Positive and Negative Reciprocity in Clientelism: An Experimental Evidence

Han Il Chang*

February 25, 2012

Draft Version

Abstract

Clientelism, or vote-buying, is an old research topic in political science but it still attracts many scholars for diverse reasons. Nevertheless, most of the scholars still share the idea that private transfers compensate a loss in utility resultant from changing vote behavior. Recently, there are a few scholars who suggest, alternatively, that a voter may vote for a politician in order to reward provision of a private transfer, which corresponds to positive reciprocity. However, no rigorous empirical evidence has been established for positive reciprocity. This paper also studies such alternative role of private transfers but it makes two novel contributions. First, the paper provides experimental evidence for positive reciprocity. Additionally, the paper finds that private transfers can work through negative reciprocity in that if a politician does not provide a private transfer, a voter votes for another in order to punish the negligent politician even though the deviation is not in the voter’s self-interest.

*Ph.D. candidate, Politics Department, New York University. Email address: hc665@nyu.edu. I am grateful to Eric Dickson, Rebecca Morton, and Leonard Wantchekon for their support and advice. I also thank Benjamin Pasquale and Shana Warren for their help in conducting the experiment. The experiment was programmed and conducted with the software z-Tree (Fischbacher 2007). The Center for Experimental Social Science (CESS), New York University, provided its lab as well as funds for the experiment.
1 Introduction

Why do politicians provide private transfers to voters? What is the role of private transfers in clientelism or vote-buying? Though political scientists have studied clientelism for a long time, they have relied on the common idea that private transfers induces voters to change their votes by compensating a resultant loss in utility. While earlier political scientists focused on existence of clientelism in a country (Chubb 1982, Fox 1994, Kitschelt et al. 1999, Schady 2000, Wantchekon 2003, Vincente 2007), recent political scientists are more interested in diverse issues regarding clientelism. For example, Gans-Morse et al. (2009), Nichter (2008), and Stokes (2005) study how different types of observability of voting behavior lead to targeting different types of voters. Keefer (2008), Keefer and Vlaicu (2007) and van de Walle (2007) are interested in relationship between regime change and clientelism. Hagopian et al. (2009), Nichter (2011) and Weitz-Shapiro (2011) study how programatic politics successfully emerged from clientelism in Brazil and Argentina. Nevertheless, scholars still share the idea that private transfers compensate a loss in utility resultant from changing vote behavior. For example, the two influential papers, Dixit and Londregan (1996) and Lindbeck and Weibull (1987), studied which group candidates target under the assumption that a voter changes her vote if and only if it is self-interested, implying the compensation role of private transfers in that the transfers must compensate a resultant net utility. The compensation role of private transfers is implicit in Gans-Morse et al. (2009), Nichter (2008), and Stokes (2005).

The compensation role of private transfers requires the condition of observability of voting behavior because reception of a private transfer is not self-binding. Like other political institutions, clientelism can be understood as a game where actors must solve credible commitment problems in the sense that anything promised is realized after an election, while the promise is given before the election (Schaffer and Schedler 2007, Stokes 2005, Nichter 2008). On the one hand, from the perspective of a voter, what a politician promised during an electoral campaign can be overridden once the politician wins the election. On the other hand, from the perspective of a politician, a provision of a private transfer to a voter during an electoral campaign will become a waste unless the voter actually votes for the politician.
at the ballot box. Hence, as Weitz-Shapiro (2009) asserts, it follows that observability at the ballot box is a necessary condition for clientelism to succeed. Nevertheless, any empirical evidence to prove the assumption that observability at the ballot box is essential in clientelism has not yet been established. Having no evidence to support the assumption prevents us from understanding other possible conditions for the existence of clientelism.

Recently, a few scholars consider alternative roles of private transfers but their empirical findings are not convincing. For example, Finan and Schechter (2011) surveyed whether middlemen in Paraguay believed villagers provided votes in a 2006 municipal as reciprocity for goods. The authors found a positive correlation between the perceived reciprocity of villagers and reception of some goods. However, the authors did not control for the compensation role of private transfers which perhaps led to the observed positive correlation. For example, suppose that villagers’ net utility to go to the poll for a candidate was negative but small. Then, according to Nichter (2009), the villagers were more likely to receive private transfers from the candidate and vote for the candidate as long as a probability of detection on the villagers’ turnout is effectively high. If this is the case, middlemen might have positive perception about the villagers’ reciprocity, causing the candidate to keep targeting the villagers. Indeed, according to the summary statistics that the authors provide, there is a significant difference in perception of confidentiality at the ballot box between the middlemen and their villagers. When the perception was measured between 0 and 1, the villagers’ average perception (0.535) on confidentiality at the ballot box was much lower than the middlemen’s (0.933). Furthermore, even if the compensation role of private transfers did not work, Finan and Schechter (2011)’s empirical finding did not show a reciprocal role of private transfers in that those who are reciprocal were selectively targeted by the principal of the middlemen.

One reason that studies of alternative roles of private transfers are rare and unconvincing is, as shown in the case of Finan and Schechter (2011), the failure to notice the importance of differentiating conceptually alternative roles from the compensation role of private transfers and designing a research to separate behaviorally the former from the latter. The second

---

1 Weitz-Shapiro states “for clientelism to ’succeed,’ a voter must believe that there is a reasonable probability that her choice at the ballot box can be observed. This belief that her vote may be observed - and her fear of the consequences if she makes the ‘wrong’ choice - is what leads the voter to exchange her political support for some valuable good or service.”
reason is the difficulty in separating effects of private transfers from effects of unobservable variables like the extent that voters believe they share interests with a politician providing transfers, how reciprocal the voters are, the extent to which voters believe their voting choices will remain anonymous, and how vulnerable the voters are to a fear of being punished when they do not vote for the politician providing transfers. Given that such unobservable variables are highly influential on voters’ perception about which voting choice is self-interested, it is difficult to separate alternative roles from the compensation role of private transfers without controlling the unobservable variables.

For a study of alternative roles of private transfers, I designed a lab experiment where two different types of reciprocity, positive and negative, can be effectively separated from the compensation role of private transfers by controlling various unobservable variables. Behavioral economists have empirically found and conceptually developed behavioral deviations from self-interest. Among others, Fehr et al. (1993), Berg et al. (1995), and McCabe et al. (1996) find that there are positive correlations between the amount of favor that an individual receives from a donor and the amount of return that the individual sends to the donor though it is self-interested for both not to donate and not to give back, which is considered “positive reciprocity.” In other words, subjects reciprocate positively to beneficial behaviors with kind reactions. Also, Cameron (1999), Güth et al. (1982), Kahneman et al. (1986), and Roth et al. (1991) find that subjects punish their partners if they believe their partners to be unfair even though there is no gain in doing so, which is labeled “negative reciprocity.” Given that provision of private transfers is beneficial behavior, voters’ reaction to the provision, voting for a politician providing the transfers though the transfers can not compensate the resultant loss in utility, can be interpreted as positive reciprocity. Conversely, given that no provision of private transfers is unkindly behavior, their reaction, deviating from voting for a politician who does not provide transfers though it is not self-interested, can be interpreted as negative reciprocity.

\[\text{For example, people have a strong tendency to keep what is already given rather than to put forth a challenge to obtain what has not yet been given (Kahneman et al. 1990, Tversky and Kahneman 1991). Also, people tend to exaggerate the degree to which their future tastes will be the same as or similar to their current tastes (Loewenstein et al. 2003). Finally, social preferences like altruism has also been reported as an important factor guiding social behaviors (Forsythe et al. 1994, Fowler 2006, Andreoni and Miller 2002, Andreoni 2006). For a review of such non-self interested behavior, see Rabin (1998) and Dellavigna (2009).}\]
In addition to private transfers, I introduce three treatment variables that affect a self-interested voting behavior. The first treatment variable is a type of detection mechanism. Nichter (2009) studies turnout detection where politicians can detect only voters’ turnout whereas Stokes (2005) studies voting choice detection where politicians can detect voting choice at the ballot box, respectively. The two different detection mechanisms yield different predictions regarding which group politicians will target across the entire voter population, which implies that a self-interested voting choice is conditional on a detection mechanism. By introducing the two different detection mechanisms into the experiment, I expect to be able to observe under which detection type deviation from self-interest becomes stronger. Second, a probability that a voter shares interests with a politician is treated. I expect positive and negative reciprocity to be observed when a voter does not believe she shares interests with a politician providing a private transfer and when the voter does believe so, respectively. The last variable is a probability that a politician detects successfully a voting behavior of a voter who receives a private transfer from the politician. By the compensation role of private transfers, it is the self-interest of the voter not to vote for the politician as long as the probability is sufficiently low. Hence, this variable also allows for a test of the logical conclusion of the compensation role of private transfers that observability is a necessary condition for clientelism to succeed. I expect that given provision of a private transfer, a voter’s choice is not conditional on detection probabilities if the voter believes she shares interests with a politician providing the transfer because neither self-interest nor negative reciprocity, which is conditional on no provision of a private transfer, leads to deviation from voting for the politician. Rather, the detection probabilities are likely be influential on voting choices only when the voter does not believe she shares interests with the politician and detection type is the voting choice detection. It is because voting for the candidate without a private transfer is not self-interested and, even if the voter receives a transfer from the politician, the turnout detection can not make the voter’s choice at the ballot box binding. However, if the transfer affects the voter’s choice at the ballot box through positive reciprocity, the voter will vote for the politician even with the turnout detection and a low detection probability.

Five sections follow. In order to generate testable hypotheses, I provide in the next section
a formal model where parameters capturing a probability of shared interests with a politician and a detection probability are introduced. Also, the voter must consider two different types of observability: that pertaining to vote choice and that pertaining to turnout. The following section discusses an experimental design for testing hypotheses generated from the formal model. Then, I report results from the experiment. Briefly speaking, the experiment reveals, first, that given provision of private transfers, detection probabilities are positively correlated with voting choices regardless of detection mechanism only when it is low a probability of shared interests between voters and politicians. When voting choices under provision of private transfers are compared to those under no provision of transfers, it turns out that the observed positive correlation between voters politicians under voting choice detection is driven by increased detection probabilities whereas the positive correlation under turnout detection is driven by positive reciprocity. Also, when the probability of shared interests is high and only turnout is detected with positive probability, voters punish politicians when private transfers are not provided even though this is not in their self-interest which corresponds to negative reciprocity. However, even when a probability of shared interests is high, negative reciprocity does not appear if voting choice can be detected with positive probability. I conclude with a section discussing the implications of the experimental findings.

2 A model of clientelism and predictions

I provide a simple model as a starting point. There are three actors in the game, two politicians, $A$ and $B$, and one voter, $I$. It is assumed that unlike $B$, $A$ can decide whether or not to provide $I$ with a transfer $T$. Given $A$’s provision of $T$ to $I$, there are two ways in which $A$ can observe $I$’s subsequent voting behavior. First, $A$ can detect whether or not $I$ turned out, which is labeled ‘turnout detection.’ Second, $A$ can detect whether or not $I$ voted for $A$, which is labeled ‘voting choice detection.’ Which type of observability $A$ has is exogenously determined before the game begins and all actors are informed about the type of observability. However, when $A$ does not provide $T$ to $I$, it is assumed that $A$ does not

---

3A more fully specified model of clientelism is provided in another paper.
use the detection capability on I.

Each detection is probabilistic in that there is a chance that A fails to observe I’s voting behavior. Hence, A may fail to detect whether or not I turned out under turnout detection. In the same vein, A may fail to detect whether or not I voted for A under voting choice detection. The probability that A detects successfully I’s voting behavior is denoted by $Q_t$ for turnout detection and $Q_v$ for voting choice detection. Further, it is assumed that $Q_v$ treats the three options equally in the sense that the probability of being detected is the same across the three options, voting for A, voting for B, and abstention. Once I is detected by A, I is always punished as long as I did not turnout under turnout detection or I did not vote for A under voting choice detection. When I is punished, I is deprived of $T$.

Table 1: Punishment for I under Turnout detection ($Q_t$) and Voting choice detection ($Q_v$)

<table>
<thead>
<tr>
<th></th>
<th>$Q_t$</th>
<th>$1 - Q_t$</th>
<th>$Q_v$</th>
<th>$1 - Q_v$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voting for A</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Abstention</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Voting for B</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 1 shows a probability of being punished under each detection type. The probability of being punished for voting for A is 0 regardless of the detection type whereas the probability of being punished for abstention is $Q_t$ under turnout detection and $Q_v$ under voting choice detection. The probability of being punished for voting for B is 0 under turnout detection but the probability is $Q_v$ under voting choice detection.

I shares interests with A and B with probability $P$ and $1 - P$, respectively. When I chooses one option among voting for A, abstention, and voting for B, A’s winning probability becomes $r_1$, $r_2$, and $r_3$, respectively. Further, it is assumed that $r_1 > r_2 > r_3$. At the same time, B’s winning probability becomes $1 - r_1$, $1 - r_2$, and $1 - r_3$, respectively. Then, an electoral outcome is realized according to a probability that A wins. Regardless of how I chooses, I receives additional earnings of $K$ only when an electoral winner shares interests.

---

4 The results of the model are qualitatively the same if I assume that the probability of detection of voting for A or B is conditional on the detection of turnout.

5 In a more fully specified game these probabilities are endogenously determined and are a function of the anticipated voting choices of other voters, candidate behavior, etc. To simplify the experimental design these parameters are treated as constants and are set exogenously in the experiment.
with $I$ as shown Table 2. $A$ with budget constraint $L \geq T$ receives $W$ from an electoral victory but 0 from defeat. All parameters described above are common knowledge.

<table>
<thead>
<tr>
<th></th>
<th>A wins</th>
<th>B wins</th>
</tr>
</thead>
<tbody>
<tr>
<td>$I$ shares interests with $A$</td>
<td>$K$</td>
<td>0</td>
</tr>
<tr>
<td>$I$ shares interests with $B$</td>
<td>0</td>
<td>$K$</td>
</tr>
</tbody>
</table>

Then, when the cost of voting is $C$, $I$’s expected utilities from voting for $A$, abstention, and voting for $B$ under turnout detection are equal to

$$EU_I(\text{voting for } A) = (1 - r_1)(1 - P)K + r_1 PK - C + T$$  \hspace{1cm} (1)$$
$$EU_I(\text{abstention}) = (1 - r_2)(1 - P)K + r_2 PK + (1 - Q_t)T$$  \hspace{1cm} (2)$$
$$EU_I(\text{voting for } B) = (1 - r_3)(1 - P)K + r_3 PK - C + T$$  \hspace{1cm} (3)$$

Next, the voter’s expected utilities from voting for $A$, abstention, and voting for $B$ under voting choice detection are equal to

$$EU_I(\text{voting for } A) = (1 - r_1)(1 - P)K + r_1 PK - C + T$$  \hspace{1cm} (4)$$
$$EU_I(\text{abstention}) = (1 - r_2)(1 - P)K + r_2 PK + (1 - Q_v)T$$  \hspace{1cm} (5)$$
$$EU_I(\text{voting for } B) = (1 - r_3)(1 - P)K + r_3 PK - C + (1 - Q_v)T$$  \hspace{1cm} (6)$$

The game proceeds as follows. First, the probability that $I$ shares interests with $A$, the detection type, the probability that $A$ can detect $I$’s voting behavior, and the amount of $T$ are exogenously determined. Then, $A$ decides whether or not to provide $T$ to $I$. Next, $I$ chooses whether to vote for $A$, abstain, or vote for $B$. Fourth, an electoral outcome is realized. Finally, if $A$ did not give $T$ to $I$, final payoffs of all actors are determined without detection and punishment. If $A$ gave $T$ to $I$ before the election, the final payoffs are determined after detection and punishment. Since all of the parameters and sequence of moves are common knowledge, an equilibrium strategy is defined in terms of subgame perfect equilibrium.
Figure 1: A simple model of Clientelism: Turnout Detection

\[
\begin{align*}
\text{Politicman A} & \\
\text{Provide T} & \\
\text{Voter I} & \\
\text{Vote for A} & \quad -T + W_{r_1} \\
& \quad \frac{(1 - r_1)(1 - P)K}{(1 - r_1)(1 - P)K} \\
& \quad r_1PK - C + T \\
\text{Abstention} & \\
\text{Voter I} & \\
\text{Vote for B} & \quad W_{r_2} \\
& \quad \frac{(1 - r_2)(1 - P)K}{(1 - r_2)(1 - P)K} \\
& \quad r_2PK - C \\
\text{Not provide T} & \\
\text{Voter I} & \\
\text{Vote for A} & \quad W_{r_3} \\
& \quad \frac{(1 - r_3)(1 - P)K}{(1 - r_3)(1 - P)K} \\
& \quad r_3PK - C \\
\text{Abstention} & \\
\text{Voter I} & \\
\text{Vote for B} & \quad -T + W_{r_2} \\
& \quad \frac{(1 - r_2)(1 - P)K}{(1 - r_2)(1 - P)K} \\
& \quad r_2PK + (1 - Q_v)T \\
\end{align*}
\]

If's expected utilities under voting choice detection are the same with ones under turnout detection except the case where I abstains or votes for B given A provides T. Under voting choice detection,

\[
\begin{align*}
\text{EU}_I(\text{Abstention}) &= r_2PK + (1 - r_2)(1 - P)K + (1 - Q_v)T \\
\text{EU}_I(\text{Voting for B}) &= r_3PK + (1 - r_3)(1 - P)K - C + (1 - Q_v)T
\end{align*}
\]
2.1 Voter I’s equilibrium strategies

To see equilibrium strategies of I, first suppose that A is able to observe only I’s turnout. From the payoffs in Figure 1, it is straightforward to show the following equilibrium strategies.

\[
\begin{align*}
\text{voting for A} & \quad \text{if } P \geq \frac{C}{2K(r_1-r_2)} + \frac{1}{2} \\
& \quad \text{and if } \frac{1}{2} < P < \frac{C}{2K(r_1-r_2)} + \frac{1}{2} \text{ and } T \geq \frac{C+K(r_1-r_2)(1-2P)}{Q_t} \\
\text{abstention} & \quad \text{if } \frac{1}{2} < P < \frac{C}{2K(r_1-r_2)} + \frac{1}{2} \text{ and } T < \frac{C+K(r_1-r_2)(1-2P)}{Q_t} \\
& \quad \text{and if } \frac{1}{2} - \frac{C}{2K(r_2-r_3)} < P \leq \frac{1}{2} \\
\text{voting for B} & \quad \text{if } P \leq \frac{1}{2} - \frac{C}{2K(r_2-r_3)} \\
\end{align*}
\]

Figure 2: Equilibrium strategies under turnout detection

Figure 2 shows, first, that provision of $T$ can effectively induce I’s support only when $\frac{1}{2} < P < \frac{C}{2K(r_1-r_2)} + \frac{1}{2}$. When $P$ is sufficiently large, I may go to the polls to vote for A without provision of $T$. However, when $P$ is smaller than $\frac{1}{2}$, I does not vote for A regardless of provision of $T$. Secondly, voting for A is positively correlated with $P$ in that I is more likely to vote for A as $P$ increases. When $P \leq \frac{1}{2}$, I does not vote regardless of $T$. When $\frac{1}{2} < P < \frac{C}{2K(r_1-r_2)} + \frac{1}{2}$, I votes for A only if $T$ is sufficiently large. However, when $P \geq \frac{1}{2}$, I always votes for A regardless of $T$. Finally, detection probability on turnout, $Q_t$, is positively correlated with voting for A only when $\frac{1}{2} + \frac{C}{2K(r_1-r_2)} > P > \frac{1}{2}$ in that the larger $Q_t$, the more
effective $T$ is in inducing $I$ to change a vote from abstention to voting for $A$ only within the domain.

Next, suppose that $A$ is able to detect whether or not $I$ voted for $A$. Under voting choice detection, $I$’s optimal strategy is as follows.

$$
\begin{align*}
\text{voting for } A & \quad \text{if } P \geq \frac{C}{2K(r_1-r_2)} + \frac{1}{2} \\
\text{and if } \frac{1}{2} < P < \frac{C}{2K(r_1-r_2)} + \frac{1}{2} \text{ and } T \geq \frac{C+K(r_1-r_2)(1-2P)}{Q_v} \\
\text{abstention} & \quad \text{if } \frac{1}{2} < P < \frac{C}{2K(r_1-r_2)} + \frac{1}{2} \text{ and } T < \frac{C+K(r_1-r_2)(1-2P)}{Q_v} \\
\text{voting for } A & \quad \text{if } \frac{1}{2} - \frac{C}{2K(r_2-r_3)} < P \leq \frac{1}{2} \text{ and } T \geq \frac{C+K(r_1-r_2)(1-2P)}{Q_v} \\
\text{abstention} & \quad \text{if } \frac{1}{2} - \frac{C}{2K(r_2-r_3)} < P \leq \frac{1}{2} \text{ and } T < \frac{C+K(r_1-r_2)(1-2P)}{Q_v} \\
\text{voting for } A & \quad \text{if } P \leq \frac{1}{2} - \frac{C}{2K(r_2-r_3)} \text{ and } T \geq \frac{K(r_1-r_3)(1-2P)}{Q_v} \\
\text{voting for } B & \quad \text{if } P \leq \frac{1}{2} - \frac{C}{2K(r_2-r_3)} \text{ and } T < \frac{K(r_1-r_3)(1-2P)}{Q_v}
\end{align*}
$$

Figure 3: Equilibrium strategies under voting choice detection

Figure 3 shows, first, that when $A$ can detect whether or not $I$ voted for $A$, $A$ can induce $I$ to vote for $A$ even when a probability of shared interests, $P$, is smaller than $\frac{1}{2}$, which is different from the case where $A$ can detect only turnout. However, when $T$ is not large enough to induce $I$ to vote for $A$, a relative size of the cost of voting determines $I$’s optimal choice between abstention and voting for $B$ in that $I$ is more likely to vote for $B$ as $C$ de-
creases. Secondly, I’s voting for A is positively correlated with P. When P is larger than \( \frac{C}{2K(r_1 - r_2)} + \frac{1}{2} \), I goes to the polls to vote for A independently of A’s provision of T. When P is smaller than \( \frac{C}{2K(r_1 - r_2)} + \frac{1}{2} \), I votes for A as long as T is sufficiently large but the sufficient amount of T is negatively correlated with P. Finally, I’s voting for A is positively correlated with a probability that a vote choice is detected, \( Q_v \), only when \( P < \frac{1}{2} + \frac{C}{2K(r_1 - r_2)} \). If P is larger than \( \frac{1}{2} + \frac{C}{2K(r_1 - r_2)} \), I votes for A regardless of a detection probability.

2.2 Politician A’s optimal strategies

A will choose to provide T to I if doing so increases his or her chance of winning. That is, providing T should induce I to vote for A. Also, provision of T must increase A’s expected utility. That is, A does not have an incentive to provide T to I though provision of T is effective in inducing I’s voting for A unless a net benefit from the induced voting is positive. Put differently, when W is A’s additional earnings from an electoral victory, T should satisfy the condition that \( Wr_1 - T > Wr_2 \) or \( Wr_1 - T > Wr_3 \) if I’s optimal strategy under no provision of T is abstention or voting for B, respectively.

Then, when A can observe only whether or not I goes to the polls, A’s optimal choice is the same as follows.

\[
\begin{align*}
\text{Not Provide } T & \quad \text{if } P \geq \frac{C}{2K(r_1 - r_2)} + \frac{1}{2} \\
& \quad \text{and if } \frac{1}{2} < P < \frac{C}{2K(r_1 - r_2)} + \frac{1}{2} \\
& \quad \text{but either } W(r_1 - r_2) \leq T \text{ or } T < \frac{C + K(r_1 - r_2)(1 - 2P)}{Q_v} \\
\text{Provide } T & \quad \text{if } \frac{1}{2} < P < \frac{C}{2K(r_1 - r_2)} + \frac{1}{2} \text{ and } W(r_1 - r_2) > T \geq \frac{C + K(r_1 - r_2)(1 - 2P)}{Q_v} \\
\text{Not Provide } T & \quad \text{if } P \leq \frac{1}{2}
\end{align*}
\]

Next, suppose that A can observe whether or not I voted for A. Then, A’s optimal choice is as follows.
2.3 Hypotheses

From equilibrium strategies of $A$ and $I$, I aim to test experimentally the four comparative static predictions. First, I test whether or not observability of voting behavior is essential in clientelism with the following hypothesis.

**Hypothesis 1.** Given $A$’s provision of $T$ to $I$, I’s voting choice is independent of the probability that $I$ is detected by $A$ regardless of the detection type, if I’s belief is strong that I’s interests are shared with $A$.

Next, the formal model does not yield a prediction to differentiate turnout detection and voting choice detection if the probability of shared interests between $I$ and $A$ is high. However, the formal model predicts different effects of the two detection types when the probability is low.

**Hypothesis 2.** Given $A$’s provision of $T$ to $I$, detection effects do not vary between the two detection types when I’s belief is strong that I’s interests are shared with $A$. However, the detection probability is positively correlated with voting for $A$ only under voting choice detection if I’s belief is weak that I’s interests are shared with $A$.

Next, equilibrium strategies of $A$ and $I$ suggest three possible roles. First, $T$ compensates
a net loss from a change in votes, so that it induces $A$ to vote for $T$. Then, compensation occurs when $\frac{1}{2} < P < \frac{1}{2} + \frac{C}{2K(r_1-r_2)}$ under turnout detection and $P < \frac{1}{2} + \frac{C}{2K(r_1-r_2)}$ under voting choice detection because it can be optimal to vote for $A$ after receiving $T$ only under these circumstances. As shown in Figure 2 and 3, $I$ changes her voting behavior from either abstention or voting for $B$ to voting for $A$ as long as $T$ is sufficiently large. However, when $P \geq \frac{1}{2} + \frac{C}{2K(r_1-r_2)}$ under turnout detection as well as voting choice detection, $T$ does not affect $I$’s voting choice, such that compensation does not occur. Also, when $P \leq \frac{1}{2}$ under turnout detection, $T$ does not affect $I$’s voting choice, so that again compensation does not occur. While the compensation role is self-interested behavior, there are two other roles of transfers that rely on violations of self-interest: positive reciprocity and negative reciprocity.

Provision of $T$ may cause $I$ to reward $A$ by helping $A$ win an election though the amount of $T$ is not large enough to compensate $I$’s loss from voting for $A$. Then, the reward role is expected to occur when $I$’s belief on sharedness of interests with $A$ is weak ($P < \frac{1}{2} + \frac{C}{2K(r_1-r_2)}$) under turnout detection as well as voting choice detection because when the belief is strong, the voter is motivated to vote for $A$ for self-interested reasons. Given that provision of $T$ is $A$’s kind behavior, $I$’s voting for $A$ despite a weak belief on sharedness corresponds to positive reciprocity.

**Hypothesis 3.** Provision of transfers affects $I$’s behavior by generating positive reciprocity when $I$’s belief is weak that $I$ shares interests with $A$.

Conversely, $A$’s failure to provide a transfer may cause $I$ to punish $A$, implying that provision of $T$ is to avoid the punishment. If $I$’s belief on sharedness of interests with $A$ is weak ($P \leq \frac{1}{2} - \frac{C}{2K(r_2-r_3)}$), such that voting for $B$ is in $I$’s self-interest, $I$ cannot damage $A$’s electoral victory probability further when $A$ does not provide $T$. However, if $I$’s belief is strong ($P > \frac{1}{2} - \frac{C}{2K(r_2-r_3)}$), so that it is in $I$’s self-interest to vote for $A$, $I$ may deviate from voting for $A$ to abstention or voting for $B$ when $A$ does not provide $T$. Hence, $T$’s role of exemption from punishment is expected to occur when $P > \frac{1}{2} - \frac{C}{2K(r_2-r_3)}$ under turnout detection as well as voting choice detection. Given that $A$’s failure to provide $T$ is unkind behavior, $I$’s voting for $B$ or abstention despite a strong belief of shared interests corresponds to negative reciprocity.
Hypothesis 4. A’s failure to provide a transfer affects I’s behavior by generating negative reciprocity when I’s belief is strong that I shares interests with A.

3 Experimental Design

This section presents an experiment designed to test the four hypotheses. The main treatment variables are four-fold: probabilities that a voter shares interests with a politician, detection types, a private transfer, and probabilities that the voter’s behavior is detected. Four letters at each cell in Figure 4 indicate the four treatment variables in sequence. First, subjects are exposed to two different detection types: turnout detection and voting choice detection. Hypothesis 2 is tested by comparison of subjects’ behaviors between the two
detection types according to a probability of shared interests under provision of a transfer (LTTL, LTTM, LTTH vs. LVTL, HVTM, LVTH and HTTL, HTTM, HTTH vs. HVTL, HVTM, HVTH). Second, the subjects are exposed to two different situations in terms of a probability that the subjects share interests with politician A who has an opportunity to provide a transfer. The probability is either 0.3 or 0.7. Third, there are three detection probabilities: 0.2, 0.5, and 0.8. Finally, there are two different conditions in terms of provision of a private transfer. For Hypothesis 1, I shall compare effects of detection probabilities on voting choices under provision of a transfer, controlling a probability of shared interests and a detection type (e.g., comparison of LTTL, LTTM, and LTTH). For Hypothesis 3 and 4, I shall compare effects of provision of a private transfer on voting choices, controlling a probability of shared interests, a detection type, and a detection probability (e.g., HTNL vs. HTTL or LVNH vs. LVTH).

There are two issues for designing an experiment. First, given that detection and punishment are conditional on provision of a transfer in reality, one may design an experiment where detection and punishment happens only under provision of a transfer. However, the experimental design fails to separate effects of a transfer from the effects of detection and punishment, leading to overestimation of the effect of a transfer. To separate the effects of detection and punishment, subjects must be detected and punished even when there is no provision of a transfer. Consequently, I use a within-subjects experimental design where subjects are exposed to two states of the world simultaneously.6 Since the two states are homogenous except that the subjects will receive treatment in one state, the within-subjects experimental design allows for controlling effects of unobservable variables including a fear of punishment after being detected.

Next, though positive reciprocity and negative reciprocity are conceptually distinguishable, the two types of reciprocity are behaviorally indistinguishable in that A’s provision of a transfer yields I’s positive reaction to the provision in both types of reciprocity. To separate behaviorally positive reciprocity from negative reciprocity, I introduce an additional experiment condition which is the same as the No Transfer condition except that there is no opportunity in which A can provide T to I. Put differently, the additional experimental

---

6For explanation of a between-subject design, see Morton and Williams(2010)
condition without an opportunity for receiving $T$ is the same as No Transfer condition in that $I$ does not receive $T$ from $A$ in both of the two conditions. Hereafter, the additional experimental condition is referred to as No opportunity condition. However, the two conditions differ in that $I$ does not receive $T$ because $A$ chooses not to provide $T$ in the No Transfer condition whereas $A$’s decision opportunity is fundamentally eliminated in the No Opportunity condition. Despite the differences between the three experiment conditions, a subject who is oriented toward maximizing self-interest will make the same voting choice in the No Transfer, Transfer, No Opportunity conditions because expected utilities among three voting choices in each experimental condition are the same. However, if the voter wants to punish $A$ for not providing $T$ despite an opportunity to provide $T$, the voter in the No Transfer condition may choose a different choice from the ones made in other conditions. In that treatment, a deviation is not predicted by self-interest because whether the voter receives $T$ or not does not affect differences in expected utilities between the three voting choices. If the subject wants to reward $A$’s provision of $T$, the subject in the Transfer condition may make a choice different from choices in other conditions. Again, the deviation violates self-interest because $T$ does not affect differences in expected utilities between the three voting choices. Consequently, the No Opportunity condition allows for identifying whether a positive vote change observed between the No Transfer and Transfer conditions results from reward or punishment.

To see how the experimental design works, suppose a voter’s choices in each experimental condition are the same as in Figure 5. Since differences in expected utilities between three voting choices, voting for $A$, abstention, and voting for $B$, remain constant across the three conditions, the voter is expected to choose the same voting choice in the three conditions when a detection type, a detection probability, and a probability of shared interests are controlled if the voter is a self-interest maximizer. As turnout is detected and

---

A subject’s expected utility from choosing a strategy in the Transfer condition is simply equal to the subject’s expected utility from choosing the same strategy in the No transfer and No opportunity conditions because there is no difference except $T$ across the three experimental conditions. Further, since $T$ is given regardless of whether the subject votes for $A$ or not in the Transfer condition, differences in expected utility between three voting choices are the same across the three experimental conditions. The instructions stated that a certain amount of $T$ would be added to a subject’s earnings in a round of the Transfer condition regardless of whether or not he or she voted for $A$. Also, subject could learn again the unconditional addition of $T$ to the subject’s earnings through a sample game before the experiment began.
the probability of shared interests is 0.7, the subject makes the same choice across the three experimental conditions when detection probability is either 0.5 or 0.8. However, when the detection probability is 0.2, the voter deviates from voting for A to abstention. The voter does not have a reason to deviate to abstention unless she does not enjoy ‘additional’ utility from punishing A. In the Transfer condition, the voter’s expected utility from voting for A is $(1 - r_1)(1 - P)K + r_1 PK - C + T$ whereas her expected utility from abstention is $(1 - r_2)(1 - P)K + r_2 PK + (1 - Q_t)T$. When there is no transfer, the difference between the two expected utilities is still the same because $T$ is subtracted from both of the two expected utilities. Then, it follows that if $EU$(voting for A) $> EU$(abstention) in the Transfer condition, it should be the case that $EU$(voting for A) $> EU$(abstention) in the No Transfer condition unless a positive value is added to $EU$(abstention) or a negative value is added to $EU$(voting for A). Further, for $EU$(voting for A) $< EU$(abstention), the absolute value of the positive or the negative value should be larger than $(EU$(voting for A)$- EU$(abstention)),
meaning that no provision of $T$ should be weighted more than the difference between the two expected utilities. In the same vein, when a subject makes the same voting choice in the No Opportunity and No Transfer conditions but the subject deviates to a vote choice favoring $A$ in the Transfer condition as shown in Figure 6, the voting pattern will be classified as positive reciprocity.

Figure 6: A sample of voting choices corresponding to positive reciprocity when the probability of shared interests is 0.3

The experiment can be divided into two parts according to role assignments. All subjects are assigned to voters in the first part but they are divided into two groups, a politician $A$ group and a voter group, in the second and the third parts. A computer takes a role of $A$ in the first part. Subjects assigned to one group in the second part are assigned to the other group in the third part. A subject in one group will be randomly matched to another subject in the other group at every round. Given that each part of the experiment

---

8A computer takes a role of politician $B$ in all of three parts.
consists of four rounds, a subject assigned to the politician A group in the second part will be randomly matched with another subject in the voter group at every round for four times. Then, after being assigned to the voter group in the third part, the subject will be randomly matched with a subject in the politician A group at every round for the next four rounds.

The No Opportunity condition is tested in the first part of the experiment whereas the No Transfer and Transfer conditions are tested in both the second and the third parts of the experiment because the No Transfer and Transfer conditions are simultaneously provided when the subject is playing the voter role. That is, voters make their choices using the strategy method, such that they choose how they will vote if they receive a transfer and how they will vote if they do not receive a transfer before being told whether the politician has given them a transfer.9 When the subject is playing the role of A, she decides whether or not to provide T to her voter partner.

---

9 In addition to evaluation of an opportunity to provide a transfer, altruism may lead to different choices between the No Opportunity and No Transfer conditions because a computer takes a role of A in the No Opportunity condition whereas a subject takes the role of A in the No Transfer condition. Given a positive effect of altruism, it may lead to overestimation of an effect of no provision under the opportunity to provide a transfer if voting behaviors between the No Opportunity and No Transfer conditions are compared. Hence, it is more desirable to design an experiment so as to control the positive effect of altruism. One way to control the positive effect of altruism is to assign subjects to the politician A group in the first part as in the second and the third parts but to deprive of the subjects assigned to the politician A group the opportunity to decide provision of a transfer. However, it increases time for the experiment as well as the number of decisions that the subjects need to make to complete the experiment. Then, the subjects may lose their attention to the experiment before completing the experiment. Hence, to keep the subjects’ attention to the experiment until it is over, I choose the way that a computer takes a role of A. Nevertheless, as I shall discuss, the possibility of altruism does not bother my interpretation of experimental results because altruism must appear to countervail negative reciprocity if there is any effect of altruism.
Figure 7 shows a decision table that a subject will see on a computer screen at each round in the first part of the experiment. As shown in the figure, voting choices under three different detection probabilities are simultaneously asked in order to reduce time for the experiment. Then, the subject makes a decision under each detection probability. Given that there are two detection types and two types of probabilities that the subject shares interests with $A$, there are four combinations of a detection type and a probability of shared interests. A computer randomly decides an order of the four combinations before the first round of each part of the experiment begins. Once the subject makes 12 decisions at four rounds in the No Opportunity condition, the subject moves on to the next part of the experiment. Two types of tables are simultaneously provided to a subject assigned to the voter group. Given that the subject cannot directly observe whether or not the subject’s politician partner decides to provide $T$, one table is about choices for the case where the subject’s politician partner decides not to give $T$ (No Transfer condition) whereas the other table is about choices for the case where the subject’s politician partner decides to give $T$ (Transfer condition). Meanwhile, a decision table asking to decide provision of $T$ under each detection probability is provided to the subject’s politician partner. To rule out learning effects, the subject is not informed about the politician partner’s decisions until the experiment is over.

All factors affecting a subject’s voting choice are controlled as constants throughout the whole experiment. A subject’s earnings are expressed as points during the experiment and an exchange rate between 1 point and 1 cent is announced before the experiment. The subject is newly endowed with 100 points at every round when the subject plays the role of a voter. The subject receives 1000 points only when a politician that shares interests with the subject wins an election, meaning that $K$ is fixed as 1000 points in the experiment. If the subject plays the role of $A$, the subject’s additional earnings from an electoral victory, $W$, are fixed as 1100 points. Also, voting cost $C$ and private transfer $T$ are fixed as 25 and 50 points, respectively. Finally, when a voter abstains, $A$’s winning probability is equal to 0.5 whereas it becomes 0.55 when the voter votes for the politician but 0.45 when the voter votes for $B$. A subject’s earnings at each round are determined according to a random selection of one detection probability among 0.2, 0.5, and 0.8. Additionally, a subject’s earnings depend on only her choice under a randomly selected detection probability in the
No Opportunity condition. However, in the No Transfer and Transfer conditions, a subject’s earnings depend on her own choice and her matched partner’s choice made under a randomly selected detection probability. For example, suppose that under a detection probability randomly selected by a computer, a voter’s response to A’s decision of a 50 point provision was to vote for the politician, whereas the voter’s response to the politician’s decision of no provision was to abstain. Then, the politician’s winning probability becomes 0.55 due to the voter’s choice to vote for the politician if the politician actually decided to give 50 points, whereas the probability is 0.5 if the politician decided not to give 50 points. Then, the computer randomly decides whether or not the politician wins according to a newly updated winning probability. A subject’s earnings at a round are equal to the sum of endowment, the cost of voting, and additional earnings from an electoral outcome when the subject plays the role a voter but the sum of endowment, provision of T, and additional earnings from an electoral outcome when the subject plays the role of A. The subject’s final earnings through the experiment are equal to the sum of her earnings from all of 12 rounds. The subject is not informed about her earnings at a round until the whole experiment is over in order to rule out learning effects. After the experiment is over, the subject is paid with a $5 show-up fee and $5 for completing a post-experiment survey in addition to the sum of her earnings through 12 rounds.

The experiment proceeded in the following order. After instructions\textsuperscript{10} were read, each subject completed a short quiz comprising of six questions not affecting his or her earnings. The correct answers were provided with explanations when subjects chose the wrong answers. Then, they played a sample game that had the same screen format as the one which they would see in the real experiment. The sample game was introduced in order to make the subject familiar with what they would do in the real experiment and to instruct them on how to read information provided on their computer screens. The No Opportunity condition was tested before the No Transfer and Transfer conditions. After a simple survey, earnings for the entire experiment were paid to all of the subjects.

\textsuperscript{10}Instructions are provided in Appendix. On the instructions, the No Transfer and Transfer conditions were referred to as the second and third parts, respectively, in order to minimize frame effects.
4 Results

This section reports results of the experiment that had been conducted in the Center for Experimental Social Science lab, New York University, using the software z-Tree (Fischbacher 2007). Each of four sessions recruited 18, 14, 22, and 10 undergraduates at NYU and the average earnings of all 64 subjects from their choices through the experiment was $14.80 including the participation fee of $10 (show-up fee $5 and survey fee $5). Table 3 reports the 64 subjects’ choices in each experimental condition.

Table 3: The number of observations on voting choices

<table>
<thead>
<tr>
<th>Experimental Condition</th>
<th>Detection Type + Probability of Shared Interests</th>
<th>0.2</th>
<th>0.5</th>
<th>0.8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Turnout + Low</td>
<td>A</td>
<td>abst</td>
<td>B</td>
</tr>
<tr>
<td>No Opportunity</td>
<td></td>
<td>2</td>
<td>14</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Voting Choice + Low</td>
<td>6</td>
<td>12</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Turnout + High</td>
<td>49</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Voting Choice + High</td>
<td>46</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>No Transfer</td>
<td></td>
<td>6</td>
<td>13</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Turnout + Low</td>
<td>6</td>
<td>13</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Voting Choice + Low</td>
<td>42</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Turnout + High</td>
<td>39</td>
<td>19</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Voting Choice + High</td>
<td>10</td>
<td>15</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>Turnout + Low</td>
<td>11</td>
<td>10</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>Voting Choice + Low</td>
<td>50</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Turnout + High</td>
<td>52</td>
<td>9</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 3 shows that the effects of the detection probabilities dramatically varied according to the probability of shared interests. When subjects were informed that the probability that they shared interests with A was low, the lower the detection probability, the less they were likely to vote for A. Additionally, the effects of the detection probabilities varied according to the detection types. The subjects were more likely to vote for A when they were under voting choice detection. When subjects were informed that the probability that they shared interests with A is high, most of them voted for A even under the lowest detection probability, 0.2. Furthermore, compared to the case when subjects were informed that the probability of shared interests with A was low, differences in voting behaviors between turnout detection and voting choice detection were not apparent when the subjects were informed that the probability was high. Finally, though differences in expected utilities between the three voting choices remain constant across the three experimental conditions,
the effects of providing a transfer are not the same. For example, if the probability of shared interests was low, subjects rewarded provision of $T$ under turnout detection with the highest detection probability. Conversely, if the probability of shared interests was high, the subjects punished no provision of $T$ under both of the two detection types with the lowest detection probability. In the following parts, I shall investigate the experimental results in detail.

Table 4: $P$-value in the Transfer condition

<table>
<thead>
<tr>
<th>Detection Prob</th>
<th>Turnout Detection</th>
<th>Voting Choice Detection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+Low Shared Interests</td>
<td>+Low Shared Interests</td>
</tr>
<tr>
<td>0.2</td>
<td>10 15 39</td>
<td>11 10 43</td>
</tr>
<tr>
<td>0.5</td>
<td>13 6 45</td>
<td>25 9 30</td>
</tr>
<tr>
<td>0.8</td>
<td>21 3 40</td>
<td>39 6 19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Detection Prob</th>
<th>Turnout Detection</th>
<th>Voting Choice Detection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+High Shared Interests</td>
<td>+High Shared Interests</td>
</tr>
<tr>
<td>0.2</td>
<td>50 11 3</td>
<td>52 9 3</td>
</tr>
<tr>
<td>0.5</td>
<td>55 7 2</td>
<td>59 5 0</td>
</tr>
<tr>
<td>0.8</td>
<td>57 3 4</td>
<td>57 4 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Detection + Shared Interests</th>
<th>0.2 and 0.5</th>
<th>0.5 and 0.8</th>
<th>0.2 and 0.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnout + Low</td>
<td>0.096</td>
<td>0.210</td>
<td>0.002**</td>
</tr>
<tr>
<td>Voting Choice +Low</td>
<td>0.020*</td>
<td>0.047*</td>
<td>0.000**</td>
</tr>
<tr>
<td>Turnout + High</td>
<td>0.567</td>
<td>0.391</td>
<td>0.078</td>
</tr>
<tr>
<td>Voting Choice + High</td>
<td>0.098</td>
<td>0.368</td>
<td>0.398</td>
</tr>
</tbody>
</table>

Significance levels: * 5%, ** 1%

To test the first hypothesis that observability at the ballot box is not a necessary condition for clientelism, I conduct Pearson’s $\chi^2$ test or Fisher’s exact test and report the result with Table 4. The table approves the first hypothesis in that it shows no statistical effect of the detection probabilities on voting behaviors when the probability of shared interests is high. However, when the probability that subjects share interests with $A$ is low, there are the statistical effects of the detection probabilities on voting behaviors at the 1% significance level regardless of the detection type.

Table 5: $P$-values for the three pairwise comparisons of the three detection probabilities in the Transfer condition

$^{11}$Fisher’s exact test was used for the case where there is a cell containing observations less than 6.
Table 5 reports $P$-values for the three pairwise comparisons of the three detection probabilities in the Transfer condition and confirm statistically the first hypothesis that observability at the ballot box is not a necessary condition for clientelism. However, the statistical results in the table confirm only partially the second hypothesis that given A’s provision of a transfer, there are detection effects on voting behaviors only under voting choice detection when the probability of shared interests is low. When the probability of shared interests is high, any comparison does not yield a statistically significance regardless of the detection type. Next, when the probability of shared interests is low, there appears the statistically significant effect of an increased detection probability in any comparison if voting choice detection is the detection type, which corresponds to the second hypothesis. However, unlike the second hypothesis, the statistically significant effects of the increased detection probability from 0.2 to 0.8 appear under turnout detection, though the effects from 0.2 to 0.5 and from 0.5 to 0.8 are not strong enough to show a statistical significance. Indeed, as the detection probability increases from 0.2 to 0.5, an increase in observations for voting for A under voting choice detection was four times as large as an increase in observations for voting for A under turnout detection. Also, as the detection probability increases from 0.5 to 0.8, an increase under voting choice detection was almost twice as large as an increase under turnout detection. The partial disapproval of the second hypothesis suggests a possibility that subjects reacted to provision of a transfer discordantly with their self-interest because it is not optimal to vote for A regardless of the detection probability when the probability of shared interests is sufficiently low and the detection type is turnout detection. To confirm whether or not the deviation from self-interest results from the provision of a transfer or other reasons, we need to compare subjects’ voting behaviors in the Transfer condition with their voting behaviors in the other conditions.

Table 6 and 7 report voting choices in the No Opportunity and No Transfer conditions. The two tables show that the effects of detection probabilities are not statistically the same across the No Opportunity, No Transfer, and Transfer conditions. Compared to the Transfer condition, first, the effects of detection probabilities appear when the detection type is voting choice detection and the probability of shared interests is high in the No Opportunity condition. However, at the same time, the effects of detection probabilities disappear
Table 6: P-value in the No Opportunity condition

<table>
<thead>
<tr>
<th>Detection Prob</th>
<th>Turnout Detection</th>
<th>Voting Choice Detection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low Shared Interests</td>
<td>+ Low Shared Interests</td>
</tr>
<tr>
<td>0.2</td>
<td>2 14 48</td>
<td>6 12 46</td>
</tr>
<tr>
<td>0.5</td>
<td>6 5 53</td>
<td>11 11 42</td>
</tr>
<tr>
<td>0.8</td>
<td>4 6 54</td>
<td>37 3 24</td>
</tr>
<tr>
<td>Pr</td>
<td>0.101</td>
<td>0.000**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Detection Prob</th>
<th>Turnout Detection</th>
<th>Voting Choice Detection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Shared Interests</td>
<td>+ High Shared Interests</td>
</tr>
<tr>
<td>0.2</td>
<td>49 10 5</td>
<td>46 15 3</td>
</tr>
<tr>
<td>0.5</td>
<td>52 5 7</td>
<td>53 7 4</td>
</tr>
<tr>
<td>0.8</td>
<td>57 4 3</td>
<td>59 3 2</td>
</tr>
<tr>
<td>Pr</td>
<td>0.267</td>
<td>0.020**</td>
</tr>
</tbody>
</table>

Significance levels: * 5%, **1%

Table 7: P-value in the No Transfer condition

<table>
<thead>
<tr>
<th>Detection Prob</th>
<th>Turnout Detection</th>
<th>Voting Choice Detection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low Shared Interests</td>
<td>+ Low Shared Interests</td>
</tr>
<tr>
<td>0.2</td>
<td>6 13 45</td>
<td>6 13 45</td>
</tr>
<tr>
<td>0.5</td>
<td>5 6 53</td>
<td>19 10 35</td>
</tr>
<tr>
<td>0.8</td>
<td>7 5 52</td>
<td>39 5 20</td>
</tr>
<tr>
<td>Pr</td>
<td>0.243</td>
<td>0.000**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Detection Prob</th>
<th>Turnout Detection</th>
<th>Voting Choice Detection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High Shared Interests</td>
<td>+ High Shared Interests</td>
</tr>
<tr>
<td>0.2</td>
<td>42 19 3</td>
<td>39 19 6</td>
</tr>
<tr>
<td>0.5</td>
<td>47 10 7</td>
<td>52 6 5</td>
</tr>
<tr>
<td>0.8</td>
<td>55 2 7</td>
<td>56 3 5</td>
</tr>
<tr>
<td>Pr</td>
<td>0.001**</td>
<td>0.001**</td>
</tr>
</tbody>
</table>

Significance levels: * 5%, **1%

when the detection type is turnout detection and the probability of shared interests is low in the No Opportunity condition. Next, compared to the Transfer condition, the effects of detection probabilities appear when the probability of shared interests is high under both of the detection types in the No Transfer condition. However, at the same time, the effects of detection probabilities disappear when the detection type is turnout detection and the probability of shared interests is low in the No Transfer condition. From the comparison of voting choices across the three experimental conditions, first, whether or not to provide a transfer does not affect voting choices if the detection type is voting choice detection and the probability of shared interests is low. It is because the effects of detection probability
are conditional on neither provision nor no provision of a transfer and the distributions of voting choices under each of the three detection probabilities are similar across the three experimental conditions. However, secondly, there exist positive effects of the detection probabilities conditionally on provision of a transfer if the detection type is turnout detection and the probability of shared interests is low. The conditional effects of detection probabilities implies that positive reciprocity becomes stronger as the detection probability increases because the distributions of voting choices are similar across the three experimental conditions when the detection probability is 0.2. Third, there also exist positive effects of the detection probabilities conditionally on no provision of a transfer if the detection type is turnout detection and the probability of shared interests is high. The conditional effects of detection probabilities implies that negative reciprocity becomes stronger as the detection probability decreases because the distributions of voting choices are similar across the three experimental conditions when the detection probability is 0.8. Finally, when the detection type is voting choice detection and the probability of shared interests is high, there did not exist effects of the detection probabilities in the Transfer condition but the effects appear in the No Opportunity and No Transfer conditions. The conditionality of effects of detection probabilities does not correspond to either positive reciprocity or negative reciprocity.

Figure 8 shows graphically the differences in proportions of voting for A across twelve combinations of the detection probabilities, the detection types, and the probabilities of shared interests. Relative positions of the dotted line for proportions of voting for A in the Transfer condition vary according to experimental conditions. When the probability of shared interests is low, the dotted line is always above the straight line for proportions of voting for A in the No Transfer condition, which is either above or overlapped with the dashed line for proportions of voting for A in the No Opportunity condition. Particularly, when detection type is the turnout detection and detection probability is 0.8, the dotted line is much above the other two lines that are almost identical. However, when the probability of shared interests is high, the straight line is either below or overlapped with the dashed line but the dotted line is either above or overlapped with the dashed line. Particularly, when detection type is the turnout detection and the detection probability is 0.2, the dashed line is overlapped with the dotted line whereas the straight line is below the other two lines.
The two different graphical patterns correspond to two different roles of a private transfer. Given that subjects do not vote for A in the No Opportunity and No Transfer conditions, on the one hand, but vote for A in the Transfer condition on the other hand, the subjects reciprocate only to provision of a transfer by voting for him. The subjects do not punish A even if the politician does not provide the transfer but reward if the politician provides the transfer. Furthermore, such positive reciprocity increases as the detection probability increases. Conversely, given that subjects do votes for A in the No Opportunity and Transfer conditions but deviate from voting for A if A does not provide a private transfer, the subjects reciprocate only to no provision of a transfer by withdrawing supports for the politician. That is, subjects punish a politician if the politician does not provide a transfer whereas the subjects do not reward the politician providing the transfer. Additionally, such negative reciprocity increases as the detection probability decreases.

Also, the two graphical patterns corresponding to positive and negative reciprocity are more apparent under turnout detection than under voting choice detection. When the prob-
ability of shared interests is low, positive reciprocity under turnout detection increases as the detection probability increases, becoming strongest when the detection probability is 0.8. However, not only does positive reciprocity, under voting choice detection, decrease as the detection probability increases, but the largest difference in the proportions of voting for A between the Transfer condition and the other two conditions is also much smaller than the difference under turnout detection. Next, when the probability of shared interests is high, the proportions of voting for A in the No Opportunity condition is almost the same as those in the Transfer condition if the detection type is turnout detection. However, the proportions in the No Opportunity condition differ from those in the Transfer condition if the detection type is voting choice detection. Though the difference can be interpreted as effects of altruism, the differences in proportions of voting for A disappear under the detection probability of 0.5 when the detection type is voting choice detection. Consequently, Figure 8 confirms the previous interpretation of distributions of voting choices across the three different experimental conditions.

Furthermore, to confirm statistically the two different patterns observed in the previous tables and graph, I conduct Pearson’s $\chi^2$ test or Fisher’s exact test. The first column in Table 8 indicates two experimental conditions tested with the hypothesis that distributions of voting for A, abstention, and voting for B between the two conditions are not statistically different. If there is positive reciprocity, the test may or may not show statistically significant difference between the No Opportunity and No Transfer conditions given the possibility of altruism toward a politician partner in the No Transfer condition. However, the test must show statistically significant differences for the other two comparisons, between the No Opportunity and Transfer conditions and between the No Transfer and Transfer conditions, simultaneously. Also, if there is negative reciprocity, the test must show statistically significant difference between the No Opportunity and No Transfer conditions and, at the same time, between the No Transfer and Transfer conditions. However, given the possibility of altruism toward a politician partner, there can be statistically significant difference between No Opportunity and Transfer conditions.

First of all, there is a statistically consistent and significant result of positive reciprocity when the detection probability is 0.8 under turnout detection and the probability of shared
interests is low. The comparison between the No Transfer and Transfer conditions and between the No Opportunity and Transfer conditions show statistically significant differences in the distributions of voting choices whereas the other comparison between the No Opportunity and No Transfer conditions shows no statistical difference in the distributions of voting choices. However, there is no statistically consistent result for negative reciprocity when detection probability is 0.2 under turnout detection and the probability that subjects share interests with A is high. All of the comparisons show statistically insignificant differences in voting choices.

The statistical result for negative reciprocity may be driven by the small number of observations. Given the experiment is somehow complicated, subjects might have difficulty in understanding the experimental environments (e.g. Gabaix et al. 2006). Then, a small number of subjects lacking sufficient understanding on the experimental environment might have relatively significant effects on the statistical result for negative reciprocity due to the size of observations. To distinguish who had sufficient understanding, I impose three criteria on voting choices made by subjects. The three criteria require a consistency in voting choices under three detection probabilities given a detection type. For a set of voting choices to be consistent, the set must consistently reflect relationships between a detection probability under a detection type and expected earnings from three voting options. Then, it follows, first, that the subjects were supposed to understand which voting option would be punished

<table>
<thead>
<tr>
<th>Detection type + Shared Interests</th>
<th>Turnout + Low</th>
<th>0.2</th>
<th>Turnout + High</th>
<th>0.2</th>
<th>Turnout + High</th>
<th>0.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Opportunity vs No Transfer</td>
<td>0.412</td>
<td>1.000</td>
<td>0.778</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Opportunity vs Transfer</td>
<td>0.412</td>
<td>0.206</td>
<td>0.000**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Transfer vs Transfer</td>
<td>0.456</td>
<td>0.134</td>
<td>0.012**</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significance levels:* 5%, ** 1%
given a detection type. Second, the subjects were supposed to understand how an increase in detection probability affects their expected earnings. Finally, the subjects were supposed to evaluate a loss from punishment equally across voting options violating the detection type.

However, I do not impose any restrictions on what constitutes a subject’s utility function. For example, though a subject’s voting for B may not be optimal when the detection probability is 0.2 under the voting choice detection and the probability of shared interests with A is 0.7, I classify voting for B as resulting from understanding of experiment environment. What matters here is that the voting choice, voting for B in the example, should be consistent with a choice under an increased detection probability given the detection type, voting choice detection. The subject was supposed to understand that her expected utility decreased as detection probability increased as long as her voting choice violated the detection type, regardless of how she voted when the detection probability was 0.2. Put differently, the subject was supposed to understand that her expected utility from voting for A did not vary across the three detection probabilities because the subject would not be deprived of T from punishment, whereas the utility resultant from voting for B or abstention decreased as the detection probability increased. Given that the subject evaluated equally a loss from being punished for abstention or voting for B, an increased loss from being punished for voting for B should be the same with an increased loss from being punished for abstention as detection probability increased. It follows, then, that when the detection probability became 0.5, the subject’s voting choice should be either voting for A or B but not abstention, because any loss in expected utility did not occur from voting for A, whereas the difference in expected utilities between voting for B and abstention did not vary as the detection probability became 0.5 from 0.2. In Table 9, each circled number indicates a voting choice under a detection probability. For example, ⑤ means that a subject chooses abstention when the detection probability is 0.5. If the subject’s choice is ⑦ under the detection probability of 0.2, the three criteria for sufficient understanding of experiment environment restrict possible sets of voting choices to ⑦②③, ⑦⑧③, and ⑦⑧⑨.

Table 10 shows the distributions of voting choices which satisfy the three criteria in each combination of the detection type and the probability of shared interests. 7 sets of voting choices are possible regardless of detection type, though the sets are not identical
Table 9: A table for voting choices

<table>
<thead>
<tr>
<th>Probability of Shared Interests</th>
<th>Voting for Politician A</th>
<th>&gt;0.2</th>
<th>&gt;0.5</th>
<th>&gt;0.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstention</td>
<td>Voting for Politician B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(7)</td>
<td>(8)</td>
<td>(9)</td>
<td></td>
</tr>
</tbody>
</table>

Table 10: Distribution of voting choices satisfying the three criteria

<table>
<thead>
<tr>
<th>Detection Type</th>
<th>No Opp.</th>
<th>No Transfer</th>
<th>Transfer</th>
<th>No Opp.</th>
<th>No Transfer</th>
<th>Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnout + Low</td>
<td>3</td>
<td>6</td>
<td>10</td>
<td>41</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Turnout + High</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Voting Choice</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>14</td>
<td>12</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>16</td>
<td>15</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

between the two detection types. Dropping observations that do not satisfy the three criteria, there remains at least 76.56% of 256 observations in each of the three different experimental conditions, the No Opportunity, No Transfer, and Transfer conditions, as shown in Table 11. Then, imposing the three criteria on all of the three conditions simultaneously, there remain 68.36% of 256 original observations. Table 12 reports the number of observations remaining after dropping the ones not satisfying the three criteria.

Table 11: Number of observations satisfying the three criteria

<table>
<thead>
<tr>
<th>Detection + Shared Interest</th>
<th>No Opportunity</th>
<th>No Transfer</th>
<th>Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnout + Low</td>
<td>48</td>
<td>51</td>
<td>47</td>
</tr>
<tr>
<td>Voting Choice + Low</td>
<td>45</td>
<td>52</td>
<td>55</td>
</tr>
<tr>
<td>Turnout + High</td>
<td>50</td>
<td>51</td>
<td>54</td>
</tr>
<tr>
<td>Voting Choice + High</td>
<td>53</td>
<td>55</td>
<td>57</td>
</tr>
<tr>
<td>Total</td>
<td>196</td>
<td>209</td>
<td>213</td>
</tr>
<tr>
<td>Percentage</td>
<td>76.56%</td>
<td>81.64%</td>
<td>83.20</td>
</tr>
</tbody>
</table>

32
Table 12: The number of observations after dropping ones not satisfying the criteria

<table>
<thead>
<tr>
<th>Detection Type</th>
<th>0.2</th>
<th>0.5</th>
<th>0.8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A abst</td>
<td>B</td>
<td>A abst</td>
</tr>
<tr>
<td>+ Shared Interests</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NO Opportunity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turnout + Low</td>
<td>0 9 31</td>
<td>0 1 39</td>
<td>0 0 40</td>
</tr>
<tr>
<td>Voting Choice + Low</td>
<td>1 3 37</td>
<td>5 3 33</td>
<td>24 1 16</td>
</tr>
<tr>
<td>Turnout + High</td>
<td>37 6 0</td>
<td>42 1 0</td>
<td>43 0 0</td>
</tr>
<tr>
<td>Voting Choice + High</td>
<td>40 11 0</td>
<td>49 2 0</td>
<td>51 0 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ Low</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turnout + Low</td>
<td>1 10 29</td>
<td>2 2 36</td>
<td>2 0 38</td>
</tr>
<tr>
<td>Voting Choice + Low</td>
<td>5 7 29</td>
<td>12 5 24</td>
<td>26 2 13</td>
</tr>
<tr>
<td>Turnout + High</td>
<td>28 15 0</td>
<td>39 4 0</td>
<td>43 0 0</td>
</tr>
<tr>
<td>Voting Choice + High</td>
<td>32 14 5</td>
<td>48 1 2</td>
<td>51 0 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turnout + Low</td>
<td>6 10 24</td>
<td>8 3 29</td>
<td>8 1 31</td>
</tr>
<tr>
<td>Voting Choice + Low</td>
<td>7 5 29</td>
<td>14 4 23</td>
<td>25 3 13</td>
</tr>
<tr>
<td>Turnout + High</td>
<td>36 7 0</td>
<td>40 3 0</td>
<td>41 2 0</td>
</tr>
<tr>
<td>Voting Choice + High</td>
<td>43 6 2</td>
<td>49 2 0</td>
<td>50 1 0</td>
</tr>
</tbody>
</table>

The observed patterns that I had discussed before introducing the three criteria are still apparent even after dropping the observations not satisfying the three criteria. First, the number of subjects who reciprocally voted between the No Transfer and Transfer conditions are not significantly different before and after dropping the observations not satisfying the three criteria. For example, when the probability of shared interests is high and the detection probability is 0.2 under turnout detection, 8 subjects appear in Table 12 to reciprocate negatively in that 28 subjects voted for A in the No Transfer condition, whereas 36 subjects voted for A in the Transfer condition. Before dropping the observations not satisfying the three criteria, 8 subjects appeared to reciprocate negatively in that 42 subjects voted for A in the No Transfer condition whereas 50 subjects voted for A in the Transfer condition, as shown in Table 3. Also, Table 12 shows that the number of subjects who reciprocate positively to provision of a private transfer increases as the detection probability increases when the probability of shared interests is low and turnout detection is the detection type. However, the number of subjects who reciprocate negatively to no provision of a transfer decreases as the detection probability increases when the probability of shared interests is high under both of the two detection types. Table 13 reports results from Pearson’s χ² test or Fisher’s exact test for differences in the distributions of voting choices between two experimental conditions after dropping the observations which fail to match the three criteria.

Two patterns are consistent and significant at a 5% significance level. First, when the probability that subjects share interests with their politician partners (Politician A) is high
Table 13: \( P \)-value for difference between two conditions after dropping observations not satisfying the three criteria

<table>
<thead>
<tr>
<th>Detection Type + Shared Interests</th>
<th>0.2</th>
<th>0.5</th>
<th>0.8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No Opportunity vs No Transfer</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turnout + Low</td>
<td>0.797</td>
<td>0.423</td>
<td>0.247</td>
</tr>
<tr>
<td>Voting Choice + Low</td>
<td>0.082</td>
<td>0.123</td>
<td>0.728</td>
</tr>
<tr>
<td>Turnout + High</td>
<td>0.022*</td>
<td>0.180</td>
<td>-</td>
</tr>
<tr>
<td>Voting Choice + High</td>
<td>0.044*</td>
<td>0.617</td>
<td>-</td>
</tr>
<tr>
<td><strong>No Opportunity vs Transfer</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turnout + Low</td>
<td>0.036*</td>
<td>0.002**</td>
<td>0.002**</td>
</tr>
<tr>
<td>Voting Choice + Low</td>
<td>0.054</td>
<td>0.038*</td>
<td>0.572</td>
</tr>
<tr>
<td>Turnout + High</td>
<td>1.000</td>
<td>0.616</td>
<td>0.494</td>
</tr>
<tr>
<td>Voting Choice + High</td>
<td>0.198</td>
<td>-</td>
<td>1.000</td>
</tr>
<tr>
<td><strong>No Transfer vs Transfer</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turnout + Low</td>
<td>0.163</td>
<td>0.112</td>
<td>0.048*</td>
</tr>
<tr>
<td>Voting Choice + Low</td>
<td>0.739</td>
<td>0.901</td>
<td>1.000</td>
</tr>
<tr>
<td>Turnout + High</td>
<td>0.041*</td>
<td>1.000</td>
<td>0.494</td>
</tr>
<tr>
<td>Voting Choice + High</td>
<td>0.052</td>
<td>0.617</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Significance levels: * 5%, ** 1%

and detection is on turnout with the probability of 0.2, there is no statistically significant difference in voting choices between the No Opportunity and Transfer conditions, whereas the other comparisons show statistical differences at a 5% significance level. The statistical results indicate that subjects did not reward provision of a private transfer, whereas they punished negligence of such provision, corresponding to negative reciprocity. Second, when the probability of shared interests is low and detection is on turnout with the probability of 0.8, there is no statistically significant difference in the voting choices between the No Opportunity and No Transfer conditions, whereas the other two comparisons show statistical differences at a 5% significance level. The statistical results indicate that the subjects rewarded provision of a private transfer, whereas they did not punish no provision of a transfer, corresponding to positive reciprocity. However, there does not appear to be a statistical significance for the case where the probability of shared interests is low and the detection type is voting choice detection and for the other case where the probability of shared interests is high and the detection probability is 0.2 under voting choice detection. Furthermore, the statistics imply that it was the subjects who clearly understood the experiment environment that led to the appearance of positive reciprocity and negative reciprocity.
5 Discussion

This section discusses the implications of what I have found from the experiment. First, the implicit assumption that observability of voting behavior is essential in clientelism should be rejected. When the probability of shared interests is high, voters still vote for a politician sharing interests with the voters even under a low detection probability. However, even though the voters’ belief to share interests with the politician guides the voters’ choice, there still exists the politician’s incentive to provide private transfers to the voters because the voters may act against their self-interest in order to punish the politician not providing the transfers. Put differently, when the probability of shared interests is high, a politician’s fear of being punished from voters leads the politician to provide private transfers. Therefore, due to negative reciprocity, clientelism can emerge even under a low level of observability if voters believe to share interests with a politician. Then, it follows that it is not always justifiable to argue that clientelism violates democracy because clientelism can emerge without violating a crucial component of democracy, i.e. the secret ballot. In addition to negative reciprocity, I have found there to be positive reciprocity under turnout detection when the probability of shared interests was low. Given that voting for $A$ is not optimal with any amount of a transfer in that circumstance, the finding of positive reciprocity is another strong evidence to show efficiency of provision of a transfer.

Second, positive reciprocity and negative reciprocity explain how a politician’s provision of a private transfer to a voter can be effective even without any information about the voter’s preference. Given that it has been observed often that politicians distribute a shirt or a lunch coupon randomly on the street during an electoral campaign, such a distribution seems to be ineffective because it would be a waste if a receiver has already inclined to vote for a distributor. Also, the receiver may not vote for the distributor if the receiver believes that the distributor is incapable to observe the receiver’s voting behavior. However, provision of a private transfer without any information about a receiver’s preference and any technology for detecting the receiver’s voting behavior can be effective due to positive reciprocity and negative reciprocity. When a receiver does not favor a politician providing a transfer, it may induce the receiver to vote for the politician through positive reciprocity.
Conversely, when the receiver favors the politician, the transfer may prevent the receiver from deviating to abstention or voting for other politician. Even when the politician does not have any technology to detect voting behavior, he can still expect provision of a private transfer to be effective in preventing the deviation. Consequently, since provision of a transfer can successfully induce a receiver to vote for a politician providing the transfer through either positive reciprocity or negative reciprocity, a random distribution of the transfer on the street is the politician’s Pareto-efficient strategy.

Third, given that clientelism can emerge even under a low level of observability, an increase in vote confidentiality may fail to stamp out clientelistic relations between a politician and voters. Rather, the voters should be encouraged not to think of the reception of private transfers in terms of reciprocity. Given that subjects who participated in the experiment were undergraduate students at New York University and most of them did not have any actual voting experience, they were less likely to think provision and reception of private transfers in terms of reciprocity than experienced voters who live in countries where clientelism predominates over politics or where reciprocity has been strongly rooted as an important social norm. Then, effects of private transfers in the countries are expected to be much stronger than the effects measured among the undergraduate students. Furthermore, the number of subjects negatively reciprocating increased as a detection probability decreased when the subjects believed to share interests with A in the experiment. It follows that an increase in confidentiality without cutting off voters’ reciprocal perception of private transfers may result in the unexpected and undesirable consequence that politicians become more reliant on provision of private transfers and, thereby, try to widen clientelistic networks.

Fourth, the empirical finding of positive and negative reciprocity predicts that the stronger reciprocity, the more attractive clientelism. When reciprocity does not work socially, a politician need to provide to voters enough private transfers to compensate a loss in utility resultant from changing vote behavior. However, if reciprocity is deeply rooted, the politician can induce effectively the voters to vote for the politician for a relatively cheap cost to provide transfers. Also, the politician may feel a stronger social pressure for the provision in order to prevent the voters from deviation to abstention or vote for other politicians. The inference of positive correlation between a level of reciprocity and clientelism in a society suggests, fur-
ther, that the more traditional a society, the more attractive clientelism because reciprocity is expected to be stronger in a traditional society compared to a modernized society where individualism predominates. Also, the above ideas have one important implication on a correlation between poverty and clientelism observed by politician scientists. Poverty may not feed clientelism as long as a society suffering from poverty does not have a strong reciprocity. Nevertheless, the reason of the observed correlation between poverty and clientelism may be that a traditional society is more likely to suffer from poverty or underdevelopment of economy.

Finally, scholars of ethnic politics have studied why ethnicity prevents provision of public goods. This paper suggests that politicians representing ethnic groups may reluctantly provide private transfers in order to prevent their ingroup members from deviating from voting for the politicians as long as ethnicity implies shared interests among group members. Then, though a politician’s ethnic group is sufficiently bigger than other groups, the politician may need to provide private transfers because the size of the ethnic group in which the politician belongs does not guarantee an electoral victory if otherwise. Given that reciprocity norms among ethnic members are stronger than the reciprocity norms in the other types of groups, the politician may feel a stronger pressure for provision of private transfers from his ethnic group. Consequently, it follows that reciprocity norms of ethnic groups prevent the provision of public goods.

6 Conclusion

In this paper, I have shown that observability of voting behavior is not a necessary condition for clientelism. It was experimentally proved that clientelism can be sustained even when a probability is low that a voting choice is observed by a politician who provided

---

12 For example, see Scott (1969), Robinson and Verdier (2003), Brusco et al. (2004), and Weitz-Shapiro (2011)
13 Banerjee et al. (2005) describes the negative correlation between ethnic diversity and provision of public goods as “one of the most powerful hypotheses in political economy” and Habyarimana et al. (2007) points out that “the specific channel(s) through which this relationship operates remain poorly understood.”
14 For an approach to ethnicity in this perspective, see Bate (1973), Alesina et al. (1999), and Alesina and LaFerrara (2005)
a private transfer. Also, as I had predicted, I found the two different roles of a private transfer: positive reciprocity and negative reciprocity. When voters believe that the probability that they share interests with a politician is low, they positively reciprocate to provision of a transfer by voting for the politician though they would not have done so if the politician did not provide the transfer. However, when voters believe that the probability is high, they negatively reciprocate to no provision of a transfer by deviating from voting for the politician though they know that the deviation violates their self-interest.

There was also an unpredicted finding that as the detection probability increased, positive reciprocity became stronger but negative reciprocity became weaker under turnout detection, implying that reciprocity is not constant but conditional on a context in which it is placed. Given that research of reciprocity have focused on its existence, there is no established explanation about the conditionality of reciprocity. Nevertheless, regarding the conditionality, the unpredicted finding suggests two things. First, spontaneity may affect reciprocity. Subjects perhaps felt their spontaneity to be more suppressed under the voting choice detection in that voting choice detection restricted their behaviors into just one single alternative, voting for A, but the turnout detection allowed for them to choose one of two alternatives, either voting for A or voting for B. The difference between the turnout and voting choice detections would have led to appearance of reciprocity conditionally on detection type. However next, subjects perhaps evaluated spontaneity in different manners according to reciprocity type. Positive reciprocity is an action helping others whereas negative reciprocity is another action hurting others, so that individuals might become less willing to participate in negative reciprocity as detection probability increases because it means they more spontaneously hurt others. Conversely, they might become more willing to participate in positive reciprocity as detection probability increases because it means they more spontaneously help others. The different manners in perceiving spontaneity between positive reciprocity and negative reciprocity might lead to the asymmetric relationships of detection probability with positive reciprocity and negative reciprocity. I leave what factors intervene in acting reciprocally or how individuals decide whether or not to act reciprocally for future research.

Finally, though this paper have focused on reciprocal roles of a private transfer, the transfer may take other roles. Among others, the role of compensation that I discussed in
the section of the formal model is one important candidate. Though the compensation role was not studied in this paper, the experimental results suggest that the role would become relatively more prominent under voting choice detection than under turnout detection in that positive reciprocity and negative reciprocity are less influential under voting choice detection. Future research about other roles of a private transfer including the compensation role will broaden our understanding of clientelism.
7 Reference


Rienner Publishers, Inc.


8 Appendix I: Instruction For the Experiment

Thank you for participating in this experiment. The experiment aims to understand how people vote in democratic elections. Hence, your voluntary participation is extremely valuable. This experiment will take about 60 minutes. In addition to $5 show-up fee, you can make additional earnings depending on your decisions during the experiment. On average, your earnings during the experiment will be $5. Also, once you complete the experiment, there is a simple survey asking for your opinions. Your responses on the survey will not affect your earnings from the experiment at all. For completing the survey, you will earn an additional $5. Hence, when you finish the whole experiment, you are expected to earn $15 on average and a minimum of $10. In the experiment, your earnings will be expressed in terms of points. Since 15 points will be exchanged into 1 cent after the survey is over, you will be making more money as you earn more points in the experiment.

We ask that you not talk with each other or ask questions to other participants once the experiment begins. Whenever you have a question, just raise your hand and one of the assistants will come and help you. The experiment consists of three parts and each part consists of 4 rounds.

You were randomly assigned to a computer booth indexed with a number. This number, and not your name, will be used in referring to you. This is because we want to maintain anonymity and confidentiality throughout the experiment. Before beginning the first part, we will have a sample game to help your understand on the experiment. This first game does not affect your earnings at all. However, the game is very similar to the one used in the experiment. Hence, I explain the first part of the experiment rather than the game.

8.1 The first part

For the first part, 12 hypothetical situations will be used. In each situation, you are supposed to choose one among “Abstention”, “Vote for candidate A”, and “Vote for candidate B”. Your earning in each situation depends on your choice. Briefly speaking, (1) your
voting choice affects the probability that each candidate wins in a hypothetical election and (2) your earning from the election depends on which candidate shares interest with you.

On (2): Once you decide your voting choice among the three options, a computer determines randomly which candidate wins in the election according to each candidate’s winning probability. Then, the computer again determines randomly which candidate shares interest with you according to the probability of shared interest. In a situation where candidate A is the electoral winner, you earn 1000 points if it turns out that candidate A shares interests with you. However, you earn nothing if it turns out that it is not candidate A but candidate B who shares interests with you. In a situation where candidate B is the electoral winner, you earn 1000 points if it turns out that candidate B shares interests with you. However, you earn nothing if it turns out that it is not candidate B but candidate A who shares interest with you. Consequently, when a candidate you voted for wins, this does not necessarily mean that you will earn 1000 points. You will earn 1000 points when a candidate sharing interests with you wins.

On (1): A computer randomly determines who wins in the election according to a probability. But, you can affect the probability by choosing one of the three options. When you choose “Abstention”, the probability that each candidate wins is equally 0.5. However, when you choose “Vote for candidate A”, the probability that candidate A wins becomes 0.55 whereas the probability that candidate B wins becomes 0.45. If you chooses “Vote for candidate B”, the probability that candidate A wins becomes 0.45 whereas the probability that candidate B wins becomes 0.55. Hence, your voting for one candidate increases by 0.05 the probability that the candidate wins.

For each election, you will be endowed with 100 points. However, either “Vote for candidate A” or “Vote for candidate B” costs 25 points. Remember that even when you do not want to vote for either candidate, you can earn points through the election though you cannot affect candidate A and B’s winning probabilities. So, if you choose “Abstention”, you keep the 100 points and you will earn additional points according to outcome of the hypothetical election. Instead, if you choose to vote for either candidate, you keep only 75 points and you will earn additional points according to outcome of the hypothetical election. In addition to the difference in the amount that you can keep before the electoral outcome
is realized, the difference in the first and the second case is that you can affect winning probability in the second case whereas you cannot in the first case.

There is another thing that you need to take into account in choosing one of the three options: Detection. There are two types of detection: (1) whether or not to have abstained and (2) whether or not to have voted for candidate A. You will be informed about one of the two conditions for detection when you are asked to choose one of the three options. So, your choice may or may not vary according to the detection condition. Once your earning is determined according to electoral outcome, a detection period begins. You will be detected according to the probability announced when you are asked to choose one of the three options. If a computer decides to detect you by chance, you will be punished according to your choice. Hence, if the computer decides not to detect you by chance, you will never be punished. Suppose that the computer decides to detect you by chance. Under the first type of detection (1), you will be punished if you abstained (So, if you voted for either of two candidates, you will not be punished). Under the second type of detection (2), you will be punished if you abstained or voted for candidate B (because if you abstained, it means that you did NOT vote for candidate A) whereas you will not be punished if you voted for candidate A. You are deprived of 50 points in the case that you are punished. Briefly speaking, though it does not necessarily happen that you are detected and punished during the detection period, there is a chance to be detected and punished. So, if your choice violates a detection rule, the higher the probability that you are detected, the higher the probability that you are punished. However, if your choice does not violate the rule, you do not need to be concerned about detection and punishment because you will not be punished even if you are detected. Remember that since you already received 100 points before choosing one of three options, you can keep at least 25 points even in the worst scenario. For example, suppose that detection rule(2) had been selected by a computer. Also, suppose that you voted for candidate B(-25) who won the election, but it turned out that candidate B did not share interests with you (+0), and, additionally, you were punished for voting for candidate B after being detected (-50). You would still keep 25 points at that time.

Summing up, you may want to consider three things when you are asked to choose one among “Abstention”, “Voting for candidate A”, and “Voting for candidate B.”
(1) Detection Rule: 2 types (whether or not you have abstained and whether or not you have voted for candidate A)

(2) Detection Probability: 3 types (0.2 /0.5 / 0.8)

(3) The probability that each candidate shares interests with you: 2 types ( 0.7 /0.3 and 0.3 /0.7 )

Also, remember that “Voting for candidate A” and “Voting for candidate B” cost 25 points and you will be deprived of 50 points if you are punished.

From a combination of the above three factors, 12 kinds of hypothetical elections are generated. However, the first part of the experiment consists of 4 rounds where (1) and (3) are randomly selected. Hence, in each round, you will be asked to decide 3 choices according to 3 different detection probabilities at the same time. To make it clear, the endowment of 100 points is for each hypothetical election. This implies that each of three elections at each round is purely independent from the others at the round. Your choices across the 3 detection probabilities may or may not vary. Given your 3 choices and 3 different detection probabilities at a round, your computer chooses randomly one detection probability and only the choice that you make under the selected probability affects your earning at the round.

Whenever a new round begins, you will again receive an allocation of 100 points for each of 3 hypothetical elections. And, your earning from a previous round will be saved for the round.

8.2 The second part and the third part

Once the first part of the experiment is over, you are randomly assigned to one of two groups. The two groups take two roles by turns: candidate A and Citizen (This means that a computer will take a role of candidate B). Hence, if you take a role of candidate A during the second part of the experiment, you will become a citizen during the third part of the experiment. Conversely, if you take the role of citizen during the second part, you will become candidate A during the third part. A computer randomly matches one participant from the candidate A group to one from the Citizen group. However, you cannot identify
who your partner is because information about your partner is not provided. Once a pair is
matched, a computer randomly selects and announces detection rule(1) and the probability
that each candidate shares interest with a citizen(3). Then, you will be asked at each round
to decide 3 choices to 3 different detection probabilities as in the first part of the experiment.
That is, at each round, you will be asked about your choices under the 3 different detection
probabilities at the same time. You can choose only one option to each of the probabilities.
You can make different or the same choices in the 3 detection probabilities. Also, both
participants are equally endowed with 100 points at every round in the same way as in
the first part of the experiment. Once you make your choices to the 3 different detection
probabilities, every process is the same as in the first part. That is, your computer chooses
randomly one detection probability and only the choice that you make under the selected
probability affects your earning at the round. After the detection period is over, your pair
for the round will be resolved and a new pair will be randomly selected for the next round.
Whenever a new round begins, you will again receive 100 points for each of the 3 hypothetical
elections. And, your earning from a previous round will be saved for the round.

If you are candidate A, you will be asked to determine whether to give 50 points to
your partner or not. If you decide not to give 50 points, you will keep 100 points. Once you
decide, you may await your partner’s voting choice. Your partner cannot observe whether
you decided to give 50 points or not until the whole experiment is over. Rather, your partner,
citizen, is asked to choose one option under each condition. That is, she will be asked in
’what- if’ types. For example,

What would you choose if candidate A gives you 50 points?

What would you choose if candidate A gives you 0 points?

An electoral outcome depends on not only your choice but also your partner’s. That is,
though your partner cannot observe your choice about whether or not to give 50 points, the
computer follows a case that you and your partner induce. For example, suppose that you-
as Candidate A- decided to give 50 points. Also, suppose that your partner decided to vote
for you if you had given 50 points, whereas she decided to abstain if you had given nothing.
Then, a computer follows the case where she voted for you. This leads to an increase in
the probability that you win in the election from 0.5 to 0.55. The increase is good for you because you earn 1100 points if you win in the election. However, you will earn nothing if you lose in the election. Now, consider that you decided NOT to give 50 points. Then, the computer follows the case where your partner abstained. Then, the probability that you win the election is just 0.5. Remember that you, candidate A, cannot observe your partner’s choice during the whole experiment. However, a computer follows the case where your choice and your partner’s meet. Consequently, if you take a role of candidate A, you need to take into account how your citizen partner will react in each situation, when you are asked to decide whether to give 50 points or not. In addition to the endowment of 100 points, your earnings are determined by two things: whether or not you give 50 points to your partner and whether or not you win in the election. Remember that though your earning does not directly depend on whether you share interests with your citizen partner, you may still have incentive to consider it. It is because your citizen partner may consider the shared interest in determining her reaction and this affects again the probability that you win in the election.

If you take the role of Citizen, everything is the same as in the first part of the experiment except that you are asked to choose your action based on your partner’s choice as I already explained. If he gave you 50 points, it will be added to your earning at the round regardless of whether or not he wins, whether or not he shares interest with you, and whether or not you are punished. However, if he did not give you the 50 points, your earnings are determined as in the first part of the experiment. Remember that your partner, candidate A, cannot observe your choice until the whole experiment is over. This implies that even if your choice is detected, it will not be reported to your partner. During the experiment, he remains uninformed about whether or not you voted for him, whether or not you are detected, and whether or not you are punished. In the same vein, you will not be able to know whether or not your candidate A partner actually gave you 50 points during the experiment (but, candidate B is programmed not to give any points to you).

Once 4 combinations of (1) detection Rule and (3) the probability that each candidate shares interests with you are tested during the second part, each group will take the opposite role in the next part of the experiment.

Remember that during the experiment, your choices are finalized with clicking the “OK”
button. Unless you click at the button, you can always change your previous choice by choosing one among alternatives. However, once you click the “OK” button, you move to a next stage or screen. Hence, please make sure that your choice is the final one before clicking the “OK” button.

Once you click the “OK” button, you may need to wait for a while because all of subjects must click the “OK” button in order to move on the next stage. While you are waiting, you may see a message in German. Please ignore the message. If you are curious, it says just “please wait while others are making their decisions.”

8.3 After the third part of the experiment

Once the third part of the experiment is over, there is a simple survey. It will ask you about your opinion to improve this experiment and so on. You will receive $5 for completing the survey. Your earning through the experiment is equal to the sum of your earnings during 12 rounds. Before the survey begins, you will be informed about your earning through the experiment. After the survey is done, your final earning including show-up fee($5) and survey fee($5) will be paid.

Again, thank you for your participation. If there is any question about the experiment, please raise your hand. There is a quiz time as well as a sample game before the real part of the experiment begins. The quiz time and the sample game are introduced to help you understand the experiment (your choices for the quiz time and the sample game do NOT affect your earning at all). The experiment will begin as soon as this instruction section is over.