# Reelection versus Reciprocity*

Prateik Dalmia† Allan Drazen‡ Erkut Ozbay§

October 23, 2019

**Abstract**

We study how reelection concerns affect reciprocity by elected leaders to the voters who elected them. If showing kindness to past voters reduces the chances of reelection, will an elected leader reduce or eliminate such intrinsic reciprocity? We present a signalling model of candidate behavior, where we show that candidates may limit intrinsic reciprocity to past voters to signal congruence with voters important for reelection, and selfish candidates may mimic reciprocal behavior for instrumental purposes. We then present an experiment that tests these ideas in the laboratory and finds support for the model. Both candidates and voters behave as the signalling model predicts. Our key finding is that the desire to be reelected may limit intrinsic reciprocity of an elected leader to the voters who put her in office, but does not eliminate it entirely.

**JEL classification**: D72, E62, D78

**Keywords**: Elections, Voting, Reelection, Signalling

*Drazen gratefully thanks the National Science Foundation (grant SES 1534132) and the Gaspard Monge Visiting Professorship for financial support, as well as Ecole Polytechnique for its hospitality. Dalmia is grateful to the Institute for Humane Studies for financial support. We thank Jonathon Bendor, Daniel Friedman, Ian Chadd, Alexey Kushnir, seminar participants at Ecole Polytechnique, Raboud University, and Stanford GSB, and conference participants at IOEA 2018, Corsica, Fourth Taxation Theory Conference, Barcelona GSE Summer Forum,Economic Science Association World Meetings, and Economic Science Association North America Meetings, for helpful comments.

†University of Maryland, prateikdalmia@gmail.com

‡University of Maryland, CEPR, and NBER, drazen@econ.umd.edu

§University of Maryland, erkut.ozbay@gmail.com

# 1 Introduction

Incumbent politicians care strongly about being reelected and hence about strategies to help their reelection chances. The allocation of resources that incumbency allows them to distribute to potential voters is one such tool. This may be especially important when commitment to post-election policies is seen as not fully credible, so that distribution of resources before an election may be used to indicate post-election intentions. Allocating resources to show congruence with the policy preferences of key voting groups may therefore be an important reelection strategy. Voters would use spending choices observed before an election to try to infer an incumbent's policy priorities and hence her likely policy choices if reelected.[1]

Such a strategy of course implies trade-offs when voting groups have different policy preferences. By giving benefits to one group of voters to indicate that she shares their preferences, a candidate signals to a group with different preferences that the does not share theirs. Hence, a candidate who uses distribution of benefits instrumentally to improve her reelection prospects must weigh the net benefits of a distributional choice in gaining votes from one group of potential voters while losing them from another.

Groups whose turnout is expected to be low will have little weight in this instrumental electoral calculus from a candidate whose goal is reelection, unless of course distribution of benefits can induce higher turnout. This is a key argument in the debate of "who should be targeted?" – swing voters who might change the candidate for whom they vote versus a candidate's "core" constituency, where a candidate's goal is to induce them to turn out to vote.[2]

Ideological considerations of course could also affect an incumbent's choice of policies or distribution of benefits in the run-up to an election. A candidate who is motivated by both reelection concerns and ideology may temper her purely instrumental choice of the distribution of benefits if it conflicts too strongly with her underlying policy preferences.

[1] The view that commitment to policy platforms is not credible has led to the "citizen-candidate" approach (e.g., Besley and Coate [1997] or Osborne and Slivinski [1996]) where candidates follow their policy preferences once elected, so that platform commitments in themselves carry no information. Key to his approach is that these preferences are *known* to voters. The argument here is a variant of the citizen-candidate where candidate preferences are not known ex-ante, and pre-electoral choices are use to signal these choices, as in Drazen and Eslava [2013]).

[2] For example, see Cox (2010).

(As we shall argue, "ideological limitations" on the distribution of benefits a candidate is willing to choose is what may give them their signaling value about post-electoral policy.)

Absent from the literature on instrumental or ideological motivations for choices made by an incumbent facing reelection is another type of motivation entirely. Might a candidate's choices be such as to show gratitude to those who put her in office, independent of any instrumental benefits such a display might have? That is, will incumbent's display non-instrumental *reciprocity* to the voters who elected her (for example, as in Sobel [2005])?[3] To the extent that resources are then distributed to individuals who are not central to reelection, or to those whose turnout is expected to be exogenously low in the upcoming election, such reciprocity (or even basic altruism) is potentially costly to reelection efforts. How might reciprocity alter reelection-oriented behavior? This is the issue we explore in this paper, both theoretically and experimentally.

We consider a model in which an elected candidate attracts votes in her reelection bid by trying to convince voters that she will enact policies favorable to them if reelected. She does this by showing that her policy preferences are "congruent" with theirs. When her policy tool is distribution of benefits before an election, she must give them enough benefits to signal her congruent preferences. Doing so successfully will increase her chances of reelection.

We demonstrate, however, that candidates with reciprocal preferences still show reciprocal behavior when facing reelection, but that the conflict between reciprocity and reelection may lead them to limit their reciprocity when voters have a sufficiently high cost of voting. This is a key result, which we find confirmed in a laboratory experiment. We further find that (both in the theory and the experimental results) when congruent candidates use distribution of benefits to signal her policy preferences, a "non-congruent" candidate may mimic a congruent one in order to be reelected. Voters respond to signalling by not voting for a candidate whom they believe does not share their policy interests, a theoretical prediction of a signalling model that is confirmed in the lab.

A laboratory experiment allows us to isolate reciprocity to past voters from benefits to prospective voters in a way that is difficult, if not impossible, in naturally occurring

[3] "Intrinsic reciprocity is a property of preferences... It is more traditional to view reciprocity as the result of optimizing actions of selfish agents. Responding to kindness with kindness in order to sustain a profitable longterm relationship or to obtain a (profitable) reputation for being a reliable associate are examples of instrumental reciprocity. Economics typically describes instrumental reciprocity using models of reputation and repeated interaction" (Sobel [2005], pp. 392-393).

election data. For example, one identification issue that may arise is that when the set of voters in past and future elections significantly overlap, an incumbent giving benefits to past voters who strongly supported her (or punishing voters who did not) may both reflect her attempting to influence their votes in the next election, and her reciprocity motives. By having a different set of voters in sequential elections, our experimental design allows us to disentangle reciprocal and reelection motives.

The plan of the paper is as follows. In the next section, a brief review of the literature is presented, and in section 3 we go over the basic conceptual set-up of our approach and outline a model of candidates giving benefits to different voters to signal their preferences and describe the equilibria of the election games. Section 4 sets out the experimental design and section 5 presents our experimental results and interprets them. The final section presents conclusions. An online Appendix presents a more formal treatment of the theory and the equilibria described in the text, as well as the instructions for the experiment and some additional figures summarizing the data.[4]

# 2 Literature

Our paper relates to several literatures. One of course is the literature on reciprocity, with the theoretical literature considering a range of questions such as whether there is reciprocity to the actions, the intentions, or the motivations of the original actor. In the experimental literature there is significant evidence of intrinsic reciprocity in gift-exchange, trust, public goods, ultimatum and other games. Fehr and Schmidt (2006) present a fairly comprehensive summary.

We are interested in the specific question of how other goals affect reciprocal behavior. There is a literature on how signalling motives may induce people with selfish preferences to act as if they are kind – "crowding in" of reciprocity – as in the work of Levine (1998), Bénabou and Tirole (2006), Camerer and Fehr (2006), and Malmendier, te Velde, and Weber (2014) among others. This may result from self-image concerns, social pressure, or the desire for reciprocity from other agents. Mimicking of reciprocal types by selfish types is, in a sense, the opposite of our main point, namely how the desire to signal that the candidate's selfish preferences are congruent with those of the voter in the upcoming election induces less kind

[4] Available at https://pdalmia89.github.io/PrateikPapers/ReciprocityReeelction_SuppAppendix.pdf

behavior by the candidate.

On "crowding out" of kind behavior, the literature considers how the perception that intrinsic kindness may be seen as motivated by selfish desires may reduce kind actions (for example, Frey and Oberholzer-Gee [1997], Gneezy and Rustichini [2000], Bénabou and Tirole [2006], Ariely, Bracha, and Meier [2009], Promberger and Marteau [2013]). For example, giving monetary incentives for blood donations or for contributing to a charity may reduce the donations (Mellström and Johannesson [2008], Niza, Tung, and Marteau [2013]). The reduction in intrinsically motivated behavior is analogous to our finding, but the mechanism is conceptually rather different. In particular, in these cases reciprocity is reduced because it *aligns* with other selfish motives, whereas in our case reciprocity is reduced because it *conflicts* with other, perhaps selfish, reelection motives. Limiting reciprocity because of "crowding out" would seem to be a not uncommon event, but we are aware of no experimental work showing such "constrained reciprocity" that we study.

In the political economy literature, the role of reciprocity in elections focusses on reciprocity by voters, for example in the work of Finan and Schechter (2012) or Ozbay and Tonguc (2018), which link successful vote buying by politicians to reciprocity by targeted voters, and Hahn (2009). Of course, a trade of votes for politician favors is conceptually different than ex post distribution of benefits by politicians to those who elected them due to intrinsic reciprocity.

To the best of our knowledge, there are almost no papers in the literature examining the intrinsic reciprocity of politicians to the voters who elected them. Drazen and Ozbay (2019) studied a one-shot dictator game where they considered how the way in which the dictator was chosen affected the degree of other-regarding behavior. In a laboratory experiment, they found that leaders who are elected are significantly more likely to share than leaders who are appointed, and that elected leaders tend to favor the voter who elected them rather than the losing candidate, while appointed leaders show no such tendency. They argued that the results provided support for the view that non-selfish behavior of leaders reflects a reciprocity motive. Enemark, et al. (2016) performs a laboratory experiment involving a trust game, where the subjects are former political candidates, and finds that having held office makes individuals *subsequently* more intrinsically reciprocal than politicians who ran for office but were not elected. Empirical discussion of reciprocity of elected leaders to voters tends to be more of an anecdotal nature (Schlesinger (1991, chapter 6), *Philadelphia Inquirer* (2012)).

By contrast, there are several papers that look at *instrumental* reciprocity of elected politicians once in office to other politicians, especially in legislatures (Weingast [1979], Binder [1997], Martorano, [2004], Kirkland and Williams [2014]).

Our paper also relates to literature on the actions of candidates seeking reelection. More precisely, there are a number of models in which an incumbent seeking reelection chooses an expenditure other than her first best in order to improve her reelection chances. The earliest models which considered this in a model of candidate signalling to rational voters were Rogoff and Sibert (1989) and Rogoff (1990). A significant number of models followed, of which Drazen and Eslava (2013), on which our model is based, is but one example. These models all considered candidates who were motivated by a combination of their own utility in getting reelected and social welfare, rather than by reciprocity to voters. However, the conceptual motivation is the same. In the absence of reelection motives (or observability of candidate expenditure behavior), candidates would simply maximize their own utility, however defined. Reelection motives induce them to choose a different pattern of expenditure to signal their type (competence, congruence with voting groups) in order to increase the probability of reelection.

Moreover, our paper relates to the experimental literature on reputation formation, and the behavior of a long run player (the candidate) facing a sequence of short-term players (voters) who are unsure about her preferences and observe her previous choices. The literature tends to focus on testing whether a particular refinement is a good predictor of behavior in industrial organization or financial market games.[5] While we find data consistent with the intuitive criterion, rather than comparing refinements, we manipulate the observability of information about past behavior and focus on the effects of signalling itself, as in Grosskopf and Sarin (2010) and Bolton, Kotak and Ockenfels (2004). Furthermore, we distinguish ourselves by focusing on the interaction of signalling motives with other-regarding preferences, two rich areas of research, and also by allowing for a continuum rather than a finite number of types.

[5] Camerer and Weigelt (1988), Neral and Ochs (1992) and Brandts and Figueras (2003) study how well sequential equilibrium predicts behavior. Brandts and Holt (1992) and Cadsby et al. (1998) explore whether the intuitive criterion provides a plausible refinement.

# 3 A Model of Candidate Behavior

## 3.1 Overview

In this section, we present a game-theoretic model of a candidate running for election to represent the conflict she may face between intrinsic reciprocity to past voters and her reelection prospects. The model also forms the basis of our experiment. After describing the model, we informally summarize the equilibria and the main theoretical result, that is, the constraint a high cost of voting and reelection concerns may impose on a candidate's reciprocity to past voters. These predictions will inform our interpretation of the experimental data. Interested readers can find a more formal treatment of the theory in the online Appendix, establishing the uniqueness of the equilibria described here.[6]

Central to our model is that policies chosen by an incumbent before an election may signal her unobserved policy preferences – more specifically, whether or not they are congruent with those of a voter – and hence the choices she would make if reelected. That is, if an incumbent wants to signal that she places a high priority on, let's say, environmental issues and will continue to do so if reelected, she may devote resources to protecting the environment before an election in a way that she would not do if she did not have that priority. Drazen and Eslava (2013) model this idea formally, and we use this idea to represent how distribution of benefits by the incumbent can be an effective reelection strategy.

To consider the possible conflict between rewarding voters who voted in the previous election and using benefits to gain votes in the next election, we assume that there are two groups of non-overlapping voters – those who voted in the last election and those who will vote in the subsequent election – and consider benefits to voters who will vote in only one of these elections. For example, consider a politician who faces a different constituency than in a previous election (perhaps because of a significant redistricting), where, for example, the previous constituency was weighted towards retirees – who voted heavily for the candidate and were crucial to her being elected – whereas the new constituency she will face is much more heavily weighted towards young workers. Helping enact a policy to raise Social Security benefits via higher taxes on workers reciprocates to retirees for their votes, but may be seen by the young as indicating the incumbent doesn't share their concerns and thus endanger her reelection. She may thus need to limit her reciprocity in order to get reelected.

[6] Available at https://pdalmia89.github.io/PrateikPapers/ReciprocityReeelction_SuppAppendix.pdf

## 3.2 Model Set-up

### 3.2.1 Elections and Distribution of Benefits

There are two sequential elections, two voters $V_1$ and $V_2$ and one candidate $C$ who runs in the first election and then, if she is elected in the first election, runs for reelection in the second. Voter $V_1$ either votes or abstains in the first election, while voter $V_2$ votes or abstains in the second election. In other words, there is only one voter in each election who is pivotal to $C$ being elected or not (when the relevant voter chooses not to vote). Hence a voter's actions are equivalent to his intentions (whether to see the candidate elected or not). The cost of voting in an election is $k > 0$, assumed identical for the two elections.

If elected, $C$ has $X > 0$ to distribute after the first election and, if reelected, $Y$ to distribute after the second election. The amount given to the two voters is $x_1$ and $x_2$ respectively (where $x_1 + x_2 = X$) after the first election (if $C$ is elected) and $y_1$ and $y_2$ (where $y_1 + y_2 = Y$) after the second election (if $C$ is reelected). One could think of $x_1$ and $y_1$ ($x_2$ and $y_2$) as choice of policies favorable to $V_1$ ($V_2$) in the first election and second election respectively.

It is assumed that $X > Y > \frac{X}{2}$ and $Y > k$. The first assumption is made because i) if $Y$ is too big, then all candidates would pool to be reelected and there would be no signalling of preference congruence with $V_2$, and ii) if $Y$ is too small, then candidates would not care enough about reelection to try to signal preference congruence with $V_2$. The value of $Y$ relative to $X$ could be motivated by thinking of election benefits as identical in each election, but there being some common discount factor $\delta$ with $\frac{1}{2} < \delta < 1$ applied to future benefits. The second assumption is made because if $Y < k$, then $V_2$ would always abstain in the second election and there would likewise be no signalling motives.

### 3.2.2 Candidate and Voter Preferences

We say that $C$ has a "policy preference", $\tau = 1, 2$, where her material payoff is equal to the amount of benefits given to the voter of her policy type ($V_1$ if $\tau = 1$ and $V_2$ if $\tau = 2$). For a $\tau = 1$ candidate, acting selfishly and giving benefits to $V_1$ coincide, while for a for a $\tau = 2$ candidate, acting selfishly and giving benefits to $V_2$ coincide. This is a simple way of representing candidate preferences over policies, and voter preferences over candidates based on policies they would enact. $C$ is also characterized by a "reciprocity parameter" $\theta$ between

0 (a "selfish" candidate) and $\overline{\theta} \geq 0$. Hence, a candidate's type is a function of her policy preference and reciprocity parameter $(\tau, \theta)$, where type is not directly observed by voters. This is central to the model, as discussed in the next subsection.

To model reciprocal preferences, we assume that $C$'s utility depends not only on her own payoff, but also the payoff of the voter electing her according to her reciprocity parameter $\theta$. A selfish candidate cares only about her own material payoff, while a reciprocal elected candidate may also care about the payoff of the voter who put her in office. That is, a reciprocal $C$ has a psychological payoff from giving to $V_1$ if he voted for her in election 1 and to $V_2$ if he voted for her in election 2.

We characterize $C$'s utility function as follows. If $r \in \{x_1, y_2\}$ for "reciprocity" represents the amount given to the voter who elected $C$ in an election ($x_1$ in election 1 and $y_2$ in election 2), and $s \in \{x_1, x_2, y_2, y_2\}$ for "selfishness" is the amount $C$ gives to the voter of her type ($x_1$ or $y_1$ if $\tau = 1$ and $x_2$ or $y_2$ if $\tau = 2$), then a simple way to represent $C$'s utility in said election is to use a Cobb-Douglas utility function, $u = r^{\theta} s^{1-\theta}$, where the terms $r$ and $s$ depend on the election and $\tau$ of the candidate. This utility function is consistent with the reciprocity model of Cox, Friedman and Gjerstad (2007). According to this utility function, a $C$ with $\theta = 0$ is selfish, and a $C$ with $\theta > 0$ is reciprocal, with her reciprocity increasing in $\theta$. We assume $\overline{\theta} \leq 0.5$ so that candidates selfish motives are at great as large as their other-regarding motives, as in Fehr and Schmidt (1999). Furthermore, we assume a candidate's $\theta$ is identical in both elections.[7]

For example, we represent first-period candidate utility as

$$u^1_{(1,\theta)}(x_1, x_2) = x_1^{\theta} x_1^{1-\theta} \tag{1a}$$

$$u^1_{(2,\theta)}(x_1, x_2) = x_1^{\theta} x_2^{1-\theta} \tag{1b}$$

Regardless of her $\theta$, a $\tau = 1$ candidate would clearly choose $x_1 = X$ if she were simply maximizing first-period utility (her "first-best"), while a type $(2, \theta)$ candidate would choose $x_1 = \theta X < X$.

Similarly, second-period candidate utility is represented as

[7] Our theoretical results would not be qualitatively affected by modifying this assumption, and might actually be strengthened.

$$u^2_{(1,\theta)}(y_1, y_2) = y_2^{\theta} y_1^{1-\theta} \quad (2a)$$

$$u^2_{(2,\theta)}(y_1, y_2) = y_2^{\theta} y_2^{1-\theta} \quad (2b)$$

where a type $(1, \theta)$ candidate's first-best is $y_2 = \theta Y < Y$, and a $\tau = 2$ candidate's first-best is $y_2 = Y$.

Finally, we assume voters are risk neutral and selfish. In other words, we assume voters have $\theta = 0$ so their utility function is linear in their payoffs. Risk-neutrality is assumed for simplicity of exposition. Voter selfishness allows us to focus on *candidate* rather than *voter* reciprocity. We do not model reciprocity by voters to candidates.[8] At the end of the section, we explore the implications of incorporating candidate altruism into the model, allowing candidates to also care about giving to a policy incongruent and non-voting voter in an election.

### 3.2.3 Voter's Beliefs, Candidate's Dilemma

We assume that $\tau = 1$ and $\tau = 2$ are initially equally likely, and that $\theta$ is independently distributed by a continuous distribution function $F(\theta)$ with support $[0, \overline{\theta}]$, where this distribution is assumed to be common knowledge. $V_1$ has no information about $C$'s type $(\tau, \theta)$ when she votes other than his priors over these two variables. In contrast, and this is the heart of both the model and the experiment, since $V_2$ votes after $C$ chooses $x_1$ and $x_2$, these may reveal information about the $C$'s type. The problem that a reciprocal $\tau = 2$ candidate faces is that choosing too high a value of $x_1$ out of her desire to be reciprocal to $V_1$ may lead $V_2$ to believe she has policy preference $\tau = 1$. Hence, when voting is costly, $V_2$ would choose to abstain and $C$ would not be reelected. Put differently, a reciprocal $\tau = 2$ candidate may choose to limit her reciprocity to $V_1$ after the first election in order to not be perceived as a $\tau = 1$ candidate by $V_2$.

In order to study constrained reciprocity, we compare what a reciprocal $\tau = 2$ candidate – that is, one whose $\theta$ is positive – would do if $V_2$ had no information about $x_1$ and $x_2$ before voting to the case where she does. More precisely, we study two different set-ups, following Grosskopf and Sarin (2010). The first is where $V_2$ observes first election benefits ($x_1$ and $x_2$) before deciding whether to vote. In this set-up, candidates are motivated to

[8] See Hahn (2009) for an interesting exploration of the effect of voter reciprocity on elections.

signal policy preference congruence with $V_2$ to be reelected. In the second set-up $V_2$ does not observe first election benefits ($x_1$ and $x_2$) before deciding whether to vote, so that $C$ cannot use distribution of benefits to signal type. This no-signalling set-up will serve as a useful benchmark to understand how signalling for electoral purposes affects candidate reciprocity.

We expect a $\tau = 2$ candidate's reciprocity to be unconstrained in the no information game as a high value of $x_1$ is unobserved by $V_2$ and thus has no implications for reelection prospects. By contrast, in the signalling game, the desire to get reelected may constrain $C$ in her choice of $x_1$ in order not to harm her reelection chances.

## 3.3 Electoral Equilibria

We can now summarize the equilibria in our two set-ups. Our basic result is that when signalling is possible, a reciprocal $\tau = 2$ will in fact constrain her reciprocity when the cost of voting is high, but less so when it is low. The key driver of this result is that since the policy preferences of a candidate are not known ex ante, a candidate with policy preference $\tau = 1$ may choose to mimic the $x_1$ choice that a reciprocal $\tau = 2$ candidate would make. Pooling by $\tau = 1$ type candidates reduces the benefit $V_2$ expects from voting to reelect $C$, and the higher the cost of voting, the more likely $V_2$ is to abstain. Reducing her reciprocity to $V_1$ reduces the mass of $\tau = 1$ type candidates who pool while increasing the mass of $\tau = 2$ type candidates who pool, thus increasing the expected benefit of voting, which, as indicated, is more important when voting costs are high.

To give more detail on the role of constrained reciprocity when benefits may signal a candidate's policy preferences, we consider the cases where benefits are not observed – the "no-information" case where signalling is not possible – and where they are, the "signalling case." Under the latter, a $\tau = 2$ type candidate may face a trade-off between reciprocating to $V_1$ after the first election and signalling her congruence of policy preference with $V_2$.

### 3.3.1 Equilibria when $V_2$ Does Not Observe $x_1$ and $x_2$

In this no-information case, $C$ cannot signal her type, so she simply maximizes her single period utility in each election (her first-best). Hence, a type $(2, \theta)$ candidate chooses $x_1 = \theta X$ in the first election, her optimal balance between benefits to $V_1$ and to herself. Furthermore, she chooses $y_2 = Y$ if reelected since her self-interest and reciprocity motives align in dictating

the giving of second selection benefits to $V_2$. By contrast, a type $(1, \theta)$ candidate chooses $x_1 = X$ in the first election, regardless of her reciprocity preference, and $y_2 = \theta Y$ if reelected, her first-best in each election. The equilibrium in the first election is depicted in Figure 1, where we note that there is complete separation of $\tau = 1$ and $\tau = 2$ candidates. $V_1$ and $V_2$ vote rather than abstain if the expected benefit from voting exceeds the cost.[9]

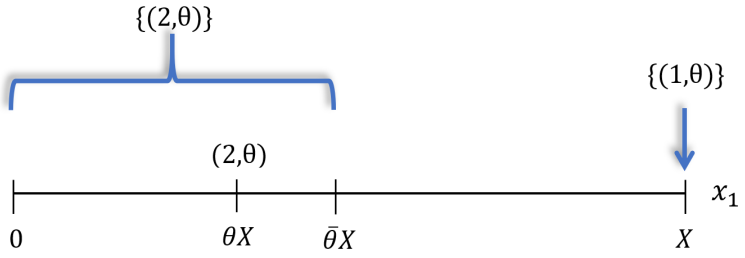


Figure 1: No Information Game Equilibrium

### 3.3.2 Equilibria when $V_2$ Observes $x_1$ and $x_2$

To better understand $C$'s choices when $x_1$ and $x_2$ are observed before the second election, suppose that all candidates are selfish, and it is common knowledge that there are only $(1, 0)$ and $(2, 0)$ type candidates.

Consider the first-best of a $(2, 0)$ candidate, $x_1 = 0$. Clearly $(2, 0)$ will choose this if it implies her reelection. If a type $(2, 0)$ candidate chose $x_1 = 0$, a type $(1, 0)$ candidate would not mimic as she receives a higher utility from choosing her first-best, $x_1 = X$, and foregoing reelection than mimicking when $X > Y$. Thus, in equilibrium, a type $(2, 0)$ chooses $x_1 = 0$ and is reelected, while a type $(1, 0)$ chooses $x_1 = X$ and foregoes reelection, so that $\tau = 1$ and $\tau = 2$ candidates locate at the extremes. This equilibrium is depicted in Figure 2.

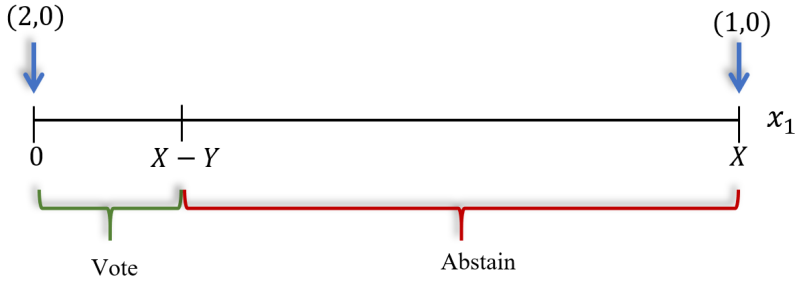


Figure 2: Selfish Candidates Separating Equilibrium

[9] Given the chosen benefits of $\tau = 1$ and $\tau = 2$ candidates, for $V_2$, this is $\frac{1}{2}Y + \frac{1}{2}Y \int_0^{\bar{\theta}} \theta dF(\theta) > k$, where the first two terms are his expected benefits from electing a $\tau = 2$ and $\tau = 1$ candidate respectively, weighted by their probabilities.

In contrast – and this summarizes key results of the paper – when candidates may be reciprocal, but distribution of benefits is observed, we get a result "between" the cases of reciprocal candidates without observation of $x_1$ and $x_2$ as in section 3.3.1 and observation of $x_1$ and $x_2$ without reciprocal candidates. $C$'s distribution of benefits will be interior but often not as much as compared to reciprocal candidates in the no-information case.

To see why, suppose that all $(2, \theta)$ incumbents played their first-best. In other words, suppose that any given $(2, \theta)$ candidate plays $x_1 = \theta X$, as in the no information case. Furthermore, consider the implications for the most reciprocal incumbent with policy preference $\tau = 2$, that is, type $(2, \overline{\theta})$ choosing $x_1 = \overline{\theta} X$.

If $\overline{\theta}$ is sufficiently large, then some $\tau = 1$ candidates would be willing to mimic choosing $\overline{\theta} X$ to get reelected instead of their first-best $X$. The lower is the reciprocity $\theta$ of a $\tau = 1$ candidate, the greater the benefit of mimicking (as utility after election 2 will be higher[10]), so that this would include $\tau = 1$ with sufficiently low $\theta$. With a positive mass of such $\tau = 1$ candidates[11] relative to the mass of $(2, \overline{\theta})$, $V_2$ would abstain if the voting cost is too high. Hence, $x_1 = \overline{\theta} X$ would not be an equilibrium choice for $\left(2, \overline{\theta}\right)$ as she would not be reelected.

However, suppose $\left(2, \overline{\theta}\right)$ constrains her reciprocity, that is choosing a lower value of $x_1$. As $\left(2, \overline{\theta}\right)$ decreases her choice of $x_1$, so too must all highly reciprocal $\tau = 2$ candidates with first-best greater than that value of $x_1$ which $\left(2, \overline{\theta}\right)$ chooses. For a low enough value of $x_1$, the mass of reciprocal $\tau = 2$ candidates who choose to constrain themselves will imply just enough mass of $\tau = 2$ candidates such that $V_2$ votes even if with mimicking by some (low reciprocity) $\tau = 1$ candidates. Note further the lower is $x_1$, the fewer $\tau = 1$ candidates who will want to mimic $x_1$ so that the relative weight of $\tau = 2$ candidates would increase for two reasons (though the expected benefit to $V_2$ from voting if the candidate is a mimicker also falls as more reciprocal $\tau = 1$ drop out of the pool).

Ultimately, in equilibrium, a $\tau = 2$ candidate face a reciprocity cut-off, based on the cost of voting, $\theta_2(k)$. All $\tau = 2$ candidates with reciprocity greater than or equal to that reciprocity cut-off $\theta \geq \theta_2(k)$ will constrain their reciprocity and choose $x_1 = \theta_2(k) X$, and all $\tau = 2$ candidates with reciprocity less than that cut-off choose their first-best $x_1 = \theta X$. Similarly, there is a reciprocity cut-off for $\tau = 1$ candidates, $\theta_1(k)$. All $\tau = 1$ candidates with

[10] Since $0 \leq \theta \leq \frac{1}{2}$, second period utility of a $(1, \theta)$ candidate is monotonically decreasing in $\theta$ from (2a).

[11] We assume $F(0) > 0$ following the observation of positive mass of selfish players in gift exchange games (see Fehr et al. [1993]). This assumption is not necessary for this result, but simplifies the proofs in the Appendix.

reciprocity less than that cut-off $\theta < \theta_1(k)$ mimic the highly reciprocal $\tau = 2$ candidates by choosing $x_1 = \theta_2(k)X$, while all other $\tau = 1$ candidates simply choose their first-best $x_1 = X$.

Figure 3 depicts this semi-separating equilibrium with constrained reciprocity by the highly reciprocal $\tau = 2$ candidates and Figure 4 mimicking by the more selfish $\tau = 1$ candidates.

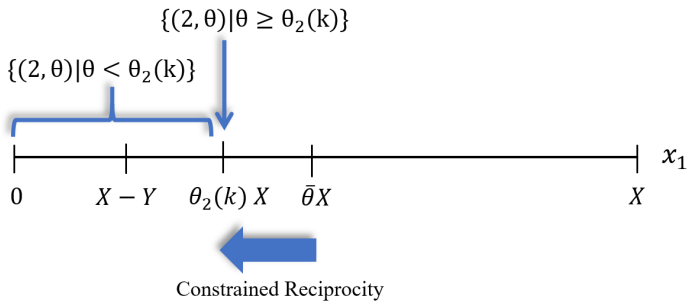


Figure 3: Constrained Reciprocity by Highly Reciprocal $\tau = 2$ Candidates

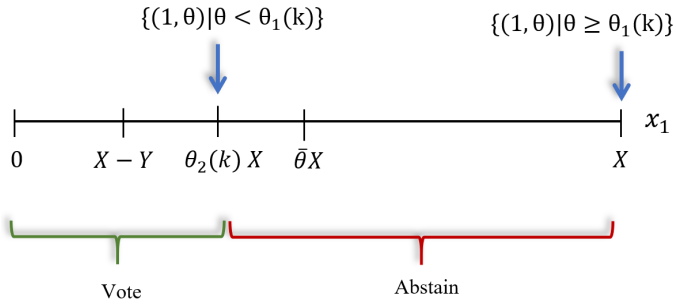


Figure 4: Mimicking by Selfish $\tau = 1$ Candidates

Furthermore, since $V_2$ is less willing to vote as the cost of voting rises, $\tau = 2$ candidates further constrain themselves at a higher cost of voting to ensure their reelection. In other words, the cut-off at which $\tau = 2$ candidates limit their reciprocity ($x_1 = \theta_2(k)X$) is weakly decreasing in the cost of voting. We view this as our central theoretical finding, and important for interpreting our experimental results.

We predict to see greater constrained reciprocity for a higher cost of voting, and might not even be able to detect constrained reciprocity for a sufficiently low cost of voting. Before continuing to the experimental results, a couple notes about how our theoretical results might be affected by relaxing some of the simplifying assumptions.

First, we assumed the distribution of reciprocity $F()$ is independent of $k$. One might suspect that $F()$ is dependent on $k$, with candidates feeling greater reciprocity towards voters when they pay a higher cost to vote. In this case, it might be that a greater number of highly reciprocal $\tau = 2$ candidates constrain their reciprocity with a higher cost of voting, apart from the amount they constrain as shown here. However, at the same time, the degree to which $\tau = 2$ candidates constrain their reciprocity may be less because there is a higher ratio of reciprocal $\tau = 2$ candidates to selfish $\tau = 1$ candidates. Which effect dominates depends strongly on the distributional assumptions imposed, and how that distribution is affected by $k$. We leave a formal analysis out as this significantly increases the complexity of the model.

Additionally, for simplicity, we assumed voters are risk-neutral and there is no ambiguity about the underlying reciprocity distribution $F()$. If voters are risk-averse and/or there is ambiguity about $F()$, then this should strengthen the robustness of the constrained reciprocity equilibrium as $V_2$ would be less willing to reelect $\tau = 1$ candidates, and $\tau = 2$ candidates would need to further constrain themselves to ensure reelection.

Lastly, we focused on a candidate's reciprocal and policy preferences. Out of a desire to be altruistic, candidates may also care about giving benefits to the non-voting citizen in an election, even if this citizen's preferences are not those of the candidate. We summarize the results below and present a more formal treatment in the online Appendix. The main intuition driving constrained reciprocity, type 2 candidates' need to prevent type 1 mimicking to be reelected, still holds when we incorporate altruism.

### 3.3.3 Constrained Reciprocity Equilibria with Altruism

In addition to a reciprocity parameter $\theta$ and a policy preference $\tau$, here we assume that each candidate is endowed with an altruism parameter $\alpha$. The altruism parameter represents the weight a candidate places on giving to the non-voting voter in an election. We assume $\alpha$ is distributed according to some continuous distribution function $G()$ with support $[0, \overline{\alpha}]$. We assume there is a positive mass of selfish candidates $G(0) > 0$, and candidates self-interest is at least as large as their altruism $\overline{\alpha} < 0.5$. Furthermore, we assume $G()$ and $F()$ are independently distributed, as candidates may have different definitions of what constitutes kindness. Some candidates might believe kindness comes from reciprocating to kind actions, others might believe it comes from distributing benefits to everyone, and others might believe

it comes from a combination of both. The utility function of each candidate in the first election is as follows:

$$u^1_{(1,\theta,\alpha)}(x_1, x_2) = x_1^{1-\theta-\alpha} x_1^\theta x_2^\alpha = x_1^{1-\alpha} x_2^\alpha \quad (3a)$$

$$u^1_{(2,\theta,\alpha)}(x_1, x_2) = x_2^{1-\theta-\alpha} x_1^\theta x_2^\alpha = x_1^\theta x_2^{1-\theta} \quad (3b)$$

A $(1, \theta, \alpha)$ candidate would choose $x_1 = (1-\alpha)X$ if she were simply maximizing first-period utility, while a type $(2, \theta, \alpha)$ candidate would choose $x_1 = \theta X$.

Similarly, second-period candidate utility is represented as

$$u^2_{(1,\theta,\alpha)}(y_1, y_2) = y_1^{1-\theta-\alpha} y_2^\theta y_1^\alpha = y_1^{1-\theta} y_2^\theta \quad (4a)$$

$$u^2_{(2,\theta,\alpha)}(y_1, y_2) = y_2^{1-\theta-\alpha} y_2^\theta y_1^\alpha = y_1^\alpha y_2^{1-\alpha} \quad (4b)$$

where a type $(1, \theta, \alpha)$ candidate's first-best is $y_2 = \theta Y$, and a $(2, \theta, \alpha)$ candidate's first-best is $y_2 = (1-\alpha)Y$.

Consider the first election of the signaling game. As can be seen in equation (3b), type 2 candidate first election motives are unchanged by the incorporation of altruism. Besides their self-interest, the only other relevant first election motive of type 2 candidates is reciprocity. However, as seen in equation (3a), altruistic type 1 candidates may also care about giving to $V_2$ in the first election.

Suppose all candidates played their first-bests in the first election. Type 1 candidates' benefits to $V_1$ would then be continuously distributed along the continuum $[(1-\overline{\alpha})X, X]$ with a positive mass at $x_1 = X$. As before, type 2 candidates' benefits to $V_1$ would be continuously distributed along the continuum $[0, \overline{\theta}X]$ where $\overline{\theta}X < (1-\overline{\alpha})X$. If the expected $\theta$ of type 1 candidates is not too high, then $V_2$ would not reelect them (see equation (4a)). Thus, type 1 candidates would have an incentive to mimic the most reciprocal type 2 candidate at $x_1 = \overline{\theta}X$ to be reelected. Furthermore, altruistic type 1 candidates would have to deviate less to mimic, giving them greater incentive to mimic. Additionally, type 1 candidates with low reciprocity would have greater incentive to mimic because they would have more utility to gain from reelection. There would then be a positive mass of mimicking type 1 candidates according to their reciprocity and altruism parameters. The remaining non-mimicking type 1 candidates would play their first-bests.

However, $V_2$ would not reelect where there is low mass of type 2 candidates and high

mass of mimicking and low reciprocity type 1 candidates. Type 2 candidates would then have to constrain their $x_1$ until they accrue just enough mass relative to the mimicking type 1 candidates that $V_2$ still reelects. Incorporating altruism implies that type 2 candidates may have to constrain their reciprocity below $x_1 = \frac{X-Y}{X}$ because altruistic type 1 candidates are even more willing to mimic. In this light, incorporating altruism strengthens the robustness of the theoretical results. Furthermore, the amount type 2 candidates have to constrain their reciprocity is increasing in the cost of voting.

The only differences between the equilibrium with altruism and without are that i) some non-mimicking and altruistic type 1 candidates select $x_2 > 0$ and ii) altruistic type 2 candidates choose $y_1 > 0$. Informed by these theoretical predictions, we turn to the experimental results.

# 4 Experimental Design

The aim of our experiment is to investigate the interaction between intrinsic reciprocity and reelection concerns on candidate behavior as suggested by the signalling model above. We implemented four treatments in a 2 x 2 experimental design. Treatments differed in the cost of voting, \$1 in the "low cost of voting games" and \$6 in the "high cost of voting games". Additionally, as in the two election games in the model, treatments varied in whether $V_2$ observed the distribution of first election benefits in the signalling games or did not observe the distribution of first election benefits in the no information games before deciding whether to vote.[12] We label treatments as "SLC" (signalling low cost), "SHC" (signalling high cost), "NILC" (no information low cost) or "NIHC" (no information high cost).

The experiment was run in the Experimental Economics Lab at the University of Maryland. There were 300 participants, all undergraduate students at the University of Maryland. We conducted five sessions for each treatment (15 participants per session, i.e. 75 participants per treatment). No subject participated in more than one session. Participants were seated in isolated booths. The experiment was programmed in z-Tree (Fischbacher [2007]).

At the beginning of each session, subjects were randomly assigned one of three roles: "Voter 1" ($V_1$), "Voter 2" ($V_2$), or "Candidate" ($C$). The assigned roles stayed fixed for all 5 rounds (until the end of the experiment). At the beginning of each of the 5 rounds in a

[12]Instructions for each treatment can be found in the Online Appendix at: https://pdalmia89.github.io/PrateikPapers/ReciprocityReeelction_SuppAppendix.pdf

session, participants were given a \$6.00 endowment (each) and randomly sorted into groups of 3 people, consisting of $V_1$, $V_2$, and $C$. In each round, $C$ was independently and randomly assigned a policy type, "Type 1" ($\tau = 1$) or "Type 2" ($\tau = 2$), with equal probability of being assigned either type. Voters did not learn the candidate's type at any point, but knew the initial probability associated with each type. No participant was ever grouped with any other participant in more than one round. Thus, each round can be thought of as a one-shot game.

Each round consisted of two sequential elections, with $V_1$ voting in the first election and $V_2$ voting in the second election. In each election, the respective voter decided whether to vote at a cost or abstain at zero cost. If a candidate was elected in election 1 (election 2), then the candidate was given \$15 (\$10) to distribute between voter 1 and voter 2. The candidate could divide the money in any penny amount. Furthermore, the candidate was given an additional penny to keep for every penny distributed to the voter of her type. Thus, the candidate could earn up to \$15 (\$10) in the first election (second election). If a voter abstained in an election, then the candidate was not elected and the round immediately came to an end. Thus, if the candidate was not elected in the first election, then the second election did not occur. Given a \$10 second election pie, a cost of voting of \$6 implies that constrained reciprocity should hold for a very general set of distributions of reciprocity, as $V_2$ would not want to reelect the most reciprocal type 1 candidate if $\overline{\theta} < 0.6$ This is why a \$6 cost of voting was chosen.[13] The treatments may be summarized as follows:

| Treatment | Signalling Game? | Voting Cost | Election 1 Distribution ($X$) | Election 2 Distribution ($Y$) |
|---|---|---|---|---|
| SLC | Yes | \$1 | \$15 | \$10 |
| SHC | Yes | \$6 | \$15 | \$10 |
| NILC | No | \$1 | \$15 | \$10 |
| NIHC | No | \$6 | \$15 | \$10 |

Once all 5 rounds were finished, 1 round out of the 5 rounds was randomly picked, and the earnings in that round were the participant's final earnings for the experiment in addition to a \$7 participation fee. Including the participation fee, subjects averaged a total of \$23.62 in earnings.

[13] Also, note that these parameter choices imply $\overline{\theta}_1 = 0.084$.

# 5 Results and Interpretation

## 5.1 Distribution and Voting Patterns

To give a preliminary overview of the data, we summarize the distribution of benefits in Table 1, where the elected candidate has \$15 to distribute in the first election and \$10 to distribute in the second election.[14]

| | \$ Benefit to $V_1$ in First Election | | | |
|---|---|---|---|---|
| | Treat SLC | Treat NILC | Treat SHC | Treat NIHC |
| Type 1 | 9.07 | 13.61 | 10.05 | 11.88 |
| | (2.21) | (2.16) | (3.26) | (2.96) |
| Type 2 | 3.50 | 2.59 | 2.82 | 4.93 |
| | (3.29) | (3.53) | (2.97) | (3.60) |
| Observations | 119 | 120 | 109 | 119 |

Mean, standard deviation in parentheses.

| | \$ Benefit to $V_2$ in Second Election | | | |
|---|---|---|---|---|
| | Treat SLC | Treat NILC | Treat SHC | Treat NIHC |
| Type 1 | 1.39 | 1.61 | 2.36 | 3.31 |
| | (1.87) | (1.96) | (2.77) | (2.50) |
| Type 2 | 8.38 | 8.72 | 9.18 | 8.02 |
| | (2.06) | (1.77) | (1.39) | (1.82) |
| Observations | 96 | 111 | 73 | 78 |

Mean, standard deviation in parentheses.

Table 1: Distribution of \$ Benefits

Additionally, voting proportions are given in Table 2. Sections 5.3.3 and 5.4.3 describe $V_2$'s voting pattern broken down by actual candidate types.

[14] Additional histograms showing the distribution of second election benefits by type 2 candidates, not provided in the main text, can be found in Figures A.1 and A.2 of the online Appendix at: https://pdalmia89.github.io/PrateikPapers/ReciprocityReeelction_SuppAppendix.pdf

| | Treat SLC | Treat NILC | Treat SHC | Treat NIHC |
|---|---|---|---|---|
| Voter 1 | 0.952 | 0.960 | 0.872 | 0.952 |
| | (0.215) | (0.197) | (0.335) | (0.215) |
| Voter 2 | 0.807 | 0.925 | 0.670 | 0.655 |
| | (0.397) | (0.264) | (0.472) | (0.477) |

Mean vote proportions, standard deviation in parentheses.

Table 2: Vote Proportions

## 5.2 Existence of Intrinsic Reciprocity

The first question we investigate is whether candidates exhibit intrinsic reciprocity to the voters who elected them when they are free from reelection motives. We focus on the no information games where candidates are unable to signal their policy type to $V_2$, so that observed reciprocity must be intrinsic rather than instrumental. We look at whether a type 1 candidate gives a non-zero amount of money to $V_2$ after the second election, and, analogously, whether a type 2 candidate gives a non-zero amount of money to $V_1$ after the first election. In these cases giving cannot be motivated by the candidate's self-interest and hence is evidence of intrinsic reciprocity.[15]

As seen in the histograms in Figures 5 and 6, while some candidates are selfish, many give a substantial reward to the voter who elected her. Indeed, on average candidates give a positive amount of money to the voter who elected them: type 1 candidates give \$1.61 and \$3.31 to $V_2$ in the second election in treatments NILC and NIHC respectively (Table 1 and Figure 5); type 2 candidates give \$2.59 and \$4.93 to $V_1$ in the first election in treatments NILC and NIHC respectively (Table 1 and Figure 6). Furthermore, since there exists positive mass above $x_2 = \$3.33$ in Figure 5 and $x_1 = \$5$ in Figure 6, it is clear that $\overline{\theta} > \frac{1}{3} = \frac{X-Y}{X}$, an important condition for constrained reciprocity in the signalling games without altruism.

[15] One might argue that candidates are free from reelection concerns in the second election of treatments 1 and 2, so that if a type 1 candidate gives a non-zero amount of money to voter 2 in the second election, then this would indicate intrinsic reciprocity. However, when signalling of type is possible after the first election, it may be that observed candidate behavior after the second election behavior may be affected by signalling mechanism in the first election, including selection of more selfish types in the semiseparating equilibrium as discussed in the formal model.

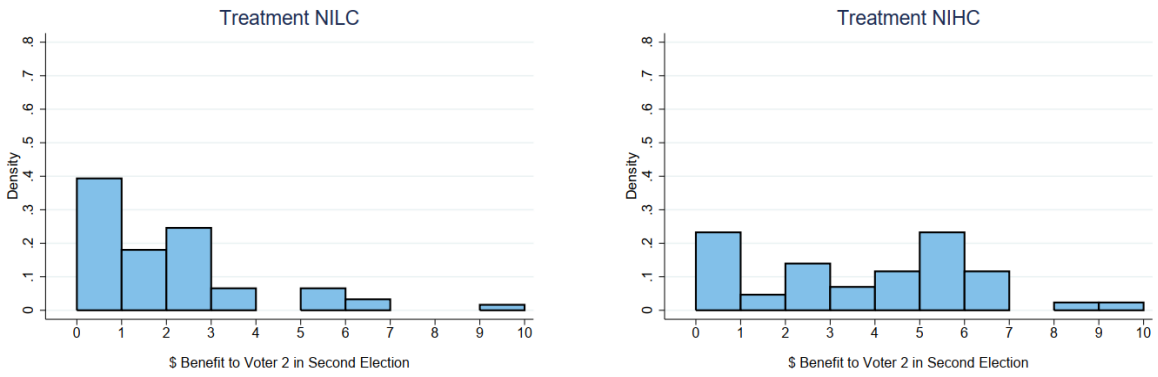


Figure 5: Type 1 Candidate Intrinsic Reciprocity

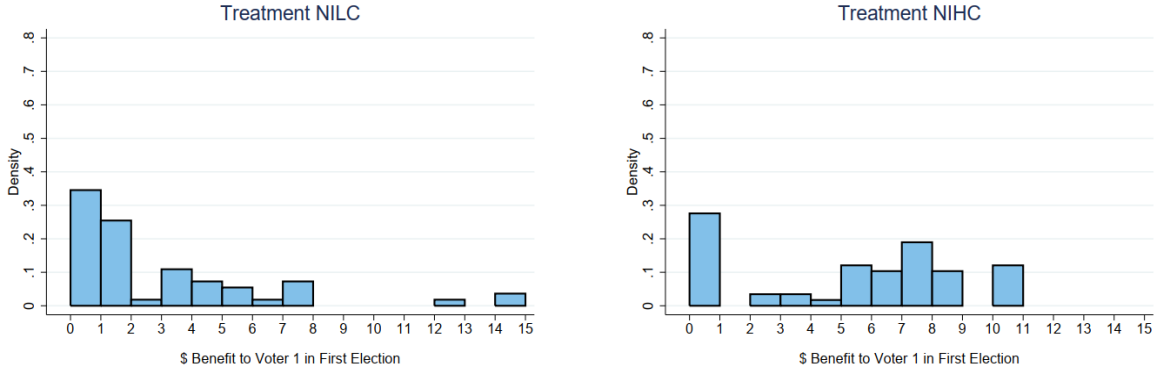


Figure 6: Type 2 Candidate Intrinsic Reciprocity

Next, we estimate the average value of $\theta$ and test whether it is statistically different from zero in tables 3 and 4. We use an OLS regression of the percentage benefits given by a type 2 (type 1) candidate to voter 1 in election one (voter 2 in election two) on a constant term, a linear term for the period to account for possible learning effects across periods (which we do not find) and clustered at the candidate level (to account for serial correlation in a given candidate's choices). The coefficient on the constant term can be interpreted as an estimate of the expected value of $\theta$. We find that the constant term is significant and positive in both treatments (NILC and NIHC), indicating that $\theta$ is statistically different from zero, and ranges from an average of 17.4% to 41.1%. It is interesting to note that the amount of intrinsic reciprocity is greater in the high voting cost game (NIHC) than the low voting cost game (NILC). This might reflect candidates showing higher reciprocity when voting costs are higher.

| | (1) Treat NILC | (2) Treat NIHC |
|---|---|---|
| Constant | 0.261*** | 0.411*** |
| | (0.071) | (0.096) |
| Period | -0.033* | -0.029 |
| | (0.0165) | (0.026) |
| Observations | 61 | 43 |
| R-squared | 0.068 | 0.027 |

Clustered at candidate level.

*** p<0.01, ** p<0.05, * p<0.1

Table 3: OLS of Type 1 Candidate
% Benefits to $V_2$ in Election 2

| | (1) Treat NILC | (2) Treat NIHC |
|---|---|---|
| Constant | 0.174** | 0.398*** |
| | (0.067) | (0.085) |
| Period | -0.000 | -0.022 |
| | (0.022) | (0.018) |
| Observations | 55 | 58 |
| R-squared | 0.000 | 0.015 |

Clustered at candidate level.

*** p<0.01, ** p<0.05, * p<0.1

Table 4: OLS of Type 2 Candidate
% Benefits to $V_1$ in Election 1

Additionally, we observe evidence of altruism. Note that type 1 candidates give on average \$1.39 and \$3.12 to $V_2$ in the first election of treatments NILC and NIHC respectively (see Table 1). Similarly, type 2 candidates give a positive amount to $V_1$ in the second election, with an average of \$1.28 and \$1.98 in treatments NILC and NIHC respectively. This is consistent with the model incorporating altruism and a positive $\alpha$ for some candidates.

## 5.3 High Cost of Voting Games

Here, we explore the results for the high cost of voting games with and without room for signalling. We find results consistent with the theoretical model. First, there is clear evidence that not all candidates are selfish. Consistent with the existence of non-selfish desires, type 1 and type 2 candidates do not fully separate in the first election at the extremes of $x_1 = \$15$ and $x_1 = \$0$ respectively. Instead, we observe many interior values of $x_1$ both with (treatment SHC) and without (treatment NIHC) reelection motives.

Furthermore, we find that aggregate behavior closely resembles the constrained reciprocity equilibrium outlined in Proposition 3 in the online Appendix. That is, reciprocal type 2 candidates must constrain their reciprocity to ensure their reelection. Furthermore, the less reciprocal type 1 candidates mimic the highly reciprocal type 2 candidates and are reelected, while the remaining type 1 candidates choose $x_1 = \$15$ and forego reelection. Lastly, $V_2$'s actions also reflects play in this equilibrium. His propensity to vote increases with his benefits received in the first election. Indeed, $V_2$'s behavior most closely resembling

a cut-off strategy, with his likelihood of voting increasing significantly if he receives $x_2$ around $\$5 - \$6$ or more in the first election.

### 5.3.1 Type 2 Candidates: Constrained Reciprocity

Our main finding is that type 2 candidates who display reciprocity limit the amount they give to $V_1$ in the first election, deviating from their first-best in order to help their reelection chances. We regard this as a key result, as it indicates that reelection concerns may limit reciprocity. Let's consider the results as a whole.

When the cost of voting is high, we find that some type 2 candidates are selfish, but the majority display reciprocity towards $V_1$ in the first election. In treatment SHC (treatment NIHC), 31.88% (21.67%) of candidates give $x_1 = \$0$ to $V_1$ in the first election, and the remaining 68.12% (78.33%) select interior values of $x_1$. We focus on the motives of the reciprocal type 2 candidates.

We show evidence of the constraints signalling concerns place on a type 2's intrinsic reciprocity. As shown in Table 5, type 2 candidates give on average \$2.11 more to $V_1$ in the no information game than in the signalling game (\$4.93 in treatment NIHC and \$2.82 in treatment SHC). The same trend is found if restricting the data to type 2 candidates who select $x_1 > \$0$ and thus might be labeled reciprocal (\$6.35 in treatment NIHC and \$4.50 in treatment SHC). Note in Table 5 that type 2 candidates give on average \$1.12 more to $V_1$ in the second election of the no information game than the signalling game. While our theory does not account for this difference in type 2 second election behavior, we note that it is not very large.

| | First Election | Second Election |
|---|---|---|
| Treat SHC | 2.82 | 0.82 |
| | (2.97) | (1.39) |
| Treat NIHC | 4.93 | 1.98 |
| | (3.60) | (1.82) |
| Observations | 117 | 86 |
| P-values | 0.001 | 0.001 |

Mean, standard deviation in parentheses.

P-values based on two-tailed t-test.

Table 5: Type 2 Candidate \$ Benefit to $V_1$ with High Cost of Voting

The constrained reciprocity in the first election can be seen visually in the histograms in Figure 7. There is much less density towards the right of the treatment SHC graph than the right of the treatment NIHC graph, and the rightmost (maximum) choice of $x_1$ is also lower ($7.5 in treatment SHC and $11 in treatment NIHC), reflecting a constraint at some $x_1^*$.

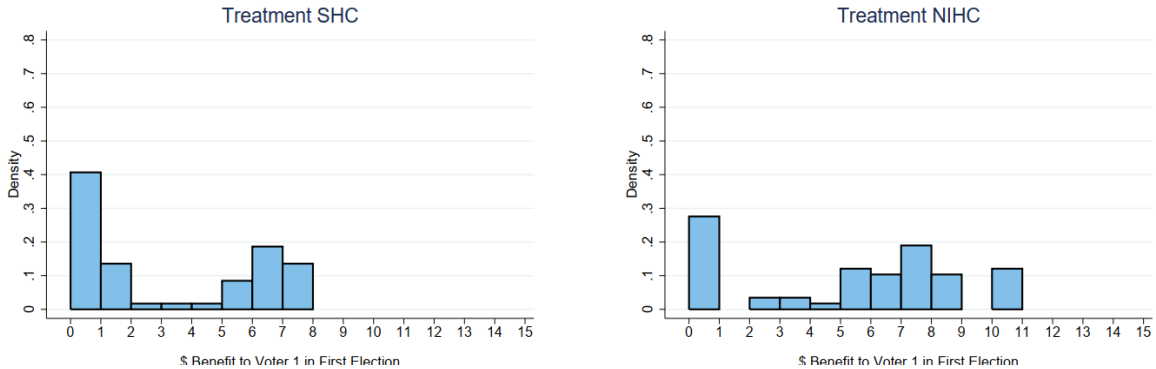


Figure 7: Type 2 Candidate First Election Benefits with High Cost of Voting

Furthermore, Figure 8 shows that the CDF of type 2 candidate giving to $V_1$ in the first election of treatment NIHC first-order stochastically dominates that in treatment SHC. We find this to be significant using the first order stochastic dominance test in Barrett and Donald (2003).[16]

Figure 16: Type 2 High K

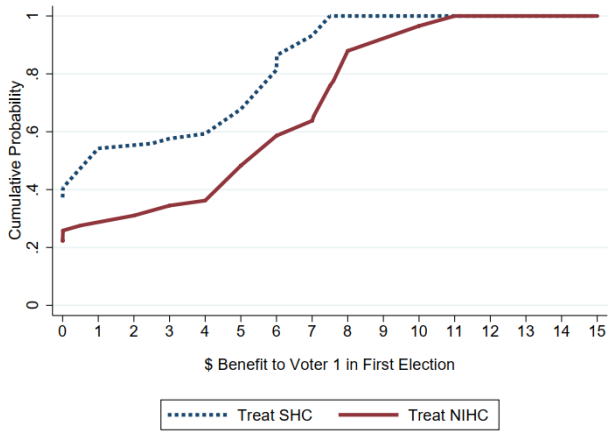


Figure 8: Type 2 Candidate First Election Benefits with High Cost of Voting

[16] We use a bootstrap of size 1,000 to calculate p-values. The test consists of two steps. We first test the null hypothesis that the treatment NIHC distribution either first order stochastically dominates or is equal to the treatment SHC distribution in the $0 to $15 range. We cannot reject the null, with a corresponding p-value of 0.719. We then test the null hypothesis that the treatment SHC distribution first order stochastically dominates or is equal to the treatment NIHC distribution (in the $0 to $15 range). We reject this null hypothesis in this case, with a corresponding p-value of 0.077.

Moreover, consider only type 2 candidates who are reelected (which is 60.3% of them, as shown in Figure 16 below). The scatter plots in Figure 9 display the benefit given to $V_1$ in each election. As one can see, there is a lot more mass to the left side of the treatment SHC scatter plot than the treatment NIHC scatter plot, indicating that in the former type 2 candidates constrain their reciprocity to $V_1$.

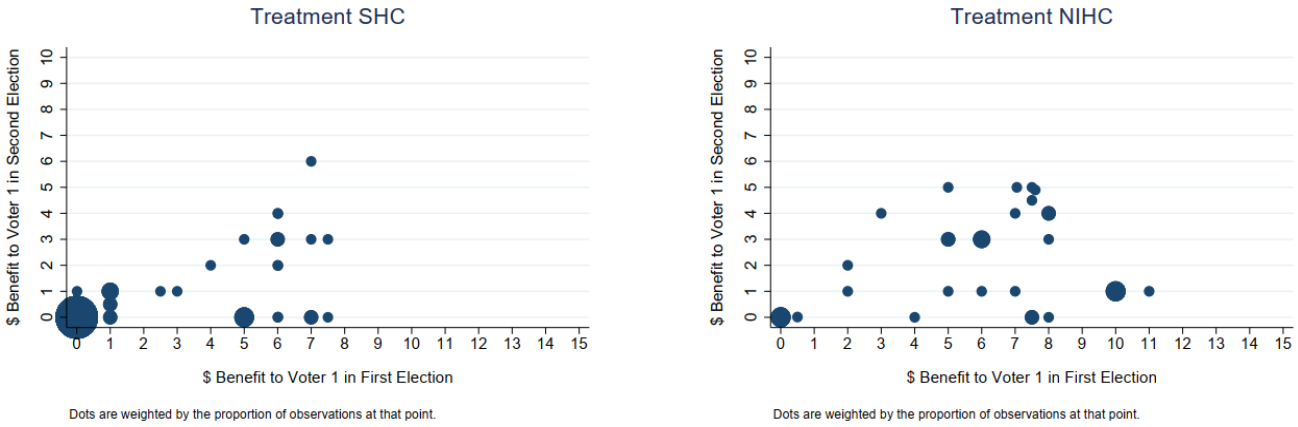


Figure 9: Type 2 Candidate Benefits to $V_1$ in the Two Elections with High Cost of Voting

Finally, in Table 6 we test whether the apparent constraints that reelection places on reciprocity are statistically significant. We use a two-limit Tobit regression to account for censoring from below ($0) and above ($15). The coefficient on the treatment NIHC dummy shows that the amount type 2 candidates give to $V_1$ in the first election is significantly higher without signalling motives than with signalling motives.

| | |
|---|---|
| Treat NIHC | 2.944** |
| | (1.196) |
| Period | -0.629** |
| | (0.241) |
| Constant | 3.507*** |
| | (0.925) |
| Observations | 117 |

*** p<0.01, ** p<0.05, * p<0.1

SE clustered at candidate level.

Table 6: Two-Limit Tobit, Type 2 Candidate $ Benefit to $V_1$ in Election 1 (Treatments SHC vs NIHC)

### 5.3.2 Type 1 Candidate Mimicking

We find that some type 1 candidates play their first-best in distributing first election benefits, thus foregoing reelection, while at the same time, many type 1 candidates pool with type 2 candidates in order to be reelected. Furthermore, we show evidence that the type 1 candidates who pool with type 2 candidates to be reelected tend to be less reciprocal.

First, note that signalling motives lead type 1 candidates to mimic type 2 candidates to help their reelection chances. As shown in Table 7, type 1 candidates give on average \$1.83 more to $V_2$ in the first election of the signalling game than the no information game (\$4.95 in treatment SHC and \$3.12 in treatment NIHC).

| | First Election | Second Election |
|---|---|---|
| Treat SHC | 4.95 | 2.36 |
| | (3.26) | (2.77) |
| Treat NIHC | 3.12 | 3.31 |
| | (2.96) | (2.50) |
| Observations | 111 | 65 |
| P-values | 0.003 | 0.170 |

Mean, standard deviation in parentheses.

P-values based on two-tailed t-test.

Table 7: Type 1 Candidate \$ Benefit to $V_2$ with High Cost of Voting

This can be seen visually in the histograms in Figure 10 showing type 1 candidate choices of $x_2$. There is much higher density towards the the middle in the treatment SHC histogram (higher benefit to $V_2$) and left in the treatment NIHC histogram (lower benefit to $V_2$).

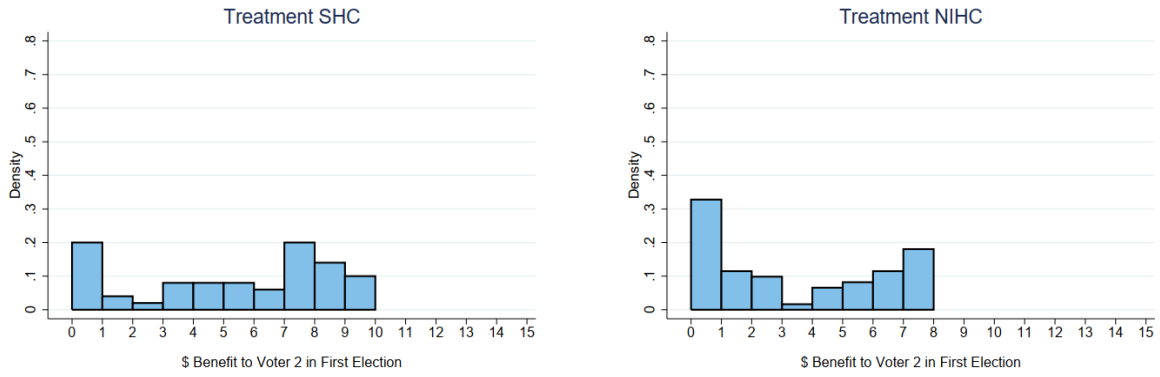


Figure 10: Type 1 Candidate First Election Benefits Distribution with High Cost of Voting

This may also be seen in Figure 11, which shows that the CDF of what type 1 candidate benefits to $V_2$ in the first election of treatment SHC first-order stochastically dominates that in treatment NIHC. We find this to be significant using the first order stochastic dominance test in Barrett and Donald (2003).[17]

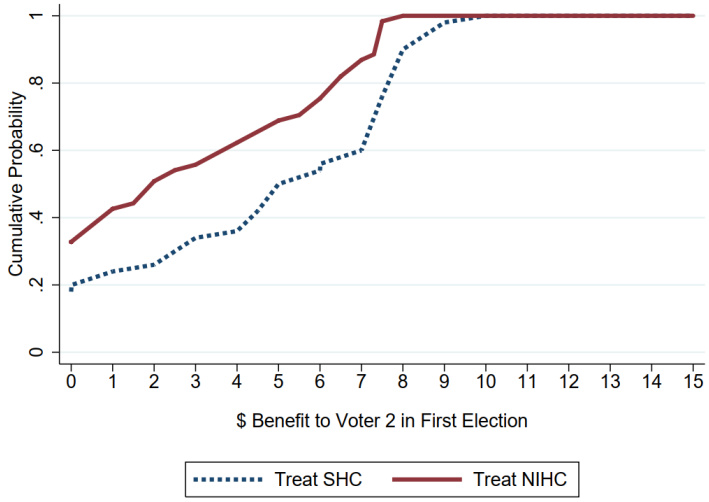


Figure 11: Type 1 Candidate First Election Benefits with High Cost of Voting

Table 8 presents a two-limit (from below at \$0 and above at \$15) Tobit regression clustered at the candidate level (to account for serial correlation in a given candidate's choices). The coefficient on the treatment 4 dummy shows that the amount type 1 candidates give to $V_2$ in the first election is significantly lower in treatment NIHC than in treatment SHC, that is, without versus with the possibility of signalling.

[17] We use a bootstrap of size 1,000 to calculate p-values. We first test the null hypothesis that the treatment SHC distribution either first order stochastically dominates or is equal to the treatment NIHC distribution in the \$0 to \$15 range. We fail to reject this null hypothesis, the corresponding p-value is 0.664. We then test the null hypothesis that the treatment NIHC distribution first order stochastically dominates or is equal to the treatment SHC distribution (in the \$0 to \$10 range). We reject the null hypothesis in this case, with a corresponding p-value of 0.079.

| | |
|---|---|
| Treat NIHC | -2.374** |
| | (1.116) |
| Period | -0.535** |
| | (0.265) |
| Constant | 6.178*** |
| | (0.893) |
| Observations | 111 |

*** p<0.01, ** p<0.05, * p<0.1

SE clustered at candidate level.

Table 8: Two-Limit Tobit, Type 1 Candidate $Benefit to $V_2$ in First Election (Treatments SHC vs. NIHC)

While it is clear that mimicking is going on, an important next question is what kind of type 1 candidates are mimicking? While both types are concerned about reelection, we saw in the theoretical model that the least reciprocal type 1 candidates earn the highest utility gain from reelection, and are thus most likely to mimic. The scatter plots of distribution of benefits to $V_2$ in the first and second election in Figure 12 suggest that this is likely the case. The large mass at the bottom left of the treatment NIHC graph disappears in the treatment SHC graph, and a new mass appears in the bottom middle. This suggests that many of the mimickers are selfish, with a signalling motive leading her to give near half of total dollar benefits to $V_2$ in the first election but little in the second election.

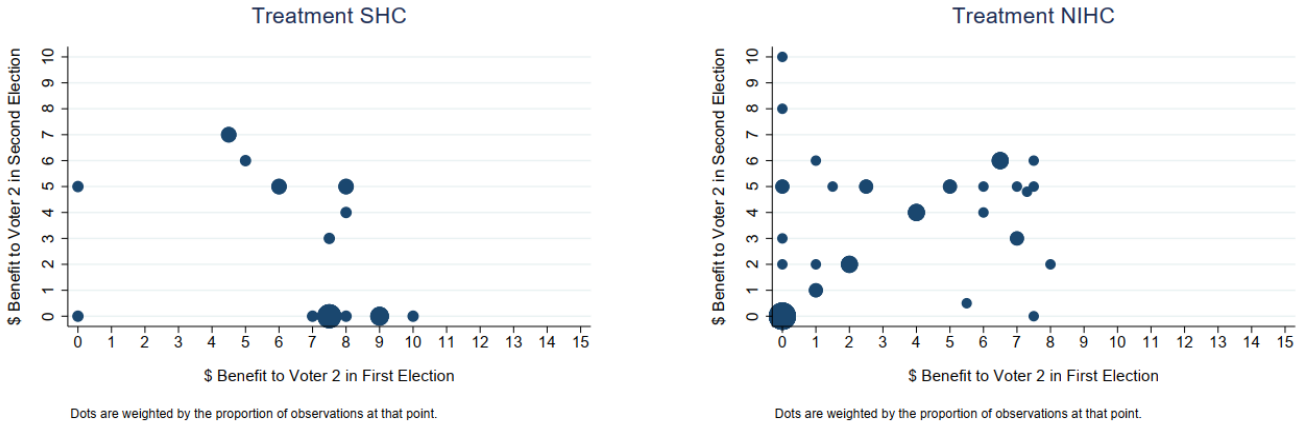


Figure 12: Benefits to $V_2$ by Type 1 Candidate in the Two Elections with High Cost of Voting

Similarly, Figure 13 shows the distribution of type 1 candidates benefits to $V_2$ in the

second election. There is much higher density to the left of the treatment SHC histogram, indicating that the reelected type 1 candidates tend to be less reciprocal and more selfish in the signalling game than in the no information game.

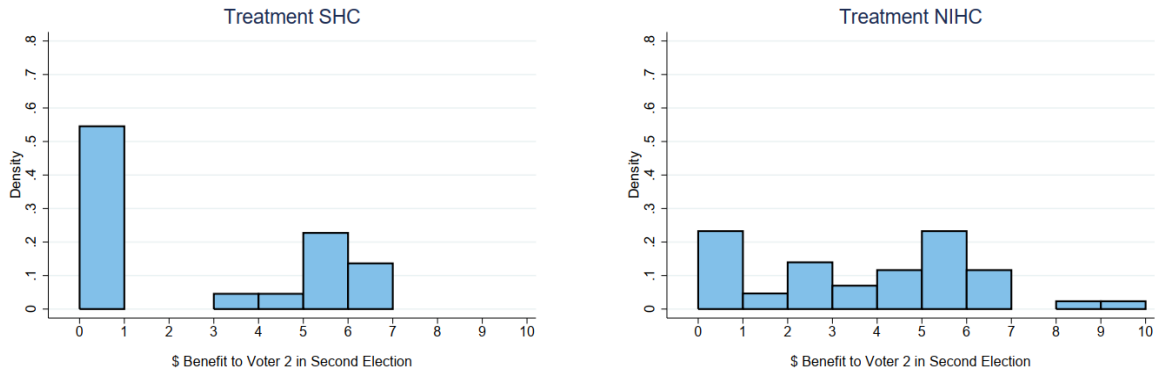


Figure 13: Type 1 Candidate Second Election Benefits Distribution with High Cost of Voting

Indeed, of the type 1 candidates who give between \$6 and \$10 to $V_2$ in the first election of treatment SHC (which constitutes 48.00%, or 24 out of 50 type 1 candidate observations), 66.67% are reelected (16 of 24 type 1 candidate observations); and, of those that are reelected, 62.50% (10 of 16 give type 1 candidate observations) give nothing to $V_2$ and the entire \$10 to $V_1$ in the second election. Mimicking increases their total payoff above the \$15 they would receive if the simply maximized their first period payoff by giving everything to $V_1$ in the first election as short-sighted selfishness would dictate.

### 5.3.3 $V_2$'s Propensity to Vote

Is restricting $x_1$ an effective reelection strategy for type 1 and type 2 candidates? To answer that question, we consider the voting behavior of $V_2$ in the signalling game with high voting costs. We show that $V_2$ is substantially more likely to vote not simply when $C$ is indeed type 2 (remember that $C$'s type is never directly revealed to $V_2$), but also the higher is the amount of money he received in the first election (the higher is $x_2$).

First, we look at $V_2$'s propensity to vote given his benefits received in the first election ($x_2$). The scatter plot in Figure 14 shows that the likelihood of $V_2$ voting increases in $x_2$, and strongly suggests that he uses a cut-off strategy, only considering voting when he receives at least \$5 to \$8 in the first election.

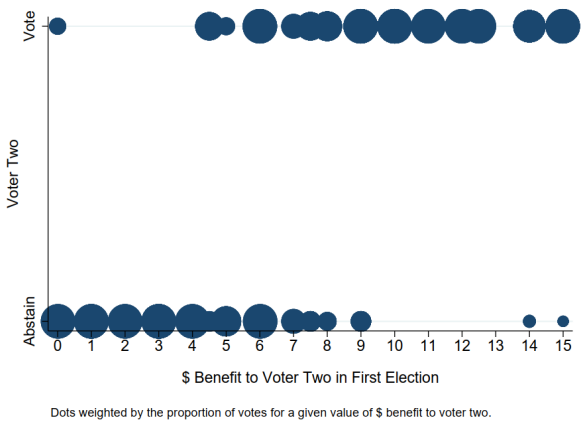


Figure 14: $V_2$ Decision by Benefit Received in First Election of Treatment SHC

Furthermore, Figure 15 shows that both the probability of $V_2$'s voting and a type 2 candidate decline sharply near this range. This lends greater credibility to the premise of the data representing equilibrium play.

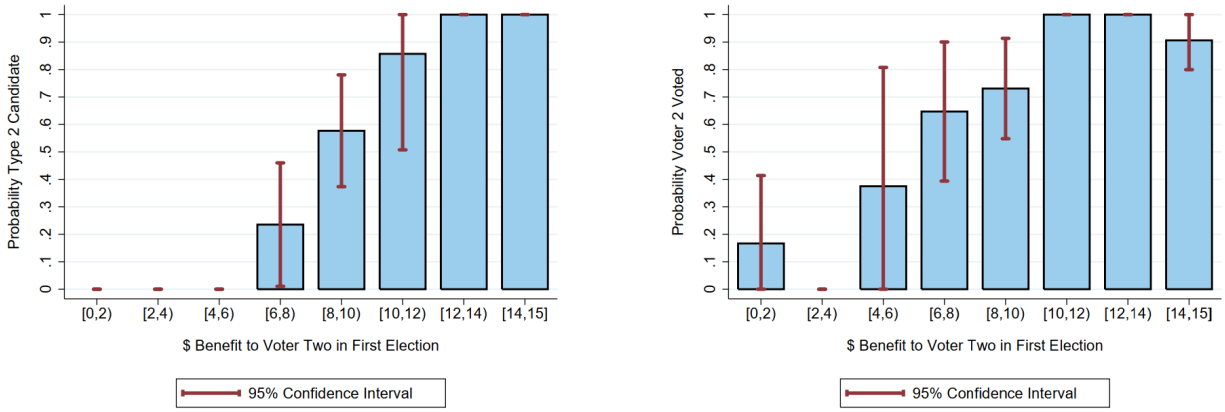


Figure 15: Probabilities of Candidate Type and $V_2$ Voting by $x_2$ in Treatment SHC

Let's more closely examine $V_2$'s abstention rate given a candidate's type. When the candidate is in fact type 2, $V_2$ abstains only 13.6% of the time (8 of 59 observations), about the same as the 12.8% overall abstention by $V_1$ in the first election of treatment SHC (16 of 125 observations) and much lower than the 34.5% overall abstention by $V_2$ in treatment NIHC where he had no information about either $x_1$ or the candidate's type (41 of 119 observations). We might expect some subjects to always abstain due to high risk aversion. In contrast, when the candidate is in fact type 1, $V_2$ abstains 56% of the time (28 of 50 observations), much higher than the 13.6% abstention rate with a type 2 candidate and the

34.5% abstention rate with no information. Note that the significant non-zero abstention rate when the candidate is actually type 2 can be explained by some subjects having high risk aversion, combined with uncertainty about candidate type.

This is confirmed in the logit regression results in Table 9 which shows $V_2$'s likelihood of voting is significantly higher when facing a type 2 candidate in the signalling treatment with high voting costs.

| | |
|---|---|
| Type 2 | 0.520*** |
| | (4.47) |
| Period | -0.0709* |
| | (-2.21) |
| Observations | 109 |
| Baseline Predicted Probability | 0.579 |

$t$ statistics in parentheses

Baseline predicted probability calculated for treatment SHC, period 1 and a type 1 candidate.

SE clustered at voter two level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: Logit Results on Marginal Effect of Candidate's Type on $V_2$'s Probability of Voting in Treatment SHC

## 5.4 Low Cost of Voting Games

We now turn to the results with a low cost of voting, with (treatment SLC) and without (treatment NILC) reelection motives. As in the high cost of voting games, we find that type 1 and type 2 candidates do not fully separate in the first election at the extremes of $x_1 = \$15$ and $x_1 = \$0$ respectively, as evidence for the existence of non-selfish candidate motives. In fact, we find more interior than non-interior choices of $x_1$ in the first election.

Consider first the choice of a type 2 candidates. Our main finding, consistent with the result in Section 5, is that with low voting cost, there is no discernible conflict between showing intrinsic reciprocity to $V_1$ and getting reelected, even when such benefits are observable by $V_2$. That is, type 2 candidates can largely show their desired reciprocity to $V_1$ without hurting their reelection chances. This is a key finding of the paper.

As in the high cost of voting games, the results suggest that some type 1 candidates pool with reciprocal type 2 candidates in order to get reelected, and the type 1 candidates who do so tend to be less reciprocal. Meanwhile, other type 1 candidates play their first election first-best and forego reelection.

Lastly, we show that $V_2$ is more likely to vote in more money received after the first election, employing a strategy that most closely resembles a cut-off strategy.

### 5.4.1 Type 2 Candidates: Unconstrained Reciprocity

When the cost of voting is low we find that some type 2 candidates are selfish, but the majority display reciprocity towards $V_1$ in the first election (as was the case with a high cost of voting). In treatment SLC (treatment NILC), 24.00% (32.76%) of candidates give $x_1 = \$0$ to $V_1$ in the first election, and the remaining 76.00% (67.24%) select interior values of $x_1$. Again, we focus on the motives of the non-selfish type 2 candidates.[18]

As Corollary 1 in the online Appendix suggests might be the case, the results show no clear sign that type 2 candidates meaningfully limit their reciprocity in order to get reelected in the signalling game with a low cost of voting. That is, we see no discernible differences in choices made by type 2 candidates when signalling of type is possible (treatment SLC) and when it is not (treatment NILC): in both cases they play their first best or close enough to their first best to be indistinguishable.

This can be seen in Table 10 showing the mean type 2 candidate first election benefits to $V_1$ in the two treatments. Type 2 candidates display intrinsic reciprocity to $V_1$ in the first election of both treatments. If anything, they give a little more ($0.91) to $V_1$ when type may be signaled by distribution of benefits than when it cannot. This is the opposite direction from what one would expect if the need to signal created a conflict between intrinsic reciprocity and the desire to be reelected, as is the case with a high cost of voting.

[18] The fact that more type 2 candidates select $x_1 > \$0$ in treatment SLC (76.00%) than in treatment SHC (68.12%) is consistent with a higher cost of voting constraining a type 2's reciprocity. The fact that fewer type 2 candidates select $x_1 > \$0$ in treatment NILC (67.24%) than in treatment NIHC (78.33%) is consistent with a candidate's reciprocal motives increasing with the cost of voting.

| | First Election | Second Election |
|---|---|---|
| Treat SLC | 3.50 | 1.62 |
| | (3.29) | (2.06) |
| Treat NILC | 2.59 | 1.28 |
| | (3.53) | (1.77) |
| Observations | 104 | 98 |
| P-values | 0.180 | 0.381 |

Mean, standard deviation in parentheses.

P-values based on two-tailed t-test.

Table 10: Type 2 Candidate $ Benefit to $V_1$ with Low Cost of Voting

The histograms in Figure 16 and CDFs in Figure 17 also shows no apparent impact of restricting reciprocity when $V_2$ uses first election choices to update his voting decision. We find the CDFs to be equal using the first order stochastic dominance test in Barrett and Donald (2003).[19] Furthermore, considering only those type 2 candidates who are reelected (which is 98% of them), the scatter plots in Figure 18 show they give similar amounts to $V_1$ in the first election of treatments SLC and NILC, indicating unconstrained reciprocity.

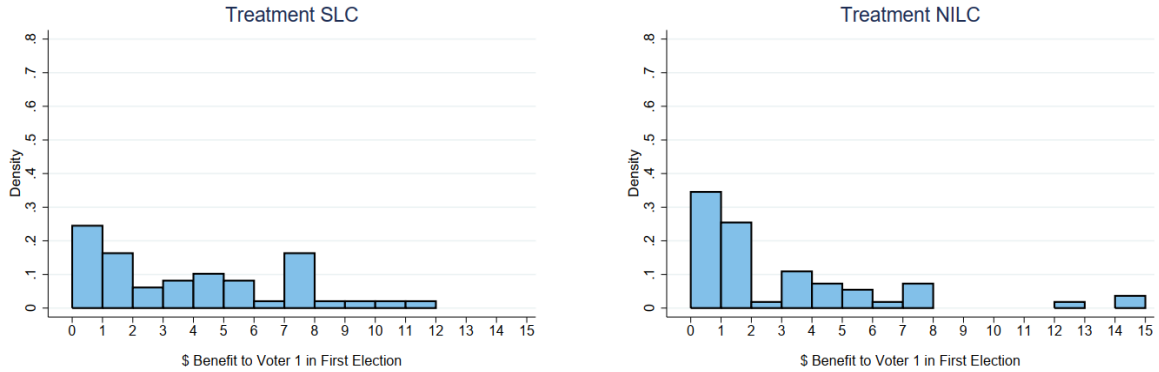


Figure 16: Type 2 Candidate First Election Benefits with Low Cost of Voting

[19] We use a bootstrap of size 1,000 to calculate p-values. We first test the null hypothesis that the treatment NILC distribution either first order stochastically dominates or is equal to the treatment SLC distribution in the \$0 to \$15 range. We cannot reject the null, with a corresponding p-value of 0.637. We then test the null hypothesis that the treatment SLC distribution first order stochastically dominates or is equal to the treatment NILC distribution (in the \$0 to \$15 range). We again cannot reject the null hypothesis in this case, with a corresponding p-value of 0.629.

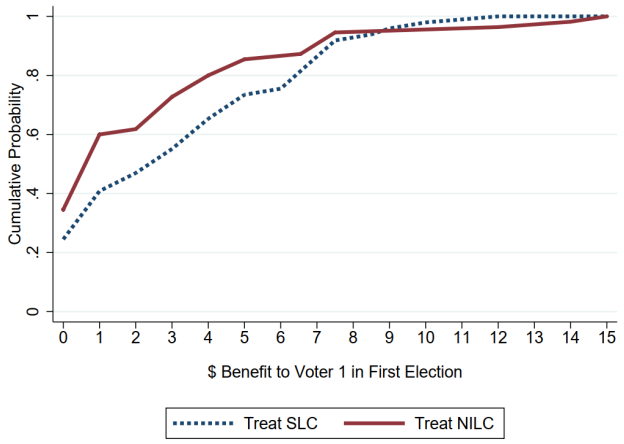


Figure 17: Type 2 Candidate First Election Benefits with Low Cost of Voting

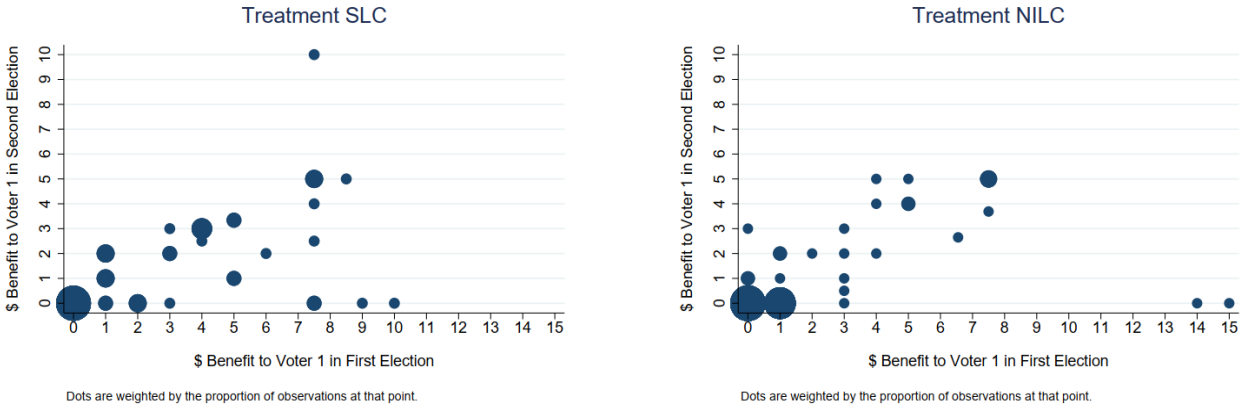


Figure 18: Benefits to $V_1$ by Type 2 Candidate in the Two Elections with Low Cost of Voting

In the Tobit regression shown in Table 11, the coefficient on the treatment 3 dummy confirms that there is no statistically significant difference in type 2 candidate choice of first election benefits when these benefits may affect $V_2$'s choice of whether to vote or abstain and when they cannot.

| | |
|---|---|
| Treat NILC | -1.250 |
| | (1.237) |
| Period | 0.0714 |
| | (0.313) |
| Constant | 2.585* |
| | (1.452) |
| Observations | 104 |

*** p<0.01, ** p<0.05, * p<0.1

SE clustered at candidate level.

Table 11: Two-Limit Tobit, Type 2 Candidate $ Benefit to $V_1$ in Election 1 (Treatments SLC vs NILC)

### 5.4.2 Type 1 Candidate Mimicking

Next, we show evidence that type 1 candidates pool with type 2 candidates in order to help their reelection chances. As shown in Table 12, type 1 candidates give on average $4.54 more to $V_2$ in the first election when signalling of type is possible than when it is not. ($5.93 in treatment SLC and $1.39 in treatment NILC).

| | First Election | Second Election |
|---|---|---|
| Treat SLC | 5.93 | 1.39 |
| | (2.21) | (1.87) |
| Treat NILC | 1.39 | 1.61 |
| | (2.16) | (1.96) |
| Observations | 135 | 109 |
| P-values | 0.000 | 0.554 |

Mean, standard deviation in parentheses.

P-values based on two-tailed t-test.

Table 12: Type 1 Candidate $ Benefit to $V_2$ with Low Cost of Voting

This can be seen visually in the histograms in Figure 19 showing type 1 candidate first election benefits to $V_2$, with much higher density towards the left in the treatment NILC histogram (lower benefit to $V_2$) and the middle in the treatment SLC histogram (higher benefit to $V_2$).

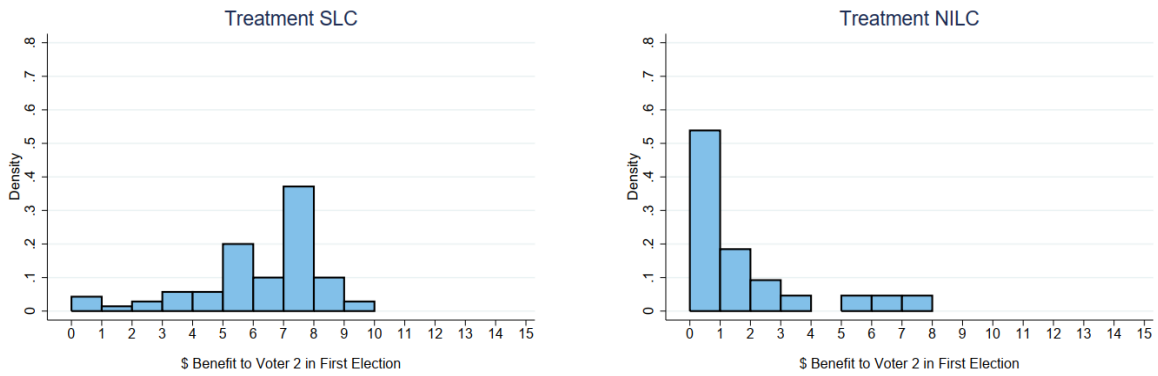


Figure 19: Type 1 Candidate First Election Benefits with Low Cost of Voting

Figure 20 shows that the CDF of type 1 candidate giving to $V_2$ in the first election of treatment SLC first order stochastically dominates that in treatment NILC. We find this to be significant using the first order stochastic dominance test in Barrett and Donald (2003).[20]

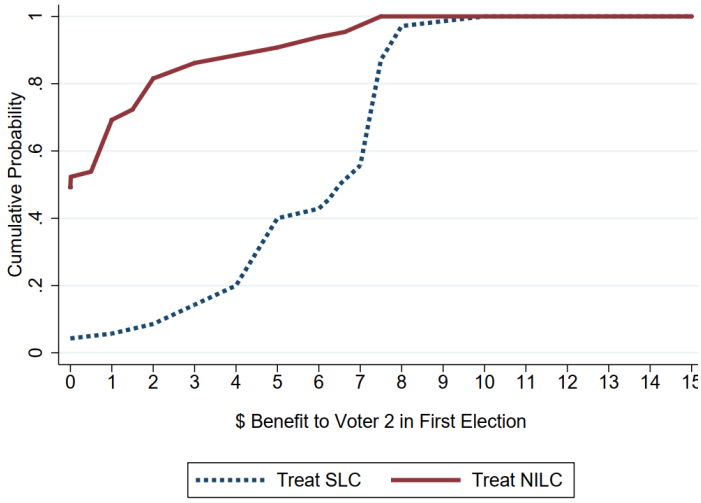


Figure 20: Type 1 Candidate First Election Benefits with Low Cost of Voting

This pattern is confirmed by the Tobit regression in Table 13, which shows that this difference in a type 1 candidate's first election behavior with and without the possibility of signalling type is statistically significant.

[20] We use a bootstrap of size 1,000 to calculate p-values. We first test the null hypothesis that the treatment SLC distribution either first order stochastically dominates or is equal to the treatment NILC distribution in the \$0 to \$15 range. We fail to reject this null hypothesis, the corresponding p-value is 0.589. We then test the null hypothesis that the treatment NILC distribution first order stochastically dominates or is equal to the treatment SLC distribution (in the \$0 to \$15 range). We reject the null hypothesis in this case, with a corresponding p-value of 0.00.

| | |
|---|---|
| Treat NILC | -5.461*** |
| | (0.713) |
| Period | -0.137 |
| | (0.134) |
| Constant | 6.264*** |
| | (0.542) |
| Observations | 135 |

*** p<0.01, ** p<0.05, * p<0.1

SE clustered at candidate level.

Table 13: Two-Limit Tobit, Type 1 Candidate $ Benefit to $V_2$ in Election 1 (Treatment SLC vs NILC)

As in the case with a high voting cost, we argue pooling with type 2 candidates is often driven by more selfish rather than more reciprocal type 1 candidates. The scatter plots in Figure 21 show type 1 candidate giving in both elections of each treatment. It seems that the large mass to the bottom left of the treatment NILC graph disappears in the treatment SLC graph, and a new mass appears in the bottom middle. This supports the claim that many of the mimickers are more selfish, as the signalling motive induces her to give near half of the pie to $V_2$ in the first election but little to $V_2$ in the second election.

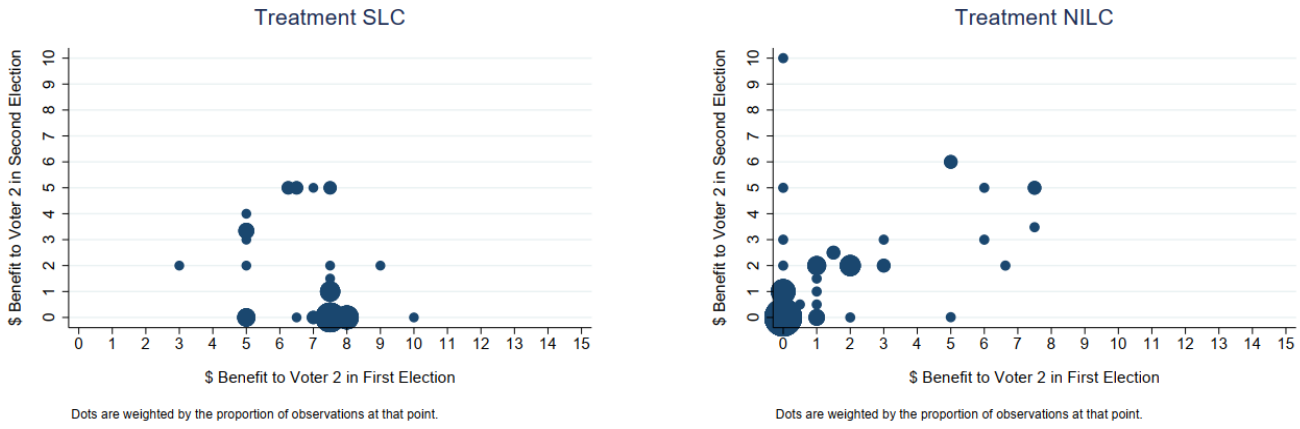


Figure 21: Type 1 Candidate First and Second Election Benefits with Low Cost of Voting

Similarly, Figure 22 shows the average benefits by type 1 candidates to $V_2$ in the second election. There is higher density to the left of the treatment SLC histogram, indicating that

the reelected type 1 candidates tend to be less reciprocal and more selfish in the signalling game than in the no information game.

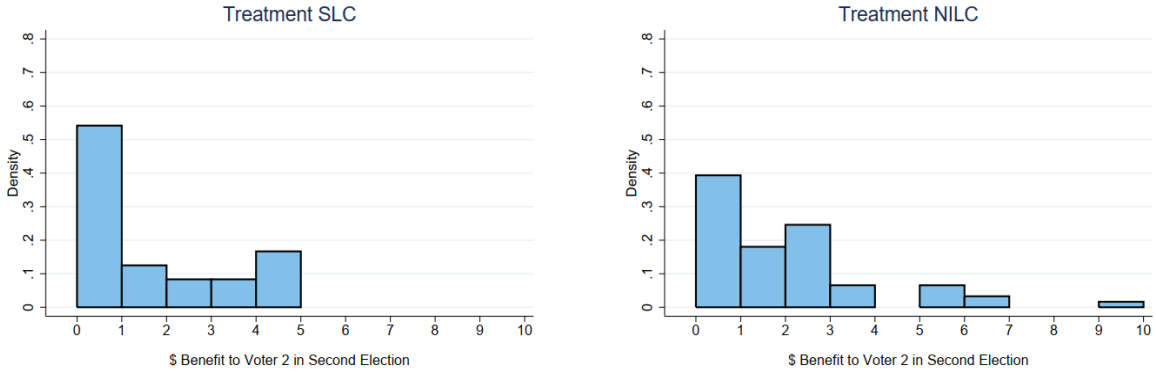


Figure 22: Type 1 Candidate Second Election Benefits with Low Cost of Voting

Indeed, as shown in Figure 19 above, the modal amount of benefits type 1 candidates give to $V_2$ in the first election of treatment SLC is \$7.5 (31%, or 22 out of 70 candidate observations), exactly half the pie. Of the type 1 candidates who give between \$4 and \$10 to $V_2$ in the first election of treatment SLC (which constitutes 84.29%, or 59 out of 70 type 1 candidate observations), 77.97% are reelected (46 out of 59 candidate observations). Of those that are reelected, 54.35% (25 out of 46 type 1 candidate observations) give \$0 to $V_2$ in the second election and 65.22% (30 out of 46 type 1 candidate observations) give \$1 or less. As argued above in the case of high voting costs, by not giving \$15 to $V_1$ after election 1, as one period optimization would imply, they get reelected and enjoy a higher overall utility.

### 5.4.3 $V_2$'s Propensity to Vote

Lastly, we consider the voting behavior of $V_2$ in the signalling game with a low voting cost. While $V_2$ voted in fairly high proportions due to the low voting cost, we find – analogous to the high voting cost case, that he is substantially more likely to vote the more money he received in the first election and when $C$ is indeed type 2 (where $C$'s type is never directly revealed to $V_2$).

The scatter plot in Figure 23 shows clear evidence that $V_2$ uses a cut-off strategy, only considering voting when he receives at least \$5 to \$8 in the first election.

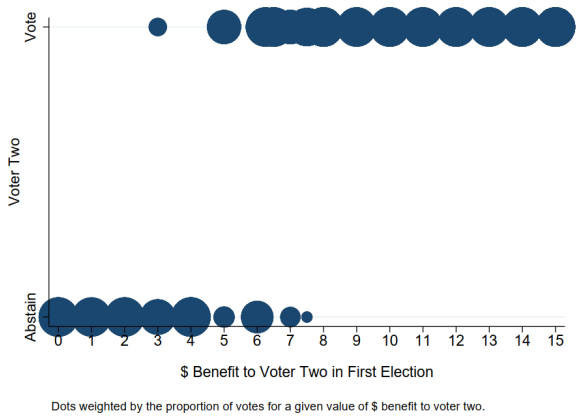


Figure 23: $V_2$ Decision by Benefit Received in First Election of Treatment SLC

This can also be seen in the histogram in Figure 24 which shows that both the probability of $V_2$'s voting and of a type 2 candidate declines sharply near this range.

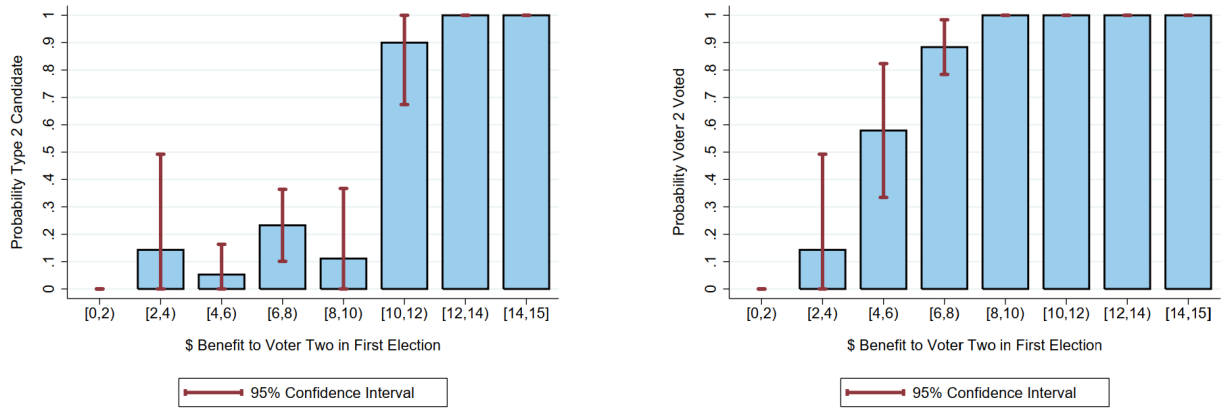


Figure 24: Probability of Candidate Type and $V_2$ Voting by $x_2$ in Treatment SLC

Let's examine $V_2$'s abstention rate for each type of candidate in treatment SLC. When the candidate is in fact type 2, $V_2$ abstains only 2.0% of the time (1 out of 49 observations), slightly lower than the 4.8% overall abstention by $V_1$ in treatment SLC (6 out of 125 observations) and the 7.5% overall abstention (9 out of 120 observations) by $V_2$ in treatment NILC when there is no possibility of the candidate signalling her type with no information. In contrast, when $C$ is in fact type 1, $V_2$ abstains 31.4% of the time (22 out of 70 observations), significantly lower than $V_2$'s 56.0% abstention rate found when voting costs were high. Additionally, this is much higher than the 2.0% abstention rate with a type 2 candidate and the 7.5% abstention when no information about candidate type is conveyed.

The type 2 candidate dummy in the logit regression results in Table 14 shows that $V_2$'s voting likelihood is significantly higher when facing a type 2 candidate (when candidates' first election choices are observable to him).

| | |
|---|---|
| Type 2 | 0.688** |
| | (3.16) |
| Period | 0.0184 |
| | (0.48) |
| Observations | 119 |
| Baseline Predicted Probability | 0.655 |

$t$ statistics in parentheses

Baseline predicted probability calculated

for treatment SLC, period 1 and a type 1 candidate.

SE clustered at voter two level.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 14: Logit Results on Marginal Effect of Candidate's Type on $V_2$'s Probability of Voting in Treatment SLC

## 5.5 Interpreting Constrained Reciprocity

Put simply, our results indicate that the degree of reciprocity depends on the perceived consequences for reelection. When gratitude is seen as posing little threat to reelection, we see reciprocity to past voters. When gratitude is seen as potentially costly, that is, in sending "the wrong message" to voters so that they do not vote to reelect, the candidate constrains her reciprocity. Hence, reciprocity is not an absolute depending on simply underlying preferences, but reflects the circumstances in which a candidate finds herself.

This argument applies more generally. While reciprocity is a common human trait (see Brown [1991], pp. 107-108), the amount of reciprocity actually shown will depend on the situation in which people find themselves. As discussed in the literature review, it has been argued that external factors such as social pressure, social image, or norms may lead to an increase apparently reciprocal behavior that do not really represent intrinsic reciprocity. That is, self-interested agents may be induced to show "kindness" because of external constraints. Our results indicate that the argument goes both ways, where (very different) sorts of constraints may lead other-regarding agents to not show reciprocity even though they are

inherently reciprocal.

The argument that external circumstances help determine how one acts has another implication central to the design of our experiment. Our basic premise is a clear implication of a principal-agent model. The desire of an agent to be retained in a position will lead her to act to satisfy the principal who has the power over this decision, and may limit inherent gratitude to other agents who put her in the position to begin with. That is, the situation of wanting to be "reelected" to a position influences behavior in addition to any inherent other-regarding preferences (or lack of them, in the case of selfish candidates who mimic in order to be reelected). For incumbent politicians, the desire to be reelected is a key "constraint" on their behavior when it comes to courting potential voters, as argued in the introduction. Hence, an experiment putting individuals in the situation where retention in office is key to their material payoffs seems a good laboratory to test how such concerns affect their inherent reciprocity, even though the subjects themselves are not professional politicians.

# 6 Conclusion

Reelection or retention is a key desire of officeholders. Reciprocity to kind actions is a key characteristic of human behavior. How will this desire affect gratitude to voters who were responsible for the leader to be in office in the first place, when such reciprocity conflicts with the likelihood of reelection? We study this conflict in a theoretical model of a setting where reelection requires a candidate signalling to the relevant voters that she shares their policy preferences. We then test the model in a laboratory experiment and find its predictions are upheld. We think the model is interesting in itself in presenting a reelection strategy not common in the literature (and hence may provide a useful approach to modeling electoral strategies), but the more novel part of the paper is the experiment and its results.

We may divide our results into two parts. First, we find that in a setting where attracting voters means signalling unobserved candidate type, subjects in the lab act in accordance with a basic signalling model. Candidates play their first-best choices where signalling is not possible but restrict those choices when signalling of type may help their reelection chances. Voters appear to read the signals correctly.

Second, we find that in the laboratory that the desire to be reelected may limit intrinsic reciprocity of an elected leader to reciprocate to the voters who put her in office, but does

not eliminate it entirely. In other words, reciprocity still is present in elected leaders (in the lab) even when put in a situation where "political" concerns, such as the desire to be reelected, are also present.

This would certainly seem to be descriptive of other-regarding individuals. Instrumental concerns may reduce their kindness and reciprocity to kindness, but do not generally eliminate them. We would argue the same is true for politicians and elected leaders in the real world. Elected officials are grateful to the voters who elected them. If self-interest fully (T)rumps gratitude, it is probably because those officials weren't very other-regarding to begin with.

**REFERENCES**


Ariely, D., A. Bracha, and S. Meier (2009), "Doing Good or Doing Well? Image Motivation and Monetary Incentives in Behaving Prosocially," *American Economic Review* 99(1), 544-555.

Barrett, G. and S. Donald (2003), "Consistent Tests for Stochastic Dominance," *Econometrica* 71(1), 71-104.

Bénabou, R. and J. Tirole (2006), "Incentives and Prosocial Behavior," *American Economic Review* 96 (5), 1652-78.

Besley, T. and S. Coate (1997), "An Economic Model of Representative Democracy," *The Quarterly Journal of Economics* 112 (1), 85-114.

Binder, S. (1997), *Minority Rights, Majority Rule: Partisanship and the Development of Congress*, Cambridge: Cambridge University Press.

Bolton, G., E. Katok, and A. Ockenfels (2004), "How Effective Are Electronic Reputation Mechanisms? An Experimental Investigation," *Management Science* 50(11), 1587-1602.

Brandts, J. and C. Holt (1992), "An Experimental Test of Equilibrium Dominance in Signaling Games," *American Economic Review* 82(5), 1350-1365.

Brandts, J. and N. Figueras (2003), "An Exploration of Reputation Formation in Experimental Games," *Journal of Economic Behavior and Organization* 50(1), 89-115.

Brown, Donald (1991), *Human Universals*, New York: McGraw Hill.

Cadsby, C.B., M. Frank, and V. Maksimovic (1998), "Equilibrium Dominance in Experimental Financial Markets," *The Review of Financial Studies* 11(1), 189-232.

Camerer C. and E. Fehr (2006), "When Does "Economic Man" Dominate Social Behavior?," *Science* 311 (5757), 47-52.

Camerer, C. and K. Weigelt, (1988), "Experimental Tests of a Sequential Equilibrium Reputation Model," *Econometrica* 56(1), 1-36.

Cho, I. and D. Kreps (1987), "Signaling Games and Stable Equilibria," *The Quarterly Journal of Economics* 102(2), 179-221.

Cox, G. (2010), "Swing Voters, Core Voters, and Distributive Politics," in I. Shapiro, S. Stokes, E. Wood, and A. Kirshner (eds.), *Political Representation*, Cambridge: Cambridge University Press.

Cox, J., D. Friedman and S. Gjerstad (2007), "A Tractable Model of Reciprocity and Fairness" *Games and Economic Behavior* 59, 17–45.

Drazen, A. and M. Eslava (2013), "Programmatic Targeting," working paper.

Drazen, A. and E. Ozbay (2019), "Does 'Being Chosen to Lead' Induce Non-Selfish Behavior? Experimental Evidence on Reciprocity," *Journal of Public Economics* 174, 13-21.

Enemark, D., C. Gibson, M. McCubbins, and B. Seim (2016), "Effect of Holding Office on the Behavior of Politicians," Proceedings of the National Academy of Sciences 113 (48) 13690-13695.

Fehr, E., G. Kirchsteiger and A. Riedl (1993), "Does Fairness Prevent Market Clearing? An Experimental Investigation" *The Quarterly Journal of Economics* 108(2), 437-459.

Fehr, E., and K. Schmidt (1999). "A Theory of Fairness, Competition, and Cooperation." *The Quarterly Journal of Economics*, 114(3), 817-868.

Fehr, E., and K. Schmidt (2006), "The Economics of Fairness, Reciprocity and Altruism–Experimental Evidence and New Theories," in *Handbook of the Economics of Giving, Altruism and Reciprocity*, 1, 615-691.

Ferejohn, J. (1986), "Incumbent Performance and Electoral Control," *Public Choice* 50, 5-26.

Finan, F. and L. A. Schechter (2012), "Vote-Buying and Reciprocity," *Econometrica*, 80(2), 863-881.

Fischbacher, U. (2007), "z-Tree: Zurich Toolbox for Ready-made Economic Experiments," *Experimental Economics*, 10(2), 171-178.

Frey B. S. and F. Oberholzer-Gee, (1997), "The Cost of Price Incentives: An Empirical Analysis of Motivation Crowding-Out," *American Economic Review* 87(4), 746-755

Gneezy, U. and A. Rustichini (2000), "Pay Enough or Don't Pay at All," *Quarterly Journal of Economics*, 115(3), 791–810

Grosskopf, B. and R. Sarin (2010), "Is Reputation Good or Bad? An Experiment," *American Economic Review* 100, 2187-2204.

Hahn, V. (2009), "Reciprocity and Voting," *Games and Economic Behavior* 67 (2), 467-480.

Kirkland, J. and R. L. Williams (2014), "Partisanship and Reciprocity in Cross-Chamber Legislative Interactions," *Journal of Politics* 76(3), 754-769.

Levine, D. (1998), "Modeling Altruism and Spitefulness in Experiments," *Review of Economic Dynamics* 1, 593–622.

Malmendier, U. V. te Velde, and R. Weber (2014), "Rethinking Reciprocity," Annual Review of Economics 6, 36.1–36.26 .

Martorano, M. (2004), "Cohesion or Reciprocity? Majority Party Strength and Minority Party Procedural Rights in the Legislative Process," *State Politics & Policy Quarterly* 4(1), 55-73

Mellström, C. and M. Johannesson (2008), "Crowding Out in Blood Donation: Was Titmuss Right?," *Journal of the European Economic Association* 6(4), 845–863.

Neral, J. and J. Ochs (1992), "The Sequential Equilibrium Theory of Reputation Building: A Further Test," *Econometrica* 60(6), 1151-1169.

Niza C., B. Tung, and T.M. Marteau (2013), "Incentivizing Blood Donation: Systematic Review and Meta-Analysis to Test Titmuss' Hypotheses," *Health Psychology* 32(9), 941-949.

Osborne, M. J., and A. Slivinski (1996), "A Model of Political Competition with Citizen-Candidates," *The Quarterly Journal of Economics* 111(1) 65-96.

Ozbay, E. Y. and O. Tonguc (2018), "Vote Buying with and without Binding Promises," working paper.

*Philadelphia Inquirer*, November 8, 2012, "Will Philly reap rewards for big Obama turnout?"

Promberger, M., and Marteau, T. M. (2013), "When Do Financial Incentives Reduce Intrinsic Motivation? Comparing Behaviors Studied in Psychological and Economic Literatures," *Health Psychology* 32(9), 950-957.

Rabin, M. (1993), "Incorporating Fairness into Game Theory and Economics," *American Economic Review* 83, 1281-1302.

Rogoff, K. (1990), "Equilibrium Political Budget Cycles," *American Economic Review* 80(1) 21-36.

Rogoff, K. and A. Sibert (1988), "Elections and Macroeconomic Policy Cycles," *Review of Economic Studies* 55(1), 1-16.

Schlesinger, J. (1991), *Political Parties and the Winning of Office*, Ann Arbor: University of Michigan Press.

Sobel, J. (2005), "Interdependent Preferences and Reciprocity," *Journal of Economic Literature* 43(2): 392-436.

Toussaert, S. (2017), "Intention-Based Reciprocity and Signaling of Intentions," *Journal of Economic Behavior and Organization* 137, 132-144.

Weingast, B. (1979), "A Rational Choice Perspective on Congressional Norms," *American Journal of Political Science* 23(2), 245-62.