters and have perfect information as to voters' party preferences and levels of reciprocity. Each parties' goal is to win the election by achieving some share of the vote at minimal cost. The value party k receives from winning an election is W^k and the value it receives from losing the election is 0.

Voters' Decision-Making

We model reciprocity as do Cox et al. (2007) and Cox et al. (2008). They lay out the following utility function:

$$u(m,y) = \begin{cases} (m^\alpha + (\theta + ar)y^\alpha)^{\frac{1}{\alpha}} & \text{if } \alpha \leq 1 \text{ and } \alpha \neq 0 \\ my^{\theta+ar} & \text{if } \alpha = 0 \end{cases} \tag{1}$$

where m is the consumption of the owner of the utility function ('mine') and y is the consumption of the first mover ('yours'). The variable α is one minus the coefficient of relative risk aversion, while $\theta + ar$ is the willingness to exchange my consumption for your consumption at the point where my consumption equals your consumption. The two measures of

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[4]This assumption can be justified by the fact that the candidates distribute money to the local political operatives who distribute the money to the voters. Quotes in the appendix give evidence that the political operatives are the residual claimants on the money they receive from the candidate and do not return unspent money.

social preferences are θ, which is altruism, and a, which is reciprocity. The fairness of the first mover's move is r.

If $a = 0$ then there is no reciprocity. The higher a is, the more reciprocal a person is, both in terms of gratitude and resentment. Reciprocity can vary over individuals. The fairness of the first mover's action is modeled as $r(x) = (m(x) - m_0)/(m_g - m_b)$ where $m(x)$ is the best I can do given your first move, $m_0 = m(x_0)$ is the best I can do for some neutral move, $m_g = \max_x m(x)$, and $m_b = \min_x m(x)$. If the first mover puts the second mover in a very bad position then r is negative, and if he puts the second mover in a very good position then it is positive.

The voter chooses whether to vote for party k, $v_i = 1$, or party j, $v_i = 0$. The voter thinks the probability of party k winning if he votes for k is $\Pi(1)$ and the probability that party k wins if he votes for j is $\Pi(0)$. Supporters feel altruistically towards the party they prefer, measured by θ, so that they get joy when the party they prefer does well. The voter expects a party to pay $\tilde{m}$ for his vote (or in the words of Cox et al. (2007), this is the neutral action). The maximum a party can give to a single voter is their entire budget, B, and the minimum is 0.

The maximization problem of a voter is as follows:

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\max_{v \in \{0,1\}} u = \quad \frac{1}{\alpha}[(w_i + p_i^k + p_i^j)^\alpha +
$$
$$
(\rho_i \theta + a_i \frac{p_i^k - \tilde{m}}{B})(\Pi(v) W^k)^\alpha +
$$
$$
((1 - \rho_i)\theta + a_i \frac{p_i^j - \tilde{m}}{B})((1 - \Pi(v)) W^j)^\alpha]
$$

where w_i is wealth, $\rho_i = 1$ if the voter has a preference for party k and 0 otherwise, θ is altruism towards the party of the voter's preference, and a_i is reciprocity. The first term is the utility the voter gets from his own income, the second term is the utility he gets related to party k, and the third term is the utility he gets related to party j.

Equilibrium

If $a = 0$, meaning there is no reciprocity, then it can easily be seen that receiving money from a party will never effect the way a voter votes. Thus vote-buying will be a waste of money and so there will be no vote-buying in equilibrium. Once we allow for $a > 0$, then vote-buying can effect a voter's choice of who to vote for and so there may be vote-buying in equilibrium.

This is a finite game, which can be seen from the fact that the sum of payments offered to all voters must go up by at least the smallest monetary unit if the game does not end. Thus, given fixed budgets, the bidding must end after a finite number of rounds.

The most reciprocal voters will be targeted. In the first round of bidding, a party will not offer anything to its own supporters, since their party preference will cause them to vote for the party. The party will target those supporters of its opponent who have high levels of reciprocity, since they will be most likely to reciprocate the money received. The party would have to offer low reciprocal supporters of its opponent quite a bit of money to get them to change their mind.

The bidding will continue in this manner, with the parties offering progressively more and more to the most reciprocal voters, and also beginning to offer money to progressively less reciprocal voters. A party needs to offer money to those of its supporters who are very reciprocal. These are the voters who will want to exact revenge. Likewise, it will be cheaper for the opposing party to generate good will with these voters and steal them away from their own party. In the end, both parties will fight over the most reciprocal voters, with the party the voter prefers offering less than the opposing party.

An Example

We run a numerical simulation to clarify the workings of the model. Imagine a set of 100 voters who prefer party k with reciprocity uniformly distributed from 0.01 to 1, and a symmetric set of 100 voters who prefer party j. Altruism towards one's own party is 0.02. The coefficient of relative risk aversion is 2 (meaning $\alpha = -1$). Voters think that the neutral move is for their party to offer them \$3, and each party has a budget of \$120. A party needs 120 votes to win. Offers must be given in units no smaller than one cent. The voter thinks that if he votes for the party then its probability of winning is .55 while if he votes for the opposition the probability the party wins is 0.45.

The results can be seen in Figure 1. The most reciprocal people (on the right) are targeted by both parties, while both parties ignore the least reciprocal people (on the left). The dotted line is the amount offered by the party to those who have an innate preference for the opposition. The lower solid line is the amount offered by the party to its own supporters.

4   Survey and Experimental Data

The data used in the analysis come from a household survey collected in March 2007. The survey represents the fifth round of a longitudinal study initiated in 1991 by the Land Tenure Center at the University of Wisconsin in Madison, in cooperation with the Centro Paraguayo de Estudios Sociológicos in Asunción. The original design of the survey randomly selected households based on their landholdings from 15 randomly chosen villages throughout rural Paraguay.[5] In 2007, 202 out of the original 300 households remained and 247 new households were added to the survey completing 30 households per village, except in one small village where only 29 households were interviewed.

Each round of the survey collects socio-demographic information on each member of the household, including detailed information on income. In 2002, during the fourth round of the survey, 187 of the households sent a member to participate in economic experiments measuring trust, trustworthiness, and risk aversion. In the most recent round of the survey, a module was added to capture voting and vote-buying behavior, as well as, other-regarding preferences such as reciprocity.

Municipal elections for mayors and local assemblies occurred in November of 2006 and the fifth round of surveying took place between March and July of 2007. To measure vote-buying, respondents were asked whether, during the run-up to the November municipal elections, any political party offered them money, food items, payment of utility bills, medicines, and/or other goods. If so, they were then asked the value of the goods and whether they accepted them. They were also asked if a political party had offered to solve a problem for them. For the solving of problems, no monetary value was asked. While there is always a concern of underreporting of vote-buying, given that this question was asked almost 6 months after the election, and given that we did not ask the respondents to identify the name of the party offering them the items, we suspect that this might be minimal.

One of our measures of reciprocity is survey-based. To measure an individual's level of reciprocity, the survey asked the respondent if he would always, sometimes, or never put somebody in a difficult situation if that person put him in a difficult situation. We classify someone as having a preference for reciprocity if they answer always.[6]

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[5]A sixteenth village, of Japanese heritage, was also added due to the large farm size in that village. This village was not surveyed in 2007 and is not included in the analysis.

[6]We do not classify individuals who answer sometimes as reciprocal because, while 'sometimes' could signify a social preference (it depends how angry they make me), it could also signify a repeated game (it depends on my relation with the person). While classifying those who answer both those who answer 'sometimes' and those who answer 'always' as negative reciprocal is not our preferred classification, our

In addition to this survey-based measure, we also construct an experimental measure of reciprocity and demonstrate that our results are robust to this alternative specification. This measure of reciprocity is calculated from play in the 2002 trust game (Berg et al. 1995). In the trust game, the first mover was given eight thousand Gs (guaranies) and had to decide whether to send nothing, two four, six, or eight thousand Gs to the second mover. Whatever he sent was tripled. The second mover received the tripled money and decided how much of it to keep and how much to return to the first mover. All participants in the trust game played both the role of first and second mover. Before finding out how much was sent to him, the second mover was asked how much he would return if he received six thousand Gs, how much he would return if he received 12 thousand Gs, how much if 18 thousand Gs, and how much if 24 thousand Gs. Then he opened the envelope and found out how much was sent to him and had to play according to his previous decision. All play was anonymous and partners did not know with whom they were paired.

Second movers may choose how much to return based both on their level of altruism and on their level of reciprocity. The more altruistic they are, the more they should return. The more reciprocal they are, the more they should return when the first mover treated them well, and the less they should return when the first mover treated them poorly. In this spirit, one of our measures of reciprocity (which we will refer to as share difference) is the average share returned when receiving 12, 18, or 24 thousand Gs (signifying the first mover sent half or more of his endowment) minus the share returned when receiving six thousand Gs (signifying the first mover sent only a quarter of his endowment). We also use a measure (which we call reciprocity) which censors the share difference below 0 so that players who return a higher share when receiving very little have zero rather than negative values of reciprocity.[7] We can link these measures of reciprocity to information on vote-buying for 140 of the original 187 players.

Table 1 presents the means of the variables used in the analysis, including our two principal variables of interest: reciprocity and vote-buying. At least 33 percent of the sample was offered something in exchange for their votes in the past municipal elections including

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results are robust to using this alternative classification.

[7]Our measures of reciprocity are in the spirit of Cox et al. (2008) who define reciprocity as the case in which a more generous choice by the first mover elicits more altruistic preferences in the second mover. Fehr & Schmidt (2006) summarize models of reciprocity as well as evidence on its economic impact. Papers such as Rabin (1993) for normal form games and Dufwenberg & Kirchsteiger (2004) for extensive form games are extremely complex, involving intentions, beliefs about intentions, etc. Reciprocity has more recently been modeled by Cox et al. (2007) based on the second mover's state of mind which is altered by the first mover's actual behavior. Our measure is more in line with the latter because we do not attempt to estimate intentions or beliefs about them.

a problem being solved, and 26 percent was offered something excluding a problem being solved. Of these 116 individuals, 74 percent accepted these items, which on average are valued at 48 dollars. A day of labor in agriculture earns between three and four dollars, so this is a sizeable amount.

While 30 percent of the conditional sample was offered cash, the offer of food items and/or other gifts (e.g. medicine, payment of utility or medical bills) was also common. Our estimates of both the incidence of vote-buying and the amount are consistent with several estimates in the literature. For instance in Argentina, Brusco et al. (2004) find that 7 percent of the respondents were asked to sell their votes. In Taiwan, Wang & Kurzman (2007) find that, in an important township campaign in 1993, officials of one party claim to have bought 67 percent of eligible votes at a non-negotiable price of approximately $10 each. They also cite results from four other research projects in Taiwan in the 1990s finding 24, 27, 30, and 45 percent of respondents in different years and different areas who admit to having sold their vote. In Sao Tome and Prinicipe, Vicente (2008) reports that 38 percent of the respondents said a personal liaison of theirs was offered to sell his vote.

Transparency International (2004) reports figures suggesting that payments to voters can range from as low as $0.60 in a poor neighborhood of Manila to as high as $60 in Taiwan. According to Phongpaichit et al. (2000), in Thailand, one third of households were offered vote-buying in the 1996 general election and one fifth of those with the right to vote were offered something in the municipal elections. In Thailand, the average offer per household in the 1996 general election was $27. One legislative candidate in Taiwan might distribute up to $3 million. In Thailand, there are estimates that a total of $460 million was distributed in the 2001 legislative elections.

From Table 1, we also see that 18 percent of sample would always reciprocate if someone put them in a difficult situation. Respondents on average would require 200,000 Gs to wait a month rather than accepting 50,000 Gs today. Assuming log utility, this implies an average minimum monthly discount factor of 0.841 with a standard deviation of 0.094.[8] The survey also measures the respondents' risk aversion, by asking a series of hypothetical risk questions. We use the number of risky choices made as our measure of risk aversion. Alternatively, we can calculate a coefficient of relative risk aversion, but 19 percent of the respondents chose a dominated option in the first question. For the others, we can calculate a minimum level of

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[8]Respondents were asked if they would prefer 50,000 Gs today to 75,000 Gs in a month. If they answered 50,000, then they were asked if they would prefer 100,000 Gs in a month. If they still answered 50,000 they were asked how much they would need to be offered to wait a month. For people who chose an amount in the first two questions, we can only estimate their minimum discount factor. To do so we assume log utility.

risk aversion (they must be at least so risk averse to have turned down a given gamble) given CES utility and we find an average coefficient of 1.84 with a standard deviation of 1.61.

We find that 70 percent of the sample voted in the previous municipal elections and over 80 percent are registered to vote. Party loyalty does not appear overly strong as only 23 percent claim that voters ought to always vote for their party even if they don't like their party's candidate, and 40 percent claim to support their party strongly.

On average, the second movers in the 2002 trust game return the same share when receiving a lot from the first mover versus receiving a little, as can be seen from the average share difference of -0.009. The average share returned, which is a measure of trustworthiness and/or altruism, is 43 percent. Out of eight thousand Gs the average first mover in the trust game sends 3700 Gs, and in a risk game with a similar payoff structure the average player bets 3500 Gs.

To get a sense for how some of these characteristics are associated with our variables of interest, Table 2 presents correlates of both vote-buying and reciprocity. In column 1, the dependent variable is an indicator variable for being offered something in exchange for your vote (including a problem solved) on a set of individual and household level controls, in additional to a set of characteristics about voting behavior. An important predictor of being targeted for vote-buying is household wealth, which is negatively correlated with vote-buying. Households that are registered are more likely to be offered something, as are individuals who attended a political rally in the previous year. In column 2, we find similar patterns when the dependent variable is the amount of the offer.

In columns 3, 4, and 5 of Table 2 we explore the correlates of the survey and experimental measures of reciprocity. Few individual or household characteristics are predictive of the survey based measure of reciprocity. The exception is education, as more educated individuals are less willing to punish someone that caused them harm. More educated people are also less reciprocal according to the experimental measure. People who attended a political rally are more reciprocal, but individuals who are strong party supporters are not more reciprocal.

5   Empirical Results

In this section, we provide empirical evidence that more reciprocal individuals are more likely to be offered goods in exchange for their votes. These individuals, in turn, are then more likely to vote for the political party that offered them these goods. These findings are robust not only to various empirical specifications, but also to whether the measure of reciprocity

is survey versus experiment based.

Vote-buying and reciprocity

To examine the relationship between reciprocity and the likelihood that someone is targeted for vote-buying, we estimate a series of linear probability models of the following form

$$offered_i = \alpha + \beta reciprocity_i + X'_i\delta + \epsilon_i \tag{2}$$

where $offered_i$ is a binary variable indicating whether or not an individual i was offered some good in exchange for his vote. The variable $reciprocity_i$ denotes either a survey-based or experiment-based measure of reciprocity, whereas the vector X_i represents a set of observable characteristics at the individual, household, and village-level. The error term, ϵ_i denotes unobserved characteristics that determine a vote-buying exchange.

Survey-based reciprocity

Table 3 presents our basic results documenting the relationship between experiencing vote-buying and an individual's level of negative reciprocity as measured in the survey. Column 1 reports the unadjusted relationship between whether or not the person was offered goods in exchange for his vote and whether or not the respondent would put somebody in a difficult situation if that person put him in a difficult situation. The specification presented in column 2 controls for a basic set of individual and household characteristics, whereas column 3 further adjusts for various political attributes. While several of these variables are themselves equilibrium outcomes and should arguably not be included in the regression, variables such as political sentiment and party allegiance may serve to proxy for some unobserved determinants that might be correlated with reciprocity. The specification in column 4 includes these additional controls, but uses only within village variation to identify the association between vote-buying and reciprocity.

From the bivariate relationship in column 1, we see that more reciprocal individuals are 15.4 percentage points more likely to experience vote-buying, which represents a 50.2 percent increase from the average vote-buying experienced by non-reciprocal individuals. As seen in the other columns, the inclusion of additional controls has a minimal effect on the point estimate. For example in column 4, which controls for village intercepts and various individual and household-level characteristics, the estimated effect (point estimate =0.123; and standard error = 0.059) is statistically and economically indistinguishable from the

unadjusted estimate presented in column 1.

In column 5, we reexamine the relationship between vote-buying and reciprocity using as the dependent variable the logarithm of one plus the amount that was offered. Column 5 reports the marginal effects from estimating a Tobit model, with censoring at zero. Again, we find that more reciprocal people are offered goods of higher value.

In column 6, we re-estimate model 2 using as the dependent variable whether the respondent reported that he voted for the political party conditional on being offered and accepting some good from that party. Even after controlling for various individual and household characteristics, we find a strong correlation between reciprocity and voting for the party that bought one's vote. Reciprocal individuals are 12.9 percentage points more likely to vote for the party, which represents a 15.9 percent increase from non-reciprocal individuals.

Experiment-based reciprocity

Overall the results presented in Table 3 suggest that politicians who engage in vote-buying target individuals who exhibit a higher degree of negative reciprocity. One potential concern with this interpretation is that our measure of reciprocity is based on a hypothetical situation, rather than from an experimental setting where subjects are "incentivized" with real payoffs.[9] To account for this, we construct a measure of reciprocity based on the trust game that was conducted in 2002. This allows us to relate an individual's vote-buying experience in 2006 with his level of reciprocity as measured in 2002. Unfortunately, because only 140 of the 187 individuals who played the games in 2002 could be found, the results are restricted to a smaller and select sample of survey respondents.

Figure 2 shows a non-parametric estimate of the unconditional relationship between being offered a good in exchange for one's vote and the respondent's experimental measure of reciprocity. For individuals who do not exhibit reciprocity (i.e., the share difference is negative, meaning they returned a *higher* share when the first mover was *less* generous), there is almost no relationship between experienced vote-buying and reciprocity. This lies in stark contrast to individuals that behaved reciprocally in the trust game. In the interval [0, 0.4], we see a strong positive association between vote-buying and reciprocity.

The general pattern presented in Figure 2 is also borne out in the regression analysis. In Table 4, we present estimation results from specifications similar to those presented in Table 3, yet using the experimental measure of reciprocity as opposed to the survey-based measure

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[9]Smith & Walker (1993) review the conflicting evidence from studies comparing measures of preferences gathered in an experimental setting with those from a survey, although no studies that we know of have done so for measures of reciprocity.

of negative reciprocity. The table presents two alternative functional form specifications to capture the nonlinearity in the relationship between vote-buying and reciprocity. In the odd columns, our measure of reciprocity is the share difference censored at zero, which captures the kink depicted; whereas, in the even columns we account for the nonlinearity by simply including a quadratic term in the share difference.

Consistent with the results reported in Table 3, reciprocity is positively associated with the respondent experiencing vote-buying. This relationship holds across both functional form assumptions, as well as when we consider the dollar value of the good offered (see columns 5 and 6). In columns 7 and 8, we examine the extent to which our experimental measure of reciprocity is correlated with whether the respondent reported to have voted for the political party from which he accepted the good. Despite having only 22 observations, we still find a strong and statistically significant association.

Alternative theories of vote-buying and potential confounds

Thus far our results are consistent with the simple idea that when buying votes, politicians target more reciprocal individuals. And, because of reciprocity, vote-buying remains prevalent throughout much of the world despite the fact that voting is often conducted with a secret ballot. There are, however, other potential explanations for why vote-buying exists in equilibrium which may confound our results. In this section, we discuss these alternative hypotheses and demonstrate that our findings are robust to these other possibilities.

Turnout-buying

Although votes are not observable, whether or not the individual actually votes is observable. Thus, it could be the case that instead of encouraging voters to change the identity of the person they will vote for, politicians are actually paying individuals to vote, knowing full well which candidate they would prefer (Nichter 2008). To test this hypothesis, we re-estimate the relationship between experiencing vote-buying and reciprocity conditional on whether or not the individual voted. If politicians target individuals to encourage them to vote, rather than to encourage them to vote for a different candidate, then we would not expect an association between reciprocity and vote-buying among individuals who have voted. In column 1 of Table 5, we find that the correlation is virtually unchanged (point estimate = 0.152; standard error= 0.074), suggesting that our results are not driven by turnout-buying.

One potential concern with this argument is if it is cheaper to buy the turnout of recip-

rocal individuals, in which case, we would still observe a correlation between experiencing vote-buying and reciprocity even after conditioning on voting. However, as reported in column 2, we do not find any evidence that reciprocal people are more likely to vote. If reciprocal people are targeted for turnout-buying, we would expect that reciprocal people would be more likely to vote, whereas, if reciprocal people are instead targeted for vote-buying, causing them to change their vote rather than causing them to turnout, we would expect no relation between reciprocity and voting, which is what we find.

Repeated game and aggregate signals

Another possible explanation for the existence of vote-buying is that, although political parties do not observe how an individual votes, they do observe voting behavior at a more aggregate level and may be able to punish groups of voters if the voting shares are not what they expected. In Paraguay, vote shares are observable at the level of the voting table, which is typically where 300 residents are registered to vote. Party operatives, who are engaged in a repeated game, could potentially contract based on these observable outcomes.

Nevertheless, there exist both theoretical and empirical reasons why this explanation is unlikely. Theoretically, results by Levine & Pesendorfer (1995) suggest that in the case of voting with an Australian ballot (i.e. individual voting behavior is not observable, but average voting behavior is observed with noise), a repeated game will not be sustainable.[10] They provide an anti-folk theorem showing that, with a finite number of agents, if average play is observed with enough error and individual play is not observed, individual deviations cannot be rewarded or punished. The aggregate vote may be observed with noise because of things like hanging chad or other mistakes in the recording of individual votes, or because of other concurrent elements of electoral fraud (such as stuffing ballot boxes) which would make the announced aggregate vote shares be noisy measures of the true voting behavior.

Even if individual voting behavior were partially observable, given that elections occur once every couple of years, voters may not be patient enough to sustain a repeated game. In addition, multiple villages vote at the same polling station, while voting tables are determined in alphabetical order. So, the information available regarding how a village as a whole voted is quite noisy. The villages in our sample range from 0.7 percent of the population at their voting station, to 21.5 percent of the population at their voting station. In only two of our villages is the share of village registerd voters to registered voters at the polling station higher than ten percent. Of course, reciprocity and partial observability of voting behavior are not

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[10]A similar result was found by Sabourian (1990).

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mutually exclusive reasons for the existence of vote-buying, and may in fact complement one another.

To test this possibility empirically, in column 3 of Table 5, we re-estimate the relationship between experiencing vote-buying and reciprocity controlling for voting table fixed-effects. If vote-buying exists because politicians can punish or reward based on observing aggregate voting behavior, then reciprocity should no longer affect vote-buying once we account for table intercepts. This is because the voting table is the lowest level of aggregation at which voting behavior is observable. When we account for table fixed-effects, we find that point estimate remains virtually unchanged from our original specification (point estimate 0.117 versus 0.123 with village fixed effects), but given that there are 173 tables, 90 of which have only one observation, we lose precision. If we re-estimate the model using polling station fixed-effects, which is one level of aggregation above the table (44 observations), the estimated effect is 0.148 (standard error = 0.071) and significant at the 5 percent level (not reported in table).

Other regarding preferences

Reciprocity may not be the only social preference to affect vote-buying. Other personal traits, such as altruism, trustworthiness, risk aversion, or time preference, may also influence the selection of voters targeted. For instance, voters who sell their vote may do so because they have a high discount rate and so prefer money today to good policies carried out in the future. They might also be risk averse to the uncertainty of the true anonymity of their vote or campaign promises. Candidates might also target trustworthy voters who can be trusted to fulfill their end of the bargain. Altruism is also arguably an important determinant of voting behavior (see Fowler (2006) and Rotemberg (2007)).

In columns 4 and 5, we test for whether the association between reciprocity and vote-buying is robust after controlling for these other personal traits. Column 4 controls for an individual's level of risk aversion, time preference, and trust in candidates based on survey data, and altruism based on an experimental game conducted in 2007 (the amount sent in an anonymous dictator game). Controlling for these additional characteristics has little effect on the outcome of interest, as we see that reciprocal voters are still 14.8 percentage points more likely to experience vote-buying. In column 5, we re-estimate the specification in column 4, but use only experiment-based measures of these personal traits from the games conducted in 2002 (with the exception of impatience which is still survey based).[11] Again

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[11]In column 5, trust is the amount sent by the first mover in the trust game, trustworthiness/altruism is

we find a robust relationship.

Social Networks and Civic Mindedness

Another possibility is that politicians may target voters with larger social networks, since it may be a more effective manner of vote-buying. Offering something to a well-connected person may potentially induce externalities either through social learning or conformity. If individuals with larger social networks are also more reciprocal, then our effects are likely to be overestimated.

In the recent round of the survey, effort was made to measure each survey respondent's social network. The social network includes all households to which gifts were given or from which gifts were received and to which money was lent or from which money was borrowed in the past year; households to which one would go if one needed to borrow 20,000 Gs or who would go to them if they needed to borrow 20,000 Gs; households with parents, children, or siblings of the household head or his spouse; and households with compadres of the household head.[12] The degree is the number of households in the village with which the household is connected, the clustering coefficient is a measure of how connected the household's friends are to one another, and the contagion time is a measure of how long it would take information to get from the household to everyone else in the village. In column 6 of table 5, we control for all three measures of an individual's social network and find that our estimated effect remains virtually unchanged. If we control for each separately (results not shown) none of the network variables are significant and the estimated effect does not change.

A confound could also arise if civic-minded individuals, who are more likely to vote and thus potentially experience more vote-buying, are also more reciprocal. While it is likely that we capture some of this behavior when controlling for altruism since civic-mindedness means one expresses concern for one's community, which may in part be determined by altruism (see columns 4 and 5), in column 7 we include in the regression whether the person attended a political rally. Again, we find that the estimated effect of reciprocity remains similar and statistically significant.

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the average share returned by the second mover in the trust game, and risky is the amount bet on the roll of a die.

[12] A compadre is a co-parent. This is the relationship between the biological parents and the godparents of a god-child.

Truthfulness

One might be worried that people misreport vote-buying. If reciprocal people are more likely to admit to vote-buying, then the results may be confounded. Note that our variable of interest is being offered something in exchange for a vote, not actually accepting the offer. In addition, in column 9, we control for two other variables which act as measures of how likely the respondent is to tell the truth. We ask people if they would participate in an illegal transaction and the potential answers are probable, sometimes, or improbable.[13] We also ask the World Values Survey question measuring trust in people. If a person trusts people more, he may trust more that the enumerator will not do anything prejudicial with the vote-buying information. When controlling for these variables both are insignificant and the coefficient on reciprocity remains unchanged.

In results not shown here, we look at an alternative dependent variable which people should not be afraid to admit to, being offered a hat or a shirt advertising the candidate. If people are offered money at the same time they are offered a hat, then this variable will be correlated with vote-buying. At the same time, there is no incentive for individuals to lie about the answer to this question. The results are weaker, but still go in the same direction.

6   Conclusions

Vote-buying is a phenomenon which is common around the world. Prior to an election, politicians will offer individuals money, goods, or favors in exchange for their votes. However, in light of secret balloting, it is not clear why vote-buying continues to exist. Votes are unobservable, while a politician's promise of future policies is unenforceable. Given this double commitment problem, vote-buying in the form of one-shot monetary transfers should not occur in equilibrium.

In this paper, we argue that vote-buying is sustained by social preferences, particularly reciprocity. Using a novel dataset that combines survey information on vote-buying with information on behavior in experiments, we show that politicians are 15 percentage points more likely to offer reciprocal individuals something in exchange for their votes. Reciprocal individuals are in turn 15.9 percent more likely to vote for the party that offered them a good. These results are robust to various other specifications and controlling for alternative mechanisms.

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[13]We include people who answer probable or sometimes as being willing to participate in an illegal transaction.

The question of why social norms and institutions, particularly dysfunctional ones, are slow to change over time has received much attention recently. Our findings lend empirical support to the hypothesis that social preferences may be useful in sustaining interactions which could not otherwise be sustained. Emotions and social preferences of reciprocity, altruism, and inequity aversion allow societies to overcome crucial commitment and information problems that might otherwise discourage social exchanges.

References

Andreoni, J. (2005), Trust, reciprocity, and contract enforcement: Experiments on satisfaction guaranteed. Unpublished Manuscript.

Benz, M. & Meier, S. (2006), Do people behave in experiments as in the field? Evidence from donations. Unpublished Manuscript.

Berg, J., Dickhaut, J. & McCabe, K. (1995), 'Trust, reciprocity, and social history', *Games and Economic Behavior* **10**, 122–142.

Brown, M., Falk, A. & Fehr, E. (2004), 'Relational contracts and the nature of market interactions', *Econometrica* **72**(3), 747–780.

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

Carpenter, J. & Seki, E. (2005), Do social preferences increase productivity? Field experimental evidence from fishermen in Toyama Bay. Unpublished Manuscript.

Cox, J. C., Friedman, D. & Gjerstad, S. (2007), 'A tractable model of reciprocity and fairness', *Games and Economic Behavior* **59**, 17–45.

Cox, J. C., Friedman, D. & Sadiraj, V. (2008), 'Revealed altruism', *Econometrica* **76**(1), 31–69.

Dal Bo, E. (2007), 'Bribing voters', *American Journal of Political Science* **51**(4), 789–803.

Dekel, E., Jackson, M. O. & Wolinsky, A. (2007), 'Vote buying: General elections', *Journal of Political Economy* **116**(2), 351–380.

Dixit, A. & Londregan, J. (1996), 'The determinants of success of special interests in redistributive politics', *Journal of Politics* **58**(4), 1132–1155.

Dufwenberg, M. & Kirchsteiger, G. (2004), 'A theory of sequential reciprocity', *Games and Economic Behavior* **47**, 268–298.

Dunning, T. & Stokes, S. (2007), Persuasion vs. mobilization. Unpublished Manuscript.

Fehr, E. & Camerer, C. F. (2004), Measuring social norms and preferences using experimental games: A guide for social scientists, *in* J. Henrich, R. Boyd, S. Bowles, C. Camerer, E. Fehr & H. Gintis, eds, 'Foundations of Human Sociality', New York, NY: Oxford University Press, chapter 3, pp. 55–96.

Fehr, E., Fischbacher, U. & Gächter, S. (2002), 'Strong reciprocity, human cooperation, and the enforcement of social norms', *Human Nature* **13**(1), 1–25.

Fehr, E., Gächter, S. & Kirchsteiger, G. (1997), 'Reciprocity as a contract enforcement device: Experimental evidence', *Econometrica* **65**(4), 833–860.

Fehr, E., Kirchsteiger, G. & Riedl, A. (1993), 'Does fairness prevent market clearing? An experimental investigation', *Quarterly Journal of Economics* **108**(2), 437–459.

Fehr, E. & Schmidt, K. M. (2006), The economics of fairness, reciprocity and altruism – Experimental evidence and new theories, *in* S.-C. Kolm & J. M. Ythier, eds, 'Handbook of Reciprocity, Gift-Giving and Altruism', North Holland Press, chapter 8.

Fowler, J. H. (2006), 'Altruism and turnout', *Journal of Politics* **68**(3), 674–683.

Gacitúa Marió, E., Silva-Leander, A. & Carter, M. (2004), Paraguay: Social development issues for poverty allevation. Wold Bank Social Development Paper No. 63.

Gneezy, U., Leonard, K. L. & List, J. A. (2009), 'Gender differences in competition: Evidence from a matrilineal and a patriarchal society', *Econometrica* . Forthcoming.

Gneezy, U. & List, J. A. (2006), 'Putting behavioral economics to work: Testing for gift exchange in labor markets using field experiments', *Econometrica* **74**(5), 1365–1384.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H. & McElreath, R. (2001), 'In search of Homo Economicus: Behavioral experiments in 15 small-scale societies', *American Economic Review* **91**(2), 73–78.

Hicken, A. D. (2007), How effective are institutional reforms?, *in* F. C. Schaffer, ed., 'Elections for Sale: The Causes and Consequences of Vote Buying', Boulder, CO: Lynne Rienner Publishers, chapter 9, pp. 145–159.

Karlan, D. (2005), 'Using experimental economics to measure social capital and predict financial decisions', *American Economic Review* **95**(5), 1688–1699.

Krueger, A. B. & Mas, A. (2004), 'Strikes, scabs, and tread separations: Labor strife and the production of defective Bridgestone/Firestone tires', *Journal of Political Economy* **112**(2), 253–289.

Lee, D. & Rupp, N. G. (2007), 'Retracting a gift: How does employee effort respond to wage reductions?', *Journal of Labor Economics* **25**(4), 725–761.

Lehoucq, F. (2007), When does a market for votes emerge?, *in* F. C. Schaffer, ed., 'Elections for Sale: The Causes and Consequences of Vote Buying', Boulder, CO: Lynne Rienner Publishers, chapter 3, pp. 33–45.

Levine, D. K. & Pesendorfer, W. (1995), 'When are agents negligible?', *American Economic Review* **85**(5), 1160–1170.

Mas, A. (2006), 'Pay, reference points, and police performance', *Quarterly Journal of Economics* **121**(3), 783–821.

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

Phongpaichit, P., Treerat, N., Chaiyapong, Y. & Baker, C. (2000), Corruption in the public sector in Thailand: Perceptions and experience of households. Chulalongkorn University Working Paper.

Powers, N. R. (1992), The transition to democracy in Paraguay: Problems and prospects. Kellogg Working Paper No. 113.

Rabin, M. (1993), 'Incorporating fairness into game theory and economics', *American Economic Review* **83**(5), 1281–1302.

Rizova, T. P. (2007), The origins of Paraguayan post-authoritarian electoral institutions and their effects on internal party organization. Unpublished manuscript.

Robinson, J. A. & Verdier, T. (2003), The political economy of clientelism. Unpublished Manuscript.

Rotemberg, J. J. (2007), Attitude-dependent altruism, turnout and voting. Unpublished Working Paper.

Sabourian, H. (1990), 'Anonymous repeated games with a large number of players and random outcomes', *Journal of Economic Theory* **51**.

Schaffer, F. C. (2007*a*), Lessons learned?, *in* F. C. Schaffer, ed., 'Elections for Sale: The Causes and Consequences of Vote Buying', Boulder, CO: Lynne Rienner Publishers, chapter 11, pp. 183–200.

Schaffer, F. C., ed. (2007*b*), *Elections for Sale: The Causes and Consequences of Vote Buying*, Boulder, CO: Lynne Rienner Publishers.

Smith, V. L. & Walker, J. M. (1993), 'Monetary rewards and decision cost in experimental economics', *Economic Inquiry* **31**(2), 245–261.

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

Telegraph (2008), 'Ex-bishop tipped to win Paraguay election', UK newspaper.

Transparency International (2004), Vote buying, *in* 'Global Corruption Report', London: Pluto Press, chapter 5.

Vicente, P. C. (2008), Is vote buying effective? Evidence from a field experiment in West Africa. Unpublished Manuscript.

Wang, C.-S. & Kurzman, C. (2007), *in* F. C. Schaffer, ed., 'Elections for sale: The causes and consequences of vote buying', Boulder, CO: Lynne Rienner Publishers, chapter 5, pp. 61–78.

A   Appendix: Relevant Quotes from Transparencia Paraguay

From July to September of 2005, Transparencia Paraguay (the national branch of Transparency International) carried out a major project regarding the financing of electoral campaigns. This project included interviews carried out in 10 municipalities across the country with legislators, mayors, and members of civil society. Focus groups were also carried out in four municipalities with political operatives and middle men (the people who are actively involved in carrying out the vote-buying).

The final write-up contains an explanation written by Transparencia Paraguay as to how the political campaign works. They state the following regarding the role of the "operador político".

> For the community to conform, the candidate needs an *operador político* in the field: the *operador político*, a professional in politics, leader of his community, who becomes the backbone of the election campaign. Through *operadores políticos*, candidates can build their network of promises of aid, favors, and meet the expectations of the poorest people in the electorate. This will allow the candidate to form the community which will sustain his candidacy on election day.
>
> ...
>
> In the scheme of an election campaign such as the one we drew out on previous pages, based both on the promotion of the candidate, as well as building a clientele available to vote for him on election day, the figure of the *operador político* assumes particular importance, so much so that they are considered by many legislators and mayors as the key to success at the polls.
>
> The *operador político* is a professional in politics. He is the one who visits potential voters during the election campaign, bringing them the proposals of the candidate and also becoming a kind of caseworker for families with limited resources (almost half the population of the country), bringing them immediate solutions such as: medicine, food, payment of bills and more. But, for an *operador político* to be successful he must also be committed to the candidate, and he must be recognized in the neighborhood where he works, a local *caudillo*, who the voters recognize as someone to go to when there's a problem.
>
> ...
>
> The third circle is composed of *operadores políticos*. They are essential for the

election campaign and their value is directly proportional to both their commitment to the candidate and their integration with the community in which they seek votes for the candidate. The more they are recognized as a community leader, or at least as someone who solves the problems of the community, the better they can perform their job as promoter of the candidate during the election campaign.

The interviews and focus groups are extremely interesting in their own right. Here are excerpts which say something about reciprocity.

"I am going to explain how a primary election takes place. One candidate from one party calls the political operative of the other to complain. He says to him: "It's a shame. In school X, on the day of the elections, you are buying the votes for 70,000 guaraníes." And the other person replies: "How could we be buying for 70 when you are buying for 100?" That happens in all the primaries. The candidate that spends better on election day wins the primaries. And the candidate who positions himself badly loses. This is so much the case that there is the accusation of treason in one of the biggest parties - I will not say which one. The problem was that the money did not arrive in time to buy the votes; thus, the other candidate could buy them. This happened in Cordillera. The voters were waiting for the money to go out and vote, but the money did not arrive; what arrived instead was the message 'vote for whoever you want.' On the corner, the political operatives of the other candidate were waiting, and they bought all the votes for sale. The consequences were that there were layoffs, anger, and annoyances. They were supposed to have spent so many millions of dollars on the day of the elections, and only a fraction of that sum was spent." -Hermes Rafael Rambo Saguier (Liberal), ex representative in the national legislature.

"The voters prostitute themselves and cause the campaign to be very expensive. Everyone gets sick; their ceiling needs repair; their taxes need to be straightened out. If you don't go out prepared, you are not going to win. That's the way it is, and that is 40 days before the election. You could take care of a person for a year, and then five days before the election you don't bring him the medicine that he asked you for and he votes for someone else." -Derlis (Colorado), municipal government worker in Coronel Oviedo.

"The issue of medicine was a big one because several of the candidates for governor, mayor, and representatives were doctors. It is true that doctors can be of service and the service they provide is important. But, what happens when the people become accustomed? The first thing they say to you is "Is there a little medicine? Are there free appointments?" The voters say to you "You're a lawyer. Mr So-and-so helped me out with a judgement. You could do that too." That is the condition. "Could you help me out with this, because if you don't then I am going to go to the other side and So-and-so is going to help me." It is a blackmailing attitude. Then I say to the voter that I don't think our situation will ever improve with that kind of attitude. I believe that the electoral authorities must make voting obligatory, but no one controls it. If people are going to vote then they should go ahead and vote for whomever they want, that's not a problem, as long as people go and perform their civic duty. Nevertheless, nowadays you have to take them to go to vote in a minibus, you have to pick them up, you have to give them breakfast or a snack, and that's the only way they'll go. If they don't have shoes then you have to buy them that. They'll tell you "I am not going to go to vote because I don't have shoes," and so you have to buy them. Nowadays that is our situation. Politics is a business deal." -Enrique (Liberal), lawyer and ex-member of the municipal legislature in Coronel Oviedo.

I just want to say what the campaigns cost, the banners, the posters, all that has a cost, the shirts, the pens. And who are the ones that criticize you? The press and the radio criticize you. We are captives of the radio, because the radio is what arrives in the rural area and we are protective of our electorate in the rural areas because in the rural areas people still believe in the power of their word. When they pawn their word, they respect it. Nevertheless, in the urban and peri-urban areas, the majority goes with the highest bidder, but in the rural areas the pawned word is respected. -Adela (Colorado), staff in the Ministry of Health in Coronel Oviedo and member of the Council of Colorado Women.

"There is a new way that the people do things, especially in urban areas. Someone tells you, "I have access to 30 votes, I have their ID cards here." He tells you 30 people, 30 ID cards. He went out to collect them and then he brings them to you. Then you ask him if they know who they are going to vote for and he answers no. He says "For 10,000 each we will vote for you", and if there are

thirty of them then it's 300,000 Gs. Some are more expensive but others only need 5,000 so they can buy some liquor or cigarettes for that same day. These are the people from the marginal districts. That's how they work and that's what they dedicate themselves to on election day. You have to have money in your pocket. If you already invested however many millions in the campaign and then for 300,000 you are going to lose 30 votes which could change the results." -Adela (Colorado), nurse working for the Ministry of Health in the regional offices in Coronel Oviedo.

"I am going to tell you one thing. I go and I tell my friend who has 4 children, let's pick a name, Mary, let's go vote. How am I going to tell her to vote for free? She has to feed her 4 kids who she is leaving home alone to go vote. I at least have to give her 20,000 Gs." -Guadalupe (Colorado), leader of the Colorado youth organization in Asunción.

"Obviously, with the needs that exist in this country, when one goes to visit the neighborhoods one receives a lot of requests for assistance. This could be in the form of medicine, payment of electricity bills, payment of water bills, telephone, payment of school fees, university fees, rent, various loans, payment for foodstuffs or for things that have been pawned, everything, everything that you can imagine happens. All these problems seem to be just waiting for the moment when there's an election campaign, and one has to deal with such situations. If someone comes up to you and you don't solve those problems, then you're not a leader. You simply don't exist if you can't find a solution to these problems.... And the people said, "I am with you. I have so many people and give me so much [money]." I said, "No, No, I don't have it". So then they go and that's that. There were candidates who had economic resources and so they paid them. But on one opportunity I denounced them [to the police] because a sort of, as it's called, 'little train' came up and there were 15 guys, and one came and told me "Well, here I have 15 ID cards and there the people are all seated on the wall"." -Martin Arévalo (Colorado), head of the municipal legislature in Asunción

The moderator of these interviews was interested in the accounting practices regarding the money which is given to the local brokers. The evidence from these quotes suggests that the local broker is the residual claimant. This is important because if the broker had to account for all of the money he was given, then he might have an incentive to give money to

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his friends and family. Because he is the residual claimant, his incentives should be to give money to the voters whose behavior he thinks it will affect and keep the rest for himself. The following discussion comes from a focus group in Asunción.

Moderator: And in the case of the political campaign, when they give you money to do things...?

Guadalupe: No, that is for the votes and any other small thing to help the people.

Moderator: They do not ask you to account for the money you spent?

Mini: No, they can't do that anymore. How are you going to ask people to sign receipts?

Guadalupe: We are not going to make a receipt for each person to whom we gave money or to whom we helped.

Lidu: My experience is the following. In no case does one account for the money spent. There is no accounting of either materials given away nor money given away, right? In the case that it is a long time before 'D-day', normally when people come to ask you for something then you tell him to go directly to the candidate or else you have to take something from your own pocket to be able to fulfill his request, because, you see, it is the person who is nearest, we are always more accessible than the candidate. Then it is necessary to give from your own pocket and maybe, what do I know, there are different resources. Also I had the occasion of, in fact one often sees that, the leaders do not do anything, that is to say, those who receive or those who facilitate the giving of money to the people, as they say, do not do anything, without keeping a bit for themselves.

Moderator: That is, the operator keeps something?

Silvina: Yes, we keep something. We must have enough so that we can eat. That just has to be there.

Noemí: I meant that, as I said to him, today the elections are different. In the general elections when I was coordinator for the capital, I made each leader that I gave cash to for 'D-day' sign a common receipt. But the leader cannot render accounts regarding the people to whom he gave the money to.

Jorge: It is impossible.

TABLE 1: SUMMARY STATISTICS

	Mean	Standard deviation
Vote buying		
Offered something (excluding a problem solved)	0.258	0.438
Conditional on being offered (excluding a problem solved)		
Accepted	0.741	0.440
Value (in US Dollars)	$48.03	179.77
Money	0.302	0.461
Food	0.250	0.435
Gifts	0.707	0.457
Offered something (including a problem solved)	0.334	0.472
Conditional on being offered (including a problem solved)		
Problem Solving	0.493	0.502
Personal traits (survey 2007)		
Negative reciprocity	0.176	0.381
Impatience (in 1000s of Gs)	199.354	561.218
Risky	2.087	1.773
Didn't understand risk survey question	0.189	0.392
Altruism (experiments 2007)	5.089	2.677
Personal traits (experiments 2002)		
Reciprocity	0.043	0.076
Share difference	-0.009	0.137
Trustworthiness/Altruism	0.426	0.195
Trust	3.671	2.002
Risky	3.532	2.147
Voting behavior		
Voted in 2006 Election	0.702	0.458
Believes the ballot is anonymous	0.535	0.499
Political sentiment	0.401	0.491
Registered voter	0.829	0.377
Votes by party	0.227	0.419
Supports Colorado party	0.557	0.497
Registered voters in the municipality (in thousands)	9.139	4.677
Household characteristics		
Male	0.673	0.470
Age	49.915	15.582
Years of schooling	5.054	2.980
Household wealth (in US dollars)	$33,356	138,833
Number of family members eligible to vote	2.849	1.163

Notes: The summary statistics are based on 449 observations, except when the sample is conditioned on have been offered or for the personal traits from the 2002 experiments or 2007 experiments. Conditioning on being offered (including a problem solved) limits the sample to 150 observations. Negative reciprocity is 1 if a person says he would always (rather than sometimes or never) put somebody in a difficult situation if that person put him in a difficult situation. For personal traits (survey 2007): Impatience is the amount a person would have to be offered in one month rather than accepting 50 thousand Gs today. Risky is the number of risky choices the respondent made in a series of hypothetical gambles. Didn't understand is an indicator for whether the respondent chose a dominated strategy. Altruism is the amount sent, out of 14 thousand Gs in an anonymous dictator game. For personal traits (experiments 2002): Trustworthiness/Altruism is the average share returned across all four possible amounts received in the trust game. Trust is the amount sent as first mover in the trust game. Risky is the amount bet on a roll of the die in a risk game. Share difference is the average share returned when receiving 24, 18, or 12 thousand Gs in the trust game minus the share returned when receiving 6 thousand Gs. Reciprocity is the share difference censored below 0. Political sentiment is 1 if the person says he is a strong party member of either of the two main parties. Vote by party is 1 if the person says voters ought to always vote for their party even if they don't like their party's candidate. Anonymous ballot is an indicator for whether the respondent thought someone could figure out how a person in his polling locale had voted.

TABLE 2: CORRELATES OF VOTE-BUYING AND RECIPROCITY

Dependent variable:	(1) Offered	(2) Log(Amount offered)	(3) Negative Reciprocity	(4) Reciprocity	(5) Share Difference
Female	-0.006	-0.094	0.002	0.002	0.036
	[0.049]	[0.209]	[0.040]	[0.012]	[0.030]
Age	0	0.003	-0.001	0.000	0.000
	[0.002]	[0.006]	[0.001]	[0.001]	[0.001]
Education	0	-0.001	-0.011	-0.002	-0.011
	[0.008]	[0.033]	[0.006]*	[0.002]	[0.006]*
Log(Wealth)	-0.027	-0.164	0.007	-0.006	-0.012
	[0.012]**	[0.050]***	[0.011]	[0.004]	[0.008]
Number of family members eligible to vote	0.005	0.044	0.015	-0.004	0.000
	[0.020]	[0.084]	[0.017]	[0.006]	[0.012]
Political sentiment	0.017	0.079	0.02	-0.018	-0.051
	[0.049]	[0.212]	[0.041]	[0.015]	[0.026]*
Registered	0.14	0.547	-0.04	-0.002	0.035
	[0.055]**	[0.207]***	[0.053]	[0.032]	[0.050]
Vote by party	0.039	0.152	0.064	-0.010	-0.041
	[0.054]	[0.233]	[0.046]	[0.014]	[0.031]
Colorado	0.059	0.257	0.062	-0.001	0.010
	[0.045]	[0.192]	[0.038]	[0.013]	[0.023]
Anonymous ballot	-0.072	-0.246	0	-0.016	-0.002
	[0.045]	[0.197]	[0.038]	[0.015]	[0.026]
Registered voters in the municipality (in thousands)	0.002	-0.017	-0.004	-0.002	0.000
	[0.005]	[0.024]	[0.004]	[0.001]	[0.002]
Attended a political reunion	0.224	0.942	0.056	0.030	0.040
	[0.048]***	[0.209]***	[0.040]	[0.013]**	[0.024]*
Observations	446	446	446	139	139
R-squared	0.06	0.06	0.03	0.12	0.13

Notes: Columns (1)-(5) display the estimates of a linear regression where the dependent variable is indicated at the top of each column. Robust standard errors are reported in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 3: VOTE-BUYING AND NEGATIVE RECIPROCITY

	Offered				Amount offered	Reciprocated
	OLS	OLS	OLS	OLS	Tobit	OLS
	(1)	(2)	(3)	(4)	(5)	(6)
Negative Reciprocity	0.154	0.159	0.15	0.123	0.602	0.129
	[0.061]**	[0.061]***	[0.060]**	[0.059]**	[0.272]**	[0.076]*
Mean of dependent variable	0.33	0.33	0.33	0.33	1.15	0.81
Individual characteristics	N	Y	Y	Y	Y	Y
Voting characteristics	N	N	Y	Y	Y	Y
Village Intercepts	N	N	N	Y	N	N
Observations	446	446	446	446	446	86

Notes: Columns (1)-(4) report the OLS estimates where the dependent variable is an indicator for whether or not the respondent was offered something in exchange for his vote. Column (5) reports the marginal effects of Tobit specification where the dependent variable is the amount offered express in logs. Column (6) reports the OLS estimates where the dependent variable is an indicator for whether or not the respondent voted for the party from which they accepted the good. Robust standard errors are reported in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 4: VOTE-BUYING AND EXPERIMENT-BASED RECIPROCITY

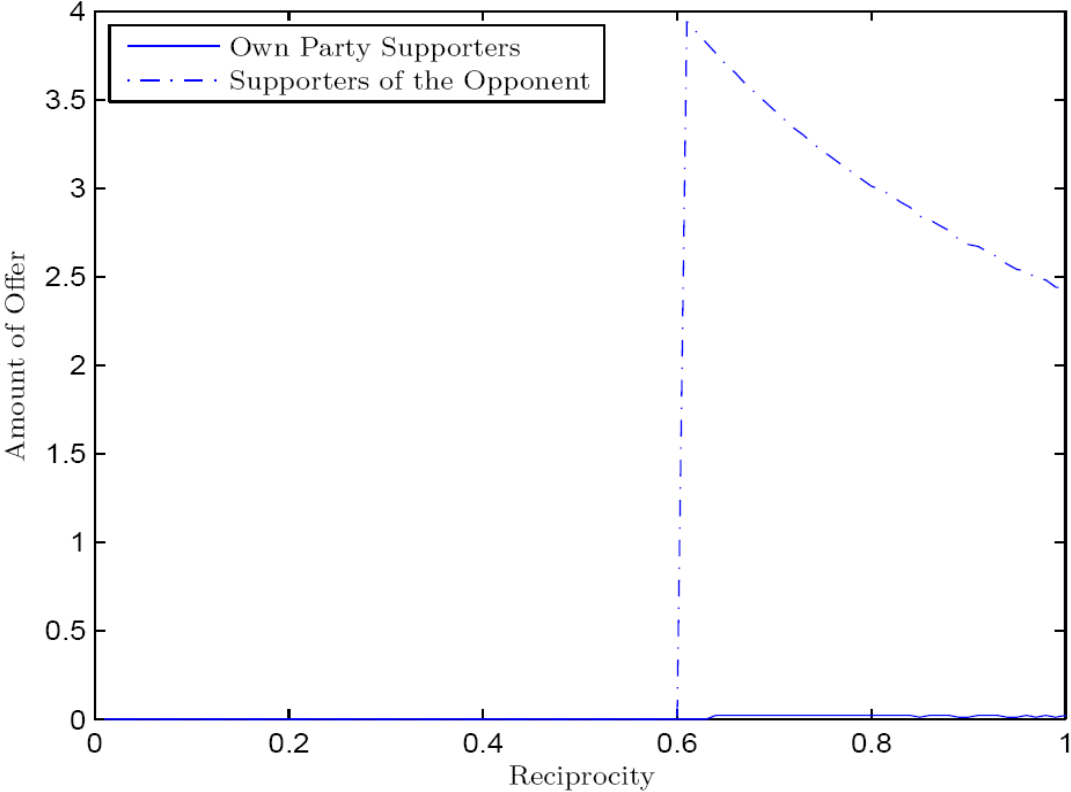|	Offered						Reciprocated	
	OLS (1)	OLS (2)	OLS (3)	OLS (4)	Tobit (5)	Tobit (6)	OLS (7)	OLS (8)
Reciprocity	1.065 [0.527]**		1.251 [0.587]**		4.489 [1.730]***		1.338 [0.627]**	
Share difference		0.381 [0.297]		0.399 [0.326]		1.457 [0.928]		0.967 [0.343]**
Share difference squared		3.607 [1.090]***		4.107 [1.170]***		13.201 [3.297]***		-0.292 [1.441]
Mean of dependent variable	0.32	0.32	0.32	0.32	1.05	1.05	0.86	0.86
F-test on reciprocity		5.57***		6.16***		8.32***		4.83**
Individual characteristics	N	N	Y	Y	Y	Y	Y	Y
Voting characteristics	N	N	Y	Y	Y	Y	N	N
Village Intercepts	N	N	N	N	N	N	N	N
Observations	139	139	139	139	139	139	22	22

Notes: Columns (1)-(4) report the OLS estimates where the dependent variable is an indicator for whether or not the respondent was offered something in exchange for his vote. Columns (5)-(6) report the marginal effects of Tobit specification where the dependent variable is the amount offered express in logs. Columns (7)-(8) report the OLS estimates where the dependent variable is an indicator for whether or not the respondent voted for the party from which they accepted the good. Robust standard errors are reported in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. The F-test is for the joint hypothesis that the coefficients on Share Difference and Share Difference Squared are zero.

TABLE 5: ROBUSTNESS

| Dependent variable:	Turnout buying		Coarse Information	Other preferences		Social networks	Civic	Truthfulness
	Offered	Voted	Offered	Offered		Offered	Offered	Offered
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Negative Reciprocity	0.152	0.015	0.117	0.148		0.152	0.131	0.149
	[0.074]**	[0.047]	[0.103]	[0.081]*		[0.060]**	[0.059]**	[0.060]**
Altruism (game 2007)				-0.001				
				[0.012]				
Risk (survey)				-0.005				
				[0.020]				
Trust in candidates (survey)				-0.015				
				[0.022]				
Didn't understand risk survey questions				-0.16				
				[0.089]*				
Reciprocity					1.353			
					[0.582]**			
Trustworthiness/altruism (game 2002)					-0.188			
					[0.240]			
Trust (game 2002)					-0.021			
					[0.022]			
Risky (game 2002)					-0.025			
					[0.020]			
Impatience (survey)				0.04	0.063			
				[0.069]	[0.065]			
Network degree						-0.004		
						[0.005]		
Network clustering coefficient						-0.047		
						[0.134]		
Network contagion time						0.003		
						[0.016]		
Atttended political reunion							0.217	
							[0.048]***	
Trust in people								0.003
								[0.025]
Would participate in illegal transaction								0.007
								[0.083]
Unadjusted coefficient on reciprocity	0.179**	0.017	0.134	0.164**	1.07**	0.154**	0.154**	0.154**
Mean of dependent variable	0.39	0.7	0.36	0.35	0.32	0.33	0.33	0.33
Individual characteristics	Y	Y	Y	Y	Y	Y	Y	Y
Voting characteristics	Y	Y	Y	Y	Y	Y	Y	Y
Table intercepts (173 tables)	N	N	Y	N	N	N	N	N
Observations	314	446	371	279	139	446	446	446

Notes: Columns (1) and (3)-(8) report the OLS estimates where the dependent variable is an indicator for whether or not the respondent was offered something in exchange for his vote. Column (2) reports the OLS estimates where the dependent variable is an indicator for whether the respondent voted in the 2006 election. Robust standard errors are reported in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

FIGURE 1: MODEL SIMULATION

Notes: This figure presents a numerical simulation of the model discussed in Section 3.

FIGURE 2: VOTE-BUYING AND RECIPROCITY
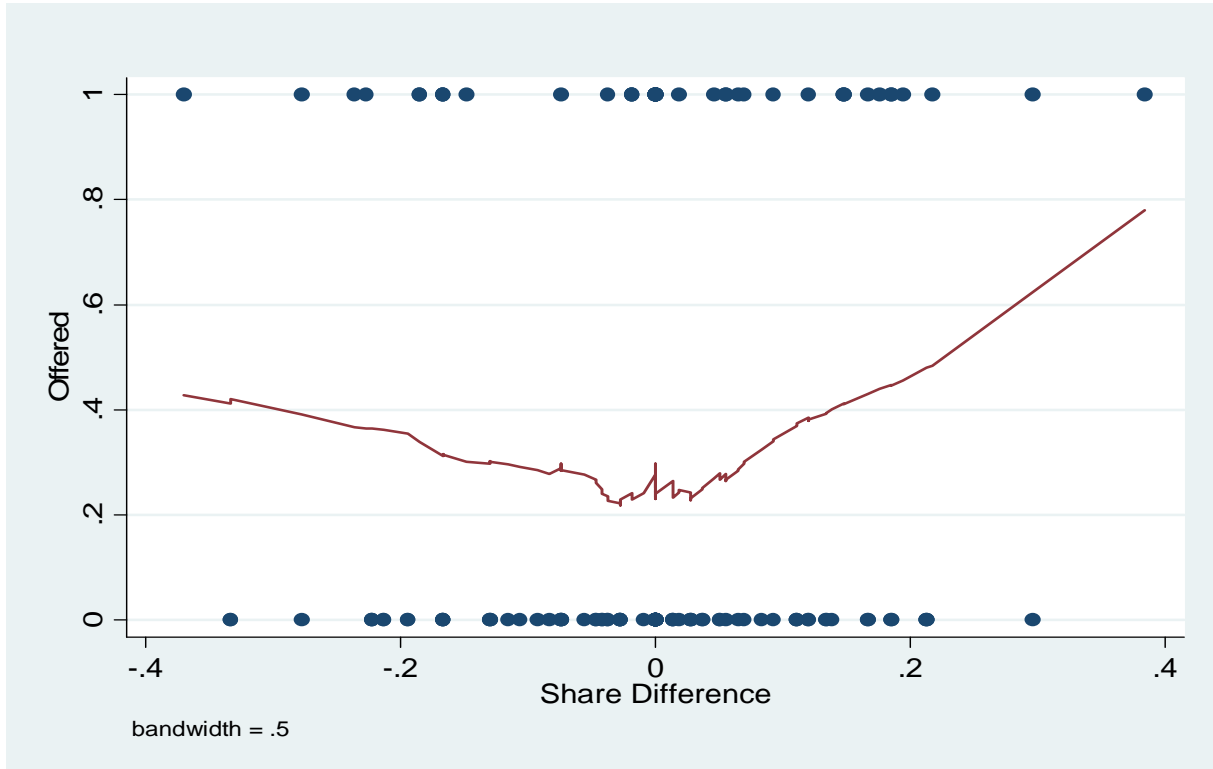
Notes: This figure depicts the nonparametric relationship between being offered a good in exchange for one's vote and the respondent's experimental measure of reciprocity. The estimates are based on a lowess regression with a 0.5 bandwidth.