

HONESTY AND SELF-SELECTION INTO CHEAP TALK*

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In many situations, people can lie strategically, for their own benefit. Since individuals differ with respect to their willingness to lie, the credibility of statements will crucially depend on who self-selects into such cheap-talk situations. We study this process in a two-stage political competition setting. At the entry stage, potential candidates compete in a contest to become their party's candidate in an election. At the election stage, the nominated candidates campaign by making promises to voters. Confirming the model's key prediction, we find in our experiment that dishonest people over-proportionally self-select into the political race and thereby lower voters' welfare.

A salesperson tells a prospective buyer about the great value of a car. Politicians praise their policy proposals to gain the support of voters. We frequently face situations in which some or all statements made by the sender of a message are costless and do not carry any commitment. Usually, they are referred to as 'cheap talk'. However, often people communicate more honestly than pure self-interest would suggest—implying that their statements carry more credibility than standard theory predicts. Preferences for honesty are frequently conceptualised via psychological costs of lying, and recent empirical evidence indicates that individuals differ substantially in this respect (e.g., Fischbacher and Föllmi-Heusi, 2013; Gneezy *et al.*, 2018; Abeler *et al.*, 2019). Hence, the welfare consequences in cheap-talk situations centrally depend on whether primarily honest or dishonest people select themselves into such settings. This is the focus of our article: we examine the incentives of individuals to self-select into cheap-talk situations and how they depend on the structure of the selection process.

For this purpose, we design an experiment with a two-stage political competition process. In the first stage, people make an investment to increase their chance of entering the second stage, in which they compete via cheap-talk messages in an election. In this latter stage, dishonest candidates, who face lower costs of lying, have an advantage and might thus be willing to invest more in the first. As long as voters cannot observe the investments in the first stage and thus cannot draw inferences from them, the higher investment incentive could lead to adverse selection of dishonest people into the second (cheap-talk) stage. In our theoretical analysis of the competition process, we derive this adverse selection effect as an equilibrium prediction and also identify a potential remedy for it: transparency. Naturally, these predictions rely on a number of modeling assumptions about the distribution and nature of the players' preferences for honesty, strategic

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sophistication and equilibrium selection. As a consequence, it is an open question whether or not the model predictions are accurate descriptions of what happens empirically. Our experimental results provide a confirmatory answer regarding the prediction of adverse selection into cheap talk under opacity. While the adverse selection effect is lower with transparency and not significantly different from zero any more—as predicted—not all the predicted treatment differences turn out significant at the 5% level in the laboratory.

Our set-up is specifically motivated by the importance of self-selection of people of different character into politics—a topic that has been passionately discussed for centuries. Most political systems grant their leaders extensive powers and thus many far-reaching decisions are shaped by their virtues, or lack thereof. Therefore, it is important to select politicians who, when in power, will advance the common good. However, a widely shared perception is that most politicians are dishonest and have low ethical standards. A 2018 Gallup survey for the United States, for example, shows that, from a list of 21 professions, Members of Congress receive the lowest ratings on perceived honesty and ethical standards.¹ Sharing this view a few years before becoming U.S. President, Donald Trump remarked: ‘One of the key problems today is that politics is such a disgrace. Good people don’t go into government.’ (in Alexander, 2000, p. 23). The problem of adverse selection into politics has been identified at least as early as in ancient Greece, where Socrates famously explained to Glaucon: ‘The truth is surely this: that city in which those who are going to rule are those least eager to do so is necessarily governed best [...]’ (in Plato’s *The Republic*, cited also in Caselli and Morelli, 2004).

At first sight, this negative view of politicians is puzzling, as it suggests that voters elect politicians whom they believe to be dishonest. At the same time, several studies suggest that honesty and trustworthiness are candidate characteristics that are important to voters (e.g., Mondak and Huckfeldt, 2006). Why would they do that? One reason could be that the pool of candidates, i.e., the voters’ choice set, is mainly populated by dishonest people and voters have no choice in this dimension. Making things even more complicated for voters, dishonest candidates typically try to appear honest by mimicking honest candidates’ behaviour in the election campaign. Consequently, how well general elections can select good leaders depends on the quality of the candidates in the electoral race and the information available to voters. In almost all democratic systems the candidates are preselected to stand for election in some process, typically within the large political parties. Therefore, the parties’ internal preselections play a major role for the later choice options and outcomes in the general election. A prominent example for such preselection institutions are the primaries in the United States, where politicians compete to be the candidate of either the Democrats or the Republicans in an upcoming election. Depending on media scrutiny, these contests can be more or less transparent to voters with respect to the resources that potential candidates invest to win their party’s nomination.

Theoretical model We consider a two-stage political process, in which, at the first stage—the preselection stage—in each of the two parties, two politicians compete for candidacy in the election. This selection takes the form of a party-internal contest, in which the contenders make investments to win candidacy. At the second stage—the election—the selected candidates make (non-binding) campaign promises on how much of a given amount of resources they will pass on to the voters. In the election, the candidate receiving a majority of votes becomes the elected

¹ <https://news.gallup.com/poll/1654/honesty-ethics-professions.aspx>, accessed on 16 March, 2019.

leader and decides on how to employ the resources that come with the office for her own private or the electorate's benefit. Regarding the information of the voters in the general election, we consider two regimes: the 'transparent entry contest', in which voters can observe how much was invested at the preselection stage by each candidate, and the 'opaque entry contest', in which voters receive no information about the entry investments that were made.

A theoretical analysis based on the traditional assumptions that candidates are completely selfish and do not suffer psychological costs of lying would suggest that in the election campaign they will promise the maximal amount to be passed on to voters to get elected and, once in office, maximise their private gains by transferring to voters the minimum possible (e.g., Barro, 1973; Ferejohn, 1986; Alesina, 1988). However, the results from Geng *et al.* (2011), Corazzini *et al.* (2014) and Born *et al.* (2018) demonstrate that campaign promises are not just cheap talk, even in one-shot interactions, and that voters take this into account. Instead, most subjects in these experiments care about keeping their promises at the election stage. While these studies provide important insights into the election stage, they do not investigate the processes that determine the candidate pool. Our focus on self-selection into politics allows us to address this important aspect.

The key mechanism in our analysis is that at the preselection stage dishonest individuals, i.e., those with a low level of lying aversion, have more to gain from standing for election than honest individuals, and are therefore willing to invest more to become a candidate. This is most obvious if candidates play 'pooling' strategies with respect to campaign promises. Then both types enjoy the same probability of being elected *ceteris paribus*. In the event of an election victory, the less honest candidate will deviate more strongly from his promise, thereby reaping higher private benefits. As a consequence, the less honest potential candidate will be willing to invest more in the entry contest. If the entry contest is opaque the investments cannot reveal the candidates' types. Therefore, our analysis predicts adverse selection into politics with an opaque entry contest. We are then interested in how this result changes when we make the entry contest transparent. In this case, voters can observe how much each potential candidate spends in the entry contest and can make inferences about their honesty. With the dishonest individuals not wanting to separate themselves from the honest ones, we predict 'pooling' in entry contest investments as well as in campaign promises. Consequently, we expect no adverse self-selection with a transparent preselection process.

Experiment To study selection into cheap talk empirically, we implement the political competition process in the lab. Selection into cheap talk might differ from the theoretical predictions, which are derived under a number of assumptions that might not hold empirically. These are assumptions on preferences, beliefs and strategic sophistication. Other motives to self-select into politics are plausible as well. For example, candidates might derive utility from truth telling or from honouring promises.² Candidates with strong preferences for equality also have an incentive to enter politics in order to prevent unequal outcome distributions that result if a dishonest, selfish candidate wins the election. In such cases, we would expect a higher willingness to pay to enter politics of honest people—the opposite of our prediction. Further, as usual in these types of models, our theoretical framework also allows for multiple equilibria supported by corresponding out-of-equilibrium beliefs. Finally, the assumption of perfect rationality is strong and people might, instead, act with less foresight than predicted, e.g., when making their contest investments. For these reasons, it is not obvious whether our key theoretical predictions regarding

² The findings in Geng *et al.* (2011), Corazzini *et al.* (2014) and Born *et al.* (2018), for example, are also rationalisable in a model with such preferences.

adverse selection and the effect of transparency on selection will hold true when empirically tested.

In the field, it remains unobserved how potential candidates who do not pass the preselection process would have behaved in office. It is therefore difficult to identify adverse selection in a given institutional set-up. Moreover, as electoral institutions are endogenous and cannot be easily manipulated, identifying causal effects of different institutions is often impossible. A lab experiment offers an attractive alternative in these respects. It allows us to observe the behaviour of all potential candidates (winners and losers) using the ‘strategy method’. Furthermore, it allows us to change the preselection process exogenously between two treatments—one with an opaque and one with a transparent entry contest.

Our experimental results show that while a non-negligible share of candidates makes zero transfers to voters, most of the campaign promises are not purely cheap talk and overall campaign promises are positively correlated with transfers to voters. We also find a substantial variation in lie sizes, i.e., the difference between promises and actual transfers. These findings are in line with the results of the earlier literature. Our novel key results are that the size of the lies are (significantly) positively correlated with the candidates’ entry investments in the opaque entry contest. We further find that transfers to voters are (significantly) lower from candidates who invested more in the entry contest. This supports our theoretical prediction of adverse selection when the entry contest is opaque. We can compare the behaviour of winners and losers of the entry competition because we let participants in the experiment specify what they will promise in the election campaign and how much they will transfer in the event of winning the election before knowing whether they have won candidacy. This use of the ‘strategy method’ further allows us to get an idea of the size of the effect of adverse selection on voter welfare. We find that in expectation voters receive about 9% lower transfers due to adverse selection at the entry stage.

Finally, we examine the results under the transparent entry treatment and find that now neither lie sizes nor transfers to voters are significantly correlated with the candidates’ investments at the entry contest. This confirms our theoretical predictions: we observe adverse selection under opaque but not under transparent entry competition. However, not all treatment differences are significant at the 5% level.

Our analysis suggests that the preselection phase is crucial for the composition of honesty preferences in cheap-talk situations. This result is relevant for politics and other professions in which low costs of lying also lead to higher payoffs for the agent. In the perception of many people, salespersons and people in marketing or advertising, for example, do not fare much better than politicians with respect to honesty and ethical standards.³

The rest of the article is organised as follows. In the next section, we relate our article to the literature and present and solve the model in Section 2. The experimental design is laid out and the experimental results are reported in Section 3. In the final section, Section 4, we discuss our findings and conclude.

1. Related Literature

The early cheap-talk literature assumed that people do not bear any psychological costs of lying and, hence, lie whenever a lie can change receivers’ actions to their benefit. This applies to many variants of Crawford and Sobel’s (1982) seminal sender–receiver game (e.g., Farrell and Gibbons,

³ <https://news.gallup.com/poll/1654/honesty-ethics-professions.aspx>, accessed on 16 March, 2019.

1989; Krishna and Morgan, 2001; Battaglini, 2002) and to political competition models with campaign promises (e.g., Barro, 1973; Ferejohn, 1986; Alesina, 1988). However, the empirical evidence on truth telling in such situations that has since been accumulated is overwhelming.⁴ Moreover, people appear to be very heterogeneous with respect to their willingness to lie and the size of their lies (Corazzini *et al.*, 2014; Gneezy *et al.*, 2018).

Several experimental studies investigate promise keeping in a political context (Geng *et al.*, 2011; Corazzini *et al.*, 2014; Born *et al.*, 2018). In these experiments, political candidates make promises to voters about how they will split a pie that the election winner receives between themselves and the voters. They find that: (i) candidates promise a lot; (ii) candidates who promise more receive more votes; (iii) higher promises are associated with higher transfers to the voters. Corazzini *et al.* (2014) explain their results with lying aversion of the candidates and argue that elections are positive for voter welfare because they induce high electoral promises, which are, at least partially, met (see also Feltoich and Giovannoni, 2015).

Sobel (2013) has recently deemed the question of whether less honest people self-select into certain occupations one of the most important current research questions on cheap talk. Providing interesting insights into the issue, Hanna and Wang (2017) find that students in India who cheat in the lab are more likely to prefer public-sector jobs.⁵ Rather than comparing levels of honesty in people in different professions, where causal links between differences and self-selection are hard to identify, we take a different approach here. We set up a model in which we include a contest in which we can observe self-selection into cheap talk and show how selection incentives are related to lying in the cheap-talk situation.⁶ In a second step we test the key predictions of the model in the lab.

Ours is, of course, not the first political economy model featuring non-standard preferences, such as a preference for honesty. In the last two decades, there has been a shift away from modelling political competition exclusively as strategic position taking of purely office-motivated candidates. Various models have been proposed to examine the political competition between candidates who differ in their policy preferences or other characteristics, such as competence, public spirit and honesty.⁷ Self-selection into politics along different dimensions has been studied in the literature as well. Various papers study the incentives of people with different skills to enter politics (e.g., Messner and Polborn, 2004; Caselli and Morelli, 2004; Mattozzi and Merlo, 2007; 2008; Dal Bó *et al.*, 2017). Bernheim and Kartik (2014) assume heterogeneity of potential candidates with respect to public spirit (altruism) and honesty (incorruptibility). Their study is most closely related to our model. The authors investigate how the candidate pool changes with different fixed costs of entry as candidates differ with respect to their willingness to pay to become a candidate. Differing from other papers, they pay direct attention to the costs that are associated

⁴ Abeler *et al.* (2019) review 72 experimental studies, using designs based on the dice-under-a-cup game, introduced by Fischbacher and Föllmi-Heusi (2013), and conclude that people lie surprisingly little. Various influences on peoples' cheating behaviour have been studied in the experimental literature, including competition (Casella *et al.*, 2018), the probability of being detected as a liar (Gino *et al.*, 2013; Konrad *et al.*, 2014), the payoff consequences for others (Gneezy, 2005; Gneezy *et al.*, 2013), and whether the decision to deceive is made individually or as a group (Kocher *et al.*, 2018).

⁵ See Barfort *et al.* (2019) for a similar study, but opposite results for Denmark. Self-selection of workers with different non-standard preferences into different sectors or organisations has been studied in another string of studies (e.g., Delfgaauw and Dur, 2007; Kosfeld and von Siemens, 2009; Buurman *et al.*, 2012; Fehrlér and Kosfeld, 2014).

⁶ For brevity we refrain from a detailed literature review of contest experiments and point the interested reader to the comprehensive survey by Dechenaux *et al.* (2015).

⁷ Examples include the work of Callander and Wilkie (2007) that assumes heterogeneous candidates with respect to two dimensions: policy preferences and lying aversion. Kartik and McAfee (2007) allow for non-strategic candidates of character, and Buisseret and Prato (2016) look at candidates with different skill levels.

with running for nomination—an aspect that takes centre stage in our model as well. In their purely theoretical paper there is an exogenous fixed amount to be paid, whereas in our model the investments into the race for candidacy are endogenous and hence can provide us with a proximate measure of the politicians' willingness to pay for entering a cheap-talk situation. This allows us to relate this observed willingness to pay directly with individuals' levels of honesty in our experiment.

2. Model

We set up a simple sequential game to represent a two-stage political selection process in which politicians compete in an entry contest at the first stage to become a candidate in an election at the second stage. We consider four politicians of two different parties. At the first stage, there are two simultaneous entry contests in the two parties. In each of the entry contests, the two politicians of each party compete to stand for election against the winner of the other party's entry contest. Every politician i makes an investment $I_i \in [\epsilon, \infty)$, with $\epsilon > 0$, in her party's contest. We assume standard properties for the contest success function: The probability of winning candidacy increases in the politician's own investment and declines with the opponent's bid. For concreteness, we use the Tullock contest success function given by equation (1), which defines the probability of player 1 winning the contest against player 2.

$$\rho(I_1, I_2) = \frac{I_1}{I_1 + I_2}. \quad (1)$$

As the winning probability is not defined for $I_1 = I_2 = 0$, we impose that investments have to be larger or equal to some small positive number ϵ .⁸

The two winners of the parties' entry contests will stand for election at the second stage of the political competition. In their election campaigns, each candidate makes a promise P_i of how much of a budget B to transfer to the N voters (N odd for simplicity). Every voter finally receives the same transfer $\frac{T}{N} \in [0, \frac{B}{N}]$ from the election winner who transfers T in total.⁹

At the election stage, the voters cast their votes for either of the candidates. A central novelty and focus of our model is on the information set that voters possess when voting. In a **transparent** entry contest, the voters can observe the entry contest investments of the candidates, while in an **opaque** entry contest the voters will have no information on the candidates' entry investments.

When in office, the winner of the election will finally decide how to split the budget of size B between her own private benefit $B - T$ and the voters' welfare T .¹⁰ Besides the remaining budget $B - T$, the elected politician obtains a rent from office W that is not transferable. W can be thought of as a salary, or an ego rent, or both.

Politicians have preferences over private consumption and, given that they are elected into office, disutility from the discrepancy between their campaign promises and the actual contribution to voter welfare, i.e., $P - T$. We refer to the latter as the politician's lying aversion or

⁸ The alternative would be to define the winning probability as $\frac{1}{2}$ for this case. However, this would not eliminate the discontinuous jump of ρ at $I_1 = I_2 = 0$. Additionally, we emphasise that our main theoretical results do not depend on the Tullock success function.

⁹ We only use indices for the choice variables if necessary for understanding, e.g., if we have to distinguish several players in the same role.

¹⁰ This is a shorthand for various moral hazard problems that are present when voters delegate power to a politician. The politician might not literally put government money into her own pocket but still enrich herself by employing resources that come with the office for her own rather than the voters' benefit or simply exert less effort in working in the voters' interest than promised.

character. For the politicians' utility functions, we use the quasi-linear specification given by equation (2).¹¹

$$U_i(I_i, P_i, T_i) = -I_i + 1_{i, \text{office}} \left(W + B - T_i - \frac{\beta_i (\max\{P_i - T_i, 0\})^2}{2P_i} \right). \quad (2)$$

The parameter β_i reflects the politician's weight attached to promise keeping. β_i can take two values, β_L and β_H , with $\beta_H > \beta_L$. The higher the value of β_i , the higher the utility costs incurred by deviating from the campaign promise. We assume that politicians have either low, β_L , or high lying aversion, β_H , with $\beta_L \geq 0$ and $\beta_H > 1$. This means that the high type will, at least partially, fulfil her election promise in the event of an election win, whereas the low type will keep the whole budget for herself if $\beta_L \leq 1$ and only make transfers if $\beta_L > 1$.¹² The *ex ante* probability of a politician being of type H is ϕ . This probability and all other parameters are common knowledge, whereas the realised β_i s are private information. The indicator function $1_{i, \text{office}}$ indicates that the latter part of utility will be realised only when politician i wins office. The voters only care about the amount $\frac{T}{N}$ in consumption that they receive.¹³

We can now summarise the structure of the political game as follows.

- Stage 0: [Type assignment] Nature draws the four individuals' types independently. Each individual will be of high (lying aversion) type with probability ϕ and of low (lying aversion) type with probability $1 - \phi$. The individuals' types are private knowledge.
- Stage 1: [Entry contests] The two politicians in each of the two parties invest amount I_i in the parties' entry contests. The winner is determined via a (Tullock) contest success function.
- Stage 2: [Election campaign] The two winners of the entry contest become the candidates in the election and promise an amount P_i to pass on to the voters when in office.
- Stage 3: [Voting] The voters cast their votes, (**not**) **observing** the candidates' entry contest investments if the entry contest is **transparent (opaque)**.
- Stage 4: [Policy implementation] The winner of the election obtains fixed wage W and decides on the transfer T to the voters out of a budget of size B .

The central innovation of our article is stage 1 of the game, in which the entry contest is either transparent to the voters or opaque. The distinction between these two institutional settings is best indicated in the game description at stage three where the voters cast their votes based on different information sets. The voters vote for the candidate that they expect to deliver the higher transfer, i.e., they vote for candidate i if her expected transfer

$$E[T_i] = \tilde{\phi}_i T_H + (1 - \tilde{\phi}_i) T_L,$$

¹¹ This allows us to illustrate the key mechanisms in a simple way and provides comparability to the previous literature, e.g., Corazzini *et al.* (2014). We note that our key results do not depend on this specification of the lying costs. Sufficiently high fixed costs of lying, for example, would work as well.

¹² Intuitively the reason is that the marginal cost of transfers is one and therefore the marginal benefit in reducing the costs from lying through transfers, $\beta(1 - T/P)$ must be larger than one at $T = 0$. This can only be the case with a sufficiently high degree of lying aversion $\beta > 1$.

¹³ Note that one could reasonably argue that voters do not only care about money either and suffer a (non-monetary) utility loss from a liar winning the election. This disutility would come in addition to the lower utility that they derive from the lower transfer that they would receive from such a politician compared with the transfer that they would have received from an honest politician winning the election *ceteris paribus*. However, this additional effect would not change the vote choice and we therefore chose to keep the voters' utility function simple.

is higher than that of her opponent.¹⁴ The voters' beliefs of candidate i being of high type is denoted by $\tilde{\phi}_i$. In the regime with the transparent entry contest, the voters' beliefs $\tilde{\phi}$ are a function of the candidates' promises P as well as the entry contest investments I . By contrast, the beliefs will not be influenced by the entry contest investments in the opaque entry contest. The politicians know of the effects of their investments and promises on the voters' beliefs and maximise expected utility

$$E[U_i] = -I_i + p_{i, \text{contest}} \times p_{i, \text{office}} \times \left\{ W + B - T_i - \frac{\beta_i (\max\{P_i - T_i, 0\})^2}{2 P_i} \right\}, \quad (3)$$

by choosing the triple (I_i, P_i, T_i) . We denote by $p_{i, \text{contest}}$ and $p_{i, \text{office}}$ the probabilities of winning the entry contest and winning office in the election, respectively. To keep notation at a minimum, we have not explicitly indicated that the probability for winning office $p_{i, \text{office}}$ depends on the voters' beliefs.

The solution concept we use is symmetric perfect Bayesian equilibrium in pure strategies. By 'symmetric' we refer to equilibria where politicians of the same type employ the same strategy. In either entry regime there can be both pooling and separating equilibria. We characterise all equilibria in Appendix A1. According to the focus of our study, we concentrate on the key properties of the equilibria with respect to self-selection, starting with the opaque entry contest regime.

PROPOSITION 1. [Opaque Entry]

Consider the political game with opaque entry contest.

- (i) *In all but one symmetric perfect Bayesian equilibria, politicians with a low level of lying aversion (low types) invest strictly more in the entry contest than politicians with a high level of lying aversion (high types).*
- (ii) *The exception can occur only if $\beta_L \leq 1$. It is a knife-edge case, in which both types pool on promising zero transfers in the campaign stage, and is not robust to small perturbations of out-of-equilibrium beliefs.*

PROOF. See Appendix A1. □

The intuition of this result can be summarised as follows. By backward induction, the winner of the election will choose their transfers to voters by trading off their own private benefit with their lying costs given their campaign promise. Incurring lower lying costs, a low lying averse office holder would transfer less than a politician with high lying aversion. Candidates will either pool their promises in the election campaigns (that is, both candidates make the same promises as the low types seek to not reveal their type), or they make separate promises, where low types reveal themselves by promising the voters more than high types. While, in the case of pooled promises, voters split votes equally and each candidate will win office with probability one half, in the equilibrium with separating promises, the voters receive higher transfers from the low lying averse types than the high lying averse types, and the latter will only have a chance to enter office if they compete against a candidate of their own type in the election.

In the case in which both types pool their promises at the campaign stage, the low type has more to gain from candidacy than the high type as the low type would make a lower transfer

¹⁴ If a voter expects the same transfer from either of the two candidates, we assume that she flips a coin and votes for either of them with probability one half.

(except for the special case of pooling on promises of zero transfers). However, the low type does not want to reveal herself as this would diminish her election chances. As in the opaque entry contest investments cannot be observed by voters, the candidates make the same campaign promises but different types make different entry contest investments. The low type will invest more than the high type as her expected value from winning the entry contest is higher than that of the high type. While such equilibria with promise pooling in the election campaign exist for all admissible parameter values, for some parameter settings, separating equilibria exist in which the high type makes a substantially lower promise in the election campaign such that the expected transfer for the voters will be higher from a low lying aversion type.

In this case, the voters prefer to vote a low type into office rather than a high type, and the high type candidate only has a chance to be elected when competing against another high type in the general election. The high type does not want to increase her election chances by mimicking the low type, as the lower promise will increase the payoff in the event of winning office sufficiently (due to the lower lying costs) to compensate for the loss in winning probability. For the low lying aversion type, the loss of making high promises and only partially honouring them is not as large in terms of utility, so that the low type is willing to accept a lower benefit in the event of winning office in exchange for a higher winning probability, relative to mimicking the high type. In Appendix A1, we show that also in these equilibria low types are always better off than high types and are therefore willing to invest more to become a candidate.

We now turn to the political game with transparent entry contest. The only difference is now that voters can observe the investments of the contenders in the parties' races for candidacy. This provides a potential source of information about the candidates' types to the voters. Consequently, candidates of low type are eager not to reveal their type at this stage if they are planning to pool promises in the election campaign. Following this logic, there is one equilibrium type in which all contenders for office play pooling with respect to entry investments and with respect to campaign promises. Again this type of equilibrium exists for the entire parameter range under consideration. Only for parts of the parameter space do we find separating equilibria where the low types and high types reveal themselves. These separating equilibria show differing campaign promises as well as differing entry investments, as there is no need to hide one's type at one stage but not the other. Regarding the election campaign, the separating equilibria in the game with transparent entry contest resemble the structure of those in the game with opaque entry contest. That is, the low type makes the higher promise and transfer than the high type.

We summarise our results with respect to the transparent entry contest in Proposition 2. Again we focus on the entry contest investments that play the central role for our focus on self-selection into cheap-talk situations.

PROPOSITION 2. *[Transparent Entry]*

Consider the political game with transparent entry contest.

- (i) *For all admissible parameter values, there are symmetric perfect Bayesian equilibria in which both types of politicians pool and invest the same amount in the entry contest.*
- (ii) *For some parameter values, there are symmetric perfect Bayesian equilibria in which low types invest strictly more in the entry contest than high types.*

PROOF. See Appendix A1.

□

For our purposes, the important implication of the results described in Propositions 1 and 2 is that the different equilibrium types predict different qualitative patterns for self-selection into candidacy. Starting with the equilibrium type with promise pooling at the election campaign stage, we observe higher investments by low lying averse types in the opaque entry contest and consequently expect adverse selection into the election in the sense that the share of low types among the candidates is higher than among the general population. Connected to that, we expect a negative correlation between individuals' entry investments and transfers to voters as well as a positive correlation between entry investments and the lie size, i.e., the deviation of the transfer from the promise. This is different in the case in which the entry contest is transparent. Then we observe pooling of campaign promises as well as entry investments and consequently no adverse selection. The transfers and the lie size will not depend on the individuals' entry investments.

In the separating equilibria by contrast, we find adverse selection of low types into office in both entry contest regimes: the opaque and the transparent one. However, while lie size is clearly positively connected with entry investments as the low types invest more in the entry contest, transfers are positively correlated with entry investments as well because of the underlying logic of the separating equilibria where the low types only reveal themselves if they have higher chances of being elected due to higher transfers.

Our theoretical analysis of the political game thus identifies multiple equilibria types. Moreover, our model assumes a certain structure of individuals' utilities. Subjects might not display psychological costs of lying as assumed in our model, or instead derive utility from being nice to voters and fulfilling promises. All these factors could lead to quite different behaviour. Ultimately, these are empirical questions and it is therefore a natural next step to run an experiment.

As the equilibrium type in which candidates pool their campaign promises exist over the entire parameter range for both opaque and transparent treatment and as we argue that the low type making higher transfers than the high lying averse type appears less plausible, we select the equilibrium predications of the equilibrium type in which politicians are concerned not to reveal their type to voters for our theoretical hypothesis that we test in the laboratory. We summarise these hypotheses below:

HYPOTHESIS H1: In the political game with opaque entry contest, there will be a negative correlation between entry contest investment I and transfer T and a positive correlation between entry contest investment I and the politician's lie size $P - T$. As a consequence, we will observe an adverse effect on voter welfare (in terms of transfers).

HYPOTHESIS H2: In the political game with transparent entry contest, there will be no correlation between entry contest investment I and transfer T or the politician's lie size $P - T$. As a consequence, there will be no adverse selection effects on voter welfare.

3. Experiment

To test the main predictions of the model, we run a laboratory experiment with two treatments: one with an opaque and one with a transparent entry stage. Costs of lying are not induced and therefore can only result from the subjects' psychology. Consequently, in each of the treatments, we first analyse the sub-game, starting with the election campaign to see whether campaign promises are in fact cheap talk or contain a certain degree of information about the following transfer and whether the lie sizes and transfers differ across the sample. When they vote, we also

ask for voters' beliefs about the transfers they expect from the candidates, to check whether voters on their part place some credibility in campaign promises. Then we turn to the central focus of this article and examine whether lie sizes and transfers are related to entry contest investments for candidacy leading to adverse selection in the treatment with opaque entry contest but not with transparent entry contest.

A potential confounding factor that could also lead to adverse selection are income effects. Subjects who invest more in the entry contest might be less honest or benevolent, not because of their lying aversion, but because they are poorer and potentially further away from their target income from participating in the experiment. To address this issue, we slightly depart from the model and have subjects pay their entry contest investment only with probability one half. In every round of a session, all four potential candidates of a group are in the same condition, as the randomisation occurs at the round level. All seven group members are informed about the fact whether potential candidates have to pay their investment or not after the contest and before they make their next decisions in the campaign and election stages. Therefore, findings in the sub-sample of subjects who do not have to pay their investment cannot be confounded by income effects. This change of the set-up does not change any of the qualitative results in Propositions 1 and 2 derived in the set-up presented in the previous section.¹⁵ The only difference is that the equilibrium investments are predicted to be twice as high for all types of potential candidates.

3.1. *Experimental Design*

After one pilot session per treatment, we ran five sessions of either treatment with a total of 308 subjects (48% female, average age: 22.4 years).¹⁶ Each session consisted of 20 rounds. In the first round, subjects were randomly assigned a role: $\frac{3}{7}$ were assigned the role 'voter' and $\frac{4}{7}$ the role 'politician'. Roles were fixed for the whole experiment. Our data thus includes $132 \times 20 = 2,640$ voting decisions and $176 \times 20 = 3,520$ decisions of potential candidates on entry investments, promises and transfers. In every round, groups with three voters and four politicians were randomly formed. Politicians were randomly divided into parties A and B, with two politicians each. We set the budget that can be split between office holder and voters to $B = 270$ and the non-transferable perks of office to $W = 50$. At the beginning of each round, each politician obtains 100 points, out of which the entry contest investment can be made. The minimal investment in the entry competition is one point. Voters receive a budget of 50 points in each round in order to approximately equalise expected payoffs for voters and politicians in the experiment. At the end, one round was randomly selected and subjects paid according to their income from that round plus a show-up fee of EUR 2. One point translated into EUR 0.2 and average earnings were EUR 22 for approximately 100 minutes in the lab.

Decision stages On the first screen of the first round, subjects were informed about their role. Subjects then faced the following decision stages, which mirror the stages of the model as presented in Section 2. The two treatments only differ in Stage 3.

¹⁵ A technical discussion of this aspect is provided in Appendix A2.

¹⁶ We had four sessions with 28 subjects and two with 21 subjects for either treatment. They were recruited using ORSEE (Greiner, 2015). Participants in the pre-test are experienced subjects. Psychology and political science students were not recruited. All sessions were run at the LakeLab at the University of Konstanz in 2015 and 2016. The instructions can be found in the Online Appendix. The experiment was programmed in z-Tree (Fischbacher, 2007).

Both Treatments

Stage 1: [Entry] Politicians had to enter their investment for the entry competition of their party on the first screen of every round. On the following screen, they had to enter their (non-incentivised) belief regarding the probability of winning the contest.

Voters saw a waiting screen.

Stage 2: [Campaign] Politicians were informed about whether the entry contest investment had to be paid or not. Then they had to enter their election promise P_i under the assumption that they won the entry contest. On the following screen, they had to enter their (non-incentivised) belief regarding the probability of winning the election.

Voters had to wait until politicians had entered their election promise and saw a waiting screen.

Opacity Treatment

Stage 3O: [Voting] Politicians directly went on to Stage 4.

Voters were informed about the election promises of the two candidates in the election, i.e., the two candidates that won their entry contests, and whether or not they had to pay their investments, and had to cast their vote for one of the candidates. On the following screen, they had to enter their (non-incentivised) belief regarding the transfer from each of the two candidates.

Transparency Treatment

Stage 3T: [Voting] Politicians directly went on to Stage 4.

Voters were informed about the election promises **and entry-stage investments** of the two candidates in the election, and whether or not they had to pay their investments, and had to cast their vote for one of the candidates. On the following screen, they had to enter their (non-incentivised) belief regarding the transfer from each of the two candidates.

Both Treatments

Stage 4: [Policy] Politicians had to enter their transfer T_i to the voters under the assumption that they had won the election. We use the ‘strategy method’ here and in Stage 2 to collect data on the (ultimately not realised) promises and transfers of entry contest and election losers, respectively.

Voters faced a waiting screen if they had completed Stage 3 before the politicians finished Stage 4.

On a final feedback screen, politicians and voters were informed about their payoffs and their group members’ decisions. They were only informed about decisions that were realised, i.e., they neither received feedback about promises of entry contest losers nor feedback about the transfer decisions of entry contest and election losers.

3.2. Experimental Results

First, we present and discuss the results in the opaque entry treatment and then contrast them with those in the transparent entry treatment.

Table 1. *Opaque Entry: Promise and Chance of Winning.*

	Dependent variable: winner					
	All		Paid		Not paid	
Promise/100	0.217***	(0.021)	0.143**	(0.055)	0.291***	(0.020)
.cons	-0.008	(0.497)	0.168	(0.129)	-0.185**	(0.050)
<i>N</i>	880		394		486	
R^2	0.03		0.01		0.05	
<i>N</i> _clust	6		6		6	

Notes: Linear probability models with the dummy *winner* as the dependent variable. Promise is divided by 100 for better readability. Standard errors in parentheses are adjusted for clustering at the session level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

All sessions including the pilots are used to compute the following results.¹⁷ Standard errors are computed with clustering at the session level as observations within a session are not independent because of the random re-matching in every round. As the number of clusters is equal to the number of sessions and therefore low for the estimation of standard errors (e.g., Cameron and Miller, 2015) and hence for parametric tests, we also run conservative non-parametric tests, which are designed for small- N inference, treating each session as a single observation to test our main hypotheses. The labels *paid*, *not paid*, and *all* indicate whether estimates are for the rounds in which the entry contest investment had to be paid, or not paid, or whether all rounds have been included without distinction regarding entry investments, respectively. We present results with the pooled data from all paid, not paid, or all rounds of a session, and look at behaviour in the first and last ten rounds separately as a robustness check in Subsection 3.2.3.

3.2.1. *Opaque entry treatment*

We start with the election stage, in which we expect to find that campaign promises are not purely cheap talk and lie sizes and transfers vary across the sample. Then we turn to the entry stage, in which we predict adverse selection into candidacy, i.e., that entry investments are positively correlated with lie size and negatively with transfers. Following a backward induction logic, this way of depicting our results is also more intuitive as behaviour at the first stage is better understood when already knowing second-stage behaviour.

Campaign/election stage First, we study the effect of promises on the probability of winning the election, conditional on winning the entry contest. Table 1 shows that higher promises increase the chances of winning. Adding the promise squared to check for non-linearities does not change results. The squared term is never significant and therefore omitted here. 61% of all election winners had promised more than their opponents (excluding pairs with identical promises).

The election chances increase as promises positively influence voters' beliefs about the size of the transfer. Regressing the difference in expectations regarding the transfer from the two candidates on the difference in their promises shows a positive relationship (Table A1, Appendix). Hence, voters do attach some credibility to the campaign promises. Anticipating the voters' reaction, the candidates make high promises (Figure 1).¹⁸

¹⁷ All results also hold with the restricted sample without the pilot sessions.

¹⁸ Accordingly, the candidates' beliefs about their chance of winning are positively correlated with their promises. This correlation is significant at the 5% level.



Fig. 1. *Cumulative Density Plots of Promises.*

Notes: These are the promises of all subjects in the role of politicians, including those who lost the entry-stage contest.

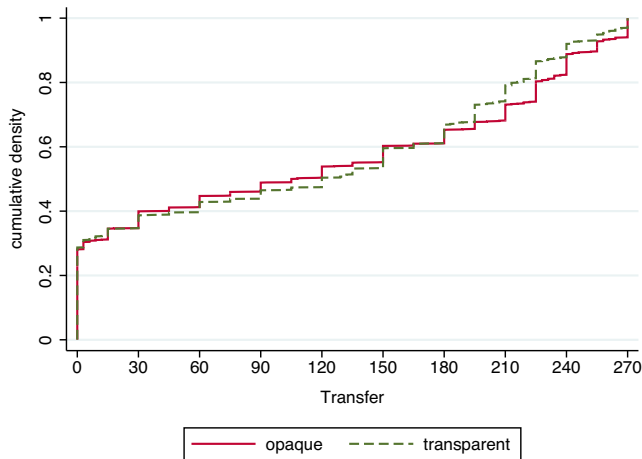


Fig. 2. *Cumulative Density Plots of Transfers.*

Notes: These are the transfers of all subjects in the role of politicians, including those who lost the entry-stage contest or the election.

Figure 2 shows the empirical cumulative distribution function of the transfers made by all potential candidates. Roughly one third of the potential candidates give nothing or almost nothing. A few politicians fully meet their promise, while the vast majority partially fulfils their promises and distribute a part of the promised amount. This finding is broadly in line with the literature, e.g., with Geng *et al.* (2011) and Corazzini *et al.* (2014).

Looking at actual transfers, voters rightfully place some informative value in campaign promises: higher promises are positively correlated with higher transfers (Table A2 and Figure A1, Appendix). The correlation is stronger if the entry contest investments do not have to

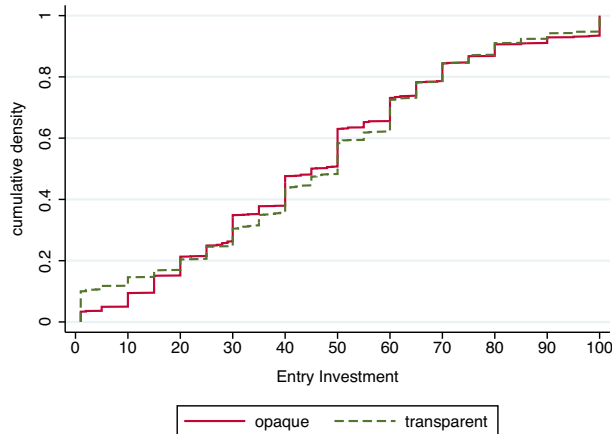


Fig. 3. *Cumulative Density Plots of Entry Contest Investments.*

Notes: These are the entry stage investments of all subjects in the role of politicians.

be paid, suggesting that income effects are present to a certain degree. Overall, we can summarise our findings at the campaign/election stage as follows.

RESULT 1.

- (i) *Candidates promise very high transfers.*
- (ii) *Higher promises increase their chance of winning the election.*
- (iii) *Promises are positively correlated with the transfers. However, a substantial number of candidates choose to make no transfers.*

Next we turn to the key focus of our study: the entry stage and its implications for self-selection.

Entry stage (opaque) The entry-contest investments in the opaque treatment are on average 46.5 points but show substantial variation (Figure 3). From a theoretical perspective, the optimal entry contest investments depend considerably on the contestants' degrees of lying aversion. In Appendix A2, we illustrate that within our model framework we can accommodate entry bids of up to 80 points for individuals without any lying aversion at all, and as low as nine points for entirely honest individuals. As Figure 3 illustrates, the vast majority of entry contest investments fall within this range.¹⁹

Next we address one of the central questions of our article: will subjects who invest more in the entry contest also lie more? The first three columns in Table 2 present the estimates of regressions of the lie size (promise minus points distributed) on the entry contest investment. The coefficient is significantly different from zero and positive, confirming our prediction that higher investments will be associated with larger lies. This is also the case for the situations in which the entry contest investment does not have to be paid. Running this regression separately for all six sessions results in positive coefficients for the investment in all six of them (for *all* and *not paid*). A simple binomial test treating the six separately estimated coefficients as independent observations thus rejects the null that there is no effect at the 5% level.

¹⁹ Unsurprisingly, the candidates' beliefs about their chance of winning the entry contest are positively correlated with their investments. This correlation is significant at the 1% level.

Table 2. *Opaque Entry: Investments, Lie Size, and Transfer.*

	Dep. variable: lie size ($P - T$)			Dep. variable: transfer T		
	All	Paid	Not paid	All	Paid	Not paid
Investment	0.753*** (0.149)	0.725** (0.195)	0.770*** (0.133)	-0.6247*** (0.102)	-0.615*** (0.128)	-0.6254*** (0.113)
_cons	84.054*** (11.565)	90.115*** (13.849)	79.496*** (10.958)	143.479*** (9.995)	136.739*** (10.759)	148.606*** (10.994)
N	1,760	788	972	1,760	788	972
R^2	0.03	0.03	0.04	0.03	0.02	0.03
N.clust	6	6	6	6	6	6

Notes: OLS models with lie size ($P - T$) or transfer T as dependent variables. Standard errors in parentheses are adjusted for clustering at the session level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Are entry contest investments also negatively correlated to transfers to voters as theoretically predicted in Hypothesis H1? The last three columns of Table 2 present the estimates of regressions of points distributed on the entry contest investment. The effect is strongly significant and negative. This is also the case for the situations in which the entry contest investment did not have to be paid. Running this regression separately for all six sessions results in negative coefficients for investment in all six of them (for *all*, *paid*, and *not paid*), providing also non-parametric support, in form of a binomial test as sketched above, for our theoretical prediction. These results are confirmed if we look at the same correlations but after averaging investment, lie size and transfer within each individual (see Table A5). Consequently we conclude that we find adverse selection into candidacy in the opaque treatment and summarise this as follows.

RESULT 2. *Confirming H1, dishonest politicians over-proportionally self-select into the political race, leading to lower expected transfers to the voters than those they would have received from entry contest losers.*

Our design of the experiment using the ‘strategy method’ where participants specify transfers before knowing whether they won candidacy provides us with information on what would have happened if the other individual had won the entry contest. With this information we can construct a measure for the size of the adverse selection effect. Intuitively, if there is adverse selection in the entry contest, then the ‘low’ types win too often and consequently the expected transfers from the winners of the contest should differ from those of the losers of the contest. The thought experiment we conduct is: how does the expected transfer from a politician, given she won the entry contest, differ from the expected transfer of a politician given she lost the entry contest. In other words, what is the difference in expected transfers from the candidates standing for election relative to the expected transfers from the losers of the entry contests. Consequently, for each pair of politicians in our experiment, we compute

$$\begin{aligned}
 E(T|winner) &= T_1 \times \frac{I_1}{I_1 + I_2} + T_2 \times \frac{I_2}{I_1 + I_2} \\
 E(T|loser) &= T_1 \times \left(1 - \frac{I_1}{I_1 + I_2}\right) + T_2 \times \left(1 - \frac{I_2}{I_1 + I_2}\right). \tag{4}
 \end{aligned}$$

The sample average of the differences $E(T|winner) - E(T|loser)$ is our measure of the adverse selection effect. The effect amounts to -10.43 , which is 9% of the average transfer.

Table 3. *Transparent Entry: Promise, Investment, and Chance of Winning.*

	Dependent variable: winner [0;1]					
	All		Paid		Not paid	
Investment/100	-0.255***	(0.058)	-0.433**	(0.167)	-0.134	(0.088)
Promise/100	0.199***	(0.045)	0.233***	(0.055)	0.178**	(0.056)
_cons	0.209	(0.122)	0.252	(0.146)	0.176	(0.159)
<i>N</i>	880		422		458	
<i>R</i> ²	0.03		0.06		0.02	
<i>N</i> _clust	6		6		6	

Notes: Linear probability models with the dummy *winner* as the dependent variable. Promise and investment are divided by 100 for better readability. Standard errors in parentheses are adjusted for clustering at the session level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

It is -10.01 if the entry contest investment has to be paid and -10.77 if it does not have to be paid. The effect is significantly different from zero at the 1% level and negative in all six sessions. When we compute the adverse selection effect on the lie size in the same way, i.e., $E(P - T|winner) - E(P - T|loser)$ the effect is 11.06 , which is 10% of the average lie size.²⁰ The effect is again significantly different from zero at the 1% level and positive in all six sessions.

3.2.2. *Transparent entry treatment*

We now turn to our results in the transparent entry contest treatment and compare them with the ones in the opaque entry contest treatment. We start again at the campaign/election stage before discussing the entry stage where we predict that no adverse selection will be present.

Campaign/election stage As expected from our results in the opaque treatment, we find that election promises are positively correlated with actual transfers and with the candidates' probabilities of winning.²¹ So they are not pure cheap talk and, again, voters place some credibility in them as they generally believe transfers will be non-zero and higher when the promise is higher (Table A3, Appendix).

The novel aspect in the transparent treatment is that voters learn about both candidates' entry contest investments in addition to their election promise. It is now interesting to see how this information affects the candidates' prospects at the election stage. Table 3 shows that higher investments are associated with a lower probability of winning the election. This effect is stronger if the entry contest investment has to be paid, suggesting that voters believe in an income effect. The reason for this negative effect of higher investments can be found in the voters' beliefs, which again go in the right direction (Tables A3 and A4, Appendix). Higher entry contest investments are expected to predict lower transfers.

We summarise these findings in the following result:

RESULT 3. *Voters react to the additional information on investments in the entry contest. Higher entry contest investments lower the chance of winning the election.*

²⁰ The effect is 10.41 if the entry contest investment has to be paid and 11.59 if it does not have to be paid.

²¹ Again anticipating this, the candidates promise a lot and their beliefs about their chance of winning are positively correlated with their promises (significantly at the 5% level).

Table 4. *Transparent Entry: Investments, Lie Size and Transfer.*

	Dep. variable: lie size ($P - T$)			Dep. variable: transfer T		
	All	Paid	Not paid	All	Paid	Not paid
Investment	0.469 (0.260)	0.528* (0.248)	0.438 (0.288)	-0.249 (0.245)	-0.289 (0.278)	-0.209 (0.236)
_cons	81.450*** (13.118)	74.723*** (14.098)	86.479*** (13.873)	124.617*** (14.210)	124.081*** (17.068)	125.077*** (12.920)
N	1,760	844	916	1,760	844	916
R^2	0.02	0.02	0.01	0.00	0.01	0.00
N.clust	6	6	6	6	6	6

Notes: OLS models with lie size ($P - T$) or transfer T as dependent variables. Standard errors in parentheses are adjusted for clustering at the session level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

The distributions of promises, points distributed to the voters, and entry contest investments of all potential candidates (Figures 1–3) look similar to those under opaque entry competition.²² However, as our theoretical predictions suggest, the relations between them are different as we discuss next.

Entry stage (transparent) Our key question of interest is whether the adverse selection effect we observed in the opaque entry contest weakens or disappears in a transparent entry contest. Our results shown in Table 4 indicate that the negative correlation of entry investments with transfers is statistically insignificant. So is the positive correlation between entry investments and lie size.²³

As we expect from these results, the adverse selection effect in terms of expected transfers is no longer significant in the transparent treatment. Computing adverse selection effects using our measure as laid out in Subsection 3.2.1 and reflected in (4) results in an effect on expected transfers of -0.59 , which is not statistically different from zero. The adverse selection effect on the lie size is 2.9, which is also not significantly different from zero at the 5% level. This establishes our final key result.

RESULT 4. *Confirming H2, adverse selection into candidacy is not significantly different from zero with a transparent entry contest.*

We note, however, that not all predicted treatment differences are significant at the 5% level. The absolute value of the coefficients in Table 4 are all smaller than those in Table 2 (the analogue table for the opaque treatment). Directly comparing them shows that they are not statistically different between the opaque entry and transparent entry treatments at the 5% level.²⁴ While our measure of the adverse selection effect in terms of transfers is significantly different between the two treatments, both with parametric or non-parametric (rank-sum) tests, average transfer levels are not significantly different between the two treatments at the 5% level.

²² As in the opaque regime, the candidates' beliefs about their chance of winning the entry contest are positively correlated with their investments. This correlation is significant at the 1% level.

²³ The results are qualitatively the same if we first take averages within subjects and then run the regressions (Table A6).

²⁴ For this result we check both parametric and non-parametric (rank-sum) tests. For the parametric tests, we run regressions combining both treatments in a fully saturated model, which yields the same results as in Tables 2 and 4. Then, we use standard t -tests to compare them. For the rank-sum tests we again estimate each coefficient separately for each session. These 12 estimates (6 for each treatment) are the independent observations used to compute the test statistic.

3.2.3. *Further analyses*

Behaviour over time We report summary statistics of the key variables for rounds 1–10 and 11–20 separately in Table A7 in the Appendix. While average entry investments and promises are on the same level in both halves of the experiment, transfers are substantially lower, and therefore lie sizes substantially higher, in the second half. However, more importantly, the regressions of transfers on entry investments or lie sizes on entry investment produce qualitatively the same results in the second half as in the first. All findings discussed in the previous sections for the pooled data (significant correlations under opacity but not under transparency) also hold for the two halves separately at the same level of significance (5%).²⁵

Size of adverse selection effect We find that adverse selection effects lead to an expected 9% lower transfers to voters in the opacity treatment. To put this into perspective, note that the size of the adverse selection effect will most likely depend on how discriminating the entry contest is with respect to differences in entry investments. The Tullock contest is not very discriminating, as the politician with the lower investment has almost the same chances of winning if both investments are relatively close. It can be expected that the adverse selection effect would be larger under a more discriminating entry contest. For example, if hypothetically the higher entry contest investment wins for sure, that is, if we divide the set of politicians at the median entry investment, and compare those with investment levels above to the ones below the median, the (hypothetical) adverse selection effect triples to 28% of the average transfer.²⁶

4. Discussion and Conclusion

We set out to study self-selection into cheap-talk situations in the specific setting of a two-stage political competition model and to test its key predictions in the lab. Our analysis suggests that self-selection into cheap talk can have substantial effects on the credibility of promises and, in our specific set-up, on voter welfare. Our results highlight that differences in honesty of individuals make it more or less attractive to enter the cheap-talk situation. In particular, less lying averse individuals can benefit more as they find it easier to renege on their promises for their own private gain. This is the mechanism on which we focus in this study.

In reality, several other factors likely play a role in self-selection into cheap talk that may affect the external validity of our results. One example is ability. Some individuals choose certain occupations or standing for a certain office because they are particularly able to succeed in this role and will therefore benefit from entering.²⁷ However, we note that as long as there is no systematic relationship between ability and honesty, this would not weaken our general results. More importantly, especially in the political context, some individuals are also motivated by social preferences towards the electorate. An example from the theoretical literature are the candidates with public spirit in Kartik and McAfee (2007). Some experimental studies show that a substantial number of people are, indeed, willing to give up monetary rewards in order to generate a public good, and consequently self-select into treatments where they can do so

²⁵ One exception is the coefficient of entry investment in the regression with lie size as the dependent variable under transparency, which turns significant in the second half of the experiment but only for the rounds in which the entry investment had to be paid. For brevity, we do not report all details of these regression estimates here. They can be obtained from the authors upon request.

²⁶ The (hypothetical) adverse selection effect in this case can be calculated via the difference in the average transfer of those below and above the median entry investment (leaving those observations right at the median out).

²⁷ Kartik (2009), for example, studies the trade-off between ability and the character trait non-corrupibility in the political context.

(e.g., Brekke *et al.*, 2011; Fehrler and Kosfeld, 2014). As we do not impose preferences in our experiment, individuals with higher levels of altruism could invest more in the entry competition to be able to do good for the voters by honouring their campaign promises and distributing all or a large part of the budget. If this was the dominant motivation for entering office, the selection effect should be opposite to our theoretical predictions. As our predictions have been confirmed in the experiment, we argue that the mechanism we emphasise appears to be dominant. While underlining its importance, we acknowledge that in real-world settings other motives for sorting into politics that are outside our framework may play a role as well, thereby possibly attenuating the adverse selection effects that we have found.

We also note that our set-up reflects a standard cheap-talk situation in which the game ends after the politician in office decides on the transfer and she has to expect no consequences for her choice afterwards. While this captures end-of-term effects in many political systems, it does not include possible re-election motives or other potentially negative consequences such as negative reputational effects after quitting office. In a broader perspective, such repeated game effects may play a role in reducing the effects of lying and consequently the incentives for adverse selection. Our results suggest that transparency might also help to reduce adverse selection. However, given the high level of noise in the transparency treatment, they are not conclusive in this respect. Another option to reduce opportunistic policy making that has been discussed in the literature is to augment the electoral process by additional institutions that sanctions deviations from promised actions (see, e.g., Gersbach and Schneider, 2012a,b).

While our study has been framed in the context of political competition for office, self-selection into cheap talk plays an important role in other settings as well. Our framework can readily accommodate such a broader interpretation. For example, the entry stage could be framed as a contest between applicants for jobs as salespersons in two different competing shops, and the second stage as advertising via statements about product quality in order to attract buyers. In fact, people in professions such as advertising or marketing and salespersons are perceived as almost as dishonest as politicians.²⁸ Hence, our results likely carry over to several other cheap-talk contexts. Future research could address the issue whether and how adverse-selection effects differ across cheap talk settings. For this purpose, it would also be intriguing to see more studies on self-selection effects in the field in the spirit of Hanna and Wang (2017).

Appendix A

A.1. Proofs

PROPOSITION 1. [*Opaque Entry*]

Consider the political game with opaque entry contest.

- (i) *In all but one symmetric perfect Bayesian equilibria, politicians with a low level of lying aversion (low types) invest strictly more in the entry contest than politicians with a high level of lying aversion (high types).*
- (ii) *The exception can only occur if $\beta_L \leq 1$. It is a knife-edge case, in which both types pool on promising zero transfers in the campaign stage, and is not robust to small perturbations of out-of-equilibrium beliefs.*

²⁸ <https://news.gallup.com/poll/1654/honesty-ethics-professions.aspx>, accessed on 16 March, 2019.

PROOF. There can be equilibria in which types pool and promise the same transfer in the campaign stage, and separating equilibria in which low types promise a higher transfer in the campaign stage. In the first step, we characterise these equilibria and derive the result that the expected value of winning the entry contest is higher for low types. In the second step, we show that a higher expected value translates into a higher equilibrium investment in the Tullock contest.

1. Set of equilibria and expected value of winning the entry contest

A *Pooling equilibria*

It is easy to see that pooling at the campaign stage can always be supported as an equilibrium. It requires the following ingredients:

- 1 The candidates in the general election make the same promises, $P_H = P_L$, in their election campaigns.
- 2 The voters vote for each candidate with probability $\frac{1}{2}$. Any candidate promising a different amount is not voted for. This is justified by the out-of-equilibrium belief that such a candidate is a low type.
- 3 The winner i of the election will transfer

$$T_i = \begin{cases} (1 - \frac{1}{\beta_i})P_i & \text{if } \beta_i > 1, \\ 0 & \text{if } \beta_i \leq 1, \end{cases} \quad (\text{A1})$$

to the voters.

Expression (A1) follows directly from maximising (3) with respect to the transfer. It is easy to see that nobody has an incentive to deviate. Note that high types are worse off than low types in all pooling equilibria except for the equilibrium with pooling on a promise of zero. In this case no lying occurs and both types' expected value from winning the entry contest is the same. However, it is a knife-edge case that is not robust to minimal deviations from the specified out-of-equilibrium beliefs. If voters attach a minimal probability to the event that a promise greater than zero comes from a high type, the pooling equilibrium with zero promises collapses.

B *Separating equilibria*

Note that there cannot be separating equilibria at the campaign stage in which the high types promise more. If such a strategy profile was played, low types could always benefit from deviating and mimicking the high types. However, for some parameter settings there are equilibria with separation at the campaign stage in which the low types promise more than the high types, such that the transfer that a voter can expect to receive after seeing a high promise (from a low type) exceeds that after a low promise (which requires that $\beta_L > 1$). High types only win with positive probability if they compete against another high type and the difference in promises of high and low types is large enough to make a deviation from their low promise unprofitable. The existence of these equilibria for some parameter settings has already been proved in Corazzini *et al.* (2014) who study the same game without an entry stage. Both transfers in these equilibria have to be strictly positive, as a high type would otherwise benefit from deviating and promising $\epsilon > 0$ instead of zero which would guarantee her victory against another high type. Note that low types must be strictly better off in this type of equilibrium. If high types were better or equally well off, low types would have an incentive to deviate and mimic the high type's promise. This would necessarily make them strictly better off because of their lower lying costs.

2. Optimal investments

First, we show that the type with the higher expected value from winning the contest will invest more and, second, that the equilibrium investments are unique for given valuations.

A *Higher expected value—higher investment*

We now determine the optimal levels of investment in the entry contests. We can do this for all contest success functions $\rho(I_1, I_2)$ that have the following standard properties: $\rho'_1 > 0$, $\rho'_2 < 0$, $\rho''_1 < 0$ and $\rho''_2 > 0$, where ρ'_1 (ρ'_2) represents the first derivative with respect to the first (second) argument in the function. Note that the Tullock contest success function belongs to this category.

The potential candidates do not have to be concerned about their bid in the entry contest sending a signal to the electorate. Therefore the candidates' objective functions at the entry stage can be written in the following compact form:

$$E[U_k] = E_{I_l}[\rho(I_k, I_l)]EV_k - I_k, \tag{A2}$$

$$E[U_k] = [\phi\rho(I_k, I_H) + (1 - \phi)\rho(I_k, I_L)]EV_k - I_k, \tag{A3}$$

where $k, l = 1, 2$; $k \neq l$ and I_k and I_l are the amounts invested in the entry competition. The values I_H and I_L reflect the investments of an individual with high and low lying aversion respectively. We recall that E_{I_l} stands for the expectation taken over I_l . The entry contestants' first-order conditions are

$$E_{I_l}[\rho'_1(I_k, I_l)]EV_k = 1. \tag{A4}$$

In this case, a candidate with low lying aversion and hence EV_L will invest more in the entry competition. Formally, using the implicit function theorem we obtain

$$\frac{dI_1}{dEV_1} = -\frac{E_{I_2}[\rho'_1(I_1, I_2)]}{E_{I_2}[\rho''_1(I_1, I_2)]EV_1} > 0. \tag{A5}$$

Using (A4), the equilibrium entry contest investments of low and high types are characterised by

$$(\phi\rho'_1(I_L, I_L) + (1 - \phi)\rho'_1(I_L, I_H))EV_L = 1, \tag{A6}$$

$$(\phi\rho'_1(I_H, I_L) + (1 - \phi)\rho'_1(I_H, I_H))EV_H = 1. \tag{A7}$$

B *Unique optimal bids*

We now show that there is a unique optimal investment pair (I_L, I_H) in the entry competition game when using a Tullock contest success function. First note that it follows from $E_{I_2}[\rho''_1(I_1, I_2)] < 0$ that the objective of the potential candidates are concave and hence they have a unique solution to their expected utility maximisation problem.

With the Tullock contest success function the politicians maximise

$$EU_i = \left(\phi \frac{I}{I + I_H} + (1 - \phi) \frac{I}{I + I_L} \right) EV_i - I. \tag{A8}$$

The equilibrium conditions as given in (A6) and (A7) can now be written as

$$\left(\phi \frac{1}{4I_H} + (1 - \phi) \frac{I_L}{(I_H + I_L)^2} \right) EV_H = 1, \tag{A9}$$

$$\left(\phi \frac{I_H}{(I_L + I_H)^2} + (1 - \phi) \frac{1}{4I_L} \right) EV_L = 1. \tag{A10}$$

We have seen previously that *ceteris paribus*, the individual with the higher prize when winning the contest will spend more. In the equilibria characterised above, we have $EV_L > EV_H$. That is, the politician of low lying aversion type values standing for election more than the individual with high lying aversion. Consequently, we must have that $I_L \geq I_H$. To simplify the equilibrium conditions, we use $I_H = \psi I_L$ with $\psi \in [0, 1]$. Inserting into the equilibrium conditions and solving for I_L , we obtain

$$I_L = EV_H \left(\frac{\phi}{4\psi} + \frac{1 - \phi}{(1 + \psi)^2} \right) := I_u(\psi), \tag{A11}$$

$$I_L = EV_L \left(\frac{\phi\psi}{(1 + \psi)^2} + \frac{1 - \phi}{4} \right) := I_b(\psi). \tag{A12}$$

Optimal investments are given by the intersection between $I_u(\psi)$ and $I_b(\psi)$. With respect to the functions' properties,

- it is obvious that $I_u(\psi)$ is strictly decreasing with ψ . Over the domain $\psi \in [0, 1]$, I_u declines from $\lim_{\psi \rightarrow 0} I_u(\psi) = \infty$ to $I_u(1) = \frac{EV_H}{4}$;
- the curvature of $I_b(\psi)$ is governed by the expression $\frac{\psi}{(1+\psi)^2}$. For the derivative with respect to ψ we obtain

$$\frac{\partial}{\partial \psi} = \frac{1 - \psi}{(1 + \psi)^3} \geq 0, \quad \forall \psi \in [0, 1]. \tag{A13}$$

Hence, $I_b(\psi)$ increases over its domain from $I_b(0) = (1 - \phi) \frac{EV_L}{4}$ to $I_b(1) = \frac{EV_L}{4}$. Since $EV_L > EV_H$, there exists a unique intersection of $I_u(\psi)$ and $I_b(\psi)$ on $[0,1]$ and hence a unique pair (I_L, I_H) of entry competition investments. Consequently, there are unique investment levels in the closed entry contest for the high type I_H and the low type I_L .

This concludes the proof. □

PROPOSITION 2. [Transparent Entry]

Consider the political game with transparent entry contest.

- (i) *For all admissible parameter values, there are symmetric perfect Bayesian equilibria in which both types of politicians pool and invest the same amount in the entry contest.*
- (ii) *For some parameter values, there are symmetric perfect Bayesian equilibria in which low types invest strictly more in the entry contest than high types.*

PROOF. We start with part (i).

- (i) Similar to the opaque entry case, it is easy to show that pooling can always be supported as an equilibrium. Now pooling also includes the investment stage. It requires the following ingredients:

- 1 The different types of politicians make the same investments, $I_L = I_H$, in the entry contest.
- 2 The candidates in the general election make the same promises, $P_H = P_L$, in their election campaigns.

- 3 The voters vote for each candidate with probability $\frac{1}{2}$. Any candidate investing or promising a different amount is not voted for. This is justified by the out-of-equilibrium belief that such a candidate is a low type.
- 4 The winner i of the election will transfer

$$T_i = \begin{cases} (1 - \frac{1}{\beta_i})P_i & \text{if } \beta_i > 1, \\ 0 & \text{if } \beta_i \leq 1, \end{cases} \quad (\text{A14})$$

to the voters.

It is easy to see that such an equilibrium always exists if we set $I_L = I_H = \epsilon$ and $P_L = P_H = B$. In this case, nobody can invest less and investing more automatically leads to a loss at the election stage because the candidate of the other party will have invested ϵ .

- (ii) The same separating equilibria that exist under opaque entry also exist with transparent entry. Their existence requires that $\beta_L > 1$. Otherwise, low types will never be elected as they would transfer zero and they can be identified in a separating equilibrium. □

A.2. Optimal Entry Contest Investments in the Experiment

In the experiment, we controlled for income effects by enforcing the entry contest investment with a probability of $\frac{1}{2}$.²⁹ Knowing this probability *ex ante*, the politicians take it into account when deciding on their entry bids. To calculate the predicted entry contest investments in the experiment, our previous theoretical results can still be used directly when interpreting *EV* as being twice its actual value.³⁰ We have all the parameters except for the levels of lying aversion β_L and β_H to determine the optimal entry bids. In the following, we give some plausible value ranges by assuming the high type to possess $\beta_H = 1,000$ and $\beta_L = 0$. Note that the optimal transfer (for $\beta_i > 0$) takes the form $T_i = (1 - \frac{1}{\beta_i})P_i$ and, hence, $\frac{1}{\beta_i}$ can directly be interpreted as the share the politicians keep for themselves (for $\beta_i \leq 1$ it is, of course, 1). For $\beta_H = 1,000$, the high lying averse type would only keep 1/1,000 for herself and give 99.9% of the promised amount to the voters. If $\phi = 0.5$ and types pool on the maximum promise B , a low type politician without any lying costs at all ($\beta_i = 0$) would spend 59 points in an opaque entry contest and the high type with $\beta_H = 1,000$ would invest 9 when playing against such a low type. The maximum bid that we can produce as an equilibrium prediction in our model is that of a low type with zero costs of lying if there are (almost) no high types. In this case the low type would (almost) bid one fourth of the prize for winning the contest multiplied by two because the investment only has to be paid with probability one half. This amounts to 80 points. To broadly delineate the range of bids we have chosen extreme values for β_i . With more moderate values of lying aversion, the bids will be between these extreme values. In a transparent entry contest, investments up to 80 can be rationalised in the same way.

²⁹ We refer to income effects when higher investments in the entry contest directly lead to lower transfers to compensate for the amount spent in the entry contest but not because of the higher expected value from holding office.

³⁰ Note that this is equivalent to adjusting the politicians' objective functions by multiplying the entry contest investments by $\frac{1}{2}$.

A.3. Additional Tables and Figures

Table A1. *Opaque Entry: Promises and Beliefs.*

	Dep. variable: difference in beliefs about transfer					
	All		Paid		Not paid	
Diff. in promises	0.125	(0.085)	0.076	(0.141)	0.172**	(0.054)
_cons	-3.409	(1.769)	-1.649	(1.396)	-4.738	(2.374)
<i>N</i>	1,320		591		729	
<i>R</i> ²	0.01		0.00		0.01	
<i>N</i> _clust	6		6		6	

Notes: OLS models with difference in beliefs regarding candidate generosity (differences in transfers) as dependent variable. Standard errors in parentheses are adjusted for clustering at the session level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A2. *Opaque Entry: Promises and Transfers.*

	Dep. variable: transfer <i>T</i>					
	All		Paid		Not paid	
Promise	0.206***	(0.040)	0.079	(0.098)	0.315**	(0.104)
_cons	64.981***	(14.288)	84.117**	(22.637)	47.568	(28.505)
<i>N</i>	880		394		486	
<i>R</i> ²	0.01		0.00		0.01	
<i>N</i> _clust	6		6		6	

Notes: OLS Models with transfers as dependent variable. Standard errors in parentheses are adjusted for clustering at the session level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

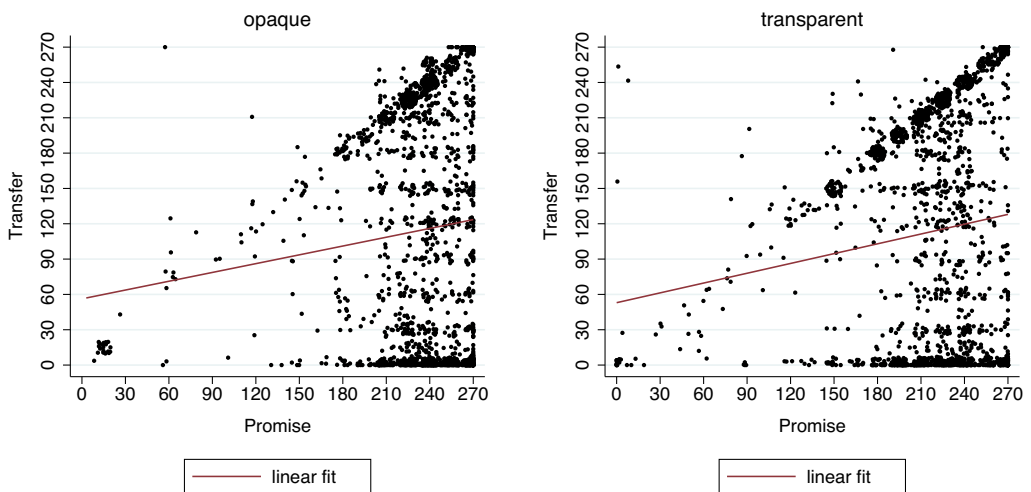


Fig. A1. *Scatter Plots of Promises and Transfers.*

Notes: Scatter plots and linear fits of promises and transfers for the opaque entry contest treatment (left panel) and the transparent entry contest treatment (right panel). To avoid overlay a random jitter was used.

Table A3. *Transparent Entry: Investments, Promises and Beliefs.*

	Dep. variable: difference in beliefs about transfer					
	All		Paid		Not paid	
Diff. in investments	-0.447***	(0.093)	-0.684**	(0.191)	-0.287***	(0.067)
Diff. in promises	0.206*	(0.089)	0.232**	(0.088)	0.176	(0.092)
_cons	2.916	(1.962)	0.760	(4.761)	4.567**	(1.492)
<i>N</i>	1,320		633		687	
<i>R</i> ²	0.04		0.09		0.02	
<i>N</i> _clust	6		6		6	

Notes: OLS models with difference in beliefs regarding candidate generosity (differences in transfers) as dependent variable. Standard errors in parentheses are adjusted for clustering at the session level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A4. *Transparent Entry: Investments, Promises and Transfers.*

	Dep. variable: transfer <i>T</i>					
	All		Paid		Not paid	
Investment	-0.763	(0.468)	-0.917*	(0.448)	-0.652	(0.502)
Promise	0.253	(0.134)	0.310*	(0.136)	0.181	(0.202)
_cons	99.102*	(42.136)	95.477**	(35.267)	109.243	(57.191)
<i>N</i>	880		422		458	
<i>R</i> ²	0.04		0.06		0.03	
<i>N</i> _clust	6		6		6	

Notes: OLS models with transfers as dependent variable. Standard errors in parentheses are adjusted for clustering at the session level. Standard errors in parentheses are adjusted for clustering at the session level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A5. *Opaque Entry: Investments, Lie Size and Transfer on the Individual Level.*

	Dep. variable: lie size ($P - T$)			Dep. variable: transfer <i>T</i>		
	All	Paid	Not paid	All	Paid	Not paid
Investment	0.906***	0.896**	0.912***	-0.842***	-0.878***	-0.807***
	(0.185)	(0.277)	(0.161)	(0.139)	(0.211)	(0.136)
_cons	77.332***	78.158***	76.633***	152.962***	152.044***	154.021***
	(12.722)	(16.563)	(11.401)	(11.576)	(13.681)	(11.417)
<i>N</i>	176	88	88	176	88	88
<i>R</i> ²	0.04	0.04	0.05	0.04	0.04	0.04
<i>N</i> _clust	6	6	6	6	6	6

Notes: OLS models with the within-subject averages (over the 20 rounds of the experimental session) of lie size ($P - T$) or transfer *T* as dependent variables and the within-subject average of the entry investment as the explanatory variable. Standard errors in parentheses are adjusted for clustering at the session level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6. *Transparent Entry: Investments, Lie Size and Transfer on the Individual Level.*

	Dep. variable: lie size ($P - T$)			Dep. variable: transfer T		
	All	Paid	Not paid	All	Paid	Not paid
Investment	0.428 (0.391)	0.450 (0.443)	0.436 (0.375)	-0.349 (0.356)	-0.466 (0.426)	-0.256 (0.310)
_cons	83.453*** (17.642)	77.502** (20.834)	88.002*** (17.065)	128.878*** (16.637)	133.733*** (20.083)	125.388*** (14.921)
N	176	88	88	176	88	88
R^2	0.01	0.01	0.01	0.01	0.01	0.00
N_{clust}	6	6	6	6	6	6

Notes: OLS models with the within-subject averages (over the 20 rounds of the experimental session) of lie size ($P - T$) or transfer T as dependent variables and the within-subject average of the entry investment as the explanatory variable. Standard errors in parentheses are adjusted for clustering at the session level. Levels of significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7. *Behaviour over Time.*

Rounds	All	1-10	11-20
Investment			
<i>Opaque</i>	46.50 (26.14)	48.43 (25.55)	44.57 (26.59)
<i>Transparent</i>	46.42 (27.00)	47.70 (26.27)	45.14 (27.67)
Promise			
<i>Opaque</i>	233.52 (39.57)	228.29 (40.98)	238.75 (37.39)
<i>Transparent</i>	216.29 (44.86)	214.65 (43.94)	217.93 (45.73)
Transfer			
<i>Opaque</i>	114.43 (102.72)	130.24 (97.80)	98.62 (105.11)
<i>Transparent</i>	113.05 (98.16)	130.77 (94.69)	95.34 (98.42)
N	1,760	880	880

Notes: Means and standard deviations (in parentheses) of key variables in all rounds and in the first and the second half of an experimental session.

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Online Appendix Replication Package

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