# Diminishing the Effectiveness of Vote Buying: Experimental Evidence from a Persuasive Radio Campaign in India*

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**Abstract**

During the 2014 Indian general elections, we carried out a large-scale randomized radio experiment to study how voters respond to information about the economic consequences of electing politicians who distribute "gifts." Using official electoral data, we find that the radio campaign significantly decreased the vote share of parties that engaged in vote buying (as reported by journalists). Using voter survey data, we find that the campaign increased the salience of government corruption as an election issue and induced voters to disfavor parties that offered gifts. We find no evidence of changes in party campaigning as a result of our ads.

*JEL Classification:* D72, D83, K42, O12.

*Keywords:* Vote Buying, Elections, Corruption, Voters, Persuasion, Radio, Mass Communication, Field Experiment, Randomized Experiment, India.

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# 1 Introduction

Vote buying, the practice of bribing voters before elections, is prevalent across the developing world.[1] A growing body of evidence suggests that poor voters are most likely to be targeted with vote buying (Brusco, Nazareno and Stokes, 2004; Jensen and Justesen, 2014), which undermines the political representation of their interests (Stokes, 2007; Stokes et al., 2013) and diminishes the supply of pro-poor public services (Khemani, 2015). At an aggregate level, vote buying undermines electoral accountability (Stokes, 2005), diverts resources away from provision of public goods (Acemoglu and Robinson, 2001; Coate and Morris, 1995), fosters public corruption (Singer, 2009), and fuels organized crime and criminalization of politics (Schaffer, 2007*b*). Given the growing consensus about its negative effects (Hicken, 2011), there is demand from governments, civil-society organizations, and multilateral agencies for cost-effective strategies to diminish the influence of vote buying in developing countries.

Law enforcement agencies devote significant resources to enforcing ballot secrecy and monitoring electioneering, yet vote-buying remains pervasive. Voter education campaigns may be a cost-effective complement to these expensive law enforcement efforts. In the long run, diminishing effectiveness could reduce incentives to engage in vote buying. In this study, we examine the electoral effects of informing voters about the incentives of vote-buying politicians and the consequences of electing them. During the 2014 Indian general elections, we conducted a large-scale experiment in which low-cost public radio stations broadcast ads that dramatized this message. Using official election results and a survey of journalists to identify vote buying by parties, we find that the radio voter education campaign was effective at persuading a large number of voters to switch to voting for non-vote-buying parties. Using data from a national voter survey, we also find supporting evidence that the campaign changed voter attitudes towards corruption and vote buying.

[1] According to the sixth wave (2010-2014) of the World Values Survey, the proportion responding with "very often" or "fairly often" to the question "How often in the country's elections [are] voters bribed?" in Brazil was 75.8%, in Mexico was 72.7%, in Argentina was 65.4%, and 12% in Germany and 4.3% in Netherlands. Respondents in United States and India were not asked this question.

Electoral accountability requires voters to be informed about politicians' qualifications, promises, and performance. Furthermore, in making decisions, voters must be able to interpret campaign communication, which requires an understanding of the underlying political processes and incentives. Lack of transparency and low levels of substantive information may limit the ability of voters in developing countries to make such informed decisions and hold their politicians accountable. This study contributes to the growing experimental literature that examines the effect of information provision on voter behavior, particularly in information-scarce contexts.

Past studies have found a high level of voter sophistication in the use of information about incumbent performance (Banerjee et al., 2011; Humphreys and Weinstein, 2010). The evidence, however, is mixed on whether voters punish (exposed) corruption by incumbents (Chong et al., 2015; de Figueiredo, Hidalgo and Kasahara, 2014; Ferraz and Finan, 2008). Another set of studies examines the impact of providing information not about candidates per se but about the "policy production function," such as the cost of not voting by women (Gine and Mansuri, 2011) or voting along ethnic lines or for corrupt candidates (Banerjee et al., 2010). These studies suggest that voters need to be made aware of why certain politician attributes are undesirable as well as which politicians possess them to be able to choose candidates who will perform well in office. Following the large voter mobilization/get-out-the-vote literature,[2] which emphasizes the role of personal interaction, several studies have used door-to-door canvassing to persuade voters with appeals, such as urging them to vote their conscience (Hicken et al., 2014; Vicente, 2014) or to organize themselves against violent politicians (Collier and Vicente, 2014).

This study contributes to the broader experimental literature that examines the persuasion effects of political communication,[3] as well as the growing empirical literature on the role of mass media in politics,[4] and more specifically the large-scale electoral effects of

[2]See Green and Gerber (2015) for a review.
[3]See DellaVigna and Gentzkow (2010) for a review of this literature.
[4]See Strömberg (2016) for a theoretical framework and a survey of this literature.

mass media, such as newspaper (Besley and Burgess, 2002; Drago, Nannicini and Sobbrio, 2014; Gentzkow, Shapiro and Sinkinson, 2011; Oberholzer-Gee and Waldfogel, 2009; Snyder and Strömberg, 2010), television (DellaVigna and Kaplan, 2007; Gentzkow, 2006) and radio (DellaVigna et al., 2014; Ferraz and Finan, 2008; Larreguy, Marshall and Snyder Jr, 2015; Strömberg, 2004).[5]

What kinds of messages are most likely to be effective at persuading voters to reject vote-buying politicians? Drawing on a large number of case studies, Schaffer (2007*a*) argues that moralistic appeals, such as urging voters to vote their conscience rather than sell their vote may be ineffective among poor voters – those considered most susceptible to vote buying – because they typically do not share the same social norms regarding vote buying as the middle-class reformers who make those appeals. He hypothesizes that convincing poor voters that voting for vote buyers is neither in their own nor their community's economic interest is likely to be far more effective. The voter education campaign we evaluate informs voters about the incentives of politicians who engage in vote buying and the negative economic consequences of voting for them, namely under-provision of public services. Voters can apply this insight to making voting decisions by using their knowledge of which parties engage in vote buying.

We selected radio as the mass medium to deliver this message for several reasons. Indian radio reaches a wider and more economically diverse audience than television. Radio ads can be quickly and cheaply scaled up, and may be readily adapted for use in other developing countries. Importantly, they are less susceptible to interference by vested interests than on-the-ground campaigns (e.g., those that distribute leaflets or posters) and are therefore safer to implement in regions where violence and intimidation are a concern. We strategically timed the campaign just before the elections, when electioneering is prohibited, at which point it may be too late for local party operatives to change their vote buying strategy.

There is ample evidence that parties react to large-scale anti-vote-buying campaigns, al-

[5]Adena et al. (2015) an Yanagizawa-Drott (2014) look at effects of radio on related outcomes – support for pogroms, and sectarian conflict, respectively.

though their response seems to vary according to context. Banerjee et al. (2011) and Vicente (2014) find that their information campaigns reduced the level of vote buying, whereas Cruz, Keefer and Labonne (2016) find that theirs increased it. The impact of our radio campaign is the sum of the direct effect on voters through changes in attitudes towards vote-buying parties and the indirect effect mediated through parties' reaction to the campaign. While the reaction of parties to the campaign may be transient, the impact on voters may persist beyond one election since it consists of an attitudinal change driven by information. The evidence of a direct effect is therefore generalizable to other interventions that similarly inform voters. However, given the simultaneity of the effect on both voters and parties, it is challenging to empirically identify the direct effect of such campaigns.

The strategic timing of our campaign limits the endogenous response of politicians. The estimated effect can therefore be interpreted as arising mainly from changes in voter attitudes rather than though changes in party behavior. We find that the radio campaign persuaded voters to reject parties engaged in vote buying, reducing their vote share by 4 to 7 percentage points (pp.). We find no evidence that the campaign raised anti-establishment sentiments, supporting the argument that the effect was conveyed through changes in voter attitudes towards vote-buying parties.

Although our messages were strictly non-partisan, they do negatively portray the class of parties that engages in vote buying. Negative campaigns have been associated with both demobilization (Ansolabehere and Iyengar, 1995) and mobilization (Goldstein and Freedman, 2002) of voters. With respect to corruption information, both Chong et al. (2015) and de Figueiredo, Hidalgo and Kasahara (2014) find that it significantly decreased the voter turnout rate in Mexico and Brazil, respectively. Based on our theoretical model, we expect the campaign to have a demobilizing effect on voter turnout. We find that the campaign had a small negative (0.16 pp.) effect on voter turnout, which is statistically indistinguishable from zero. A plausible explanation for this weak effect is that turnout can be monitored by vote buyers, whereas candidate choices cannot.

The vote share and turnout rate results suggest that the campaign primarily induced voters to switch from vote-buying parties to non-vote-buying parties. Indeed, the campaign was more effective in areas with more non-vote-buying parties. There is also some evidence that the campaign may have induced weak coordination effects against prominent vote-buying parties. The apparent effect on vote share and the null effect on turnout rate imply that the radio campaign drew close to two million votes away from the vote-buying parties. Furthermore, with 78 voters persuaded per dollar spent, the campaign appears to be a cost effective alternative to the more expensive on-the-ground efforts. The persuasion rate of the campaign, i.e., the proportion of the audience persuaded to switch to non-vote-buying parties, is approximately 10.3 to 20.8%, which is comparable to the persuasion rates reported by other voter information campaigns.[6] The campaign had a small negative effect on the highest vote-buying vote share and large negative effect on the second-highest vote-buying vote share. Due to this pattern of effects on the performance of individual vote-buying parties, the campaign decreased the probability of a vote-buying party getting the most votes by a statistically insignificant estimate of 4 pp.

We assessed the influence of the campaign on a limited set of voter attitudes and beliefs using data from a national voter survey available for a subset of the areas included in our experiment. We find some indications that the campaign increased the salience of government corruption as an election issue. We also find that the campaign induced voters to vote for a party rather than for a candidate and decreased support for parties that offered gifts. We find no impact of the campaign on observed party campaigning behavior, suggesting that the campaign affected voter behavior only by influencing attitudes and beliefs and not by inducing changes in party behavior.

Although we provide rigorous evidence on the persuasiveness of messages that explain why it is not in voters' interest to elect vote buyers, the deeper channels of persuasion remains open to interpretation. Changes to social norms surrounding reciprocity, as suggested by

[6]See DellaVigna and Gentzkow (2010) for a systematic comparison of persuasion rates of different types of information campaigns.

Finan and Schechter (2012), could explain the effects estimated in this study. Changing entrenched social norms, however, is no easy task, and unlikely to be achieved by a radio campaign over a few days.[7] Based on the content of the ads and the pattern of the observed effects on electoral outcomes and voter attitudes, the most plausible explanation is that the campaign decreased electoral support for vote-buying parties because it made voters more pessimistic about their post-election performance.

The rest of the paper is organized as follows. In Section 2 we discuss the setting of the experiment, as well as the content, timing, and randomization of the radio campaign. Next, in Section 3 we present a simple model of voter behavior in the presence of vote buying and formally derive testable predictions about the effects of an information campaign. In Section 4 we discuss the data sources, including the journalist survey to identify vote-buying parties, and the estimation sample. We also lay out the empirical strategy to estimate the average treatment effect, addressing issues arising from geographically clustered randomization of observations, with overlaps in the clusters. In Section 5 we present the results of the experiment. In Section 6 we present the analysis of the national voter survey data and conclude with Section 7.

# 2 The Experiment

## 2.1 Setting

The setting for this experiment was the 2014 Indian general elections, during which 8251 candidates contested elections to 543 seats in the national parliament. Each parliamentary seat represents an electoral district known as a parliamentary constituency (PC).[8] A can-

[7] Though not directly related to electoral politics, an example of a radio intervention changing social norms is by Paluck and Green (2009), who find that over a course of one year, a radio soap opera in Rwanda changed listeners' perception of the community norms surrounding expression of dissent. On the other hand, short films dramatizing domestic violence over a span of one month had mixed effects on social norms in Uganda (Green et al., 2017).

[8] A candidate wins by receiving a plurality of the votes cast.

didate can either represent a political party or be unaffiliated (commonly referred to as an independent). Party candidates appear on the ballot along with their party name and party symbol. Across the country, 464 parties participated in the elections, out of which six were officially recognized as "national parties" and 39 as "state parties."[9]

The ECI enforced a ban on opinion and exit polling during this entire period. Furthermore, it enforced a three-day ban on electioneering and liquor sales, starting two days before the polling date in each phase.[10] For security reasons, the ECI conducted the election in staggered phases, with polling held on nine different dates.[11] Polling in PCs in the first phase was held on April 10, 2014 and in PCs in the last phase on May 12, 2014.[12] Election results for all phases were released simultaneously on May 16, 2014.[13]

Approximately 120,000 federal police were deployed to prevent the procurement and transportation of resources for vote buying, and to enforce various measures such as bans on sale of liquor, limits on cash withdrawals, checking vehicles at roadblocks, surveillance of airports and railway stations, and even sending videographers to shadow campaigning candidates (Biswas, 2014; Ford, 2014). Working in collaboration with the ECI, the police seized approximately $50 million in cash and 30 million liters of liquor, and arrested more than two million people in connection with election-related violations (Election Commission of India, 2014*a*). Despite these efforts, allegations of widespread vote buying were leveled by many media observers (Choudhury, 2014; Ford, 2014; Mandhana and Agarwal, 2014).

[9]All parties participating in the election are required to register with the Election Commission of India (ECI), which designates parties as national, state or unrecognized, based on their past performance in national and state elections. National and state parties receive benefits such as subsidized air-time on government-run television and radio stations for election advertisements.

[10]Broadcast of mass media ads, because of their geographically unrestricted nature, was prohibited throughout the country during each phase's three-day window. The legality of speeches or statements made in non-restricted PCs that are nevertheless publicized in restricted PCs is ambiguous. Rules governing electioneering practices evolve based on the interpretation of election law in individual cases by the ECI which has quasi-judicial status under the constitution. See Election Commission of India (2014*b*) for a list of various electoral offenses and corresponding penalties.

[11]This is comparable to the presidential primary elections in the US.

[12]The five phases represented in this study have polling dates approximately a week part.

[13]This is unlike the US presidential primaries where results become available immediately after polling in each phase, potentially affecting voter behavior in subsequent phases. We registered our pre-analysis plan for the experiment described below at the American Economic Association (AEA) registry on May 15, 2014, before the results were released.

Cash bribes reportedly ranged from Rupees 1000 ($17) to 2500 ($43) (Chilkoti, 2014). The coalition led by the Bharatiya Janata Party (BJP) won a decisive victory over the long-dominant coalition led by the Indian National Congress (INC). Although rising prices topped voter concerns, corruption scandals were important as well and were cited by one in seven voters (DNA, 2014).

## 2.2 Intervention: The Radio Campaign and Randomization

AIR, also known as *Akashvani*, is the national public radio broadcaster. AIR's transmitters cover 95% of the country by area and 99% by population (Prasar Bharati, 2007). As of 2014, it operated 194 stations that broadcast external advertising, and broadcasts in the 22 nationally recognized languages and several additional languages/dialects recognized by individual states. Compared to other mass media, AIR has the highest audience reach in rural areas, where it has a statutory monopoly on radio broadcasting, television viewership is constrained by unreliable electricity, and newspaper readership is low because of high rates of illiteracy. Regular listenership of AIR comprises 55% of all households in rural areas and 50% in urban areas (Prasar Bharati, 2007).

Of the 194 AIR stations, 57 had high-power transmitters and therefore had large coverage areas that overlapped with those of several neighboring radio stations. In order to minimize such overlap, we eliminated these high-power stations from our sample. Further, for budgetary reasons we excluded 30 radio stations with prohibitively high advertising rates. Since it was feasible to record messages in only a limited number of languages, we restricted our sample to stations broadcasting in five languages that could be understood by the largest listener populations – Hindi, Kannada, Marathi, Oriya, and Telugu. This restriction eliminated 47 additional stations. The selection process resulted in a final list of 60 stations. These radio stations belong to 10 of the major states in India,[14] which contain 67% of the country's population and 62% of the parliamentary constituencies (PC).

[14]A new state of Telangana was carved out of the Andhra Pradesh, one of the states in our sample, after the election.

We produced three 60-second ads, each consisting of a dramatized vignette that involved a conversation between a "naive" voter who had just received a "gift" from a politician, and a "sophisticated" voter who understood the corrupt incentives of vote-buying politicians and the consequences of voting for them. The sophisticated voter conveys the message that politicians give gifts to buy their way into office and, once elected, are likely to steal public money to recoup their expenditure instead of providing public services like schools and electricity.[15] Further, the sophisticated voter argues that it is quite likely that politicians who trade cash for votes will expect bribes in the future to perform essential functions required of them. In the vignettes we portrayed the naive voter deciding to no longer honor his or her promise to vote for the vote-buying politician, having realized that doing so may not be in his or her self-interest. Each ad ended with an appeal by an announcer urging voters to teach vote buyers a lesson by voting instead for an honest candidate. The ads did not name any particular candidate or party, and were not endorsed by any named individual or entity. English translations of the scripts of the ads are presented in Appendix A. The goal in crafting this message was to diminish voters' expectations about the post-election performance of the vote-buying politicians. The message may have indirectly implied that non-vote-buying parties are less likely to be corrupt in the future.

In order to reveal the direct effects of the ads on the behavior of voters, i.e., through changes in their attitudes and expectations, we need to limit the endogenous response of the parties in response to the ads. The ideal strategy for this purpose would be to deliver the ads after all the vote buying has already occurred and parties are no longer able to interact or communicate with voters. This strategy implies broadcasting the ads as close to day of polling as possible. A conflicting goal, however, is to ensure high voter exposure to the ads, which requires a campaign period that is sufficiently long. Based on these considerations, we timed the campaign to occur during the three days of the pre-election window, when

[15] In the Indian context, there is abundant evidence suggesting that office holders accumulate wealth at an exceptionally high rate (Fisman, Schulz and Vig, 2014).

electioneering is prohibited by law.[16]

Vote buying is a massive logistical exercise involving transfers of large amounts of resources and coordination of thousands of agents; it requires careful planning and execution to evade detection by police, political rivals and anti-corruption activists. Much of the vote buying occurs under the guise of legitimate electioneering – during political rallies, "celebrations," and door-to-door canvassing. Media reports suggest vote buying starts several weeks before the day of elections (Hiddleston, 2011). Party behavior exogeneity would be violated if parties could change their vote buying or electioneering behavior in response to our ads. By the time our ads aired most of the vote buying would have been completed, and the plans for any remaining vote buying would be well in place. Nonetheless, given the reports of vote buying occurring during the 24 hours before the start of polls, we cannot fully rule out an endogenous vote-buying response by parties or related responses such as increasing monitoring. However, given the short period of time, the extent of these endogenous responses is likely to be limited.

Prior to the random assignment of radio stations, we assigned a schedule for broadcasting the ads to each of the 60 radio stations. The broadcast schedule consisted of a total of 48 airings, 24 airings during popular prime-time programs and 24 additional airings during regular non-prime-time programs, spread over three consecutive days.[17] The third day of the scheduled airings coincides with the election date for the town/city where the radio station is based. We divided the 60 radio stations into 4 groups corresponding to the election dates.[18] Exactly half of the radio stations in each group were randomly selected to broadcast the radio campaign according to the pre-assigned schedule. We hired an advertising agency[19] to develop and translate the scripts, produce the ads, and purchase the air-time on the

[16] All India Radio found our ads to be exempt from this prohibition on campaigning because they are strictly non-partisan and mentioned neither candidates nor parties, and are therefore not considered electioneering.

[17] The distribution of the airings was: 18 on the first day, 18 on the second day, and 12 on the third day.

[18] The stations in our sample had campaign end dates of April 10 (N = 8), April 17 (N = 30), April 24 (N = 12), April 30 (N = 5), and May 7 (N = 5). Henceforth, we will use these end dates to identify campaign timing. We pooled the stations with April 30 and May 7 campaign timing into one group.

[19] Super Ads Pvt. Ltd., New Delhi.

specified radio stations for designated dates.[20] The total cost of the radio campaign, including producing and airing the ads on the 30 stations, was $23,000, or $750 per radio station.

# 3 Model and Hypotheses

In this section, we present a stylized model to generate testable predictions of the impact of the radio campaign on the two outcome variables of interest – the vote share of politicians that engaged in vote buying and the voter turnout rate. Consider a setting with a homogeneous electorate and a political regime consisting of two parties. Let the first party engage in vote buying with intensity $q_1 \in [0, 1]$, which can be interpreted as the fraction of the electorate that is bribed. For simplicity, assume that the second party does not engage in any vote buying and its behavior is fixed, i.e., $q_2 = 0$. Further, assume that the vote buying behavior of the two parties is common knowledge.

Let the electorate be modeled by a representative agent, which is consistent with approaches that assume voters to be rule-utilitarians, where they act according to a social welfare-maximizing strategy conditional on everyone following the same strategy (Feddersen and Sandroni, 2006). In this model, the implicit rule is that, conditional on turning out, the electorate votes according to its beliefs in order to maximize the supply of public goods.

Let the agent be endowed with one unit of time, which can be converted without cost into a vote for the vote-buying party or the non-vote-buying party. Let time and votes be perfectly divisible. The voter turnout rate in the election is $t = v_1 + v_2$, and the vote share of the vote-buying party is $s_1 = \frac{v_1}{t}$, where $v_1$ and $v_2$ are the votes received by the vote-buying and non-vote-buying parties, respectively. Since there are only two parties, the vote share of the non-vote-buying party is $s_2 = 1 - s_1$. The agent consumes the time remaining after voting as leisure ($l$).

[20] The additional non-prime-time airings were part of a promotional scheme of the AIR that consisted of one free non-prime-time airing for each prime-time airing. We received broadcast certificates from the radio stations only for the paid prime-time ads, not for the free non-prime-time ads. Broadcast certificates are available from the authors on request.

In this economy, the election represents the political process that produces a composite public good, which we interpret broadly to include both local public goods (e.g., water, electricity, sanitation, health, education, and law and order) and welfare benefits (e.g., subsidies and transfers). The agent has a mental representation of this political process, where the quantity of public good ($x$) is a function of her voting decisions:

$$x(s,t) = v_1^{h_1} v_2^{h_2} \tag{1}$$

where $h_1 > 0$ and $h_2 > 0$, are random coefficients that capture the agent's uncertain beliefs about the productivity of supporting the vote-buying and non-vote-buying parties, respectively. An equivalent expression of the production function in terms of the vote shares of the two parties and the voter turnout rate is:

$$x(s,t) = t^h s^{h_1} (1-s)^{h_2} \tag{2}$$

where $h = h_1 + h_2$ is the random coefficient associated with the productivity of voter turnout. Since voter turnout captures support for the political regime, it is intuitive that beliefs about the productivity of turning out depend on beliefs about the productivity of voting for each party in the political regime. In this model, we define only the conditional means of the random coefficients, and leave higher moments and the distribution of the beliefs itself undefined.

We choose this simple Cobb-Douglas functional form for the production function for analytical tractability. Nonetheless, it is a plausible approximation of the true relationship between public goods delivery, political competition and electoral participation. The intuition that political competition matters for public goods provision is straightforward – governments are likely to be highly rent-seeking when power is concentrated in one party. Besley and Burgess (2002) test a model of government responsiveness using data from Indian states and find that greater political competition is associated with greater government

responsiveness. Studies find similar results for Italy (Padovano and Ricciuti, 2009) and the U.S. (Besley, Persson and Sturm, 2010). There is also evidence that citizen participation in elections affects public goods provision. Banerjee and Lakshmi (2012) find that public goods provision in India is higher in districts with greater voter turnout. Mueller and Stratmann (2003) similarly find that lower voter turnout in Latin American countries is associated with lower government spending and greater inequality.

Just prior to making the electoral decisions, the agent is exposed to the information campaign with intensity $m$.[21] The campaign potentially affects the intensity of vote buying by the first party, i.e., $q_1 \equiv q_1(m)$. Further, the campaign affects voters' expectations about supporting the two parties,[22] both directly and indirectly through endogenous changes in the intensity of vote buying by the first party. Formally, $\mathrm{E}(h_1|m, q(m)) = h_1(m)$. Since the second party's behavior is fixed, $\mathrm{E}(h_2|m) = h_2(m)$.

The agent has preferences over consuming leisure and the public good. Other considerations with respect to vote buying may enter the voter's utility function. However, we focus on the channel that is the target of our campaign – public goods provision. We subsequently discuss the implications of other channels on the predictions of this model. Let the agent's preferences be given by the utility function:

$$U(l, x) = \beta \log(l) + \gamma \log(x) \tag{3}$$

where $\beta > 0$, and $\gamma > 0$ are preference parameters associated with leisure and public goods, respectively. The agent maximizes the expected utility, $\mathrm{E}_m\, U(x, l)$ subject to the resource constraint $v + w + l = 1$. As is clear from the agent's problem, there are no strategic aspects to the agent's decision problem. The agent's maximization problem in terms of the variables

[21] We parameterize exposure as a continuous rather than a binary variable for ease of mathematical exposition. Further, we assume that all functions in this model are differentiable with respect to $m$.

[22] It many change higher moments as well. However, we ignore those since they do not enter the agent's problem.

of interest $s$ and $t$ and the parameters is:

$$\underset{1\leq s,t\leq 0}{\text{Max}} \ \beta\log(1-t)+\gamma\left[h(m)\log(t)+h_1(m)\log(s)+h_2(m)\log(1-s)\right] \tag{4}$$

Assuming that an interior solution exists, the first order conditions of the maximization problem give the following expressions:

$$s(m)=\frac{h_1(m)}{h(m)} \tag{5}$$

$$t(m)=\frac{\gamma h(m)}{\beta+\gamma h(m)} \tag{6}$$

The vote share of the vote-buying party is the fraction of its productivity relative to that of the political regime. Note that in the absence of time costs of voting, there would be full turnout. We can now predict the effect of greater exposure to the campaign on the vote share of the vote-buying party and on the voter turnout rate. Differentiating Equations 5 and 6 with respect to $m$, respectively:

$$s'(m)=\frac{h_2(m)}{h(m)^2}h_1'(m)-\frac{h_1(m)}{h(m)^2}h_2'(m) \tag{7}$$

$$t'(m)=\frac{\gamma\beta}{(\beta+\gamma h(m))^2}h_1'(m)+\frac{\gamma\beta}{(\beta+\gamma h(m))^2}h_2'(m) \tag{8}$$

The total effect of the campaign on the agent's expectation of the vote-buying party is:

$$h_1'(m)=\underbrace{\frac{\partial h_1}{\partial m}}_{\text{Direct Effect}}+\underbrace{\frac{\partial h_1}{\partial q_1}\frac{\partial q_1}{\partial m}}_{\text{Indirect Effect}} \tag{9}$$

where $\frac{\partial q_1}{\partial m}$ is the reaction of the vote-buying party to the campaign, and $\frac{\partial h_1}{\partial q_1}$ is the underlying responsiveness of voters to vote buying.

To pin down the predictions of this model, we make some reasonable assumptions. The first is that the voters' expectations are positively responsive to vote buying, i.e., $\frac{\partial h_1}{\partial q_1} > 0$. Drazen and Eslava (2010) present a theoretical model to argue that parties use targeted transfers as a credible signal of their clientelist platform. There is also growing empirical evidence that candidates use electoral handouts to provide a signal about their electoral viability as well as their future ability to provide targeted goods (Kramon, 2016; Muñoz, 2014). Since the behavior of the non-vote-buying party is fixed, there is only a direct effect on voters' expectations of the non-vote-buying party, i.e., $h_2'(m) = \frac{\partial h_2}{\partial m}$.

Secondly, given the message contained in the campaign, we assume that the direct effect of the campaign is to decrease expectations of the vote-buying party ($\frac{\partial h_1}{\partial m} \leq 0$). Thirdly, we assume that the campaign can only increase expectations of the non-vote-buying party ($\frac{\partial h_2}{\partial m} > 0$). Although the campaign focused on vote-buying parties, it urged voters to vote for "honest candidates," indirectly implying that non-vote-buying parties were likely to be more productive. Finally, given the primary focus of the campaign on vote-buying parties, the negative effect on vote-buying parties is likely to be larger in magnitude than the positive effect on non-vote-buying parties ($\frac{\partial h_1}{\partial m} + \frac{\partial h_2}{\partial m} < 0$). Table 1 lists the cases corresponding to the different endogenous reactions of the vote-buying party.

Table 1: Predictions of the Model

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | | Predictions | | Magnitude | |
| | $\frac{\partial q_1}{\partial m}$ | $s'(m) < 0$ | $t'(m) < 0$ | Relative to Case (a) | |
| (a) | 0 | Always | Always | | |
| (b) | + | $\frac{\partial q_1}{\partial m} < \frac{\frac{h_1}{h_2}\frac{\partial h_2}{\partial m} - \frac{\partial h_1}{\partial m}}{\frac{\partial h_1}{\partial q_1}}$ | $\frac{\partial q_1}{\partial m} < \frac{\frac{\partial h_1}{\partial m} + \frac{\partial h_2}{\partial m}}{-\frac{\partial h_1}{\partial q_1}}$ | $\downarrow$ | $\downarrow$ |
| (c) | − | Always | Always | $\uparrow$ | $\uparrow$ |

*Assumptions*: $\frac{\partial h_1}{\partial q_1} > 0$; $\frac{\partial h_1}{\partial m} < 0$; $\frac{\partial h_2}{\partial m} > 0$; $\frac{\partial h_1}{\partial m} + \frac{\partial h_2}{\partial m} < 0$

Consider the simplest case and the one closest to our experiment design (case (a)), where there is no endogenous change in vote buying, i.e., $\frac{\partial q_1}{\partial m} = 0$. In this case, the impact on voter attitudes towards the vote-buying party is entirely due to direct effect of the message, i.e., $h_1'(m) = \frac{\partial h_1}{\partial m}$. Thus, the predictions of Equations 7 and 8 are that the campaign unambiguously decreases the vote share of the vote-buying party and the voter turnout rate.

In the remaining cases, the total effect of the campaign will additionally depend on the vote-buying party's reaction to the campaign ($\frac{\partial q_1}{\partial m}$). In this model, we do not specify the vote buyer's decision problem, and are therefore agnostic about the vote-buying party's reaction to the campaign. There are many reasons why it might increase or decrease vote buying. Vote buying might decrease if the campaign induces fear of greater detection in an environment of greater awareness. We assess the net effect in the presence of both an increased and decreased intensity of vote buying.

In case (b), the vote-buying party increases its intensity of vote buying in response to the campaign. Since it is in the direction of voter responsiveness, it diminishes the effectiveness of the campaign. If the increase in vote buying is large enough, then there could potentially be an unintended effect of an increase in the vote share of the vote-buying party. Similarly, a large enough increase in vote buying could increase the turnout rate. Even when there are decreases in vote share and turnout rate, their magnitudes will be smaller relative to case (a).

In case (c), the endogenous response of the party is to decrease the intensity of vote buying. Since both the direct and indirect effects act in the same direction, the vote share of the vote-buying party unambiguously decreases. Further, the magnitude will be larger relative to that in case (a). Similarly, decreased vote buying will reduce the turnout rate with a magnitude larger than than in case (a). Thus, if we observe attenuation in the effects when endogenous reaction by parties is possible, it is reasonable to infer that it is due to increased vote buying, and vice versa.

Our model does not address all of the strategies available to parties. "Turnout buying," the bribing of voters to show up to the polls (Nichter, 2008), may counteract the turnout effects predicted by the model. It will counteract the vote share effects only if the electorate is heterogeneous and turnout buying can be targeted. Similarly, our model does not account for the existence of the social norm of voter reciprocity. Assuming that the campaign does not have any effect on this norm itself, voter reciprocity will counteract both the vote share and the turnout effects predicted by this model.

# 4 Data and Empirical Strategy

## 4.1 Data and Estimation Sample

Each parliamentary constituency (PC) is divided into several assembly constituencies (AC), typically 5 to 10, each containing 150,000 to 250,000 registered voters. Each AC represents a seat in a state's legislature, known as the Assembly. We chose the AC as the unit of analysis for two reasons: they are typically quite small compared to a station's coverage area, and provide the most easily accessible disaggregated official electoral data.

The two main outcome variables of this study are vote share of the vote-buying parties and the voter turnout rate. To calculate the vote share, in each AC we sum the votes received by all the parties identified as vote buyers, discussed in Section 4.2, and divide this sum by the total votes cast in that AC. Of the ten states in our sample, two states – Andhra Pradesh and Odisha – had state legislative elections simultaneously with the parliamentary elections. In order to maintain consistency in the outcome variable across states, we use votes cast for the parliamentary candidates for all states. The voter turnout rate is calculated by dividing the total votes cast in an AC by the total registered voters in that AC. The electoral data were obtained from the Election Commission of India (2014c). Data on criminal backgrounds of candidates are from their election disclosures, digitized by the Association for Democratic

Reforms (ADR).[23]

For robustness checks, we include other covariates – the number of vote-buying parties, demographic variables from the 2011 Census (the percentage of the population that is literate, percentage living in rural areas, and percentage belonging to the Scheduled Caste (SC)/Scheduled Tribe (ST) category), and an indicator of whether the state had simultaneous elections to the state legislature. Data for demographic variables are from the 2011 Census geocoded by ML Infomap (2012).[24]

We use a simple approach to determine exposure of an AC to a radio station that is based on the distance of the AC from the radio station and on the radio station's transmitting power.[25] We obtained the typical radial reach for different levels of transmitter power based on information for a few stations available on the AIR website.[26] We consider an AC to be covered by a radio station if its geographic centroid lies within the radio's radial reach.[27] There are in total 751 ACs that are covered by the 60 radio stations in our sample. However, as explained below, not all of these are included in the experiment's estimation sample.

The "treatment" in this experiment is defined as receiving the radio campaign during the three-day pre-election window, when the conditions for party behavior exogeneity are most likely to be met. Because of the irregular boundaries of election phases, which often change at state boundaries,[28] and the circular coverage areas of radio stations, the campaign schedule may not match the pre-election window for all ACs covered by a station. The estimation sample therefore consists only of those ACs that are eligible to receive the campaign during

[23]Available at `www.myneta.info`, accessed May 6, 2017.

[24]The demographic data is at the census block-level. We calculate the demographics of an AC based on those of the census block which contains the AC centroid. Calculations based on the average of block demographics weighted by the proportion of AC area overlapping with the census block yield almost identical values.

[25]We do not know the exact location of the station's transmitter within the city and therefore use distance to the town/city center. This is a minor issue since all the stations in our sample are based in small cities.

[26]`http://www.allindiaradio.gov.in`, accessed 4 April, 2017. The correspondence between transmitter powers and radii reaches are – 1 kW: 25 km, 3 kW: 50 km, 5 kW: 65 km, 6 kW: 75 km, 10 kW: 100 km, and 20 kW: 125 km.

[27]An alternate approach might use the proportion of the AC area covered. We use the centroid approach because it is computationally straightforward and ACs are typically small enough to be entirely covered by radio stations.

[28]Recall that an election phase is the set of regions that hold elections on the same day.

their respective pre-election windows,[29] and not before or after.

We exclude 39 ACs that are eligible to receive the campaign only earlier than the three-day window and 11 ACs that are eligible to receive both the early campaign and the regular campaign. We re-incorporate these 50 ACs into the analysis to examine the differential impact of early timing of exposure to the campaign. We also exclude 86 ACs that are eligible to receive only post-election ads from the stations covering them.[30] We use them as a sample for placebo tests (henceforth, placebo sample). Our estimation sample therefore comprises 615 ACs covered by 57 radio stations.[31]

## 4.2 Journalist Survey: Identifying Vote-Buying Parties

In order to estimate the effect of the treatment on electoral support for parties that engaged in vote buying, we need to first identify those parties. Vote buying is an illegal transaction between a bribe giver and a bribe taker that is rarely observed by outsiders in any systematic fashion. There is no direct method for documenting which parties engaged in vote buying, let alone for documenting spatial variation in vote buying by parties.[32] We therefore rely on the impressions of those versed in local politics to identify vote-buying parties in different areas.[33]

Our research team conducted phone interviews with journalists covering elections across the ten states, asking them a standardized set of questions to shed light on which party or parties were engaging in vote buying in regions they were covering. We drew our sample of journalists primarily from names listed in directories of registered reporters in each of the

[29] An AC is considered eligible if there is some randomization under which it could receive the treatment.

[30] The bulk of these ACs are covered by three stations, which would allow delivery of only post-election ads to their covered areas.

[31] Although we used 60 stations, only 57 stations are relevant for delivering the treatment ads. The late campaign timing of the 3 stations means it could treat no ACs. Out of the 57 stations, 29 were assigned to broadcast the ads.

[32] ECI reports statistics related to confiscation of suspected vote-buying resources and police arrests in connection with election-related violations. These reports do not identify the parties connected with the illicit resources or the arrests. Further, the statistics are only reported at the state level, and it is unclear how ECI allocated its enforcement resources across states.

[33] Voter surveys are an alternate approach for identifying vote-buying parties, but the scale of this type of undertaking far exceeded our budget.

ten states. We also asked respondents to suggest other journalists we could interview. Our sample of journalists is diverse and includes reporters for English, Hindi and local language newspapers, correspondents at national and state-level news channels, and freelancers. Since electoral contests for the *Lok Sabha* elections occur at the parliamentary constituency (PC) level, we asked questions pertaining to specific PCs the journalists were covering. The ACs in our experiment sample belong to 144 PCs, and ACs in the placebo sample belong to 34 PCs.[34]

In all we received responses from 426 journalists[35] regarding PCs relevant for our experiment and placebo sample, 82% of whom identified at least one vote-buying party in the PC(s) they were covering. Of the 144 PCs relevant for our sample, we obtained at least one journalist response for 138 PCs.[36] The questionnaire (presented in Appendix B) made no mention of our radio campaign. Consensus among respondents about which parties were engaging in vote buying is fairly high. In 83% of the PCs with two respondents, both agreed on at least one party.[37] In 97% of PCs with three respondents, two respondents agreed on at least one party, and in 58% all three agreed on at least one party.[38]

In addition to identifying which parties were buying votes, we also asked respondents to describe the kinds of bribes distributed by parties and the categories of voters they typically targeted with such bribes. Of the 426 respondents, 67% identified at least one type of bribe; within this subset, cash (82%), liquor (28%), and food (15%) were the most commonly identified kinds of bribes. Within the subset (63%) of respondents who identified at least one category of voters that was targeted by parties, lower castes and religious minorities (40%), the poor (29%), all voters (19%), slum residents (14%), the youth (14%), and rural voters (14%) were the most commonly stated categories.

We coded the putative vote-buying parties based on journalist responses to the question

[34]There are 21 PCs in common between the two sets of PCs.

[35]All except three journalists were interviewed before elections results were released.

[36]10% of the 138 PCs had one respondent, 51% had two respondents, 23% had three respondents and 16% had four or more respondents.

[37]84% of respondents report only 1 party, 14% report 2 parties and 2% of respondents report 3 parties.

[38]87% of respondents report only 1 party, 12% report 2 parties and 1% of respondents report 3 parties.

"Which party/parties seem to be spending the most money secretly (such as on distribution of liquor, cash or other gifts)?"[39] The lowest level at which we can code the vote-buying parties is the PC. Under specification 1, we designate all parties identified by at least one respondent for a PC as vote buyers in that PC. It is our impression that journalists are much more likely to omit reporting one or more vote-buying parties due to incomplete information than to spuriously misreport non-vote-buying parties as vote-buying parties. By fully incorporating the differences in opinion between journalists in identifying vote-buying parties, we are able to minimize the Type I error in their responses. Because we lack respondents for 6 PCs, we are unable to designate vote-buyers for approximately 4% of the ACs using this coding scheme.[40]

In order to designate vote-buying parties for the entire sample and to further reduce the Type I error, we aggregate the journalist responses to the state-election phase (henceforth specification 2). Parties designated as vote buyers in at least one PC are designated as vote-buying parties for the entire state-election phase. Our sample belongs to 21 state-election phases.[41] The assumption underlying this coding scheme is that vote buying by parties is similar among the PCs within a given state and election phase. While aggregation of responses to higher levels further reduces the Type I error, it is likely to also increase Type II error.

To reduce Type II error, we construct two additional specifications. Under specification 3, we designate parties identified by at least two respondents for a PC as vote buyers for that PC. We are unable to designate vote-buying parties for 20 PCs with zero or just one respondent. Finally, under specification 4, parties designated as vote buyers in at least two PCs (under specification 1) in a state-election phase are designated as voter buyers for all PCs in that state-election phase. To assess the robustness of our results to aggregation of the

[39]Candidates unaffiliated with any party are quite marginal and cannot realistically compete with the vote-buying resources of parties.

[40]Out of the 34 PCs relevant for our placebo sample, we obtained at least one journalist response for 24 PCs.

[41]A few examples of state-election phases are: Andhra Pradesh-30 April, 2014; Andhra Pradesh-7 May, 2014; Jharkhand-17 April, 2014; and Karnataka-17 April, 2014.

journalist responses, we present estimates using all four specifications of vote-buying parties.

## 4.3 Empirical Strategy

We seek to estimate the average treatment effect (ATE) of exposure to the radio campaign on the outcome variables of interest – the voter turnout rate and the vote share of the putative vote-buying parties. Ordinarily, one may obtain a consistent estimate of the ATE by estimating the following regression using OLS.[42]

$$y_i^{2014} = \alpha_1 + \beta_1 T_i + \gamma_1 y_i^{2009} + \delta_1' phase_i + \epsilon_i \tag{10}$$

where $y_i^{2014}$ is the outcome variable of interest, $T_i$ is the binary variable indicating the treatment status, $y_i^{2009}$ is the lagged outcome variable for AC $i$, and $phase_i$ is a vector of dummies indicating four of the five election phases. We use the vote share of the putative vote-buying party or parties in the previous general elections (in 2009)[43] as a covariate in the vote-share regression and the voter turnout rate in 2009 as a covariate in the turnout-rate regression.

In our case, overlap among radio coverage areas introduces varying treatment probabilities for different ACs. Although all radio stations have the same probability of being assigned to broadcast the ads, an AC's probability ($p_i$) of being treated depends on the number of radio stations from which it is eligible to receive the ads during the pre-election window.[44]

[42] This was the specification envisaged in our pre-analysis plan.

[43] *Illustration for specification 1*: Let parties A and B be the vote-buying parties in a PC. Suppose that only party A contested that PC in 2009. Then for each AC in that PC, the 2014 vote share is the sum of the 2014 vote shares of parties A and B in the given AC and the 2009 vote share is the 2009 vote share of party A in the given AC. Note that this coding scheme is agnostic as to whether vote-buying parties in 2014 also bought votes in 2009. *Illustration for specification 2*: Let parties C, D, and E be the vote-buying parties in an election-phase or state. Suppose that parties C and D contested a given PC in 2014, but only parties C and E contested in 2009. Then for each AC in that PC, the 2014 vote share is the sum of the 2014 vote shares of parties C and D in the given AC, and the 2009 vote share is the sum of the 2009 vote shares of parties C and E in the given AC.

[44] The probability of assignment of a radio station to broadcast the ads is 0.5. Thus, the treatment probability for an AC which is eligible to receive the ads from one station is 0.5, from two stations is $1 - 0.5 * 0.5 = 0.75$, and from three stations is $1 - 0.5 * 0.5 * 0.5 = 0.875$.

Figure 1 provides a map of the AC sample, election phases, and the experiment design. Panel (1) provides a map depicting the experiment sample, placebo sample, excluded ACs, and the treatment probabilities for the ACs in the experiment sample. Out of the 615 ACs, 570 ACs had a probability of 0.5 of receiving the treatment, 44 ACs had a probability of 0.75, and 1 AC had a probability of 0.875. Panel (2) depicts the broadcast status of the radio stations and the realized treatment status for ACs in the experiment sample. Based on the realization of the random selection of radio stations, 312 ACs were treated (referred to as treatment ACs) and 303 ACs were untreated (referred to as control ACs).

Our strategy is to estimate Equation 10 using weighted least squares (WLS) with inverse-probability weights (IPW), which for an AC is the inverse of the probability of its being treated if treated and the inverse of the probability of its being untreated if untreated. This approach provides consistent estimates of the ATE. Further, in our case, there is no possibility of mis-specification of the propensities/probabilities since they are exactly known and not estimated.[45]

Formally, the weight for AC $i$ is $w_i = \frac{T_i}{p_i} + \frac{1-T_i}{1-p_i}$. The weights (% of the sample) are 1.14 (0.15%), 1.33 (7.97%), 2 (91.28%), and 4 (0.60%). The inverse-probability weighted least squares (IPWLS) estimator of $\beta_1$ is given by:

$$\hat{\beta}_1^{IPWLS} = \left[\sum_{i=1}^{n} w_i \tilde{T}_i^{\,2}\right]^{-1} \left[\sum_{i=1}^{n} w_i \tilde{T}_i \tilde{y_i}^{2014}\right] \tag{11}$$

where $\tilde{T}$ and $\tilde{y_i}^{2014}$ are the partialed-out treatment and outcome variables, respectively.

Randomization by radio station means that ACs are assigned to treatment or control groups in geographic clusters. However, due to overlap in the coverage areas of the radio stations, the error variance-covariance matrix does not have a block-diagonal structure. Because of the experimental design, the cross-sectional dependence in the error term has a known structure, where the error term may be correlated between ACs within the same

[45]Results from fixed-effects OLS estimation, given in Appendix D, are quantitatively very close.

cluster but independent of ACs in other clusters (Barrios et al., 2012). We estimate the standard error robust to multi-way clustering (Cameron, Gelbach and Miller, 2011) by setting the covariance terms to zero in the residual variance-covariance matrix for ACs that do not belong to the same radio station. This provides consistent estimates of the standard errors. The estimator for standard error of $\hat{\beta}_1^{IPWLS}$ is given by:

$$\hat{SE}_{\hat{\beta}_1^{IPWLS}} = \sqrt{\left[\sum_{i=1}^{n} w_i \tilde{T}_i^{\,2}\right]^{-1} \left[\sum_{i=1}^{n}\sum_{j=1}^{n} w_i \tilde{T}_i^{\,2} \hat{e}_i \hat{e}_j \mathbf{1}(i,j \text{ in same radio})\right] \left[\sum_{i=1}^{n} w_i \tilde{T}_i^{\,2}\right]^{-1}} \quad (12)$$

where $\hat{e}_i = \tilde{y}_i^{2014} - \hat{\beta}_1^{IPWLS}\tilde{T}_i$.

To address concerns stemming from the small number of clusters, we provide $p$-values estimated using randomization inference, which are robust to finite sample and distribution issues, and more conservative than the asymptotic $p$-values calculated from the standard errors (Young, 2016). Under the sharp null hypothesis of no effect for any AC ($\beta_i = 0$), the data reveal each AC's treated and untreated potential outcomes. Reproducing the known randomization procedure an arbitrarily large number of times, the distribution of the test statistic under the null can be approximated with a high degree of precision, which in turn can be used to test hypotheses.

For each random assignment of radio stations, $s$, we estimate the simulated treatment effect, $\hat{\beta}_1^s$, and the corresponding multi-way clustered standard error, $\hat{SE}_{\hat{\beta}_1^s}$. The simulated test statistic is $t^s = \frac{\hat{\beta}_1^s}{\hat{SE}_{\hat{\beta}_1^s}}$ and the actual test statistic is $t = \frac{\hat{\beta}_1}{\hat{SE}_{\hat{\beta}_1}}$.[46] We calculate the two-tailed randomization inference $p$-value as $p^{RI} = \frac{1}{S}\sum_{s=1}^{S} \mathbf{1}\{|t_s| > |t|\}$.

## 4.4 Balance Check

Table 12 in Appendix C presents the summary statistics of electoral and demographic characteristics and differences between the treatment and control ACs. Vote-buying parties are

[46]The results are not substantively different for randomization inference using the distribution of the coefficient.

defined for all 615 ACs under specification 2, but only for 481 ACs under specification 3. Under specifications 1 and 3, which aggregate journalist responses by PC, the number of vote-buying parties ranges from one to four with a mean below 2; and under specifications 2 and 4, which aggregate journalist responses by state-election phase, it ranges from one to six with a mean above 2. There are no statistically significant differences in the number of vote-buying parties between the treatment and control groups under any specification. ACs have on average 14.36 candidates (SD = 5.49) out of which 8.77 candidates (SD = 2.42) belong to parties.

According to the Census of India (2011), 73.0% of India's population is literate, 68.8% is rural, and 25.2% belonged to the Scheduled Castes (SC) or Scheduled Tribes (ST) category. By comparison, our sample is on average less literate (59.52%), more rural (79.15%) and has a greater proportion of the population belonging to the SC/ST category (31.77%).

The sample is balanced along all observed electoral characteristics. The only demographic variable that differs appreciably between the treatment and control groups is percentage population rural. The mean percentage of population rural in the control group is 76.03, which is 6.30 pp. lower than the treatment group ($p = 0.04$). The null hypothesis that coefficients from a regression of treatment status on a large set of covariates[47] are jointly equal to zero cannot be rejected (rand. inf. $p$-value = 0.33).

# 5 Results

Table 2 presents the main results of this study – the effect of the treatment (receiving the radio campaign during the three-day pre-election window) on the vote share of vote-buying parties. Electoral support for vote-buying parties is high – the mean for ACs in the control group ranges from 52.01% to 90.73%, depending on vote-buying party specification.

Results from the baseline regression of the vote share of vote-buying parties under speci-

[47] All variables from 12 except the two specification 1 variables are included. The regression is estimated using WLS with IPW.

fication 1, presented in column (1), suggest that the radio campaign decreased the vote share of vote-buying parties by 7.14 pp. (SE = 3.44). As expected,[48] the $p$-value from randomization inference (rand. inf.) of 0.09 is slightly larger than the standard (std.) or asymptotic $p$-value of 0.04. Columns (2)-(5) test the robustness of this estimated effect to inclusion of different covariates. The estimate is robust to inclusion of proportion of parties that are vote buyers, three demographic characteristics, and the state election indicator separately, as reported in columns (2)-(4). However, it decreases considerably in magnitude to 3.46 pp. (rand. inf. $p$-value = 0.21, std. $p$-value = 0.09) on inclusion of all five covariates jointly, as reported in column (5).

The estimate of the effect on vote share under specification 2, presented in column (6), is a decrease of 5.99 pp. (SE = 2.53), with a rand. inf. $p$-value of 0.003 (std. $p$-value = 0.02). The estimate is robust to inclusion of covariates, both separately and jointly. The weakest estimate, when all covariates are included, is -4.84 pp. The randomization inference $p$-values remain at or are under 0.003 for all specifications, and the standard $p$-values are 0.02 or under. The estimates under specification 3 are about 1 pp. smaller in magnitude than those under specification 2. However, their significance levels fall short of conventional levels, presumably because of the substantially reduced number of observations. The estimates under specification 4 are about 1 pp. larger than those under specification 2 and are significant (using both rand. inf. and std. $p$-values) at the 0.05 level.

Overall, the results suggest that the vote-share estimates are somewhat sensitive to the level of aggregation at which vote-buying parties are classified (i.e., parliamentary constituency versus state-election phase), or to the degree of certainty about vote buying by parties. The $R^2$ values for all regressions hover around 50%. Estimations using OLS with fixed effects for the treatment probability strata yield similar results and are given in Table 16 in Appendix D. Taken together, these results suggest that the radio campaign decreased the vote share of vote-buying parties by 3.5 to 7.1 pp.

[48] See Young (2016) for a comparison of the the standard and rand. inf. $p$-values for a large number of field experiments.

Recall that 86 ACs were eligible to receive only post-election ads; under no random assignment of radio stations could they receive the ads before their election. We utilize this collection of ACs to perform a set of placebo tests. Out of the 86 ACs, 39 ACs received post-election ads, whereas the remaining 47 ACs received no ads. The results of the placebo test, i.e., the impact of receiving the radio campaign after the election, are presented in Table 18 in Appendix E. Nine of the coefficients are positive, eleven are negative, and average they are close to zero.

Table 3 presents the estimates of the treatment effect on the voter turnout rate. The baseline result suggests a small decrease in the voter turnout rate of 0.16 pp., on a mean level of 68.20 percent in the control group. The estimated effect, however, is statistically insignificant, the rand. inf. $p$-value is 0.88 (std. $p$-value = 0.86). The results remain weak regardless of whether we control for covariates. The OLS results, given in Table 17 in Appendix D, are similar. The placebo tests for turnout rate, presented in Table 19 in Appendix E, show no impact of post-election radio ads. The magnitude of the effect is negligible compared to the shift in vote share, suggesting that voters primarily responded to the ads by shifting their votes rather than abstaining altogether.

To verify that the radio campaign had an effect by changing voter attitudes towards vote-buying parties rather than by inducing anti-incumbent, anti-establishment, or generic anti-corruption sentiments, we estimate the impact of the campaign on the vote share of the incumbent party, the vote share of candidates unaffiliated with any party (independents), the vote share of the None of the Above (NOTA) option,[49] and the vote share of party candidates with criminal backgrounds. These regression estimates are presented in Table 4.

We find that the ads had a negative but statistically insignificant effect (-1.98 pp., rand. inf. $p$-value = 0.43, std. $p$-value = 0.37) on the vote share of the incumbent party (control mean = 39.53%). The vote share of candidates unaffiliated with any political party increased by just 0.48 percentage points. Although this estimate is large relative to the control mean

[49]The 2014 general elections was the first in which voters were given the option of rejecting all the candidates on the ballot.

of 2.84%, it falls well short of statistical significance (rand. inf. $p$-value = 0.46, std. $p$-value=0.39). There is similarly only limited evidence of an effect on the NOTA vote share. The effect is an increase of 0.15 percentage points relative to a control mean of 1.01%. In addition to being statistically insignificant (rand. inf. $p$-value = 0.28, std. $p$-value = 0.29), the effect is not robust to inclusion of controls. Finally, there is no statistically significant impact on the vote share of party candidates with criminal backgrounds; the point estimate is 1.26 pp. (rand. inf. $p$-value = 0.72, std. $p$-value = 0.72). Taken together with the impact on the vote share of vote-buying parties, these results suggest that the radio campaign affected voter choices by changing their attitudes towards parties mainly along the dimensions of their reputed vote buying.

To put the magnitude of the estimated effect – a 4 to 7 pp. reduction in vote share of vote-buying parties – in context, consider the impacts of other voter information campaigns: In municipal elections in Delhi, Banerjee et al. (2011) find that disseminating information about incumbent performance, in the form of report cards, increased the vote share of the best-performing incumbents by 7 pp. and increased the voter turnout rate by 3.5 pp. Using survey experiments in Uttar Pradesh, Banerjee et al. (2010) find that priming voters to vote for the collective development of the community instead of voting along ethnic lines increased voter turnout by 7.6 pp. and decreased the proportion of voters voting along caste lines by 10 pp. Priming voters to not vote for corrupt candidates, however, had no effect, presumably because of lack of accompanying information about who is or has been corrupt. In our context, the identity of vote buying parties is widely known to voters, primarily through personal experiences.

In Nigeria, Collier and Vicente (2014) finds that a grass-roots campaign that appealed for collective action against violent politicians increased voter turnout by 11 pp. and decreased levels of electoral violence. In municipal elections in Sorsogon City, Philippines, Hicken et al. (2014) find that inviting voters to "promise not take vote-buying payments at all" reduced vote-switching (relative to initially preferred candidates) by 10.9 pp. in races for

certain offices. Invitation to "promise that if they did take vote-buying payments, they would nevertheless vote their conscience" had no effect on any of the races. In São Tomé and Príncipe, Vicente (2014) evaluates a door-to-door campaign urging voters to vote their conscience and finds that the campaign reduced the prevalence of bribes, increased the vote share of the incumbent party by 4 pp., and decreased the voter turnout rate by 3 to 6 pp. It is unclear how much of the effect is from changes in levels of vote buying vs. changes is voter attitudes towards vote buying.

In our case, the estimated effect is mainly attributable to changes in voter attitudes alone (as opposed to changes in party behavior as well) and is therefore a plausible estimate of the persuasion effects of mass communication. We calculate the implied persuasion rate using the framework put forth by DellaVigna and Kaplan (2007). They define the persuasion rate as the share of the audience that is convinced to change their behavior because of the message and would not have done so in its absence:

$$f = \frac{ATE}{\Delta Exposure} * \frac{1}{\bar{y_c}}, \tag{13}$$

where $f$ is the persuasion rate, $ATE$ is the estimated average treatment effect, $\Delta Exposure$ is the difference in exposure to the message between the treatment and control groups, and $\bar{y_c}$ is the proportion of the persuadable voters in the control group.

Assuming no exposure in the control group, 50% exposure in treatment group (the average daily listenership of radio), a proportion of persuadable voters of 68.2 percent (control mean under specification 1), the $ATE$ of 3.5 to 7.1 pp. imply a persuasion rate of 10.3 to 20.8%. This persuasion rate is comparable to the short-term persuasive effects of televised campaign advertisements found in the U.S. (Gerber et al., 2011).

Assuming that 150,000 voters cast ballots in a given AC,[50] even the most conservative estimate of 4 percentage points reduction in vote share implies that vote-buying parties received 6000 fewer votes (assuming no effect on turnout). Across the 312 treatment ACs, this

[50]The mean turnout in the control group is 150,807.

estimated effect implies that the radio messages drew close to 1.9 million votes away from the putative vote-buying parties. Further, the cost of the campaign, of $23,000 ($750/station) implies that 78 voters were persuaded per dollar spent. The cost-effectiveness of this campaign is quite favorable compared to more expensive and potentially dangerous on-the-ground campaigns, such as door-to-door canvassing.

Calculating the impact of the radio campaign on whether a vote-buying party gets the most votes in an AC is less straightforward. The net effect depends on the differential impact of radio campaign on the performance of individual vote-buying and non-vote-buying parties. Under certain patterns of impacts it is possible for the campaign to even increase this probability. We assess the distributional impacts of the campaign by estimating its impact on the highest and second-highest vote share of vote-buying parties in an AC, and similarly on the highest and second-highest vote share of non-vote-buying parties. Two vote-buying parties are defined for sufficient number of ACs only in specifications 2 and 4, which aggregate responses at the state-election phase level. Table 5 presents estimates on the vote shares under these two specifications.

The control mean of the highest vote-buying vote share (specification 2) is 51% and of the second-highest vote share is 35%. The impact on the highest vote share is small (-1.40 pp.) and statistically insignificant (rand. inf. $p$-value = 0.45, std. $p$-value = 0.38) whereas the impact on the second-highest vote share is large (-3.78 pp.) and borderline statistically significant (rand. inf. $p$-value = 0.06, std. $p$-value = 0.02). The control mean of the highest and second-highest vote shares of non-vote-buying parties (specification 2) are 3.39% and 0.89%, respectively. The campaign increased the highest vote share by 4.14 pp. (rand. inf. $p$-value = 0.04, std. $p$-value = 0.02) and the second-highest vote share by 0.85 pp. (rand. inf. $p$-value = 0.02, std. $p$-value = 0.03), which are substantial relative to the control mean levels. Next, we assess the impact of the campaign on the probability of a vote-buying party winning the most votes in an AC. In 99% of the control ACs, the vote-buying party won the most votes. The campaign decreased this probability by 4 pp., under both specifications.

The point estimates, however, are not statistically significant, at rand. inf. $p$-values of 0.44 (std. $p$-value = 0.31) and 0.30 (std. $p$-value = 0.22) for specifications 2 and 4, respectively.

Voters exposed to the campaign may anticipate its effects on other voters, knowing that they had received the campaign as well. This may induce coordination effects, in addition to the direct effects of voter education. Further, voters' ability to act on the information from the campaign depends on the choices they face on the ballot. To assess the impact of the campaign along these dimensions, we estimate regressions with interactions of the treatment with two pre-treatment vote-buying characteristics – the proportion of parties that are engaged in vote buying and the lagged vote share of vote-buying parties. Results of these regressions are presented in Table 6.

There is mixed evidence that the campaign was more effective in decreasing vote shares of vote-buying parties in areas where they had higher past electoral support. The interaction coefficient is significant in two out of four specifications. The interaction coefficient for turnout rate is 0.04 pp. (std. $p$-value = 0.18). Taken together, this suggests that the campaign might have induced some (weak) coordination effects against more prominent vote-buying parties, as captured by their past electoral support. An alternative interpretation is that the past electoral support acts as a proxy for the level of vote buying in an area, with the campaign being more effective in areas with greater vote buying. There is stronger evidence of interaction effects for the proportion of vote-buying parties. The campaign was less effective in decreasing vote-buyer vote shares in areas where voters were constrained by fewer non-vote-buying alternatives. The coefficient is statistically significant in three out of the four specifications. The corresponding interaction coefficient for turnout rate is weak at -0.05 pp. (std. $p$-value = 0.29).

One might reasonably expect the effect of our ads to vary by demographic characteristics of the ACs, which we investigate by estimating the interaction effects of the campaign with key demographic characteristics – proportion of the population literate, rural, and belonging to the SC/ST category, respectively. The results of these regressions are presented in Table

20 in Appendix F. There is little evidence of heterogeneity along these dimensions. There is suggestive evidence that the campaign may have resonated more with rural voters. The campaign had a less demobilizing effect in areas with greater proportion of SC/ST population, possibly because SC/ST voters were targeted with greater vote buying (as reported by journalists) and experienced higher levels of associated monitoring of their turnout.

To assess the differential impact of receiving the campaign during the pre-election window vs. before the window, when parties have greater ability to change their vote-buying and electioneering behavior, we pool together the experiment sample and the sample of 50 ACs that were eligible to receive the campaign before the window. We include three "treatment" variables – whether treated before the window, during the window, or both. To control for the differing treatment selection probabilities, we include indicators for the number of stations eligible to broadcast to a given AC during the window, and for the number of stations eligible to broadcast to a given AC before the window, respectively. The results of these regressions are presented in Table 7.

The coefficient for receiving both the early and regular campaign is imprecisely estimated since very few ACs fall in this category. The results show a consistent pattern: relative to the regular campaign, the effect on the vote share of vote-buying parties is much larger for areas receiving the early campaign. However, as is clear from inspecting the standard errors, we cannot statistically reject equality between the coefficients. The stronger effect of the early campaign runs counter to salience-based explanations for the impact of the campaign. A plausible explanation for the pattern of estimated results is that the campaign caused a change in behavior of the vote-buying parties. To infer whether the campaign increased or decreased the level of vote buying in response to our campaign, we turn to its impact on the turnout rate. Receiving the early campaign decreased the turnout rate by 4.28 pp (std. $p$-value = 0.06) compared to 0.24 (std. $p$-value = 0.72) for regular campaign. The null hypothesis of equality of the two coefficients can be rejected at the 0.10 level. Taken together with the predictions of the theoretical model, these results suggest that, if anything,

the campaign decreased vote buying by parties. We return to this point in the next section, where we analyze voter attitudes and perceptions.

# 6 Analysis of Voter Surveys

The analysis of electoral outcomes suggests that the campaign affected voter behavior as predicted by the theoretical model. The underlying mechanism in the theoretical model is changes in voter beliefs. In this section we assess the changes in some attitudes and beliefs that may have contributed to changes in voter behavior. We use data from a national voter survey conducted during the 2014 general elections to assess the impact of the campaign. Note that since there was no coordination between the survey and this study, we can assess the impact of the campaign only on a limited set of relevant attitudes and beliefs included in the survey. For example, while we can study the impact on salience of corruption because the national survey included questions on this topic, we cannot study the impact on voters' beliefs about the social consequences of vote buying, which were not included.

In Section 6.1 we discuss the survey and the sample of respondents, and describe the outcome variables we analyze. Section 6.2 lays out the empirical specification and Section 6.3 presents the results.

## 6.1 Data Description

We use data from a national post-poll survey of registered voters during 2014 general elections conducted by the Centre for the Study of Developing Societies (CSDS) as part of its National Election Studies series, which began in 1967. The surveys were conducted after voting was completed in each phase was completed but before the results were announced. The sample was drawn from 347 ACs spread across 306 PCs. Four polling stations were randomly selected from each AC and 25 to 30 respondents were drawn from the electoral rolls of these poll stations. Out of the 37,000 respondents selected, 22,295 respondents were interviewed,

implying a high unavailability/refusal rate of 40%.

Within the 615 experimental ACs, survey data are available for 2,533 respondents belonging to 39 ACs. Although this constitutes only 6.3% of the experiment sample, the ACs are widely distributed across the coverage areas of 30 out of the 60 radio stations. The electoral behavior reported by the survey sample coincides imperfectly with the official electoral outcomes of the ACs. Table 15 presents the comparison of the average electoral outcomes in the 39 ACs[51] measured using the electoral data vs. the survey data. The vote shares and turnout rates are roughly the same in the two measures.

Summary statistics of key characteristics of the respondent sample are given in Table 13 in Appendix C. The sample is approximately 48% female and 77% rural. Eight percent of the respondents report listening to radio "daily," and 14 % report listening "sometimes."

Table 14 in Appendix C presents the summary statistics for all outcome variables we study. Respondents were asked, "What was the single most important issue for you while voting in this election?" Issues that were reported by at least 5% of the respondents include: "Price Rise," "Government Corruption," "Unemployment and Jobs," and "Lack of Development." Price rise was the most important issue (raised by 16% of the respondents) followed by corruption which was raised by 12% of the respondents.

When asked which mattered more in deciding whom to vote for, 59% reported that party mattered more than candidate. Another question asked voters to report which party was: "Better for Administration," "Takes Better Care of Religious Sentiments," "Better for National Security," "Has Good Leadership," "Offers Lots of Free Gifts/Freebies." We used responses to this question to code their beliefs about the party they voted for. We present the means for the responses separately for those who voted for a party and for a candidate. Understandably, voters who voted for a candidate have less confidence in performance by the party of the candidate compared to voters who voted for a party.

Faith in the electoral process is relatively high, with only 14% stating that the elections

[51]The number of ACs for vote-buying party specification 1 is 37, for specification 3 is 31, and for specification 4 is 37.

were not fair. There was substantial grassroots campaigning by parties – 72% report a visit to their home by a canvasser. Interestingly, 23% of the voters reported that they had observed parties offering food or money to voters, and 31% report observing offers for rides to polling stations by parties (which is illegal).

## 6.2 Empirical Specification

We estimate linear probability models of the form:

$$y_i = \alpha_2 + \beta_2 T_i + \gamma_2 X_i + \eta_2 stations_i + \delta_2' phase_i + \epsilon_i \tag{14}$$

where $y_i$ is binary outcome variable of interest for respondent $i$, $T_i$ is the binary variable of whether respondent $i$ is covered by a treated radio station, $X_i$ contains all the covariates summarized in Table 13 in Appendix C, $phase_i$ is a vector of dummies indicating four of the five election phases, $stations_i$ is an indicator of whether repondent $i$ is covered by two stations,[52] and $\epsilon_i$ is the error term. We use multi-way clustering by radio station described in Section 4.3 to obtain standard errors. We present both standard $p$-values and the randomization inference $p$-values. We also estimate heterogeneous effects along gender, literacy, rural-ness, SC/ST status, and radio listenership by including interactions of these variables with $T_i$.

## 6.3 Results

Table 8 presents the estimates of the impact of the radio campaign on the salience of different election issues. Out of the top four issues reported (price rise, government corruption, unemployment, and development), there is some indication that the campaign increased the salience of government corruption as the most important election issue. The Treatment coefficient is 8 pp. (rand. inf. $p$-value = 0.11, std. $p$-value = 0.05). Relative to a control mean

[52]None of the respondents in the estimation sample are covered by three stations.

of 8 percent, this effect is large, albeit borderline statistically significant. The coefficients for other issues are both small and statistically insignificant. These results suggest that voters may have been influenced by the campaign message linking vote buying to corruption. Table 21 in Appendix F presents the heterogeneous effects of the campaign on issue salience along key demographic characteristics and radio listenership. We do not find evidence of any heterogeneity in the impact of the campaign on the salience of corruption.

Table 9 presents estimates of the impact of the campaign on voting behavior of respondents. These estimates tell us whether the survey sample behaves in a manner that is broadly consistent with the patterns we observed earlier using the full set of election outcomes. Similar to the estimates from the electoral data, there is no impact of the campaign on probability of turning out. Columns (3)-(6) present the impact of the campaign on voting for a vote-buying party, defined according to the four specifications given in Section 4.2. Specification 1 suggests a statistically significant decrease of 19 pp. (rand. inf. $p$-value = 0.09, std. $p$-value = 0.02) in the probability of voting for a vote-buying party, relative to control mean of 73%. We find no statistically significant effects on vote-buyer vote share measured according to other specifications. Table 22 in Appendix F presents the heterogeneous effects of campaign on voting behavior. We do not find any striking patterns of heterogeneous effects on turnout or voting for a vote-buying party. The differential effect on rural voters and radio listeners, while large in magnitude, is not statistically significant at conventional levels.

Next, we estimate the impact of the campaign on the kind of parties voters chose, presented in Table 10. We find no effect of the campaign on voting for a party because they were better for "Administration," "Religious Harmony," "National Security," or had "Good Leadership." There is a decrease in probability of voting for a party that offered the most gifts/freebies of 8 pp., which falls short of statistical significant at conventional levels (rand. inf. $p$-value = 0.28, std. $p$-value = 0.12). Table 23 in Appendix F presents the heterogeneous effects of the campaign on choice of parties. Relative to non-literate voters in treated areas, literate voters in treated areas experience a larger negative effect on support for parties that

engaged in most gift giving.

Finally, in Table 11 we test whether the campaign affected party campaigning behavior. Columns (1) and (2) report the impact of the campaign on perception of malpractice prevalence and election fairness, respectively. The coefficient for perception of increased malpractice is positive and election fairness is negative; however, both are statistically insignificant. This is suggestive of salience effects of the campaign, which drew attention to the prevalence of vote buying. The second set of results, presented in Columns (3)-(6), assess the impact on observed party campaigning practices. We find no effect on probability of a home visit by a canvasser, of receiving a phone call or SMS from a party/candidate, of being offered food or money, or of being offered a ride to the polling station.

Increased salience of corruption as an election issue and decreased preference for parties that gave gifts suggest that the radio campaign had direct attitudinal effects. Furthermore, the lack of impact on party campaigning behavior suggests that the radio ads are likely to have affected voter behavior only by influencing voter attitudes and beliefs.

# 7 Conclusion

In many parts of the world, vote buying takes place on such a grand scale that it is difficult to contain solely through law enforcement. Voter education campaigns delivered through mass media represent a cost-effective complement to expensive law enforcement efforts. This study represents the first systematic attempt to evaluate the effects of a mass media voter education campaign against vote buying and one of the few large-scale mass media field experiments of a voter education campaign. This study shows that messages informing voters about the incentives of vote buyers and the negative consequences of voting for them can be effective in deflecting electoral support away from parties that engage in vote buying.

Compared to other studies that expose corruption by specific politicians, we evaluate messages that argue against voting for politicians who engage in a particular form of corruption.

Because vote buying is so prevalent, voters can apply this insight to the information they already have about vote buying by politicians. While other mechanisms such as changes in social norms could have led to the observed effect, one plausible explanation underlying the effect is that voters have a strong preference for receiving public services and the campaign made voters pessimistic about the ability of vote-buying parties to deliver them.

A pertinent question for the future is whether and how vote-buying parties respond to these kinds of media campaigns and to informed voters over time. It might lead to parties to re-allocate resources to developing and publicizing their policy platform and to other legitimate electioneering efforts. Alternatively, an (undesirable) possibility might be that as this type of intervention raises the cost-per-vote for vote buyers, parties engaging in this activity will go to greater lengths to monitor voters' compliance (e.g., by having voters use their cell phones to take photos of their ballots inside the voting booth) or perhaps reallocate some of their resources to other forms of electoral malpractices, including voter intimidation.

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Table 2: Impact of the Radio Campaign on Vote Share (%) of Vote-Buying Parties

| | Specification 1 | | | | | Specification 2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Mean (Control) | 67.42 | 67.42 | 67.42 | 67.42 | 67.42 | 90.73 | 90.73 | 90.73 | 90.73 | 90.73 |
| Treatment | -7.14 | -4.90 | -6.98 | -5.37 | -3.46 | -5.99 | -5.72 | -5.92 | -5.14 | -4.84 |
| | (3.44) | (2.55) | (3.37) | (2.57) | (2.04) | (2.53) | (2.26) | (2.52) | (2.13) | (2.00) |
| $p$-value | | | | | | | | | | |
| Standard | 0.04 | 0.05 | 0.04 | 0.04 | 0.09 | 0.02 | 0.01 | 0.02 | 0.02 | 0.02 |
| Rand. Inf. | 0.07 | 0.13 | 0.09 | 0.10 | 0.22 | 0.04 | 0.07 | 0.05 | 0.12 | 0.15 |
| $R^2$ | 0.54 | 0.66 | 0.54 | 0.58 | 0.69 | 0.47 | 0.51 | 0.49 | 0.52 | 0.57 |
| N (Treatment) | 301 | 301 | 301 | 301 | 301 | 312 | 312 | 312 | 312 | 312 |
| N (Control) | 291 | 291 | 291 | 291 | 291 | 303 | 303 | 303 | 303 | 303 |
| | Specification 3 | | | | | Specification 4 | | | | |
| | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) |
| Mean (Control) | 52.01 | 52.01 | 52.01 | 52.01 | 52.01 | 87.22 | 87.22 | 87.22 | 87.22 | 87.22 |
| Treatment | -4.90 | -3.94 | -5.25 | -4.81 | -3.89 | -6.89 | -6.64 | -6.37 | -6.14 | -5.33 |
| | (3.47) | (2.62) | (3.44) | (3.00) | (2.5) | (2.78) | (2.49) | (2.81) | (2.45) | (2.19) |
| $p$-value | | | | | | | | | | |
| Standard | 0.16 | 0.13 | 0.13 | 0.11 | 0.12 | 0.01 | 0.01 | 0.02 | 0.01 | 0.02 |
| Rand. Inf. | 0.24 | 0.23 | 0.21 | 0.17 | 0.19 | 0.05 | 0.06 | 0.07 | 0.08 | 0.14 |
| $R^2$ | 0.45 | 0.58 | 0.46 | 0.49 | 0.60 | 0.49 | 0.54 | 0.49 | 0.54 | 0.58 |
| N (Treatment) | 223 | 223 | 223 | 223 | 223 | 293 | 293 | 293 | 293 | 293 |
| N (Control) | 258 | 258 | 258 | 258 | 258 | 302 | 302 | 302 | 302 | 302 |
| Covariates | | | | | | | | | | |
| % Parties Vote-Buying | | X | | | X | | X | | | X |
| Demographics | | | X | | X | | | X | | X |
| State Election | | | | X | X | | | | X | X |

*Notes*: See Section 4.2 for a description of the four specifications of vote-buying parties. Mean (Control) is weighted by IPW and the Treatment coefficient is estimated using WLS with IPW. All columns include election phase fixed effects and the lagged vote share. Demographics include percent population rural, SC/ST, and literate, respectively. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses. Observations belong to 57 overlapping clusters (radio station coverage areas). Randomization inference $p$-values obtained from 1000 iterations.

Table 3: Impact of the Radio Campaign on Voter Turnout Rate (%)

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Mean (Control) | 68.20 | 68.20 | 68.20 | 68.20 | 68.20 |
| Treatment | -0.16 | -0.19 | -0.37 | 0.05 | -0.21 |
| | (0.87) | (0.82) | (0.70) | (0.86) | (0.63) |
| $p$-value | | | | | |
| Standard | 0.86 | 0.82 | 0.59 | 0.96 | 0.75 |
| Rand. Inf. | 0.95 | 0.95 | 0.90 | 0.99 | 0.94 |
| $R^2$ | 0.79 | 0.8 | 0.81 | 0.80 | 0.83 |
| N (Treatment) | 312 | 312 | 312 | 312 | 312 |
| N (Control) | 303 | 303 | 303 | 303 | 303 |
| Covariates | | | | | |
| % Parties Vote-Buying | | X | | | X |
| Demographics | | | X | | X |
| State Election | | | | X | X |

*Notes*: Mean(Control) is weighted using IPW and the Treatment coefficient is estimated using WLS with IPW. All columns include election phase fixed effects and the lagged dependent variable. Demographics include percentage population rural, SC/ST, and literate. The proportion of vote-buying parties uses specification 2, which defines vote-buying parties for all ACs. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses. Observations belong to 57 overlapping clusters (radio station coverage areas). Randomization inference $p$-values obtained from 1000 iterations.

Table 4: Impact of the Radio Campaign on Other Vote Shares (%)

| | Incumbent | | Independent | | NOTA | | Criminal | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Mean (Control) | 39.53 | 39.53 | 2.84 | 2.84 | 1.01 | 1.01 | 44.77 | 44.77 |
| Treatment | -1.98 | -2.24 | 0.48 | 0.42 | 0.15 | 0.03 | 1.26 | 0.78 |
| | (2.19) | (2.11) | (0.56) | (0.61) | (0.14) | (0.11) | (3.56) | (3.55) |
| $p$-value | | | | | | | | |
| Standard | 0.37 | 0.29 | 0.39 | 0.49 | 0.29 | 0.77 | 0.72 | 0.83 |
| Rand. Inf. | 0.43 | 0.37 | 0.46 | 0.56 | 0.28 | 0.77 | 0.72 | 0.83 |
| $R^2$ | 0.40 | 0.44 | 0.09 | 0.10 | 0.09 | 0.42 | 0.68 | 0.69 |
| N (Treatment) | 304 | 304 | 312 | 312 | 312 | 312 | 227 | 227 |
| N (Control) | 292 | 292 | 303 | 303 | 303 | 303 | 261 | 261 |
| Covariates | | | | | | | | |
| Lagged Dep. Var. | X | X | X | X | | | X | X |
| % Parties Vote-Buying | | X | | X | | X | | X |
| Demographics | | X | | X | | X | | X |
| State Election | | X | | X | | X | | X |

*Notes*: See notes to Table 3.

Table 5: Impact of the Radio Campaign on Inter-Party Electoral Performance

| | Vote Share of Vote-Buying Party (%) | | | | Vote Share of Non-Vote-Buying Party (%) | | | | Vote-Buying Party | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Highest | | Second Highest | | Highest | | Second Highest | | Highest | |
| | Spec. 2 | Spec. 4 | Spec. 2 | Spec. 4 | Spec. 2 | Spec. 4 | Spec. 2 | Spec. 4 | Spec. 2 | Spec. 4 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Mean (Control) | 51.11 | 50.91 | 34.57 | 33.64 | 3.39 | 6.37 | 0.89 | 1.18 | 0.99 | 0.97 |
| Treatment | -1.40 | -1.38 | -3.78 | -4.52 | 4.14 | 4.85 | 0.85 | 1.34 | -0.04 | -0.04 |
| | (1.60) | (1.41) | (1.58) | (1.77) | (1.71) | (1.98) | (0.40) | (0.46) | (0.04) | (0.03) |
| $p$-value | | | | | | | | | | |
| Standard | 0.38 | 0.33 | 0.02 | 0.01 | 0.02 | 0.01 | 0.03 | 0.00 | 0.31 | 0.22 |
| Rand. Inf. | 0.45 | 0.40 | 0.06 | 0.05 | 0.04 | 0.04 | 0.02 | 0.01 | 0.44 | 0.30 |
| $R^2$ | 0.30 | 0.36 | 0.09 | 0.21 | 0.37 | 0.47 | 0.36 | 0.31 | 0.25 | 0.22 |
| N (Treatment) | 312 | 293 | 296 | 279 | 312 | 293 | 312 | 293 | 312 | 293 |
| N (Control) | 303 | 302 | 303 | 290 | 303 | 302 | 303 | 302 | 303 | 302 |

*Notes*: See Section 4.2 for a description of the four specifications of vote-buying parties. Mean(Control) is weighted using IPW and Treatment coefficient is estimated using WLS with IPW. All columns include election phase fixed effects, lagged outcome variable, demographics (percentage population rural, SC/ST, and literate), and proportion of vote-buying parties under specification 2. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses. Observations belong to 57 overlapping clusters (radio station coverage areas). Randomization inference $p$-values obtained from 1000 iterations.

Table 6: Effects of the Radio Campaign Interacted with Vote-Buying Characteristics

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Vote Share of Vote-Buying Parties (%) | | | | Turnout Rate |
| | Spec. 1 | Spec. 2 | Spec. 3 | Spec. 4 | (%) |
| Treatment | -9.10 | -13.07 | -19.69 | -10.80 | -1.23 |
| | (5.62) | (12.38) | (5.13) | (8.20) | (3.12) |
| $p$-value | 0.11 | 0.29 | 0.00 | 0.19 | 0.69 |
| Treatment * | | | | | |
| Lagged Vote Share (%) | -0.22 | -0.03 | -0.21 | 0.01 | 0.04 |
| | (0.08) | (0.10) | (0.07) | (0.10) | (0.03) |
| $p$-value | 0.01 | 0.77 | 0.00 | 0.89 | 0.18 |
| Treatment * | | | | | |
| % Vote-Buying Parties | 0.87 | 0.31 | 1.62 | 0.15 | -0.05 |
| | (0.26) | (0.17) | (0.41) | (0.14) | (0.05) |
| $p$-value | 0.00 | 0.07 | 0.00 | 0.26 | 0.29 |
| $R^2$ | 0.70 | 0.52 | 0.66 | 0.54 | 0.81 |
| Obs. | 592 | 615 | 481 | 595 | 615 |

*Notes*: See Section 4.2 for a description of the four specifications of vote-buying parties. Regressions estimated using WLS with IPW. All columns include election phase fixed effects, lagged outcome variable, demographics (percentage population rural, SC/ST, and literate), and proportion of vote-buying parties under specification 2. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses, and corresponding $p$-values reported. Observations belong to 57 overlapping clusters (radio station coverage areas).

Table 7: Timing Effects of the Radio Campaign

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Vote Share of Vote-Buying Parties (%) | | | | Turnout Rate |
| | Spec. 1 | Spec. 2 | Spec. 3 | Spec. 4 | (%) |
| During Window Only | -4.14 | -4.77 | -4.09 | -5.22 | -0.24 |
| | (2.23) | (2.08) | (2.50) | (2.27) | (0.66) |
| $p$-value | 0.06 | 0.02 | 0.10 | 0.02 | 0.72 |
| Before Window Only | -6.58 | -13.82 | -19.39 | -10.06 | -4.28 |
| | (7.99) | (4.46) | (9.64) | (4.65) | (2.29) |
| $p$-value | 0.41 | 0.00 | 0.04 | 0.03 | 0.06 |
| Before and During Window | -7.22 | 0.36 | -12.53 | 3.59 | 1.11 |
| | (5.95) | (4.62) | (6.09) | (5.26) | (1.80) |
| $p$-value | 0.23 | 0.94 | 0.04 | 0.50 | 0.54 |
| $R^2$ | 0.69 | 0.61 | 0.61 | 0.60 | 0.81 |
| Obs. | 628 | 665 | 505 | 641 | 665 |

*Notes:* Observations belong to 60 overlapping clusters (radio station coverage areas). See Table 6 for additional notes.

Table 8: Impact of the Campaign on Salience of Election Issues

| | (1) Price Rise | (2) Corruption | (3) Unemployment | (4) Development |
|---|---|---|---|---|
| Mean (Control) | 0.14 | 0.08 | 0.07 | 0.09 |
| Treatment | -0.01 | 0.08 | 0.02 | 0.01 |
| | (0.06) | (0.04) | (0.03) | (0.05) |
| $p$-value | | | | |
| Standard | 0.91 | 0.05 | 0.56 | 0.86 |
| Rand. Inf. | 0.93 | 0.11 | 0.82 | 0.88 |
| $R^2$ | 0.05 | 0.09 | 0.12 | 0.05 |
| N (Treatment) | 1253 | 1253 | 1253 | 1253 |
| N (Control) | 1169 | 1169 | 1169 | 1169 |

*Notes*: Regressions estimated using OLS and include fixed effects for the number of radio stations and election phase fixed effects. All columns include controls for age, gender dummy, indicators for levels of schooling, caste, religion, community type, monthly income, asset index, frequency of radio listenership, and presence of non-respondents during the interview. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses. Randomization inference $p$-values obtained from 1000 iterations. Observations belong to 30 overlapping clusters (radio station coverage areas).

Table 9: Impact of the Campaign on Voting Behavior

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Voted | Voted for Vote-Buying Party | | | |
| | | Spec. 1 | Spec. 2 | Spec. 3 | Spec. 4 |
| Mean (Control) | 0.94 | 0.73 | 0.94 | 0.65 | 0.93 |
| Treatment | 0.01 | -0.19 | 0.04 | -0.12 | 0.02 |
| | (0.02) | (0.08) | (0.04) | (0.09) | (0.04) |
| $p$-value | | | | | |
| Standard | 0.63 | 0.02 | 0.39 | 0.17 | 0.62 |
| Rand. Inf. | 0.69 | 0.08 | 0.62 | 0.33 | 0.71 |
| $R^2$ | 0.03 | 0.16 | 0.21 | 0.17 | 0.06 |
| N (Treatment) | 1243 | 1057 | 1164 | 852 | 1057 |
| N (Control) | 1165 | 1094 | 1094 | 921 | 1094 |

*Notes*: See Section 4.2 for a description of the four specifications of vote-buying parties. See Table 8 for additional notes.

Table 10: Impact of the Campaign on Choice of Party Characteristics

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Voted for party better for: | | | | |
| | Admin. | Rel. Harmony | Nat. Security | Leadership | Free Gifts |
| Mean (Control) | 0.79 | 0.79 | 0.78 | 0.78 | 0.77 |
| Treatment | 0.00 | -0.02 | -0.01 | 0.01 | -0.08 |
| | (0.05) | (0.04) | (0.05) | (0.05) | (0.05) |
| $p$-value | | | | | |
| Standard | 0.92 | 0.68 | 0.87 | 0.84 | 0.12 |
| Rand. Inf. | 0.94 | 0.73 | 0.89 | 0.86 | 0.28 |
| $R^2$ | 0.07 | 0.07 | 0.06 | 0.06 | 0.08 |
| N (Treatment) | 1110 | 1043 | 1043 | 1073 | 965 |
| N (Control) | 961 | 894 | 894 | 912 | 770 |

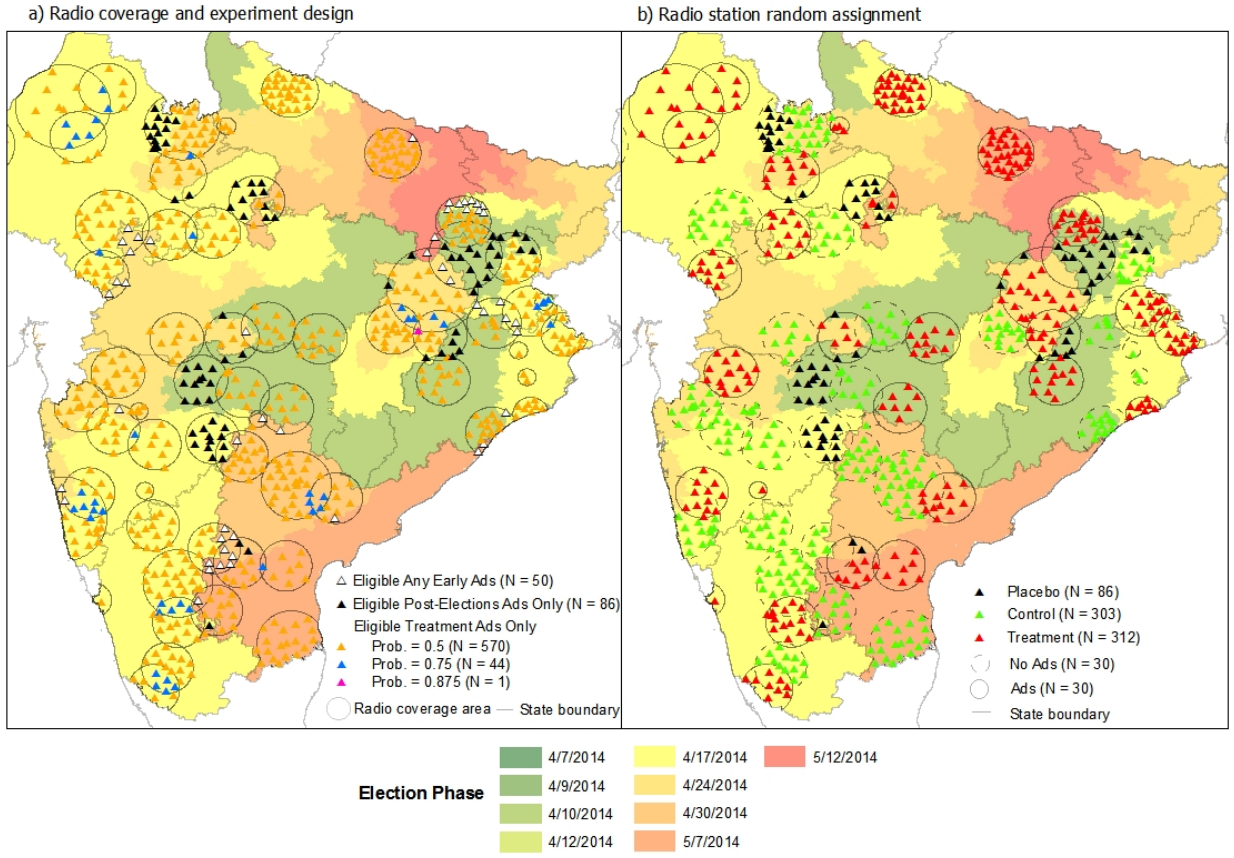
*Notes*: Regressions estimated using OLS and include fixed effects for the number of radio stations and election phase fixed effects. All columns include controls for age, gender dummy, indicators for levels of schooling, caste, religion, community type, monthly income, asset index, frequency of radio listenership, and presence of non-respondents during the interview. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses. Randomization inference $p$-values obtained from 1000 iterations. Observations belong to 30 overlapping clusters (radio station coverage areas).

Table 11: Impact of Campaign on the Election Integrity and Party Campaigning

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | | | Party Campaigning Observed: | | | |
| | Malpractices Increased | Elections Fair | Canvasser Visit | Phone Call or SMS | Offered Food/Money | Offered Ride to Polls |
| Mean (Control) | 0.09 | 0.13 | 0.72 | 0.28 | 0.22 | 0.32 |
| Treatment | 0.06 | -0.05 | -0.05 | 0.10 | 0.00 | -0.08 |
| | (0.05) | (0.04) | (0.10) | (0.10) | (0.07) | (0.10) |
| $p$-value | | | | | | |
| Standard | 0.22 | 0.23 | 0.60 | 0.30 | 1.00 | 0.42 |
| Rand. Inf. | 0.34 | 0.41 | 0.69 | 0.37 | 1.00 | 0.49 |
| $R^2$ | 0.05 | 0.06 | 0.13 | 0.18 | 0.15 | 0.13 |
| N (Treatment) | 1253 | 1253 | 1049 | 951 | 874 | 909 |
| N (Control) | 1169 | 1169 | 1044 | 996 | 950 | 994 |

*Notes*: See Table 10 for notes.

Figure 1: Experiment Design and Randomization



# For Online Publication

## Appendix A. Radio Campaign Advertisements

### A.1 Script 1

*It is a village setting. We hear birds chirping, the distant rumble of a motorbike and the faint noise of distant conversations. Kamala (grandmother, around 70 years old) comes to Ramesh's (male, around 50 years old) shop to make a purchase.*

Kamala: Namaste, Ramesh Bhaiyya!

Ramesh: Namaste! How are you Amma?

Kamala: I am really happy today. Give me three of your best school bags. I am buying them as gifts for my grandchildren.

Ramesh: School bags (puzzled)? But our area doesn't even have a school!

Kamala: Then we'll get one soon (laughing). I was just at an election rally where the candidate promised to build a school if he wins.

Ramesh: Oh, really?

Kamala: Yes, and he was handing out cash as well. And all we have to do in return is to vote for him. That's it!

Ramesh: That's it (rhetorical)? Don't you get it? He is trying to buy your vote with money.

Kamala: I don't quite follow.

Ramesh: Amma, if he wins, then in order to recoup his election expenditure, he could siphon off government funds.

Kamala: Really (surprised)?

Ramesh: Yes Amma! And the school – it will remain only in the books.

Kamala: Oh! I hadn't thought of that. In that case, there is no way I am voting for him.

*End scene.*

Announcer: Teach vote buying leaders a lesson – use your secret ballot to vote for an honest candidate.

## A.2 Script2

*It is a village setting. We hear birds chirping, the distant rumble of a motorbike and the faint noise of distant conversations. Ram (male, around 40 years old) is a customer with a happy-go-lucky personality and Ramesh (male, around 50 years old) is the shopkeeper. Ram comes to Ramesh's shop to make a purchase.*

Ram: Ramesh Bhai, show me the best pair of clothes you have on sale.

Ramesh: Of course. Looks like you had a good harvest.

Ram: My harvest was good. But that's not why I am buying new clothes?

Ramesh: What's the reason then?

Ram: Actually, an acquaintance of mine is contesting in the upcoming elections. He has fattened my wallet so I vote for him.

Ramesh: I see. And if he wins do you think he will fulfill his responsibilities?

Ram: Why won't he?

Ramesh: Well, why would anyone who trades notes for votes do anything for free?

Ram: Oh, I hadn't thought of that. In that case, there is no way I am voting for him.

*End scene.*

Announcer: Teach vote-buying leaders a lesson – use your secret ballot to vote for an honest candidate.

## A.3 Script 3

*It is a village setting. We hear birds chirping, the distant rumble of a motorbike and the faint noise of distant conversations. Mohan (male, around 40 years old) is a passerby and Ramesh (male, around 50 years old) is a shopkeeper. Mohan happens to walk past Ramesh's shop holding an electric fan.*

Ramesh: Mohan Babu, where did you buy this electric fan?

Mohan: I didn't buy it! A candidate is handing them out for free at the election rally.

Ramesh: But our village doesn't even get power.

Mohan: The candidate has promised to bring power to our village if he wins.

Ramesh: If this corrupt candidate wins then in order to recoup his election expenditure he could siphon off government funds.

Mohan: What (shocked)!

Ramesh: Yes and the promise will remain just that – a promise.

Mohan: Oh, I hadn't thought of that. In that case, there is no way I am voting for him then.

*End scene.*

Announcer: Teach vote-buying leaders a lesson – use your secret ballot to vote for an honest candidate.

# Appendix B. Journalist Interview Questions

1. Which *Lok Sabha* constituencies you are covering?

   *Interviewer Note: Ask the remaining questions for each constituency mentioned.*

2. Which three parties have the biggest presence and what is the name of the candidate contesting from each party?

3. How are parties spending money to gain publicity and increase their vote share?

   *Interviewer Note: Examples used to prompt can be rallies, parades, and posters.*

4. Which party/parties seem to be spending the most on campaigning?

5. Which party/parties have held the most public events (such as rallies, speeches, parades, etc.)?

6. Which party/parties have had the most visits by party leaders or "star campaigners" (such as celebrities or other well-known individuals lending support to the candidate)?

7. Which party/parties have the most volunteers or workers (largest party cadre)?

8. Which party/parties seem to be spending the most money secretly (such as on distribution of liquor, cash or other gifts)?

9. What are they spending this money on?

10. What class of voters are they trying to win by distributing gifts?

11. Which party do you think will get the largest vote share?

# Appendix C. Summary Statistics

Table 12: Summary Statistics and Balance Check

| Variable | Mean | SD | Observations | | Mean (C) | Difference | $p$-value | |
|---|---|---|---|---|---|---|---|---|
| | | | Treatment (T) | Control (C) | | (T) - (C) | Std. | Rand Inf. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| # Journalists | 2.73 | 2.06 | 291 | 301 | 2.86 | -0.28 | 0.55 | 0.69 |
| # Vote-Buying Parties | | | | | | | | |
| Specification 1 | 1.70 | 0.71 | 291 | 301 | 1.79 | -0.19 | 0.18 | 0.17 |
| Specification 2 | 2.88 | 0.94 | 312 | 303 | 2.94 | -0.12 | 0.68 | 0.65 |
| Specification 3 | 1.26 | 0.52 | 223 | 258 | 1.28 | -0.06 | 0.64 | 0.65 |
| Specification 4 | 2.50 | 0.82 | 293 | 302 | 2.53 | -0.07 | 0.79 | 0.79 |
| Lagged Turnout (%) | 57.85 | 12.25 | 312 | 303 | 59.21 | -2.74 | 0.35 | 0.38 |
| Lagged Vote Share of Vote-Buying Parties (%) | | | | | | | | |
| Specification 1 | 54.30 | 25.84 | 291 | 301 | 57.03 | -5.72 | 0.25 | 0.20 |
| Specification 2 | 79.00 | 20.50 | 312 | 303 | 77.88 | 2.25 | 0.64 | 0.61 |
| Specification 3 | 40.53 | 24.17 | 223 | 258 | 40.07 | 1.03 | 0.86 | 0.85 |
| Specification 4 | 74.09 | 22.80 | 293 | 302 | 74.06 | 0.07 | 0.99 | 0.99 |
| # Registered Voters | 235433.76 | 53230.34 | 312 | 303 | 222737.85 | 25680.65 | 0.10 | 0.15 |
| # All Candidates | 14.36 | 5.49 | 312 | 303 | 14.77 | -0.83 | 0.47 | 0.47 |
| # Party Candidates | 8.77 | 2.42 | 312 | 303 | 8.73 | 0.09 | 0.88 | 0.86 |
| Election Date | | | | | | | | |
| April 10 | 0.14 | 0.35 | 312 | 303 | 0.12 | 0.04 | 0.69 | 0.33 |
| April 17 | 0.44 | 0.50 | 312 | 303 | 0.43 | 0.02 | 0.90 | 0.83 |
| April 24 | 0.20 | 0.40 | 312 | 303 | 0.21 | -0.02 | 0.87 | 0.78 |
| April 30 | 0.10 | 0.30 | 312 | 303 | 0.14 | -0.09 | 0.32 | 0.42 |
| May 7 | 0.12 | 0.33 | 312 | 303 | 0.10 | 0.05 | 0.66 | 0.63 |
| State Election | 0.25 | 0.44 | 312 | 303 | 0.31 | -0.12 | 0.34 | 0.30 |
| Pop. Literate (%) | 59.52 | 9.63 | 312 | 303 | 60.69 | -2.37 | 0.24 | 0.31 |
| Pop. Rural (%) | 79.15 | 23.69 | 312 | 303 | 76.03 | 6.30 | 0.02 | 0.04 |
| Pop. SC/ST (%) | 31.77 | 17.70 | 312 | 303 | 29.83 | 3.92 | 0.33 | 0.34 |

*Notes:* See Section 4.2 for a description of the four specifications of vote-buying parties. Mean, SD, Control Mean, and Difference are weighted using IPW. Randomization inference $p$-values are obtained from randomization inference with 1000 iterations. Joint F-statistic for all variables is 0.44; $p$-value (std.)= 0.98, and $p$-value (rand. inf.) = 0.33. Missing values are coded with value, -9.

Table 13: Survey Data–Summary Statistics of Control Variables

| Variable | Mean | SD | N |
|---|---|---|---|
| Age | 41.77 | 15.59 | 2533 |
| Female | 0.48 | | 2533 |
| Highest Schooling | | | |
| Not Literate | 0.29 | | 2519 |
| Below Primary School | 0.10 | | 2519 |
| Some Middle School | 0.12 | | 2519 |
| Some High School | 0.13 | | 2519 |
| High School Diploma | 0.15 | | 2519 |
| Some College | 0.10 | | 2519 |
| Graduated College | 0.10 | | 2519 |
| Post-Graduate | 0.03 | | 2519 |
| No Information | 0.01 | | 2519 |
| Caste | | | |
| Scheduled Caste | 0.19 | | 2533 |
| Scheduled Tribe | 0.15 | | 2533 |
| Other Backward Caste | 0.44 | | 2533 |
| Other Caste | 0.20 | | 2533 |
| Not Applicable | 0.00 | | 2533 |
| Religion | | | |
| Hindu | 0.91 | | 2533 |
| Muslim | 0.06 | | 2533 |

Continued on next page

Table 13 – continued from previous page

| Variable | Mean | SD | N |
|---|---|---|---|
| Other | 0.04 | | 2533 |
| Residence | | | |
| Village | 0.77 | | 2533 |
| Town | 0.13 | | 2533 |
| City | 0.10 | | 2533 |
| Metropolitan City | 0.00 | | 2533 |
| Asset Index | 3.98 | 2.18 | 2533 |
| Montly HH Income (Rs.) | 8642.29 | 15909.92 | 2533 |
| Radio Listening | | | |
| Daily | 0.08 | | 2436 |
| Sometimes | 0.14 | | 2436 |
| Rarely | 0.17 | | 2436 |
| Never | 0.61 | | 2436 |
| Present During Interview | | | |
| No One | 0.45 | | 2533 |
| Spouse | 0.10 | | 2533 |
| Family Adult Male | 0.15 | | 2533 |
| Family Adult Female | 0.12 | | 2533 |
| Neighbor Adult Male | 0.07 | | 2533 |
| Neighbor Adult Female | 0.03 | | 2533 |
| Small Crowd | 0.07 | | 2533 |
| Other | 0.01 | | 2533 |

Table 14: Survey Data-Summary Statistics of Outcome Variables

| Variable | Mean | N |
|---|---|---|
| Most Important Election Issue: | | |
| Price | 0.16 | 2422 |
| Corruption | 0.12 | 2422 |
| Unemployment | 0.11 | 2422 |
| Development | 0.08 | 2422 |
| Voted | 0.93 | 2408 |
| Voted for Vote-Buying Party: | | |
| Spec. 1 | 0.67 | 2151 |
| Spec. 2 | 0.90 | 2258 |
| Spec. 3 | 0.58 | 1773 |
| Spec. 4 | 0.93 | 2151 |
| Voted Party Better for: | | |
| Administration | 0.82 | 2071 |
| Religious Sentiments | 0.83 | 1937 |
| National Security | 0.83 | 1937 |
| Good Leadership | 0.83 | 1985 |
| Gifts/Freebies | 0.77 | 1735 |
| Malpractices Increased | 0.12 | 2422 |
| Election Unfair | 0.14 | 2422 |
| Party Campaigning Observed: | | |
| Canvasser Visit | 0.72 | 2093 |
| Phone Call/SMS | 0.30 | 1947 |
| Offered Food/Money | 0.23 | 1824 |
| Offered Ride to Poll Stations | 0.31 | 1903 |

Table 15: Comparison of Voting Outcomes between Electoral Data and Survey Data

| | AC Mean (%) | |
|---|---|---|
| | Admin. Data | Survey Data |
| Turnout | 68.86 | 93.55 |
| Vote Share (Spec. 1) | 61.68 | 65.60 |
| Vote Share (Spec. 2) | 86.91 | 89.19 |
| Vote Share (Spec. 3) | 53.10 | 57.06 |
| Vote Share (Spec. 4) | 87.47 | 92.02 |

# Appendix D. Treatment Effects using OLS with Fixed Effects

Table 16: Impact of the Radio Campaign on Vote Share (%) of Vote-Buying Parties

| | Specification 1 | | | | | Specification 2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Mean (Control) | 67.32 | 67.32 | 67.32 | 67.32 | 67.32 | 90.72 | 90.72 | 90.72 | 90.72 | 90.72 |
| Treatment | -7.31 | -5.19 | -7.17 | -5.56 | -3.76 | -4.90 | -4.77 | -4.84 | -4.17 | -3.99 |
| | (3.54) | (2.58) | (3.47) | (2.65) | (2.09) | (2.16) | (1.98) | (2.23) | (1.88) | (1.85) |
| $p$-value | | | | | | | | | | |
| Standard | 0.04 | 0.04 | 0.04 | 0.04 | 0.07 | 0.02 | 0.02 | 0.03 | 0.03 | 0.03 |
| Rand. Inf. | 0.07 | 0.12 | 0.08 | 0.09 | 0.18 | 0.14 | 0.16 | 0.15 | 0.25 | 0.27 |
| $R^2$ | 0.53 | 0.65 | 0.54 | 0.58 | 0.68 | 0.40 | 0.44 | 0.43 | 0.46 | 0.51 |
| N (Treatment) | 301 | 301 | 301 | 301 | 301 | 312 | 312 | 312 | 312 | 312 |
| N (Control) | 291 | 291 | 291 | 291 | 291 | 303 | 303 | 303 | 303 | 303 |
| | Specification 3 | | | | | Specification 4 | | | | |
| | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) |
| Mean (Control) | 52.04 | 52.04 | 52.04 | 52.04 | 52.04 | 87.20 | 87.20 | 87.20 | 87.20 | 87.20 |
| Treatment | -3.37 | -2.72 | -3.53 | -3.21 | -2.96 | -6.52 | -6.39 | -6.04 | -5.80 | -5.13 |
| | (3.66) | (3.65) | (3.78) | (3.31) | (3.68) | (2.83) | (2.53) | (2.86) | (2.49) | (2.22) |
| $p$-value | | | | | | | | | | |
| Standard | 0.36 | 0.46 | 0.35 | 0.33 | 0.42 | 0.02 | 0.01 | 0.03 | 0.02 | 0.02 |
| Rand. Inf. | 0.45 | 0.52 | 0.44 | 0.44 | 0.47 | 0.06 | 0.06 | 0.08 | 0.10 | 0.15 |
| $R^2$ | 0.22 | 0.23 | 0.23 | 0.24 | 0.25 | 0.42 | 0.47 | 0.42 | 0.47 | 0.52 |
| N (Treatment) | 223 | 223 | 223 | 223 | 223 | 293 | 293 | 293 | 293 | 293 |
| N (Control) | 258 | 258 | 258 | 258 | 258 | 302 | 302 | 302 | 302 | 302 |
| Covariates | | | | | | | | | | |
| % Parties Vote-Buying | | X | | | X | | X | | | X |
| Demographics | | | X | | X | | | X | | X |
| State Election | | | | X | X | | | | X | X |

*Notes*: See Section 4.2 for a description of the four specifications of vote-buying parties. The Treatment coefficient is estimated using OLS with probability strata fixed effects. All columns include election phase fixed effects and the lagged vote share. Demographics include percent population rural, SC/ST, and literate, respectively. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses. Randomization inference $p$-values obtained from 1000 iterations. Observations belong to 57 overlapping clusters (radio station coverage areas).

Table 17: Impact of the Radio Campaign on Voter Turnout Rate (%)

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Mean (Control) | 68.21 | 68.21 | 68.21 | 68.21 | 68.21 |
| Treatment | -0.11 | -0.10 | -0.33 | 0.09 | -0.14 |
| | (0.89) | (0.82) | (0.71) | (0.87) | (0.63) |
| $p$-value | | | | | |
| Standard | 0.91 | 0.90 | 0.64 | 0.92 | 0.82 |
| Rand. Inf. | 0.97 | 0.97 | 0.91 | 0.97 | 0.96 |
| $R^2$ | 0.77 | 0.78 | 0.79 | 0.78 | 0.81 |
| N (Treatment) | 312 | 312 | 312 | 312 | 312 |
| N (Control) | 303 | 303 | 303 | 303 | 303 |
| Covariates | | | | | |
| % Parties Vote-Buying | | X | | | X |
| Demographics | | | X | | X |
| State Election | | | | X | X |

*Notes*: The Treatment coefficient is estimated using OLS with probability strata fixed effects. All columns include election phase fixed effects and the lagged turnout rate. Demographics include percentage population rural, SC/ST, and literate. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses. Randomization inference $p$-values obtained from 1000 iterations. Observations belong to 57 overlapping clusters (radio station coverage areas).

# Appendix E. Placebo Tests

Table 18: Impact of Post-Election Radio Campaign on Vote Share (%) of Vote-Buying Parties

| | Specification 1 | | | | | Specification 2 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Mean (Control) | 64.10 | 64.10 | 64.10 | 64.10 | 64.10 | 80.34 | 80.34 | 80.34 | 80.34 | 80.34 |
| Treatment | -0.95 | -4.73 | 5.91 | -4.86 | 0.60 | -0.88 | -0.35 | 5.59 | -2.64 | 4.78 |
| | (5.38) | (5.96) | (2.92) | (5.49) | (2.30) | (5.94) | (3.76) | (2.05) | (6.23) | (2.44) |
| $p$-value | | | | | | | | | | |
| Standard | 0.86 | 0.43 | 0.04 | 0.38 | 0.80 | 0.88 | 0.92 | 0.01 | 0.67 | 0.05 |
| Rand. Inf. | 0.92 | 0.64 | 0.38 | 0.67 | 0.95 | 0.96 | 0.98 | 0.76 | 0.88 | 0.78 |
| $R^2$ | 0.83 | 0.84 | 0.90 | 0.86 | 0.92 | 0.71 | 0.78 | 0.85 | 0.72 | 0.85 |
| N (Treatment) | 23 | 23 | 23 | 23 | 23 | 38 | 38 | 38 | 38 | 38 |
| N (Control) | 42 | 42 | 42 | 42 | 42 | 47 | 47 | 47 | 47 | 47 |
| | Specification 3 | | | | | Specification 4 | | | | |
| | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) |
| Mean (Control) | 81.40 | 81.40 | 81.40 | 81.40 | 81.40 | 84.77 | 84.77 | 84.77 | 84.77 | 84.77 |
| Treatment | -0.41 | -3.66 | 0.15 | -1.01 | -0.26 | -2.11 | -3.84 | 0.11 | -2.44 | 0.23 |
| | (3.10) | (3.50) | (3.27) | (3.81) | (3.06) | (4.98) | (3.84) | (4.26) | (7.08) | (5.29) |
| p-value | | | | | | | | | | |
| Standard | 0.90 | 0.30 | 0.96 | 0.79 | 0.93 | 0.67 | 0.32 | 0.98 | 0.73 | 0.97 |
| Rand. Inf. | 0.96 | 0.58 | 0.97 | 0.93 | 0.96 | 0.75 | 0.45 | 0.98 | 0.79 | 0.98 |
| $R^2$ | 0.43 | 0.57 | 0.63 | 0.43 | 0.71 | 0.87 | 0.89 | 0.89 | 0.87 | 0.90 |
| N (Treatment) | 37 | 37 | 37 | 37 | 37 | 39 | 39 | 39 | 39 | 39 |
| N (Control) | 45 | 45 | 45 | 45 | 45 | 47 | 47 | 47 | 47 | 47 |
| Covariates | | | | | | | | | | |
| % Parties Vote-Buying | | X | | | X | | X | | | X |
| Demographics | | | X | | X | | | X | | X |
| State Election | | | | X | X | | | | X | X |

*Notes*: See Section 4.2 for a description of the four specifications of vote-buying parties. Mean (Control) is weighted by IPW and the Treatment coefficient is estimated using WLS with IPW. All columns include election phase fixed effects and the lagged vote share. Demographics include percent population rural, SC/ST, and literate, respectively. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses. Observations belong to 57 overlapping clusters (radio station coverage areas). Randomization inference $p$-values obtained from 1000 iterations.

Table 19: Impact of Post-Election Radio Campaign on Voter Turnout Rate (%)

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Mean (Control) | 60.76 | 60.76 | 60.76 | 60.76 | 60.76 |
| Treatment | -0.59 | -0.98 | 0.25 | -1.74 | -1.12 |
| | (2.08) | (1.96) | (2.52) | (1.82) | (2.16) |
| $p$-value | | | | | |
| Standard | 0.78 | 0.62 | 0.92 | 0.34 | 0.6 |
| Rand. Inf. | 0.84 | 0.77 | 0.92 | 0.62 | 0.74 |
| $R^2$ | 0.75 | 0.75 | 0.77 | 0.78 | 0.81 |
| N (Treatment) | 39 | 38 | 39 | 39 | 38 |
| N (Control) | 47 | 47 | 47 | 47 | 47 |
| Covariates | | | | | |
| % Parties Vote-Buying | | X | | | X |
| Demographics | | | X | | X |
| State Election | | | | X | X |

*Notes*: Mean(Control) is weighted using IPW and the Treatment coefficient is estimated using WLS with IPW. All columns include election phase fixed effects and the lagged turnout rate. Demographics include percentage population rural, SC/ST, and literate. The proportion of vote-buying parties uses specification 2, which defines vote-buying parties for all ACs. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses. Observations belong to 57 overlapping clusters (radio station coverage areas). Randomization inference $p$-values obtained from 1000 iterations.

# Appendix F. Heterogeneous Effects

Table 20: Effects of the Radio Campaign Interacted with Demographic Characteristics

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Vote Share of Vote-Buying Parties (%) | | | | Turnout Rate |
| | Spec. 1 | Spec. 2 | Spec. 3 | Spec. 4 | (%) |
| Treatment | 7.99 | 14.37 | -0.29 | 12.50 | -4.81 |
| | (14.25) | (15.25) | (26.08) | (16.11) | (4.80) |
| $p$-value | 0.58 | 0.35 | 0.99 | 0.44 | 0.32 |
| Treatment*% Pop. Literate | -0.09 | -0.23 | -0.11 | -0.24 | 0.07 |
| | (0.17) | (0.20) | (0.29) | (0.21) | (0.05) |
| $p$-value | 0.60 | 0.24 | 0.70 | 0.24 | 0.21 |
| Treatment*% Pop. SC/ST | 0.08 | 0.12 | 0.14 | 0.17 | 0.09 |
| | (0.11) | (0.08) | (0.13) | (0.10) | (0.04) |
| $p$-value | 0.46 | 0.12 | 0.28 | 0.08 | 0.03 |
| Treatment*% Pop. Rural | -0.11 | -0.12 | -0.02 | -0.11 | -0.03 |
| | (0.07) | (0.05) | (0.08) | (0.05) | (0.03) |
| $p$-value | 0.13 | 0.03 | 0.83 | 0.03 | 0.32 |
| $R^2$ | 0.68 | 0.52 | 0.61 | 0.55 | 0.81 |
| Obs. | 592 | 615 | 481 | 595 | 615 |

*Notes*: See Section 4.2 for a description of the four specifications of vote-buying parties. Regressions estimated using WLS with IPW. All columns include election phase fixed effects, lagged outcome variable, demographics (percentage population rural, SC/ST, and literate), and proportion of vote-buying parties. Column (5) includes the proportion of vote-buying parties under specification 2. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses, and corresponding $p$-values reported. Observations belong to 57 overlapping clusters (radio station coverage areas).

Table 21: Heterogeneous Effects of the Radio Campaign on Issue Salience

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Price Rise | Corruption | Unemployment | Development |
| Treatment | 0.03 | 0.09 | -0.01 | -0.07 |
| | (0.08) | (0.08) | (0.07) | (0.05) |
| $p$-value | 0.73 | 0.27 | 0.90 | 0.14 |
| Treatment*Rural | -0.02 | -0.01 | 0.01 | 0.11 |
| | (0.07) | (0.09) | (0.08) | (0.04) |
| $p$-value | 0.80 | 0.87 | 0.89 | 0.01 |
| Treatment*Non-Literate | 0.02 | -0.03 | 0.04 | -0.02 |
| | (0.06) | (0.03) | (0.03) | (0.03) |
| $p$-value | 0.72 | 0.41 | 0.21 | 0.55 |
| Treatment*SC/ST | 0.01 | -0.01 | -0.04 | 0.00 |
| | (0.04) | (0.03) | (0.03) | (0.05) |
| $p$-value | 0.76 | 0.75 | 0.21 | 0.93 |
| Treatment*Female | -0.04 | 0.00 | -0.01 | 0.00 |
| | (0.03) | (0.03) | (0.03) | (0.02) |
| $p$-value | 0.19 | 0.89 | 0.83 | 0.84 |
| Treatment*Radio Listener | -0.08 | 0.08 | 0.16 | -0.05 |
| | (0.04) | (0.07) | (0.07) | (0.05) |
| $p$-value | 0.06 | 0.26 | 0.02 | 0.37 |
| $R^2$ | 0.05 | 0.09 | 0.13 | 0.06 |
| Obs. | 2422 | 2422 | 2422 | 2422 |

*Notes*: Radio Listener is coded as 1 if individuals listen to radio "daily" or "sometimes" and 0 otherwise. Regressions estimated using OLS and include fixed effects for the number of radio stations and election phase fixed effects. All columns include controls for age, gender dummy, indicators for levels of schooling, caste, religion, community type, monthly income, asset index, frequency of radio listenership, and presence of non-respondents during the interview. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses, and corresponding $p$-values reported. Observations belong to 30 overlapping clusters (radio station coverage areas).

Table 22: Heterogeneous Effects of the Radio Campaign on Voting Behavior

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Voted | Voted for Vote-Buying Party | | | |
| | | Spec. 1 | Spec. 2 | Spec. 3 | Spec. 4 |
| Treatment | 0.05 | -0.06 | 0.14 | -0.25 | 0.08 |
| | (0.03) | (0.15) | (0.09) | (0.11) | (0.09) |
| $p$-value | 0.08 | 0.70 | 0.11 | 0.03 | 0.40 |
| Treatment*Rural | -0.04 | -0.15 | -0.14 | 0.14 | -0.09 |
| | (0.03) | (0.13) | (0.08) | (0.12) | (0.08) |
| $p$-value | 0.23 | 0.26 | 0.09 | 0.24 | 0.26 |
| Treatment*Non-Literate | -0.00 | 0.03 | -0.02 | -0.00 | 0.03 |
| | (0.02) | (0.07) | (0.03) | (0.07) | (0.03) |
| $p$-value | 0.91 | 0.65 | 0.58 | 0.94 | 0.22 |
| Treatment*SC/ST | -0.04 | -0.01 | 0.07 | 0.02 | 0.04 |
| | (0.02) | (0.06) | (0.03) | (0.08) | (0.03) |
| $p$-value | 0.08 | 0.82 | 0.02 | 0.82 | 0.12 |
| Treatment*Female | -0.02 | -0.01 | -0.00 | 0.01 | -0.01 |
| | (0.02) | (0.04) | (0.02) | (0.03) | (0.02) |
| $p$-value | 0.32 | 0.83 | 1.00 | 0.79 | 0.75 |
| Treatment*Radio Listener | 0.04 | -0.10 | -0.13 | 0.09 | -0.04 |
| | (0.03) | (0.11) | (0.06) | (0.09) | (0.03) |
| $p$-value | 0.18 | 0.34 | 0.03 | 0.33 | 0.19 |
| $R^2$ | 0.03 | 0.17 | 0.22 | 0.17 | 0.06 |
| Obs. | 2408 | 2151 | 2258 | 1773 | 2151 |

*Notes*: Radio Listener is coded as 1 if individuals listen to radio "daily" or "sometimes" and 0 otherwise. See Section 4.2 for a description of the four specifications of vote-buying parties. Regressions estimated using OLS and include fixed effects for the number of radio stations and election phase fixed effects. All columns include controls for age, gender dummy, indicators for levels of schooling, caste, religion, community type, monthly income, asset index, frequency of radio listenership, and presence of non-respondents during the interview. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses, and corresponding $p$-values reported. Observations belong to 30 overlapping clusters (radio station coverage areas).

Table 23: Heterogeneous Effects of the Radio Campaign on Party Choice

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Voted for party better for: | | | | |
| | Administration | Religious Harmony | Nat. Security | Leadership | Free Gifts |
| Treatment | 0.03 | -0.11 | -0.00 | 0.10 | -0.15 |
| | (0.09) | (0.09) | (0.08) | (0.08) | (0.08) |
| $p$-value | 0.71 | 0.23 | 0.97 | 0.23 | 0.08 |
| Treatment*Rural | -0.07 | 0.05 | -0.05 | -0.14 | 0.01 |
| | (0.09) | (0.10) | (0.08) | (0.08) | (0.09) |
| $p$-value | 0.45 | 0.58 | 0.53 | 0.09 | 0.96 |
| Treatment*Non-Literate | 0.01 | 0.02 | -0.01 | -0.04 | 0.08 |
| | (0.05) | (0.06) | (0.05) | (0.05) | (0.05) |
| $p$-value | 0.83 | 0.79 | 0.81 | 0.43 | 0.09 |
| Treatment*SC/ST | -0.00 | 0.01 | 0.00 | 0.00 | 0.06 |
| | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) |
| $p$-value | 0.97 | 0.91 | 0.95 | 0.95 | 0.27 |
| Treatment*Female | 0.00 | 0.06 | 0.05 | 0.05 | 0.03 |
| | (0.04) | (0.03) | (0.04) | (0.04) | (0.04) |
| $p$-value | 0.93 | 0.05 | 0.15 | 0.22 | 0.40 |
| Treatment*Radio Listener | 0.07 | 0.13 | 0.09 | 0.04 | 0.07 |
| | (0.06) | (0.06) | (0.07) | (0.05) | (0.09) |
| $p$-value | 0.21 | 0.05 | 0.18 | 0.44 | 0.39 |
| $R^2$ | 0.07 | 0.08 | 0.07 | 0.07 | 0.08 |
| Obs. | 2071 | 1937 | 1937 | 1985 | 1735 |

*Notes*: Radio Listener is coded as 1 if individuals listen to radio "daily" or "sometimes" and 0 otherwise. See Section 4.2 for a description of the four specifications of vote-buying parties. Regressions estimated using OLS and include fixed effects for the number of radio stations and election phase fixed effects. All columns include controls for age, gender dummy, indicators for levels of schooling, caste, religion, community type, monthly income, asset index, frequency of radio listenership, and presence of non-respondents during the interview. Standard errors robust to heteroskedasticity and multi-way clustering given in parentheses, and corresponding $p$-values reported. Observations belong to 30 overlapping clusters (radio station coverage areas).