Rational Voters and Political Advertising

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1 Introduction

Most political scholars agree that organized groups play a key role in modern democracy. One aspect of special interest politics that has caught the attention of both academic researchers and the public at large, especially in the US, are campaign contributions. Candidates to various federal and state offices receive monetary donations from various corporations and pressure groups.[1]

What do candidates do with the money they receive from lobbies? In western democracies, politicians appear to use contributions not mainly to increase their personal wealth but rather to finance their electoral campaigns. While electoral spending includes canvassing, the production of printed material, and organizational costs, it is television advertising that gets the lion's share of US campaign spending (Ansolabehere and Iyengar [1]).

Given this observation, it becomes clear that any theory of special interest politics must explain what political advertising does. Most existing models assume an ad hoc "influence function," which maps campaign expenditure into vote share (Grossman and Helpman [8, ch. 10]). The more a candidate spends (perhaps in relation to the expenditure of his opponents), the higher the share of voters who vote for him. The problem of modeling the influence function as a black box is twofold. First, results depend on the functional form we choose, but it is unclear what the most plausible form is. Second, we

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[1]For a discussion of campaign finance in the US, see Levitt [13]. In other countries, the situation is heterogeneous because of the presence of limits on campaign spending (which are discussed below). See Kaid et al. [10] for an overview or electoral campaigning in various Western democracies.

cannot perform welfare analysis. Unless we know what advertising does to voter utility, we cannot evaluate the relative merit of alternative regulatory regimes.

The lack of micro-foundation for political advertising is a serious drawback because it prevents us from making policy recommendations. There is no consensus on how campaign finance should be regulated. Different countries have chosen radically different ways. The US imposes some limits on contributions but leaves the expenditure side unregulated. Some European countries impose draconian limits on both contributions and expenditures, and may provide more or less generous public funding.[2] The need to build a micro-founded model of campaign finance has been recognized for some time (e.g. Morton and Cameron [15]). However, it is only recently that theorists have moved in that direction. The present contribution will offer a critical review of the existing literature.

Micro-founded models of campaign finance begin with the assumption that voters are rational: they are not systematically fooled by advertising.[3] Advertising works only inasmuch as it provides voters with some kind of information. There are two possible approaches, depending on how information transmission is modeled.

First, one may assume that advertising conveys no direct information (Potters et al. [16] and Prat [17, 18]).[4] Still, it can provide information indirectly. The fact that advertising is intrinsically expensive (time on television and space on newspapers are scarce goods) means that advertising is a way to *burn money* publicly. The willingness and/or the ability to destroy a large amount of resources may constitute a credible signal of some otherwise non-verifiable information. For instance, in a model of repeated purchases, a new seller may burn money in order to signal to potential buyers that he has a high-quality product and that he believes that buyers will buy more of it after they experience its quality (a seller with a low-quality product would not be willing to spend the same amount on advertising because he knows

[2]The US Supreme Court ruled that campaign advertising constitutes political speech and cannot be in any way limited (*Buckley v. Valeo*, 1976). This sets the US apart from other western democracies, in which campaign advertising enjoys no such strong constitutional protection. For instance, in 1998 the European Court of Human Rights ruled (*Bowman v. UK*) that limits on campaign spending do not necessarily violate the right to freedom of expression as long as they are not unreasonably low.

[3]A micro-foundation of campaign finance need not have rational voters. However, it is natural to begin by examining the case that is closer to the standard Bayesian paradigm. In the conclusion, we discuss the possibility of developing a model that incorporates cognitive biases.

[4]This approach is inspired by models of advertising used in industrial organization, such as Kihlstrom and Riordan [11] and Milgrom and Roberts [14].

that sellers will only buy from him once).

Second, one may assume that advertising provides information directly (Ashworth [2], Bailey [4], Coate [5, 6], Schultz [19], and Wittman [23]). Advertising conveys to viewers some verifiable information that would not be available otherwise. Then, providing positive information to viewers will generate a positive response.[5]

It is not clear which of the two approaches is the more realistic. In the case of political advertising, often ads convey verifiable information on the political record of the candidate or his opponents. However, it is also true that some commercials are extremely expensive but appear to contain little new information. Indeed, Ansolabehere and Iyengar [1] use an experimental setting to show that political advertising is effective even when, by design, it contains no direct information.

The present contribution will pursue both approaches and compare their results. We use a simple model in which voters are fully rational but they are uninformed about some non-policy characteristics of candidates (valence). Specifically, with a certain probability voters observe quality directly, otherwise they are uninformed. Lobbies can make campaign contributions, which candidates can spend on advertising. We use a service-induced model of campaign finance. Candidates can make policy promises to lobbies (we briefly discuss a version with position-induced contributions).

Under both approaches to advertising, there exists a similar political equilibrium in which high-quality candidates (but not the low-quality ones) receive funds from interest groups in exchange for policies that hurt the median voter and benefit lobbies. The campaign contributions are then spent on political advertising which voters observe. If advertising is directly informative, voters learn the quality of the candidate directly. If advertising is not directly informative, voters infer that the candidate must be high-quality because in equilibrium lobbies only contribute to high-quality candidates. Lobbies do not give money to low-quality candidates not out of a direct concern for quality but because they know the money will be wasted if voters find out that the candidate is actually bad.

Thus, equilibrium behavior is qualitatively similar under both approaches. Welfare implications are similar in one respect: prohibiting campaign contributions may be optimal because the informational benefit that they bring can be lower than the equilibrium policy cost they impose. But the welfare analysis differs in one important aspect: a role for public funding of the

[5] Austen-Smith [3] provides the first model in which political advertising is assumed to convey direct information, even though the information transmission mechanism is represented in reduced form.

kind used in some European countries exists only if advertising is directly informative.

The plan of the present contribution is as follows. The next two sections consider, respectively, non-directly informative advertising and directly informative advertising. Section 4 discusses how a micro-founded model of campaign finance can be used to re-interpret the available empirical evidence. Section 5 concludes with a discussion of the main lessons and possible future research.

2 Non-directly Informative Advertising

The main points of this contribution can be made in a straightforward model (a minimalist version of the one used in Prat [17]). By keeping the formalization as simple as possible, we can use the same basic set-up to explore the two possible approaches to advertising. We now focus on non-directly informative advertising, leaving informative advertising for the next section.

There are four players: a voter, a lobby, and two candidates. There are two possible policies: $p = 0$ and $p = 1$. The voter gets utility $-p$ from policy, while the lobby gets utility hp from policy, where $h > 0$. Thus, $p = 0$ is the voter-preferred policy and $p = 1$ is the lobby-preferred policy.[6] The candidates do not care about policy: they only derive utility from being elected.

The two candidates, 1 and 2, simultaneously announce the policies that they are going to implement if elected: $p_1 \in \{0, 1\}$ and $p_2 \in \{0, 1\}$. Candidates are characterized not only by the policy stance they assume but also by some innate quality (often referred to as *valence* in political economy), which does not relate to policy but nevertheless affects voter utility. We assume that the quality of candidate 2 is given, while the first candidate can be good or bad. Formally, the quality of candidate 1 is given by $\theta \in \{b, g\}$, which is a random variable (the two realizations are equally likely). Quality is known to the candidates and to the lobby but not necessarily to the voter. With a certain exogenous probability $\rho \in (0, 1)$, the voter discovers the value of θ, otherwise she does not know it. Thus, the parameter ρ measures the precision of voter information.

The voter's payoff depends on quality as well as policy. The voter's utility

[6] For simplicity, assume that the lobby represents the interests of non-voters, such as foreign entities. Below, we argue that the main results would not change even if the lobby represented a minority of voters.

is

$$u = \begin{cases} -p_1 + k & \text{if 1 is elected and } \theta = g \\ -p_1 - k & \text{if 1 is elected and } \theta = b \\ -p_2 & \text{if 2 is elected} \end{cases},$$

where k is a positive parameter that denotes the importance of valence in the eyes of the voter.

Finally, we have to describe the interaction between the lobby and the candidates. The existing papers assume that contributions are either *service-induced* or *position-induced*. In the service-induced case, lobbies and candidates reach explicit agreements in which candidates promise to implement certain policies in exchange for certain donations. In the position-induced case, such agreements are impossible: first candidates select their policy positions, then lobbies make donations. In equilibrium, one expects candidates to choose positions that are close to the lobbies' interests in order to attract larger donations.

In this model, we use a service-induced model (we discuss a position-induced variant briefly at the end of this section). Before the electoral campaign starts, the lobby can offer any positive sum m to candidate 1.[7] If the candidate accepts the offer, he commits to announcing and implementing policy $p = 1$. The candidate can use campaign contributions only to finance advertising (not to enrich himself). Furthermore, he has no personal wealth. Thus, the amount of campaign advertising equals the amount of the contribution.[8]

The lobby's payoff depends on the policy that is implemented and the size of the campaign contribution that is made. If the offer is accepted, the lobby's utility is $hp - m$. If it is rejected, it is just hp. The candidates maximize the probability of being elected. Neither the lobby nor the candidates care about quality in a direct way.[9]

The timing of the game is as follows:

1. The lobby and the two candidates observe quality θ. The lobby makes an offer m to candidate 1.

2. Candidate 1 accepts or rejects the offer.

[7] The assumption that only one candidate has uncertain quality and only that candidate can receive money is made for analytical convenience. See Prat [17] for a general analysis.

[8] Another assumption that is worth spelling out is that the voter observes the policy position selected by candidate 1. At the end of the section, we briefly discuss unobservable policy.

[9] The separating equilibrium discussed below holds a fortiori if the lobby has the same preference of voters over candidate quality, while it may not exist if they have opposite preferences (Potters et al. [16]).

3. The two candidates simultaneously announce their policies: p_1 and p_2. If candidate 1 has accepted the offer, he must announce $p = 1$. Otherwise, he is free to announce any policy.

4. The voter observes the campaign contribution m and the two policies p_1 and p_2. With probability ρ, he also observes θ. The voter votes for 1 or 2.

As candidate 2 cannot receive money from the lobby, he will always select the voter's preferred policy: $p_2 = 0$. From now on, we only focus on the other three players: the voter, the lobby, and candidate 1. Still, this is a complex signaling game with several equilibria. For instance, there are pooling equilibria in which the voter believes that campaign spending is uninformative and, therefore, the candidate never accepts a deal from the lobby. We focus on the simplest equilibrium in which campaign spending plays a role:

Proposition 1 *If quality is sufficiently important ($k \geq 1$), the game has a perfect Bayesian equilibrium in which:*

1. *If candidate 1 is bad ($\theta = b$), the lobby offers no money to the candidate. If he is good ($\theta = g$), the lobby offers campaign contribution*

$$m = \bar{m} \equiv h\left(1 - \rho\right).$$

2. *If the voter does not observe the quality θ directly, she forms the following belief*

$$\tilde{\theta} = \begin{cases} b & \text{if } m < \bar{m} \\ g & \text{if } m \geq \bar{m} \end{cases}.$$

   If she observes θ directly, let $\tilde{\theta} = \theta$.

3. *Candidate 1 accepts an offer from the lobby if and only if $m \geq \bar{m}$. If the candidate rejects the offer, he chooses policy $p_1 = 0$.*

4. *The voter votes for 1 if and only if*

$$-p_1 + \tilde{\theta} \geq 0.$$

The key to understanding this equilibrium is the campaign spending threshold

$$\bar{m} \equiv h\left(1 - \rho\right).$$

If the voter observes that candidate 1 has received at least $\bar{m}$, she must infer that the candidate's quality is high, because the lobby would not be willing

to spend that much money on a bad candidate. This is not because the lobby cares about the candidate's quality intrinsically, but rather because the lobby knows that with probability ρ a bad candidate is discovered and loses the election. If the lobby strikes a deal with a bad candidate, the lobby's expected policy payoff is $h(1-\rho)$. By "burning" an amount of money equal to $h(1-\rho)$, the lobby supplies a credible signal that the candidate is good.

Given the voter's belief, a good candidate who is offered $\bar{m}$ will be elected for sure if he accepts. Therefore, he does accept. A bad candidate receives no campaign contribution: voters learn his quality and he loses the election even if he chooses $p_1 = 0$. There is nothing a bad candidate can do to improve his situation because the lobby is not willing to pay contribute $\bar{m}$ to his campaign.

This equilibrium exists only if the valence dimension is sufficiently important with respect to the policy dimension: $k \geq 1$. If $k < 1$, the voter will never elect candidate 1 if he chooses $p = 1$ even if his innate quality is high.

What are the welfare implications of this simple model? One may think that a rational voter cannot be hurt by the availability of campaign finance because she is in a position to punish a candidate who sells off to the lobby by not electing him. This is not the case. There is actually scope for campaign regulation that improves the voter utility.

To see this, compute the voter's expected payoff in the equilibrium above. With probability $\frac{1}{2}$, candidate 1 is good, and the voter receives utility $k-1$. With probability $\frac{1}{2}$, the candidate is bad, and the voter elects candidate 2 and receives 0. The expected payoff is thus

$$U_C = \frac{1}{2}(k-1).$$

Suppose instead that campaign contributions are prohibited and focus on the pooling equilibrium in which the two candidates select the voter's preferred policy ($p_1 = p_2 = 0$) and the quality of candidate 1 is revealed only if there is direct information, which happens with probability ρ. The expected utility is

$$U_{NC} = \rho k.$$

Assume that $\rho < \frac{1}{2}$ and $k > 1$. We now see that:

Proposition 2 *Prohibiting campaign contributions increases the voter's expected payoff if and only if the quality dimension is not too important:*

$$k < \frac{1}{1-2\rho}.$$

The intuition behind the result is simple. In an equilibrium with political contributions, all good candidates sell out to the lobby. A candidate who receives no campaign money is perceived as a bad candidate and loses the election. Campaign finance brings the electorate an informational benefit (the voter always knows the quality of candidate 1) and a policy cost (all the good candidates choose the policy preferred by the lobby). If quality does not play an extremely important role in the voter's utility, the policy cost is higher than the informational benefit: the voter would be better off if contributions were prohibited.

This welfare result takes into account the utility of voters only, not that of the lobby. Note however that the result does not depend on h, the intensity of the lobby's preference. We can thus let h tend to zero, without affecting the result above. But if h is small enough and we use a Utilitarian approach, the lobby's payoff becomes negligible, and Proposition 2 is still valid as stated.

The main findings of this simple model are robust to several extensions. One can examine the effect of having multiple lobbies or multiple candidates who can receive contributions, heterogeneous voters, or a richer the policy space and/or signal space (Prat [17, 18]).

One may also relax the assumption that voters are able to observe the policy favors that candidates promise to lobbies. In this simple two-policy setting, there would still be an equilibrium similar to the one in proposition 1. However, in a richer policy space (e.g. a line), good candidates may choose a policy that is even more skewed towards the lobby's interest (Prat [17]) . Sloof [20] shows that a full disclosure policy is beneficial to voters. If voters do not fully observe the deals between lobbies and candidates, it is useful to require that candidates disclose the origin of the campaign contributions they receive. In an equilibrium with disclosure, candidates who receive money from extreme lobbies are believed to have chosen extreme policies and are shunned by voters. This provides candidates with an incentive to make deals with moderate lobbies only.

Finally, one may believe that the a position-induced model is more realistic than the service-induced model used here. In this particular setting, this would make no difference. To see this, keep the current set-up but assume that lobbies and candidates cannot make deals. First, candidate 1 choose policy p; then, the lobby makes a contribution m. It is immediate to see that there exists a separating equilibrium analogous to proposition 1, in which all good candidates select the lobby's preferred policy and receive an amount of contribution that the lobby would not be willing to give to a bad candidate. The welfare implications do not change either.

However, the finding that a position-induced model and a service-induced model produce the same results is unlikely to carry over to other settings.

Coate [6] considers a position-induced campaign finance model in which voters are uncertain over the candidates' ideological position.[10] In turn, candidates are chosen by parties. In equilibrium, the presence of campaign contributions makes parties choose more moderate candidates. A cap on donations hurts the median voter.

3 Informative Advertising

In the previous section, advertising was just money burning and could not convey information directly. Even so, we showed that it can provide indirect information in equilibrium. We now consider the possibility that advertising provides direct information.[11] As we shall see, the main results obtained in the previous section still hold, with one important exception.

Suppose that the model is as in the previous section except that now the advertising technology is different. By spending an amount a, candidate 1 can inform all voters about his quality θ. As before, the candidate does not have personal wealth, and must rely on campaign contributions from the lobby. As it makes little sense for the lobby to make a campaign contribution which is different from zero or a, we restrict attention to $m \in \{0, a\}$.[12]

Essentially, the game follows the timing used in the previous section. First, the lobby decides whether or not to offer a to the candidate. If the candidate is offered a, he accepts or rejects the lobby's offer. If he accepts, he announces $p_1 = 1$ and spends the money on advertising to reveal his quality θ to the voter. If he rejects, he chooses $p_1 = 0$. With probability ρ the voter observes the quality directly. The voter also observes the policy announcements of the two candidates and she chooses the winner.

In the previous section, the voter formed a potentially complex belief function, which mapped every advertising level into a posterior distribution on candidate 1's quality. Now, beliefs are simpler because advertising provides hard information. Still, the voter must form a belief for the case in which she observes no advertising, which we denote with $\hat{\theta}_0$ (in this sense, indirect information transmission play a role even when advertising is directly

[10] Coate [6] uses directly informative advertising. See also Vanberg [22].

[11] Among the existing models of informative campaign advertising, the present analysis is closest to Ashworth [2] and Coate [5]. Like those two papers, it includes an exchange of favors between politicians and lobbies and it reaches similar results on campaign finance regulation. However, being an extremely simplified version, it misses several other insights. For instance, in contrast to the two papers cited above, the present paper assumes that political favors are obseved by voters.

[12] We assume that the voter does not observe the amount of campaign contribution m directly.

informative).

We can show the following:

Proposition 3 *If advertising is not too expensive ($a \leq h$) and quality is sufficiently important ($k \geq 1$), there exists a perfect Bayesian equilibrium in which:*

1. *The lobby offers amount a to candidate 1 if and only if his quality is high ($\theta = g$).*
2. *If the voter does not observe the quality θ directly, she believes that candidate 1 is bad ($\tilde{\theta}_0 = b$).*
3. *Candidate 1 accepts an offer of a.*
4. *The voter votes for 1 if and only if*

$$-p_1 + \tilde{\theta} \geq 0,$$

where $\tilde{\theta} = \tilde{\theta}_0$ if there is no advertising, and $\tilde{\theta} = \theta$ if there is advertising.

This separating equilibrium mirrors the equilibrium with money burning described in proposition 1. A good candidate receives an amount a from the lobby and uses it to reveal his quality to the electorate, while a bad candidate receives no money because it would be of no use revealing his quality. If the voter observes no advertising, she correctly infers that candidate 1 must be bad.

For such an equilibrium to exist, two conditions must be met. First, the candidate must be willing to accept the lobby's contribution, which is true only if the voter prefers a good candidate with the wrong policy to a bad candidate with the voter-preferred policy. This holds if the voter puts sufficient weight on innate quality ($k \geq 1$). Second, the lobby must have sufficient incentive to contribute a. Given the first condition, the lobby knows that a good candidate who advertises is elected for sure. Therefore, the lobby is willing to contribute a if the monetary cost is lower than the policy benefit ($a \leq h$).

The equilibrium with informative advertising is similar to the one with uninformative advertising which we identified in the previous section. The only difference is that the contribution level is exogenously given by a, rather than endogenously determined by the voter's belief. It is not a surprise that we obtain a welfare result identical to the one we had with non-directly informative advertising, namely:

Proposition 4 *Prohibiting campaign contributions increases the voter's expected payoff if and only if the quality dimension is not too important:*

$$k < \frac{1}{1-2\rho}.$$

If quality matters but not too much ($k \in \left(1, \frac{1}{1-2\rho}\right)$), the presence of campaign contributions generates a policy cost that is higher than the informational benefit it brings.

However, the two approaches to advertising lead to diametrically opposed conclusions with regards to public financing of electoral campaigns. Suppose candidate 1 is provided with an amount s of money which is paid for by the voter. This amount must be spent on advertising. Clearly, the presence of s makes no difference if advertising is non-directly informative. The voter knows that candidate 1 receives a given amount of public funding and she just discounts it. If instead advertising is informative, things change. If public funding is sufficient to cover the advertising cost ($s \geq a$), the candidate has no reason to make a deal with the lobby. Information about the candidate's quality is revealed at no policy cost. As long as the amount of advertising needed is not too high ($a \leq 1$), the voter prefers an equilibrium in which the candidate's quality is revealed through public funding to the equilibrium in proposition 3. We summarize this reasoning as follows:

Proposition 5 *Public funding for electoral campaigns is inefficient if advertising is non-directly informative and can be efficient if advertising is directly informative.*

Another important insight of the direct information approach relates to the incumbency advantage. In Ashworth [2], voters expect the incumbent to have a higher quality than the challenger (perhaps because the incumbent has undergone prior selection). Lobbies realize that, everything else equal, the incumbent is more likely to be elected and they are willing to contribute more to the incumbent's campaign. To secure the amount necessary to reveal his quality, the incumbent needs to promise lobbies less favors than the challenger. A challenger of a given quality is thus at a disadvantage vis a vis an incumbent of the same quality. This finding can explain the strong incumbency advantage observed in the US. It also implies that the size of the advantage would be reduced by the introduction of public financing.[13]

[13]The incumbency effect has not been studied with non-directly informative advertising. If voters observe advertising spending perfectly, one would expect no advantage for a priori favorite candidates: money burning is equally effective at all levels. However, the incumbency effect identified by Ashworth [2] could be present if spending is not perfectly observable (as in Hertzendorf's [9] model of commercial advertising).

4 Identification of the Expenditure Function

Several empirical papers (surveyed in Levitt [13]) have sought to estimate the *expenditure function*, that is, the relationship between the amount of money that a candidate spends and his vote share. It was soon recognized that the raw relationship is misleading because the amount of money a candidate gets may be related to his quality, which in turn is linked to the vote share through other channels. Authors like Levitt [12] have devised ingenious ways to control for unobserved heterogeneity.

We will now argue that, even if we were able to control for candidate quality perfectly, we would still face an identification problem. In a model with rational voters, the expenditure function is not a primitive. Rather, it is a complex equilibrium phenomenon that takes into account the behavior of lobbies and candidates.

This point is developed in detail in Prat [18], but the core argument can be sketched informally. In a separating equilibrium of a model with rational voters, there exists a positive association between these three variables: (i) the amount that a candidate spends on his campaign; (ii) the quality of that candidate; and (iii) the amount of policy favors that the candidate promises to lobbies. Of these variables, only (ii) is exogenous. Moreover, in equilibrium the vote share that a candidate receives is positively associated with (i) and (ii), and negatively associated with (iii).

Let us use our model to re-interpret the existing empirical work. The authors cited above regress vote share on (i), trying to control for (ii). However, they disregard (iii). The relationship they observe is not, as they claim, the effect on electoral outcome of an extra dollar of campaign spending (Levitt [12]). Rather, they estimate *the effect on electoral outcome of an extra dollar of campaign spending net of the political cost of persuading lobbies to donate the extra dollar.*

Most available estimates of the coefficient of "expenditure function" are very low. Some are not significantly different from zero. These estimates have been used to infer that campaign spending has little effect on electoral outcome and to make policy recommendations. For instance, Levitt [12] argues that there is no role for public financing because spending is useless.

The same estimates have a different interpretation in a model with rational voters. A coefficient close to zero indicates that the informational benefit of advertising is offset by the political cost of raising money from lobbies. The lobbies appropriate all the informational surplus (defined as the difference in utility for the median voter between having a low-quality politician and a high-quality one) in the form of policies geared toward lobbies. This means that in equilibrium the voter faces a depressing choice between elect-

ing low-quality candidates with good policy or high-quality candidates with policy that is so bad that it makes them as valuable as a low-quality candidate with good policy. As Prat [18] proves, in this case prohibiting campaign contributions must be beneficial to the median voter.

On the other hand, those estimates do not imply that public financing is necessarily useless. The informational benefit of advertising may be high. If advertising provides direct information, proposition 5 suggests a role for public financing.

Obviously, more research is needed, both theoretical and empirical. However, it is clear that campaign finance is a complex equilibrium phenomenon and that the empirical estimation strategy should follow a more structural approach in order to disentangle the various forces at play and to arrive at estimates that can be used for policy purposes. Stratmann [21] makes a step in that direction: he exploits variations in campaign finance regulation and advertising cost across US states to differentiate between the informational effect and the political cost of campaign spending.

One promising avenue for future empirical work relates to the role of candidates' personal wealth. A rich candidate, such as Ross Perot or Jon Corzine, can fund his electoral campaign directly. Potentially, this could help distinguish between the two approaches to advertising. If advertising is not directly informative, lobbies' money certifies the quality of a candidate. It is not obvious that this role can be replicated by personal wealth. Instead, if advertising is directly informative, the origin of the funds used to pay for advertising is inconsequential.[14]

5 Discussion

We have considered a simple model of campaign finance in which voters are rational but uncertain about the quality of political candidates. In equilibrium, political advertising can provide voters with useful information, either through direct transmission or via costly signalling. The counterpart of this informational benefit is the political cost of raising campaign contributions to pay for advertising.

Despite its simplicity, the model yields several policy-relevant implications:

1. Even though voters are rational, there is scope for restricting contributions. In equilibrium, the informational benefit derived from adver-

[14]Gerber [7] uses challenger wealth as an instrumental variable in the estimation of campaign spending effectiveness.

tising may be lower than the policy cost generated by deals between lobbies and candidates. This is more likely to happen when voters are already well informed. In such a case, voters are better off if advertising and/or contributions are prohibited.

2. There may be a role for public financing of electoral campaigns, but only if advertising is directly informative.

3. A full disclosure policy is beneficial to voters. Candidates should be required to publicize the origin of the campaign contributions they receive.

4. A model of campaign finance with rational voters may explain the strong incumbency advantage observed in the US.

5. Empirical work faces an identification problem. In a microfounded model of campaign finance, the "expenditure function" (the relation between candidate's expenditure and candidate's vote share) is not a primitive of the model but rather an equilibrium phenomenon.

The public opinion perceives campaign finance as a negative feature of modern democracy. Political scholars should offer a coherent conceptual framework to analyze the validity of this perception and to evaluate possible forms of regulation. The present contribution has argued that such a conceptual framework must be micro-founded starting from primitive assumptions on voters' preferences and information.

All the existing papers on micro-founded campaign finance assume that voters are rational, in the sense that they cannot be systematically fooled. One may object that this is an unrealistic requirement, especially in a sphere of decision-making, such as voting, which is characterized by both free-riding and complexity. Agreeing with such an objection does not imply going back to the "black box." A micro-founded model of campaign finance need not include full Bayesian rationality. On the contrary, it would interesting to develop a model on campaign finance starting from non-standard assumptions on the way voters make decisions. Such model could incorporate some of the cognitive biases that are by now well-documented in the psychological literature. A non-Bayesian micro-founded model of campaign finance would still be amenable to welfare analysis, and may provide insights that are not available with rational voters.

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