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Abstract

The virtue of democratic elections has traditionally been seen in their role as a means of screening and sanctioning shirking public officials. This paper proposes a novel rationale for elections and political campaigns by considering heterogeneity in candidates' aversion to lying. We analyze theoretically and experimentally how democratic elections and campaigns influence the behavior of voters and their representatives. Our main insight is that candidates behave more benevolently when democratically elected than when exogenously appointed. Moreover, the results show that candidates feel more obliged to serve the public interest the higher their approval ratings are. Together, our results suggest that electoral competition and campaigns confer benefits beyond their function as a screening and sanctioning device.

JEL classification: D72, C92, D03.
Keywords: Costs of Lying, Electoral Competition, Laboratory Experiment.

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"We have won amply - But this, far from putting us in a position of privilege, puts us instead in a position of greater responsibilities and obligations."

Argentina's first lady Cristina Fernandez de Kirchner after having won the election with 45% of all votes - almost twice the number of votes of the second place finisher (2007/10/29)

1 Introduction

When facing fierce electoral competition, candidates typically spend substantial amounts of resources on electoral campaigns (see Stratmann (2005)). Even though electoral campaigns are literally anything but cheap, scholars often consider them to be *cheap talk* (e.g. Barro (1973), Ferejohn (1986) or Austin-Smith and Banks (1989)). Candidates can promise almost anything during electoral campaigns, but voters generally do not possess any direct institutional instrument to make them keep their promises.[1] But are campaigns nothing other than cheap talk? And, do voters benefit from electoral campaigns?

We try to shed light on these questions by putting forward a behavioral rationale as to why voters might benefit from elections and electoral campaigns. Our idea is based on the observation that human behavior is not exclusively characterized by pure self-interest, but is also driven by other-regarding preferences, emotions, and norm compliance (e.g. Cooper and Kagel (forthcoming), Sobel (2005) or Fehr and Schmidt (2002)). A grow-

[1] Two theoretical explanations have been proposed as to how elections serve as an indirect instrument for representation. Barro (1973) and Ferejohn (1986), for instance, consider repeated elections a means for sanctioning shirking incumbents. In contrast, others consider elections a mechanism to select among "good" and "bad" types of candidates (e.g. Rogoff (1990), Fearon (1999) or Besley (2005)).

ing experimental literature suggests that a non-negligible fraction of people tends (partially) to tell the truth in strategic situations, even if reputational concerns are absent. Scholars usually explain this phenomenon by arguing that honest people incur some form of psychological costs if they do not live up to their promises. Several psychological determinants for these cost of lying have been put forth (see Vanberg (2008) for an experiment testing alternative hypotheses). The experiments from Fischbacher and Heusi (2008) suggest that the desire to maintain a positive self-image might determine the extent to which someone might lie. Charness and Dufwenberg (2006) argue that people feel guilty if they do not meet others' expectations (see also Battigalli and Dufwenberg (2007)). Other scholars have proposed that humans have an innate preference for telling the truth or for behaving consistently (see Gneezy (2005) or Ellingsen and Johannesson (2004)). Whatever the exact determinants of these costs of lying, their existence implies that electoral campaigns are not necessarily just cheap talk, but potentially constitute anchors for actual behavior. We therefore hypothesize that electoral competition fosters the representation of the public's interests if candidates suffer from psychological cost of lying: candidates are forced to promise large benefits for their constituency in order to get elected. Since these promises provide an anchor for subsequent behavior, the electorate is likely to be better off when candidates compete in an election rather than if they are exogenously assigned to office and therefore do not have to make any promises.

In this paper, we develop and experimentally test a theoretical equilibrium model of political competition incorporating the psychological costs of

lying.[2] The model features "egoistic" politicians for whom campaigns are mere cheap talk, and "honest" politicians who incur psychological costs if they break their promises. Moreover, we assume that these psychological costs are increasing with the perceived harm of deceiving others (see also Battigalli and Dufwenberg (2007), Baumeister et al. (1994), Charness and Dufwenberg (2006)). Hence, the more supporters a candidate would let down, the greater the harm of deception.[3] It can be shown that, in equilibrium, both types of candidates promise benefits to their constituency when they are facing electoral competition, and that honest politicians stick to their promises—even if sticking to one's promises means forgone monetary benefits, and even if there are no looming reelections. Consequently, voters are better off if candidates are actually elected – and therefore compete for office appointment with the intensive use of promises – rather than if they are exogenously appointed.

We empirically test the implications of our model, using a computerized laboratory experiment where a conflict of interests is imposed between candidates and the electorate. The winning candidate receives a budget which she can allocate between herself and the citizens. Once elected, the candidate is in the same situation as a proposer in the dictator game.[4] Following

[2] We direct our attention to one-shot elections in order to isolate the influence of psychological costs of lying from reputational concerns. Hence, voters have no means for sanctioning the incumbent.

[3] Our quote from Cristina Fernandez de Kirchner for example highlights this positive relation between a politician's feelings of obligation towards his or her constituency and her political support.

[4] In the standard version of this game, subjects in the role of the dictators allocate a fixed sum of money between themselves and an anonymous recipient, where the recipients have no alternative but to accept the offer (see Forsythe et al. (1994)). Our experiment can easily be reinterpreted to mimic a situation where an incumbent has to decide how much costly effort she wants to spent in office, with effort being beneficial to the citizens.

our model, players interact anonymously in a one-shot sequential game. In stage one, candidates simultaneously make a non-binding promise about the amount of money they will distribute to the citizens if they win the election. In the second stage, voters observe the electoral campaigns and vote for one of the candidates. Finally, the outcome of the election is publicly announced and the winning candidate decides how much she actually wants to distribute to the citizens. We complement this benchmark treatment (ELEC for "election"), with two additional control treatments. In the first control treatment (RAND for "random dictatorship"), we eliminate the driving force behind electoral competition (and with it the reason for running electoral campaigns as well) by replacing the election in stage two with a random selection mechanism. Instead of letting citizens vote according to their will, their voting decisions are randomly imputed; the random selection of the winner was common knowledge. With the other control treatment (NOCAMP for "no campaign"), we provide more direct evidence concerning the role of promises by restricting the possibility of running electoral campaigns.

The results broadly support our theoretical predictions. First, electoral competition intensifies electoral campaigns. Candidates promise significantly larger benefits in ELEC than in RAND. Second, promises serve as an anchor for subsequent behavior. We observe an economically and statistically significant correlation between candidates' promises and their actual later actions. This suggests that a non-negligible fraction of our subjects seems to shoulder psychological costs of letting others down. Third, eliminating electoral competition leads to substantially less intensive campaigns (i.e. lower promises). This effect is accompanied by a large drop in the amount candidates actu-

ally distribute to the citizens. Moreover, we show that if candidates cannot make any promises (in treatment NOCAMP), voters are as equally badly off in monetary terms as in RAND. Together these results suggest that the difference between RAND and ELEC is not exclusively driven by the absence of electoral competition per se, but can at least partly be attributed to the reduced intensity of campaigns in RAND. Fourth, we find that the higher candidates' political support is, the likelier they are to behave more benevolently, suggesting that the costs of lying increase with the number of supporters a candidate would let down. However, this relationship is much weaker in the two control treatments RAND and NOCAMP, where the approval rate does not signal voters' expectations (or does so to a lesser extent).[5]

Our experimental approach enables us to identify causalities under controlled conditions and allows for a clean test of our theoretical model.[6] Furthermore, a lab experiment allows us to deal with several important challenges that generally arise with the use of observational field data. First, our candidates find themselves in an anonymous one-shot interaction. We can therefore more easily disentangle intrinsically motivated honesty from reputational concerns such as looming reelection or future career concerns. Second, as monetary preferences are exogenously imposed on our subjects, defining the political actions in the public's interest is straightforward. Opin-

[5] The approval rate in treatment RAND is a random outcome by design. A citizen has no information about the candidates due to missing campaigns in treatment NOCAMP; voting is therefore arbitrary and the approval rate is similar to a random outcome.

[6] We are aware that the question of generalizability arises with the use of laboratory data (see Levitt and List (2007)). We view field studies and lab experiments as complementary approaches. Moreover, there is a growing number of studies replicating lab results in the field (e.g. Falk (2007)) or demonstrating significant correlations between laboratory and field measures (e.g. Meier and Benz (2008)) or Fehr and Leibbrandt (2008)). See DellaVigna (2009) for an excellent survey on psychology and economics in the field.

ion polls are used as a proxy for the preferences of the constituency in most empirical studies (e.g. see Canes-Wrone and Shotts (2004) or Levitt (1996)). However, a large amount of literature suggests that public opinion is easily manipulable through the framing of questions (see for example Jacoby (2000), Krosnick and Brannon (1993) or Hetherington (1996)). Furthermore, rather than reflecting true preferences, voters may even use polls strategically (see McKelvey and Ordeshook (1985) and Forsythe et al. (1996)). Second even if these issues of manipulation were of minor importance, informational asymmetries between the electorate and the politicians might imply that the latter choose (un)popular policies such as pension reforms that potentially increase the citizens' welfare.

Related Literature: This paper contributes to the existing literature in several ways. First, a recent branch of the theoretical literature (Callander and Wilkie (2007), Callander (2008) and Kartik and McAfee (2007)) has introduced psychological cost of lying in models of *spatial* electoral competitions. They assume that costs of lying increase with the distance between the policy promised in the campaign and the implemented policy. These models generally conclude that the costs of lying imply that electoral campaigns are informative about the policies the winner will implement. Our model presents two important differences with respect to these contributions. In these spatial election models, lying does not hurt all voters but actually – depending where they are located in the policy space – also benefits some voters. Our model focuses on cases where dishonesty hurts all voters equally (e.g. a corrupt politician) and provides an argument for why electoral campaigns potentially improve the representation of the public's interests. Fur-

thermore, the costs of lying in our model positively depend on the number of supporters a candidate has. Both psychological and economic literature on guilt aversion suggest this assumption, as they argue that the costs of lying depend on the harm caused by disappointing other peoples' expectations (e.g. Baumeister et al. (1994) or Charness and Dufwenberg (2006)). To the extent that approval rates signal the electorate's expectations, candidates will be more inclined to live up to their promises if more people vote for them.

Second, the role democratic institutions play in society is a question of enduring interest (e.g. Olken (2008), Maskin and Tirole (2004), Acemoglu et al. (2001) or North (1981)). Our theoretical and experimental results provide a novel behavioral explanation as to why democratic elections are beneficial for citizens, apart from their use as a selection and sanctioning instrument. Electoral competition induces candidates to promise more benefits to the public. Given that the fraction of honest candidates is sufficiently large, citizens are likely to be better off in the presence of electoral competition, rather than under exogenous or random office appointment.[7]

Third, there is an emerging economic literature on leadership (e.g. Hermalin (1998), De Cremer and van Knippenberg (2005), Güth et al. (2007), Glöckner et al. (2008) or Gächter et al. (2008)). Leadership is typically assigned exogenously (i.e. randomly) in these experiments. However, our results suggest that leaders might act differently, depending on whether they have to compete for leadership or if they are exogenously assigned (see also

[7]Dal Bo et al. (2008) conducted a related experiment demonstrating that democratic institutions shape individual behavior on top of their effects on implemented policies. While they study the behavioral effects of *direct* democratic institutions, this paper focuses on elections as an *indirect* democratic institution.

Brandts et al. (2006)). Fourth, we contribute to the discussion about the design of social decision making mechanisms. Some scholars propose random appointments of representatives (e.g., by chance or by arbitrary office rotation schemes) as a means for achieving precise representation with low transaction costs.[8] Moreover, if each lot has an equal probability of winning, random appointments seem to be attractive from the viewpoint of procedural fairness (see Stutzer and Frey (2005) or Carson and Martin (1999)). Our results underscore that these potential benefits should be carefully weighted against the potential costs of less inclined incumbents.

Finally our paper relates to a large literature studying the effects of preplay communication in strategic contexts (see for example Harbring and Irlenbusch (2004), Charness (2000) or Crawford (1998) for a survey), as well as contributing to a steadily growing literature using economic experiments to study voting behavior (see Grosser and Schram (2008, 2006), Grosser and Giertz (2006), Kube and Puppe (2009) or Palfrey (2006) and Morton and Williams (forthcoming) for recent literature overviews). The rest of the paper is structured as follows. We present our theoretical model in the following Section 2. We describe our experimental design in Section 3 and illustrate the experimental results in Section 4. The paper concludes with Section 5.

2 The Model

Our model is based on a sequential game which proceeds as follows: In stage 1, two candidates, A and B, compete for office appointment by promising

[8] See Elster (1989) for illustrative real world examples of randomization in social decision making.

how much they will distribute in case they get elected. Each candidate can promise how much to distribute from her budget $I \in \mathbb{R}_+$ to the $N \in \mathbb{N}$ risk-neutral voters (with N odd). Let $P_j \leq I$ be the non-binding promise made in stage 1 by candidate j, with $j = A, B$. Voters observe the promises and cast their vote for either A or B in stage 2. A candidate is elected if she receives at least $m = \frac{N+1}{2}$ votes (simple majority voting rule). After having observed her approval rate in stage 3, the winning candidate receives a budget I and then decides how much of this budget she actually distributes to the voters, keeping the rest for herself. Let $S_j \in \mathbb{R}_+$, with $0 \leq S_j \leq I$ be the share of the budget I candidate j distributes if she wins the election. The amount distributed is shared equally among all N voters.

Honest candidates incur psychological costs from distributing less than what they promised in the electoral campaign. We assume that these psychological costs increase with (i) the difference between promised and distributed benefits and (ii) with the number of supporters a candidate would disappoint. Formally, if candidate j is honest, she incurs psychological costs $\Omega(P_j, S_j) : \mathbb{R}_+ \times \mathbb{R}_+ \longrightarrow \mathbb{R}_+$ for each supporter she disappoints by distributing an amount less than her promise. We assume that $\Omega(P_j, S_j)$ is a continuous and differentiable function with $\Omega(P_j, 0) > \frac{I}{N}$ for all $P_j > 0$ and $\Omega(P_j, S_j) = 0$ for all pairs P_j, S_j such that $P_j - S_j \leq 0$[9]. Moreover we assume that $\frac{\partial \Omega(P_j,S_j)}{\partial S_j} < 0$, $\frac{\partial^2 \Omega(P_j,S_j)}{\partial^2 S_j} > 0$, $\frac{\partial \Omega(P_j,S_j)}{\partial P_j} > 0$, $\frac{\partial^2 \Omega(P_j,S_j)}{\partial^2 S_j P_j} < 0$ for all $P_j \geq S_j > 0$, and that the psychological costs are linearly increasing in the

[9] These assumptions guarantee that psychological costs plays any role; namely, i) if an honest candidate promises $P_j > 0$ and is elected with unanimous support, then she distributes a strictly positive amount; ii) if a candidate distributes what she promised (or if she does not make any promise), then she does not feel guilty.

number of votes a candidate gets. Hence, the expected (psychological) payoff U_j of an honest candidate who makes a promise P_j is:

$$U_j(P_j, S_j, k) = \sum_{k=m}^{N} (p_j)^k (p_{-j})^{N-k} [I - S_j - k\Omega(P_j, S_j)] \text{ for } j = A, B, \quad (1)$$

where $(p_j)^k (p_{-j})^{N-k}$ is the probability of candidate j winning the election with k votes; and $p_{-j} = 1 - p_j$, because we have two candidates, voting is mandatory and each voter casts one vote.

Our first result concerns the amount an honest candidate distributes when she wins the elections with k votes and promises P_j in stage 1.

Proposition 1 *The amount an honest winner, $S_j^*(P_j, k)$, distributes depends positively on the approval rate and the promise made in the electoral campaign.*

Proof: See appendix.

Let us now turn to both the equilibrium behavior in the voting game and the optimal promises candidates make in the electoral campaign game. We restrict our attention to equilibria in which voters play the same strategy and, with a little abuse in notation, we call it symmetric equilibria, even if we allow candidates to play different strategies.

2.1 Identical Honest Candidates

We first consider the simplest case in which both candidates are identical and honest and there is complete information on their characteristics. Voter

$i's$ expected payoff is

$$U_i(S_j^*(P_j,k), S_{-j}^*(P_{-j},k)) = \\ \frac{1}{N}\left[\sum_{k=m}^{N}(p_j)^k(p_{-j})^{N-k}S_j^*(P_j,k) + \sum_{k=m}^{N}(p_{-j})^k(p_j)^{N-k}S_{-j}^*(P_{-j},k)\right]. \quad (2)$$

If a voter is never pivotal in the election, then she prefers voting for the winning candidate. It follows that simultaneous voting induces a multiplicity of Nash equilibria in the voting game and therefore a multiplicity of SPNE in the game. For instance, voting for the candidate who makes the smallest promise with probability one is *part of* a SPNE of the game. Indeed, unilateral deviations only reduce the number of votes the winning candidate receives and, by proposition 1, her distributed amount on stage 3. Under the assumption that voters cannot communicate and agree on the same voting strategy, the concept of Strong Nash equilibria does not seem to be the appropriate equilibrium refinement for reducing the multiplicity of SPNE. In order to overcome this problem, we introduce the following milder assumption on voters' behavior, which is widely used in the literature.

(A1) *If a Pareto dominant SPNE of the subgame starting in stage 2 exists, then voters play the strategy associated with this equilibrium.*

Notice the difference between assumption (A1) and the concept of strong Nash equilibrium, which allows for coalition deviations. The concept of strong Nash equilibrium implies that if candidates make an identical promise, then all voters coordinate to vote for the same candidate. Thus, the chosen candidate is elected unanimously with probability one, which is the best electoral outcome for voters. When candidates make the same promise, there

are two weakly Pareto dominant equilibrium strategies: all voters vote for candidate A with probability one, or all voters vote for candidate B with probability one. If voters cannot communicate and coordinate their votes on a chosen candidate, they randomly cast their votes for a candidate. In other words, assumption (A1) only applies when a Pareto dominant SPNE exists. Under this assumption the following proposition holds.

Proposition 2 *In any symmetric SPNE of the game, if candidates make different promises, voters cast their vote with probability one for the candidate who made the largest promise.*

Proof: See appendix.

The following proposition shows that under reasonable assumptions about the psychological costs, there is a unique equilibrium in which candidates promise the entire endowment in the electoral campaign game.

Proposition 3 *If candidates prefer winning with probability one and with unanimous support rather than winning with probability* $\frac{1}{2}$ *and simple majorities for any promise made in the electoral campaign, then there is a unique SPNE of the electoral campaign game where both candidates promise the entire budget.*

Proof: See appendix.[10]

[10]It should be noted that the previous result depends on the form of the psychological costs. If the assumption stated in the above proposition does not hold, then other SPNEs emerge in which both candidates make the same promise, but which may be lower than the entire budget.

2.2 Honest and Egoistic Candidates

Consider now the more interesting case in which candidates may differ according to the degree of their honesty. Here we simply introduce the possibility that candidates may be egoistic. If candidate j is egoistic, her payoff function is simply given by $U_j = I - S_j$. Thus, promises are pure cheap talk for an egoistic candidate — since, once elected, she does not bear any psychological cost from deceiving voters. As a consequence, in equilibrium, she always distributes nothing, regardless of what she promised in the electoral campaign game and the approval rate she observes in the voting game. We assume that voters do not have prior information about candidates, i.e., they do not know whether a candidate is honest (type H) or egoistic (type E). However, they know that candidates' types are independent and identically distributed: a candidate is a H-type with probability ϕ, while with the candidate is an E-type complementary probability $1 - \phi$. In such a situation, voters can only rely on the promises to infer candidates' type. Since now the game is characterized by incomplete information, we look for Perfect Bayesian Equilibria. Under these assumptions, it can be shown that equilibria exist in which candidates make different promises. Moreover, in these equilibria, the candidate promising the lowest amount has still a positive probability of winning.

Proposition 4 *The game with incomplete information concerning candidates' type has pooling and semiseparating Perfect Bayesian equilibria. Candidates make different promises in a semiseparating equilibrium with positive probability; when this occurs, the candidate who promises more wins with higher probability, but the candidate who promises less can still win the elec-*

tion with positive probability.

Proof: See appendix.

The intuition behind the previous result can be easily seen. Voters will never want to vote for an egoistic candidate (at least if they assign a positive probability that the other candidate is an honest type). Therefore, egoistic candidates should never play a strategy which may reveal their type to voters. As a consequence, only two types of equilibria may emerge: pooling equilibria, in which egoistic candidates mimic honest candidates, or semi-separating equilibria, where honest candidates play a mixed strategy. In the latter case, honest candidates should get elected with a larger probability when they make a more generous promise, and a lower probability when they make a less generous promise (they win "less frequently", but when they win their gain is larger because they have only committed to distribute a smaller amount). Egoistic candidates always make promises which maximize their probability of getting elected.

A multiplicity of equilibria exists, and candidates do not promise the entire budget in most of them. In these cases, the following result can be derived using the intuitive criterion.

Proposition 5 *Suppose that in an equilibrium candidates promise less than their entire budget. If a candidate deviates and makes a too generous promise, then voters believe that this candidate is an egoistic type.*

Proof: See appendix.

We conclude the theoretical part by noting that the main driving force behind propositions 3 and 4 is the existence of electoral competition; i.e., that

candidates can actually influence their probability of winning the election by making promises. As soon as the winner is selected by a random mechanism, promising zero amounts is a dominant strategy for honest candidates (weakly dominant for egoistic), since they can keep the entire budget for themselves without bearing any psychological cost. As a consequence, voters are worse off in these situations. This observation leads the following final remark:

Remark 1 *In the absence of electoral competition (i.e. exogenous or random office appointment), honest candidates promise and distribute zero benefits to their electorate.*

3 Experimental Design

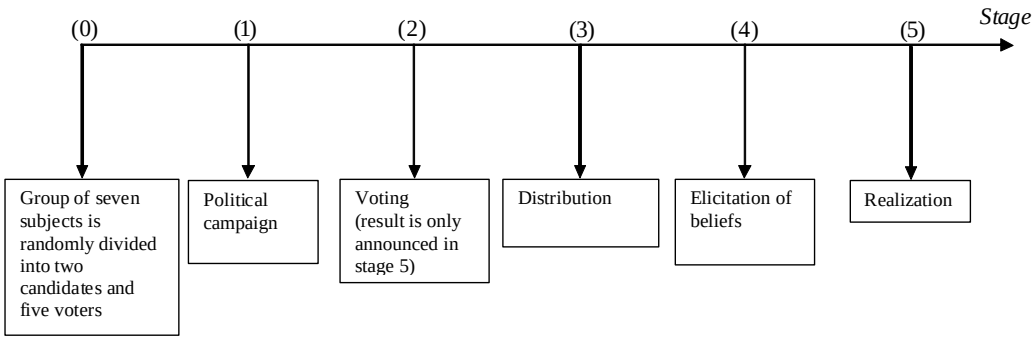
Following our theoretical model, we set up a stylized experimental one-shot election to test its predictions.[11] First, given that lying imposes psychological costs on honest candidates, electoral campaigns are not entirely cheap talk. In other words, promises and actual behavior are positively correlated (Proposition 1). Candidates who promise larger benefits are therefore more likely to get elected (Propositions 2 and 4), but only if their promises are not unreasonably high. Promises that are too large signal that that lying is not costly for them (Proposition 5). Second, if voting is random, honest candidates promise zero benefits in order to avoid the costs of lying (Remark 1). Therefore, electoral competition should lead to more intensive campaigns and, as a consequence, to more benevolent politicians. Finally, since the costs

[11] The experimental instructions are downloadable from the following homepage: http://marechalhome.googlepages.com/research

of lying are assumed to be increasing with the number of persons who are disappointed, candidates should provide larger benefits to their electorate if a higher number of voters support them (Proposition 1).

In the experiment, we formed groups of seven players and randomly divided them into two candidates (A and B) and an electorate of five citizens. The benchmark election treatment (ELEC) consisted of the following five stages (see Figure 1):

Figure 1: Timeline: Treatment ELEC



Stage 1 Political campaign: Candidates run their electoral campaign. The electoral campaign is non-binding and consists of two parts. The compulsory part contains a promise about the amount of tokens P_j to be distributed equally among the citizens. Optionally, candidates can send an additional free-form text message to the electorate.

Stage 2 Voting: Citizens must vote anonymously for one of the two candidates. The winner of the election is determined by majority rule, but is only announced in stage 5, when the winner receives an ego rent E (see Rogoff

(1990))[12] of 30 tokens and a budget I of 450 tokens.

Stage 3 Distribution: Candidates decide which share S_j^a from their budget I they want to equally distribute among all citizens. In order to analyze how the candidates' behavior depends on their political support, we use the strategy method (see Selten (1967)): before candidates know the actual outcome of the election, they decide on the amount S_j^a they would distribute to the electorate if they were to win the election with an approval rate (a) of 3 of 5, 4 of 5 and 5 of 5 votes.[13]

Stage 4 Elicitation of beliefs: Citizens guess how many tokens each candidate will distribute. At the same time, each candidate estimates (conditional on the electoral outcome) the average amount citizens expect her to distribute. In order to elicit beliefs in an incentive-compatible way, we implement a mechanism proposed by Dufwenberg and Gneezy (2000) and reward exact beliefs with 10 tokens; for every unit that the stated beliefs differ from the actual value, the reward is reduced by one token down to zero tokens.[14]

Stage 5 Realization: In the last stage, the winner of the election is announced, the ego rent is paid out, and, conditional on the actual approval rate and choices made in stage 3, the amount S^a is deducted from the budget and equally distributed to the electorate.

We conducted two additional control treatments. In treatment RAND,

[12] We introduced the ego rent as an additional benefit for the incumbent. This ensures that the extraction of rents is not the only motivation for getting elected.

[13] This method is frequently used in the experimental literature, but is not undisputed due to its emotionally rather "cold" framing. Brandts and Charness (2000), Güth et al. (2001), Schotter et al. (1994) and Cason and Mui (1998) do not find significant differences in behavior between the strategy and the direct response method. Moreover, since we apply the strategy method in all of our treatments, it should not have an impact on treatment differences.

[14] We report our analysis of second order beliefs in the appendix.

citizens could not elect their preferred candidate. We instead randomly imputed a vote for each citizen. This was common knowledge among all participants and eliminated the driving force behind electoral competition (and with it the reason for the use of electoral campaigns as well). In the second control treatment (NOCAMP), candidates could not make any electoral campaigns at all. This allows us to look at the causal effect of promises on voters' monetary welfare.

The experiments were conducted at the BonnEconLab (University of Bonn) using z-Tree (Fischbacher (2007)). We ran five sessions with a total of 10 independent groups for each of the three treatments. The 210 subjects were randomly recruited from the BonnEconLab's general subject pool (consisting of approximately 3000 students from all disciplines, except for psychology). Participants started the experiment with an initial endowment of 100 tokens as their show-up fee. Tokens earned were converted at an exchange rate of 0.04 Euro per token at the end of the experiment. The experiment lasted approximately 40 minutes (including instructions and control questions).

We additionally ran a classroom experiment to classify the messages candidates sent in treatments ELEC and RAND, following the design from Houser and Xiao (2007). Fifty nine students who did not participate in the above experiments were recruited for a "paper and pen" experiment. After verbally explaining the instructions of the original experiment, we gave students a list containing the candidates' messages and asked them to classify each message into one of the following two types: a "statement of intent or promise" or "empty talk". At the end of the classroom experiment, ten

participants were randomly selected and paid according to their classification of three randomly selected messages. In particular, they earned two Euros for each message that they classified in line with the majority of the other students' classifications.

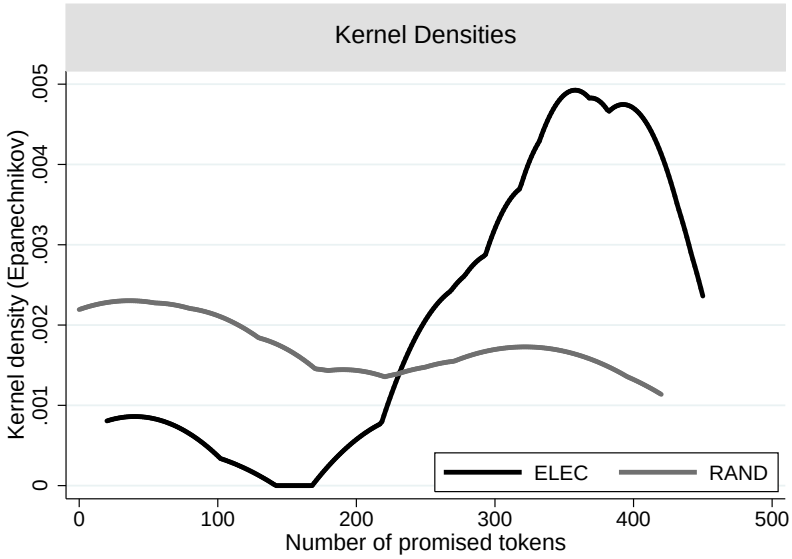
4 Experimental Results

We present the experimental results in three steps. First, we analyze how electoral competition affects promises in electoral campaigns. Second, we test whether the electorate considers promises as cheap talk and whether the electoral outcome signals voters' expectations about the candidates' trustworthiness. Finally, we investigate how the candidates behave depending on the mechanism of office appointment and the availability or effectiveness of electoral campaigns.

Campaigns: Read my Lips!

Figure 2 depicts kernel density estimates for the number of tokens the candidates promise depending on whether they were elected by the constituency (ELEC) or whether office appointment was randomly determined (RAND). While the promised amount is approximately equally distributed over the whole budget range in RAND, the mass of promises lies in the top range of the available budget in treatment ELEC. In comparison with treatment RAND (165 tokens), candidates' promises were twice as high in ELEC (325 tokens). This difference is statistically significant according to a Wilcoxon

Figure 2: Electoral competition and Promises



rank-sum test ($p = 0.001$).[15] We summarize these observations in the following result:

Result 1: *Electoral competition induces candidates to promise larger benefits for their constituency.*

Elections: We want YOU!

A natural question is whether promises influence voting behavior despite the fact that traditional economic theory suggests that they should be considered as cheap talk in our setting. Table 1 reports the estimated marginal effects from Probit regression models. In column (1) we regressed a dummy indicating whether a voter casted his vote for candidate A on the absolute and

[15] All reported p-values are based on two-sided tests.

squared difference in promises (in hundreds of tokens) made by candidates A and B. We further included the promised amount (in hundreds of tokens) by candidate A in order to control for the level of promises.

Table 1: Promises and Voting Behavior in ELEC

	(1)	(2)
Difference in Promises	0.320***	0.315***
	(0.099)	(0.093)
Difference in Promises^2	-0.002***	-0.001**
	(0.001)	(0.001)
Promise A	0.042	-0.087**
	(0.040)	(0.042)
Message promise A		0.408***
		(0.153)
Message promise B		-0.377***
		(0.099)
Obs.	50	50

Notes: This table reports Probit marginal effect estimates (standard errors are reported in parentheses and are corrected for clustering on the level of each electorate) evaluated at the medians of all covariates. The dependent variable is a dummy variable indicating whether a voter casted his vote for candidate A. *Difference in promises* (*Difference in promises*^{2}) is the (squared) difference between the number of tokens promised by candidate A and B (in 100 tokens). *Promise A* is the number of tokens promised by candidate A (in 100 tokens). *Message promise A* and *Message promise B* indicate whether the text message sent by candidate A, respectively B contain a statement of intent or promise. Significance levels are denoted as follows: * p<0.1, ** p<0.05, *** p<0.01.

Both the coefficient for the absolute and the squared difference in promises are statistically highly significant, suggesting that the effect of the difference in promises for political support is nonlinear. Promising larger benefits than the opponent helps, but only to a certain extent. This observation is consistent with the prediction of our model that promises which are too high are not considered trustworthy. In column (2) we further show that apart

from the promised amount, the type of message candidates communicate also influences voting behavior. If the message contains some statement of intent or a promise - captured with the dummy variables *Message promise A* and *B* - the corresponding candidate is significantly more likely to win political support. The main findings are summarized in our second result:

Result 2: *Voters do not consider promises as cheap talk and take them into account when deciding for whom they vote.*

Further support for this result comes from the additional regression models in Table 2, analyzing how voters form their beliefs concerning the candidates' trustworthiness. The dependent variable is the amount the electorate believes it will receive on average from each candidate; this variable is regressed on the absolute and squared promised amount. A consistent significant nonlinear relationship is visible: Promises have a positive impact on voters' beliefs. Their influence, however, diminishes as promises grow larger. Consistent with the voting behavior, text messages containing statements of intent or promises have a positive impact on voters' beliefs (see column 2).

Overall we find that the electoral outcome reflects voters' expectations about the candidates' trustworthiness. Comparing the average electorate beliefs about candidate A and B with the outcome of each election, we find that in nine out of ten elections, the candidate whom the electorate perceives to be as more trustworthy wins the election (χ^2 test: $p = 0.016$).

Accountability: I Won't Let YOU Down!

We have shown that candidates promise to provide larger benefits for their

Table 2: Promises and Voter's Beliefs in ELEC

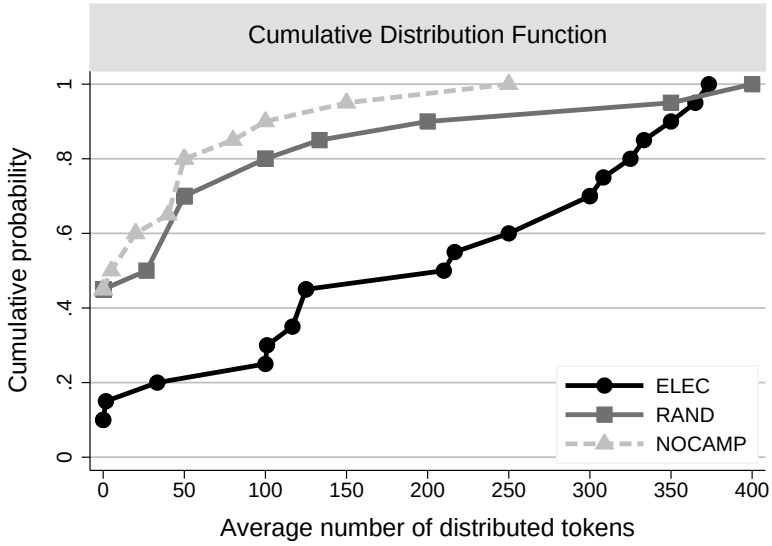
	(1)	(2)
Promise	1.173***	1.048***
	(0.132)	(0.171)
Promise^2	-0.002***	-0.001**
	(0.000)	(0.000)
Message promise		36.143*
		(18.277)
Constant	30.111***	15.542
	(6.543)	(9.605)
Obs.	20	20

Notes: This table reports OLS coefficient estimates (standard errors are reported in parentheses and are corrected for clustering on the level of each electorate). The dependent variable is the average number of tokens the electorate believes it will receive from a candidate. *Promise* (*Promise*^{2}) is the (squared) number of tokens promised by the candidate. *Message promise* indicates whether the text message the candidate sent contains a statement of intent or a promise. The results remain qualitatively the same if we alternatively use a Tobit model. Significance levels are denoted as follows: * p<0.1, ** p<0.05, *** p<0.01.

constituency if they compete for approval rather than if they are appointed randomly. But do candidates actually live up to their promises? The cumulative distribution functions for the number of distributed tokens depicted in Figure 3 show that voters are substantially more likely to be better off in treatment ELEC than in RAND. For example, the probability that a candidate distributes one hundred tokens or less is only .25 in treatment ELEC, but .8 in treatment RAND. On average (over all approval rates) candidates distributed 197 tokens in treatment ELEC and only 76 tokens in RAND. According to a Wilcoxon rank-sum test, this difference is statistically highly significant ($p = 0.003$).[16]

[16] Comparing the distributed amount in treatment ELEC and RAND for each approval

Figure 3: Political Institutions and Voters Welfare



The OLS regression results reported in column (1) of Table 3 corroborate the nonparametric results. When we regress the number of distributed tokens on the *ELEC* treatment dummy, we find that candidates distribute 121 tokens more in ELEC than in RAND. In column (2) we additionally control for the number of tokens the candidates promise and find that promises have a highly significant and substantial influence on voters' payoff. Interestingly, the coefficient for ELEC is much smaller and no longer statistically significant, suggesting that the difference in the intensity of promises might drive our treatment effect. Furthermore, we find that candidates who communicate an additional statement of intent or promise also distribute a higher number of tokens. This effect, however, does not reach statistical significance.

In treatment NOCAMP candidates could not make any promises to their

rate separately, we find that all differences are statistically significant ($p < 0.05$).

electorate. Comparing treatment ELEC with NOCAMP provides more direct evidence on the importance of campaigns and promises for voters' payoff. As visible in Figure 3 candidates are substantially more likely to distribute a small number of tokens to their electorate than in ELEC. On average candidates distributed only 41 tokens, which is significantly lower than in ELEC (Wilcoxon rank-sum test: $p < 0.001$). Even though the distributed amount is slightly larger in RAND than in NOCAMP, the difference does not reach statistical significance $p < 0.522$).[17] We summarize these findings as follows:

Result 3: *Voters are better off when candidates are elected rather than randomly appointed. This difference seems to be driven by the higher intensity of electoral campaigns. Restricting the ability to make promises in electoral campaigns leads to a corresponding reduction in the monetary payoff to the electorate.*

We have shown that the approval rate in an election signals how trustworthy voters perceive the candidates to be. The psychological costs of disappointing others should therefore increase with the approval rate in treatment ELEC. On the other hand, the approval rate in treatment RAND does not contain any information since it was generated randomly. Similarly in NOCAMP voters had absolutely no information about the different candidates, .i.e. voting can be considered unintentional. As a consequence, we should see a positive correlation between approval rates and the number of distributed

[17] The difference between ELEC and NOCAMP is statistically significant for each approval rate ($p < 0.01$). On the other hand, none of the differences between NOCAMP and RAND reach statistical significance.

Table 3: Treatment ELEC vs. RAND: The Role of Promises

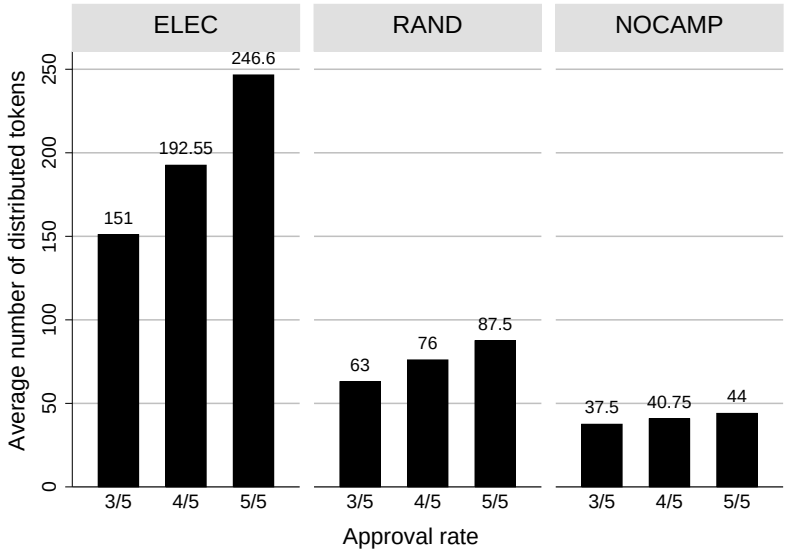
	(1)	(2)	(3)
Elec	121.217***	57.169	45.860
	(39.392)	(49.205)	(51.377)
Promise		0.401***	0.388**
		(0.139)	(0.143)
Message promise			44.599
			(41.016)
Constant	75.500***	9.448	0.433
	(26.005)	(14.178)	(15.968)
Obs.	40	40	40

Notes: This table reports OLS coefficient estimates (robust standard errors in parentheses). The dependent variable is the average (over all three approval rates) number of tokens candidates distribute. *ELEC* is a dummy indicating the election treatment. *RAND* is considered as the reference category. *Promise* is the number of tokens the candidate promises. *Message promise* indicates whether the text message the candidate sends contains a statement of intent or a promise. The results remain qualitatively the same if we alternatively use a Tobit model. Significance levels are denoted as follows: * p<0.1, ** p<0.05, *** p< 0.01.

tokens in treatment ELEC, but not in RAND or NOCAMP. Figure 4 provides supporting evidence: The number of distributed tokens is strongly increasing with the approval rate in ELEC but remains much flatter in the other two treatments where approval rates have no signaling value.

In Table 4, we regressed the number of distributed tokens on dummies indicating the corresponding approval rate as well as the promised amount (if available) for each treatment separately. In treatment ELEC (column 1) we find that both approval rate dummies are positive and highly significant ($p < 0.01$). Using a Wald test, we can reject the null hypothesis that the coefficient for *4 of 5 votes* and *5 of 5 votes* are equally large ($p = 0.003$). In contrast, approval rate has a much lower impact on candidates' behavior in

Figure 4: Approval Rate and Voters' Material Welfare



ELEC (see column 2). The coefficients for *4 of 5 votes* and *5 of 5 votes* are positive but only marginally significant ($p < 0.1$).

We find no significant relationship between approval rates and the distributed amount in treatment NOCAMP (see column 3 in Table 4). In order to test whether the relationship between the approval rate and voters payoff is significantly stronger in ELEC than in the other two treatments, we pooled the data from all three treatments and interacted our treatment dummies with the approval rates in column (4). Both interaction terms from treatment ELEC are highly significant and large.

Furthermore, Wald tests reject the null hypothesis that the coefficients for *4 of 5 votes * ELEC* and *4 of 5 votes * RAND* (respectively *5 of 5 votes * ELEC* and *5 of 5 votes * RAND*) are equally large ($p = 0.014$ and

$p = 0.008$). Our last result summarizes these findings:

Result 4: *Elected candidates behave more benevolently the higher their approval ratings are. This relationship is much less pronounced (or absent) when the approval rate is based on unintentional, or random voting.*

Table 4: Approval Rate and Number of Distributed Tokens

	(1) ELEC	(2) RAND	(3) NOCAMP	(4) All Treatments
4 of 5 votes	41.550***	13.000*	3.250	3.250
	(8.814)	(7.300)	(3.979)	(3.933)
5 of 5 votes	95.600***	24.500*	6.500	6.500
	(22.698)	(13.121)	(7.959)	(7.867)
Promise	0.427***	0.387*		
	(0.140)	(0.203)		
ELEC				113.500***
				(32.877)
RAND				25.500
				(29.733)
4 of 5 votes * ELEC				38.300***
				(9.489)
5 of 5 votes * ELEC				89.100***
				(23.588)
4 of 5 votes * RAND				9.750
				(8.162)
4 of 5 votes * RAND				18.000
				(15.071)
Constant	12.395	-0.733	37.500**	37.500**
	(43.526)	(16.874)	(15.568)	(15.388)
Obs.	60	60	60	180

Notes: This table reports OLS coefficient estimates (standard errors are reported in parentheses and are corrected for clustering on the level of each candidate). The dependent variable is the number of tokens candidates distribute for each approval rate. The variables *4 of 5 votes* and *5 of 5 votes* indicate the approval rate. *ELEC* and *RAND* are treatment dummy variables. *NOCAMP* is considered the reference category in the column (4). The results remain qualitatively the same if we alternatively use a Tobit model. Significance levels are denoted as follows: * p<0.1, ** p<0.05, *** p<0.01.

5 Conclusion

Are electoral campaigns cheap talk? And are democratically elected leaders more inclined to serve the public interests? This paper sheds new light on these questions using a behavioral approach. We demonstrate theoretically that in the presence of candidates who suffer from psychological costs of lying, the electorate is potentially better off under elections than under an exogenous and random appointment rule.[18] Candidates make generous promises in order to get elected. Breaking a promise implies psychological costs for honest candidates and campaigns therefore act as an anchor for their subsequent behavior in office. Depending on the share of honest candidates, electoral competition and campaigns may thus enhance the representation of the public interests.

We tested the implications of our model empirically using controlled laboratory experiments. The data are consistent with our theoretical predictions. Electoral competition intensified electoral campaigns (i.e. candidates promise larger benefits), and pre-election promises were positively correlated with the incumbents' actual behavior. Voters anticipated this and did not consider promises as cheap talk when making their voting decisions. Candidates who made larger promises than their opponents were more likely to get elected. However if promises were unreasonably high, voters considered this as a signal that the candidate does not suffer from costs of lying. Most interestingly, we find that voters were better off under electoral competition

[18] We model elections as one-shot interactions in order to isolate the influence of costs of lying from the role of election as a sanctioning and selection instrument in repeated elections.

than under random assignment of leadership – but only if the design allowed the candidates to run electoral campaigns.

While our setup is very stylized and certainly does not cover all features of democratic elections, it nevertheless provides a simple and parsimonious framework that can successively be enriched in future research. For example, voting is mandatory in our setting, but if voting were voluntary, turnout might affect politicians' trustworthiness (see Besley and Burgess (2002)). A low turnout might signal that the electorate has low expectations and reduce the incumbents' feelings of obligation. Other interesting extensions could allow for self-selection into the role of candidates and citizens, variation in the candidates' wages, or targeting benefits exclusively to supporting voters. In general we believe this line of research to be a fruitful enterprise which might lead one step closer towards a behavioral public choice.

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Appendix

Appendix A: Proofs

Proof of Proposition 1: Suppose that candidate j is elected with k votes. She chooses the amount to distribute to voters by maximizing her utility conditional on the number of votes k she got and the promise P_j made at stage 1. Therefore, $S_j^*(P_j, k) \equiv \arg\max\ I - S_j - k\Omega(P_j - S_j)$. If $P_j = 0$, then $S_j^*(P_j, k) = 0$. If $P_j > 0$, then $S_j^*(P_j, k) > 0$; in fact if a candidate distributes a zero amount, she gets a negative payoff (since by assumption, $\Omega(P_j, 0) > \frac{I}{N}$). Hence $S_j^*(P_j, k)$ is the value in $(0, P_j]$ solving the FOC:

$$-1 + k\Omega'(P_j, S_j^*) = 0.$$

Using the implicit function theorem under the above assumptions on the psychological-costs function we get that $\frac{\partial S_j^*(P_j,k)}{\partial k} > 0$ for all $S_j^*(P_j, k) < P_j$ and $\frac{\partial S_j^*(P_j,k)}{\partial P_j} > 0$.

Proof of Proposition 2: Suppose without loss of generality that $P_A^* > P_B^*$. First notice that voting with probability one for A is the Pareto dominant SPNE of the voting game. Indeed, if all voters vote for A, then this candidate is elected with probability one, receives unanimous support and by the assumption distributes $S_A^*(P_A^*, N) > 0$. Voting for A with probability 1 is a Nash equilibrium of the voting game, since any unilateral deviation made by a voter to vote for B simply reduces the electoral support of A and, by proposition 1, $S_A^*(P_A^*, N)$. By previous arguments and noticing that $S_B^*(P_B^*, N) < S_A^*(P_A^*, N)$, we conclude that any SPNE of the voting game

implies a strictly lower payoff for voters. Finally, by assumption (A1), each voter will vote for A.

Proof of Proposition 3: The proof follows the same argument of a Bertrand game. First, there is no SPNE in which candidates make different promises. Suppose the contrary and, without loss of generality, let $P_A^* < P_B^* \leq I$. By Proposition 2, candidate B is elected by unanimity and distributes $S_B^*(P_B^*, N)$. By continuity, if she deviates and promises P_B' with $P_B^* > P_B' > P_A^*$, she wins with unanimous support and gets higher expected payoff being $S_B^*(P_B', N) < S_B^*(P_B^*, N)$. Let $P^* \leq I$ be the equilibrium promise made by both candidates. By Proposition 2 and assumption (A1), if candidate j deviates and promises $P_j < P^*$ she looses the election and gets zero expected payoff, but receives a positive payoff in equilibrium. It follows that a SPNE exists where both candidates promise $P^* = I$. Suppose finally that both candidate promise $P^* < I$; in equilibrium each candidate gets

$$\sum_{k=m}^{N} \left(\begin{array}{c} N \\ k \end{array} \right) \frac{1}{2^N} [I - S_j^*(P^*, N) - k\Omega(P^*, S_j^*(P^*, N))]. \tag{3}$$

By Proposition 2 and assumption (A1), if candidate j deviates and offers any $P > P^*$ wins the election with probability one and unanimous support. By assumption

$$I - S_j^*(P^*, N) - N\Omega(P^*, S_j^*(P^*, N)) >$$
$$\frac{1}{2}[I - S_j^*(P, \frac{N+1}{2}) - \frac{N+1}{2}\Omega(P^*, S_j^*(P^*, \frac{N+1}{2}))].$$

Since the right hand side of the previous equation is strictly larger than

the equilibrium payoff, then by continuity it follows that a profitable deviation $P > P^*$ exists.

Proof of Proposition 4: The proof proceeds by three Lemmata

Lemma 2 *There are no equilibria in which E-type candidates make a promise with positive probability which is never played by a $H-type$ candidate.*

Proof: Consider a separating equilibrium where candidates play pure strategies. When both candidates are of the same type, voters cast their votes randomly. When one candidate is social and one candidate is egoistic, then all voters vote for the $H-type$ candidate.[19] Therefore with probability ϕ a $E-type$ candidate is never elected, and with probability $1-\phi$ is elected with probability $\frac{1}{2}$. It follows that if an $E-type$ candidate deviates and makes the promise made by a $H-type$ candidate increases her probability to win the election and therefore her final payoff (the promise is irrelevant for her because she never distributes a positive amount). The same reasoning applies for all equilibria in which E-type candidates make a promise with positive probability which is never played by a $H-type$ candidate.

Lemma 3 *There are no pooling equilibria where candidates play a mixed strategy.*

[19] This statement requires a clarification. In fact it does not hold if the $G-type$ promises 0. We want to rule out these equilibria. We assume therefore that if a candidate promises a positive amount,and the other promises zero, voters vote for he former. Note that this restriction on voters' behavior does not put any constraint on voters' beliefs. In fact even if they assign probability one that the candidate who promises zero is a $G-type$ and the candidate who promises a positive amount if a $E-type$, the previous strategy is a best response.

Proof: Let (P_1^*, P_2^*) be a pair of promises made with positive probability and assume, without loss of generality, that $P_1^* > P_2^*$. Since the equilibrium is pooling the probability that a candidate is self-interested is the same for all promises made in equilibrium; therefore, by assumption (A1), voters always vote for the candidate who makes the largest promise. Hence, a $E-type$ should deviate, and offering the largest promise in the support of the mixed strategy with probability one.

Lemma 4 *There are no semiseparating equilibria such that the $H-type$ play a mixed strategy whose support include (P_1^*, P_2^*) with $P_1^* > P_2^*$ and the $E-type$ promises P_2^*.*

Proof: Consider the case in which a candidate promises P_2^* and the other P_1^*. All voters vote with probability one for the candidate who offers P_1^*, since she made the largest promise and is $H-type$ with probability one. The $E-type$ deviating and promising P_1^* increases her ex-ante probability to win the election.

We now describe the two types of equilibria that emerge in this game.

1. *Pooling Equilibria.* Both candidates promise $P^* > 0$. Voters vote each candidate with probability $\frac{1}{2}$ if they make the same promise. If a candidate promises P^* and the other promises $P' \neq P^*$, then voters vote for the former candidate for sure. Beliefs are such that if a candidate promises P^* is a $H-type$ with probability ϕ, if promise $P' \neq P^*$ is a $E-type$ with probability one.

2. *Semiseparating Equilibria.* The $E-type$ candidate makes the promise P_1^*, the $H-type$ promises P_1^* with probability α and P_2^* with probability

$1-\alpha,$. where $P_1^* > P_2^*$. Voters randomly cast their vote if candidates make the same promise, vote for the candidate who promises P_1^* with probability $\beta > \frac{1}{2}$ if the other candidate promises P_2^*. Beliefs are such that if a candidate promise P_2^* is a H-type candidate with probability one, if she promises P_1^* is a H-type candidate with probability $\frac{\phi\alpha}{\phi\alpha+1-\phi}$. If she promises any $P' \neq P_1^*, P_2^*$, then she is a E-type with probability one. Note that the ex-ante probability of being elected of a H-type candidate is lower than the probability of being elected of a E-type because $\beta > \frac{1}{2}$. We show now that in all semiseparating Perfect Bayesian Equilibria it must be that $\beta > \frac{1}{2}$. Let $S_{j,H}(P,k)$ denote the amount distributed by candidate j of type H when she promised P and got k votes. The following three conditions must be satisfied in equilibrium. A voter is indifferent between voting for the candidate who offers P_1^* and voting for the candidate who offers P_2^* when all other voters vote with probability β for the candidate who promises P_1^* if and only if

$$\begin{aligned}
&\frac{\phi\alpha}{\phi\alpha+1-\phi}\sum_{k=m-1}^{N-1}\left(\begin{array}{c} N-1 \\ k \end{array}\right)\beta^k(1-\beta)^{N-1-k}S_{j,H}^*(P_1^*,k+1)+ \quad (4)\\
&+\sum_{k=m}^{N-1}\left(\begin{array}{c} N-1 \\ k \end{array}\right)\beta^{N-1-k}(1-\beta)^k S_{j,H}^*(P_2^*,k) = \\
&=\frac{\phi\alpha}{\phi\alpha+1-\phi}\sum_{k=m}^{N-1}\left(\begin{array}{c} N-1 \\ k \end{array}\right)\beta^k(1-\beta)^{N-1-k}S_{j,H}^*(P_1^*,k)+ \\
&+\sum_{k=m-1}^{N-1}\left(\begin{array}{c} N-1 \\ k \end{array}\right)\beta^{N-1-k}(1-\beta)^k S_{j,H}^*(P_2^*,k+1)
\end{aligned}$$

A H-type candidate is indifferent between promising P_1^* and P_2^* if and

only if

$$(\phi\alpha+1-\phi)\left\{\sum_{k=m}^{N}\left(\begin{array}{c}N\\k\end{array}\right)\frac{1}{2^N}\left[I-S^*_{j,H}(P_1^*,k)-k\Omega(P_1^*-S^*_{j,H}(P_1^*,k))\right]\right\}+ \tag{5}$$

$$(1-\alpha)\phi\left\{\sum_{k=m}^{N}\left(\begin{array}{c}N\\k\end{array}\right)\beta^k(1-\beta)^{N-k}\left[I-S^*_{j,H}(P_1^*,k)-k\Omega(P_1^*-S^*_{j,H}(P_1^*,k))\right]\right\}=$$

$$(\phi\alpha+1-\phi)\left\{\sum_{k=m}^{N}\left(\begin{array}{c}N\\k\end{array}\right)(1-\beta)^k\beta^{N-k}\left[I-S^*_{j,H}(P_2^*,k)-k\Omega(P_2^*-S^*_{j,H}(P_2^*,k))\right]\right\}$$

$$+(1-\alpha)\phi\left\{\sum_{k=m}^{N}\left(\begin{array}{c}N\\k\end{array}\right)\frac{1}{2^N}\left[I-S^*_{j,H}(P_2^*,k)-\Omega(P_2^*,S^*_{j,H}(P_2^*,k),k)\right]\right\}$$

Finally, a E-type candidate prefers promising P_1 to P_2 if and only if

$$(\phi\alpha+1-\phi)\left[\sum_{k=m}^{N}\left(\begin{array}{c}N\\k\end{array}\right)\frac{1}{2^N}I\right] \tag{6}$$

$$+(1-\alpha)\phi\left[\sum_{k=m}^{N}\left(\begin{array}{c}N\\k\end{array}\right)\beta^k(1-\beta)^{N-k}I\right]\geq$$

$$(\phi\alpha+1-\phi)\left[\sum_{k=m}^{N}\left(\begin{array}{c}N\\k\end{array}\right)(1-\beta)^k\beta^{N-k}I\right]$$

$$+(1-\alpha)\phi\left[\sum_{k=m}^{N}\left(\begin{array}{c}N\\k\end{array}\right)\frac{1}{2^N}I\right]$$

This last condition implies that $\beta\geq\frac{1}{2}$. Moreover, note that for a H-type candidate offering P_1^* is more costly than offering P_2^* because for all k,

$S^*_{j,H}(P^*_1, k) > S^*_{j,H}(P^*_2, k)$. Therefore, a H-type candidate can be indifferent between offering P^*_1 and P^*_2 if only if the probability of being elected is higher when she promises P^*_1, that is if $\beta > \frac{1}{2}$.

Proof of Proposition 5: Consider any pooling equilibrium with $P^* < I$ (the same argument holds for semiseparating equilibria with $P^*_1 < I$). For all $P > P^*$ such that

$$\sum_{k=m}^{N} \begin{pmatrix} N \\ k \end{pmatrix} \frac{1}{2^N} \left[I - S^*_{j,H}(P^*, k) - k\Omega(P^*, S^*_{j,H}(P^*, k)) \right] >$$

$$\left[I - S^*_{j,H}(P, N) - N\Omega(P, S^*_{j,H}(P, N)) \right]$$

the intuitive criterion imposes to assign probability one that the proposer is a self interested type.

Appendix B: Analysis of Second-Order Beliefs

Similar to Charness and Dufwenberg (2006) we elicited the candidates' second order beliefs, i.e. their beliefs about what the electorate expects them to distribute. Charness and Dufwenberg analyzed behavior in an experimental trust game[20] with pre-play communication and found a positive correlation between the trustee's second order beliefs and his actual trustworthiness. This positive correlation is consistent with their notion of guilt aversion, where people suffer from psychological cost to the extent they do not meet other peoples expectations.

We also find that the candidates' second order beliefs are strongly correlated with their actual behavior (see column 1 of Table 5). Interestingly this correlation is weaker and only marginally significant once we control for second order beliefs. Furthermore, we find that the candidates' approval and their promises are positively related with second order beliefs (see column 2 of Table 5). These results are thus broadly consistent with the notion of guilt aversion proposed by Charness and Dufwenberg (2006) and Battigalli and Dufwenberg (2007). However as noted by Vanberg (2008) and Ellingsen et al. (2007) a positive correlation between second order beliefs and behavior could equally well be explained by the existence of a false consensus effect: Candidates who prefer to distribute a lot to their electorate believe that the electorate expects them to do so. Hence, we report these results mainly for the sake of completeness but acknowledge that their interpretation is not undisputed.

[20] See Berg et al. (1995).

Table 5: Second Order Beliefs and Behavior: Treatment ELEC

Dependent Variable	(1) Distributed amount	(2) 2^{nd} order beliefs
4 of 5 votes	13.742*	41.750***
	(7.934)	(9.392)
5 of 5 votes	35.654*	90.000***
	(19.986)	(18.485)
Promise		0.662***
		(0.128)
2^{nd} order beliefs	0.666***	
	(0.164)	
Constant	5.132	4.155
	(27.396)	(33.280)
Obs.	60	60

Notes: This table reports OLS coefficient estimates (standard errors are reported in parentheses and are corrected for clustering on the level of each candidate) for ELEC sample. In column (1), the dependent variable is the number of tokens candidates distribute for each approval rate. In column (2), the dependent variable represents the candidates' second order beliefs (i.e. how many tokens they believe voters expect them to distribute) for each approval rate. The variables *4 of 5 votes* and *5 of 5 votes* indicate the approval rate. *Promise* is the number of tokens the candidate promises and 2^{nd} *order beliefs* are the candidates' second order beliefs. The results remain qualitatively the same if we alternatively use a Tobit model. Significance levels are denoted as follows: * p<0.1, ** p<0.05, *** p<0.01.

Appendix C: Data and Messages

Table 6: Experimental Data

	promised	votes	distributed amount			voters' average	candidate's belief		
id	amount	received	3/5	4/5	5/5	belief	3/5	4/5	5/5
			Treatment ELEC						
1	350	5	350	350	350	334	280	280	350
2	250	0	50	100	200	200	100	180	250
3	400	3	0	0	5	237	10	25	50
4	360	2	50	100	150	262	240	300	360
5	400	3	300	325	350	280	330	350	370
6	300	2	300	325	375	220	310	330	368
7	60	3	20	30	50	105	30	50	70
8	20	2	100	101	102	48	20	25	27
9	375	2	355	365	375	175	300	350	375
10	450	3	100	200	330	243	220	330	430
11	375	4	225	300	375	245	225	300	375
12	400	1	200	250	300	124	200	250	300
13	450	3	50	150	450	261	200	250	400
14	250	2	25	150	200	220	50	200	350
15	300	5	0	0	0	262	300	300	300
16	300	0	100	125	150	252	250	300	350
17	300	0	320	380	420	230	290	300	320
18	400	5	250	300	375	281	400	400	400
19	375	3	0	0	0	288	375	375	375
20	375	2	225	300	375	281	250	320	360
			Treatment RAND						
41	420	0	400	400	400	84	70	70	70
42	300	5	100	200	300	60	200	300	400
43	350	4	0	0	0	83	0	0	0
44	0	1	0	0	0	0	0	0	0
45	50	3	50	150	200	23	300	300	450
46	225	2	0	0	0	170	50	50	50
47	50	1	10	20	50	80	0	10	10
48	100	4	100	100	100	110	100	100	100
49	100	0	100	100	100	46	0	0	0
50	250	5	50	50	50	112	5	5	5
51	0	2	0	0	0	0	0	0	0
52	350	3	350	350	350	140	350	350	350
53	50	4	0	0	0	8	0	0	0
54	300	1	50	50	50	24	0	10	10
55	400	3	0	0	0	318	5	5	5
56	0	2	0	0	0	0	0	0	0
57	50	5	50	50	50	22	10	20	30
58	0	0	0	0	0	82	50	50	50
59	300	3	0	50	100	99	200	200	200
60	0	2	0	0	0	0	0	0	0

Table 7: Experimental Data, continued

id	promised amount	votes received	distributed amount 3/5	4/5	5/5	voters' average belief	candidate's belief 3/5	4/5	5/5
Treatment NOCAMP									
21		3	0	0	0	60	0	0	0
22		2	0	5	10	60	2	5	15
23		2	250	250	250	31	50	50	50
24		3	0	0	0	32	0	0	0
25		1	50	100	150	40	50	50	50
26		4	200	150	100	50	300	250	100
27		2	50	50	50	55	50	50	50
28		3	50	50	50	55	10	15	20
29		4	0	0	0	20	100	100	100
30		1	0	0	0	30	0	0	0
31		3	0	0	0	152	1	1	1
32		2	30	40	50	78	10	20	30
33		1	50	50	50	36	0	0	0
34		4	0	20	40	31	0	20	29
35		3	60	80	100	51	300	350	400
36		2	0	0	0	40	0	0	0
37		1	0	0	0	90	0	0	0
38		4	0	0	0	100	0	0	0
39		0	0	0	0	23	0	0	0
40		5	10	20	30	29	20	30	50

Table 8: Classification of Messages: Promise (P) or Empty Talk (E)

Candidate	*Message*	*Category*
	Treatment ELEC	
1	The more votes I get, the more I will distribute, that is for sure! And that won't be few!	P (39)
2	70 for each of you and 100 for me – this is (almost ;-)) fair. It is only a game, but I will share honestly anyway. Out of principle, and so that I can sleep well tonight ;-)	P (53)
3	Hello dear voters!	E (0)
4	[Blank]	E
5	Hello, I distribute justly among all of us, I suppose that this is fair, so that you get 80 tokens each and I get 50+30 for winning the election	P (51)
6	Hi :). I will pay 300 if I receive 3 votes. For 4 votes 325 and for 5 votes 375. I want to do it justly, but there should also be a small incentive to vote for me ;-).	P (57)
7	Hello, I hope that you will cast your vote for me, so that afterwards we can drink one (or several) beers from our earned money. To the others: Have a nice day :)	E (24)
8	Each of you will receive at least 20 tokens from me! You can count on that!	P (56)
9	One for all, all for one! Vote for me and win with me!	E (1)
10	I think the number speak for themselves! I would be happy about each vote :)	E (2)
11	In case that I win, I will pay each citizen the same amount of tokens, because I think that this is fair.	P (42)
12	You want something to get done? Then cast your vote for me!	E (10)
13	Vote for me, because I will give you the most money! By the way: I am supporting universal peace ;-)	E (24)
14	If I would distribute more, I would have no money left to fulfill your wishes;)	E (8)
15	If this helps to get elected: I will give this amount in any case, if the other candidate offers a relatively unrealistic amount (e.g. 450), then I would be skeptical – this is also useful for the beliefs.	P (53)
16	Ban the dog license fee! Freedom for the whales! The other is lying! Tuition fees are antisocial! Abolishment of can deposits! My opponent is lying!	E (0)
17	Hello all ;) you are here to earn money, right ????? I am here to help you with this... ;) so VOTE FOR ME AND I WILL SHARE MY MONEY JUSTLY WITH YOU :))))))you won't regret it....best wishes:)	P (48)
18	I will distribute 400 tokens, this is just, because then each citizen gets 400/5 = 80T payoff	P (58)

Table 9: Classification of Messages: Promise (P) or Empty Talk (E)

Candidate	*Message*	*Category*
19	Dear citizens! Vote for me and I will take care that the amount of 450 tokens is shared equally amongst you, i.e. 75 tokens for each of you and also for me. That is an additional 3 Euros for each of you.	P (56)
20	In case I get elected, I will divide the 450 tokens fairly by 6, so that each citizen receives the same amount of tokens as I do. So I will distribute 375 tokens, every citizen receives 75 tokens, so do I!	P (59)
	Treatment RAND	
1	I keep pre-election promises.	E (21)
2	[Blank]	E
3	[Blank]	E
4	Sorry, but since the electoral outcome does not depend on the citizens, I have no reasons to offer you more - just enter that you expect me to distribute 0 tokens for any approval rate, so that you earn 10 tokens for correct beliefs. ;-) Have a wonderful legislative period.	P (59)
5	[Blank]	E
6	Dear voters.	E (0)
7	[Blank]	E
8	I give you 100 tokens.	P (51)
9	[Blank]	E
10	[Blank]	E
11	3:0 4:0 5:0 that is a lottery, the other candidate is a looser, so I have a higher risk.	E (1)
12	350 tokens will be distributed to the citizens - no ifs, and, or buts- Wealth to the people.	P (55)
13	[Blank]	E
14	[Blank]	E
15	For reasons of fairness, I will split the amount by 6.	P (52)
16	[Blank]	E
17	[Blank]	E
18	Yes, we can!	E (0)
19	If I am the winner, I will share the tokens justly	P (53)
20	[Blank]	E