A discusión

ASYMMETRIC INFORMATION AND ELECTORAL CAMPAIGNS: THE MONITORING ROLE OF MEDIA*

Ascensión Andina

WP-AD 2004-32

Corresponding author: A. Andina, Departamento de Fundamentos del Análisis Económico. Universidad de Alicante. 03080 Alicante, Spain. Tfno: (+34) 96 590 36 14. Ext: 2630. Fax: (+34) 96 590 38 98. E-mail: andina@merlin.fae.ua.es

Editor: Instituto Valenciano de Investigaciones Económicas, S.A.

Primera Edición Septiembre 2004.

Depósito Legal: V-3980-2004

IVIE working papers offer in advance the results of economic research under way in order to encourage a discussion process before sending them to scientific journals for their final publication.

* I am grateful to my advisor Javier M. López Cuñat for several helpful conversations and for his precise observations. I thank Timothy Besley, Matthias Dahm, Ramón Faulí, Andrea Galeotti, Sanjeev Goyal, Miguel A. Meléndez Jiménez and Ignacio Ortuño Ortín for valuable suggestions. The hospitality of Queen Mary, University of London, where part of this research was carried out, is gratefully recognized. The usual disclaimer applies.

ASYMMETRIC INFORMATION AND ELECTORAL CAMPAIGNS: THE MONITORING ROLE OF MEDIA

Ascensión Andina

ABSTRACT

This paper analyzes an electoral game where candidates have private information on their own types. Candidates propose non-binding platforms and run for office. Voters make inferences on the politicians' types and cast their votes. We show that in this set-up, the existence of a media industry is desirable, as it improves the quality of the political game by increasing the accuracy of the candidates' signals. In particular, it induces politicians to discard the use of pooling strategies. We show that this monitoring role of the media is more likely to appear in societies with large numbers of swing voters, or with great competition among the media. We do this analysis in a context of a neutral media. We also analyze the case of an ideological media and show that ideology is not harmful per se, but the possibility of asymmetries in the support of different candidates may well be.

Keywords: Uncertainty, electoral campaigns, media.

JEL classification: D72, D82.

"The media do play a role in shaping the public image of corporate managers and directors and in so doing they pressure them to behave according to societal norms".

Dyck and Zingales, 2002.

1 Introduction

Election campaigns are an important feature of the political game. In fact, they are the platforms used by candidates to present themselves and their goals to the voters. It is not certain, however, that they are accurate signals of future policies. The reason for this is that there is no legal regulation that forces candidates to implement what they propose in their platforms. Despite this fact, voters usually take campaigns into account if they want to be informed about the skills of the politicians running for office. So much so, that a significant number of undecided or swing voters usually decide their votes during the electoral period. In this respect, evidence for Great Britain shows that the percentage of the population who was "absolutely certain" to vote was 72% in the first week (of the electoral process), whereas it was 85% in the fourth week.[1] This proves that the electoral process plays an important role in determining the chances of a candidate being elected and may explain why the amounts of money spent in pre-electoral periods have increased greatly over the last decades.[2]

In other words, campaigns seem to be powerful instruments in the hands of politicians, making their run for office easier. However, they are often "cheap talk". Along these lines, Krukones[3] (1984) found that for candidates running for the White House between 1912 and 1976, the percentage of fulfilled promises was around 75%. We present this evidence in Table 1.

Table 1: **Percent of Domestic and Foreign Campaign Issues Fulfilled : 1912 – 76**

	Domestic	**Foreign**
Democrat	86.5%	70.2%
Republican	75.6%	71.6%
All Presidents	82.1%	70.8%

Source: Krukones (1984).

This data suggest that politicians do not always fullfil their campaign promises. The question is therefore if there is a mechanism that could discipline politicians' behavior. We argue in this paper that media is such a mechanism.

There is no empirical evidence to support this idea that media reduce the candidates' incentives to cheat, but there is a good proxy to it: the level of corruption in governments is negatively correlated with

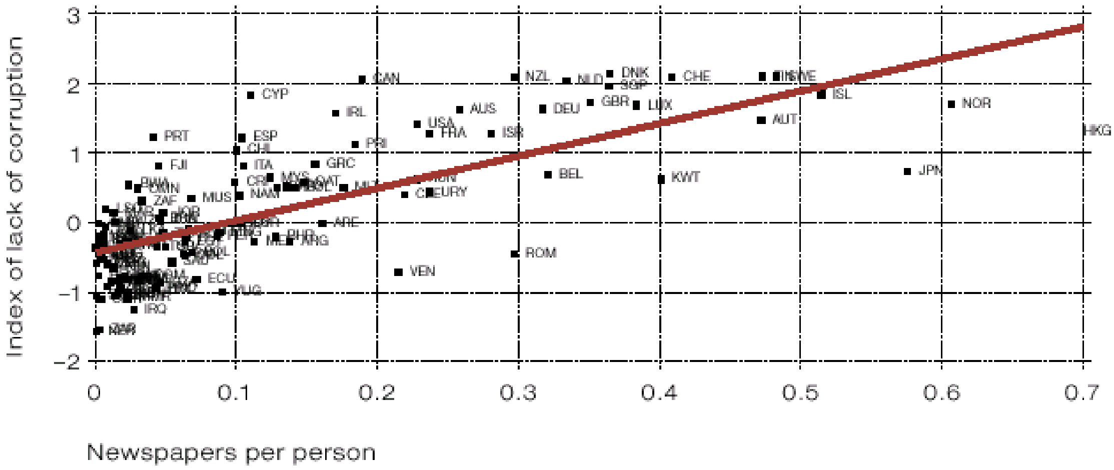
[1] Worcester (1995) in a study for the British general election campaign of 1992.

[2] "*The exercise of politics in contemporary America is very expensive, elections costs having increased an average of 125 percent with each quadrennial election year*". Crotty (1985) in a study for the US.

[3] In a study for the U.S.

the degree of information held by the citizens.[4] We show the data in Figure 1.

Figure 1: **Level of Corruption and Newspaper Circulation : 1997 -98**



Source : Adserà , Boix and Payne (2000).

The main objective of this paper is, therefore, to show that the media can improve the accuracy of electoral campaigns as signals of the candidates' real goals. To this aim, we propose a signalling game with three types of players: political parties, media outlets and voters. There are two political parties: a left-wing party and a right-wing one. From each of the two parties a candidate emerges, who can be either moderate or extreme. This is private information of each agent. The two candidates propose non-binding platforms, choosing either a moderate or an extreme platform. The aim of candidates is to win the election. Therefore, they may well choose a platform that does not correspond to their respective types if this were profitable to them. The aim of media is to maximize their profits (i.e. audience in the case of them being neutral; political benefits in the case of them being ideological). The aim of voters is to maximize their own utility, but as such utility is not defined on the platforms proposed by the parties but rather on the post-election policy, voters will want to know the true intentions of politicians (their types). Hence the role of media.

We start the analysis with the study of a benchmark case, where there is no media, and we show that in equilibrium candidates pool either at the moderate or at the extreme platform. We then analyze the case where there is a neutral media industry, i.e. outlets with no political preferences. We show that the existence of such an industry is desirable, as the media can induce politicians to discard the use of pooling strategies. We also show that the monitoring role of media is more likely to appear in

[4] Adserà, Boix and Payne (2000) write: "*More precisely, the extent to which politicians engage in rent-seeking behavior and other corrupt practices declines with: the presence of free and regular elections, which allow citizens to discipline politicians; the degree of information of citizens (measured through the frequency of newspapers readership), which curbs the opportunities politicians may have to engage in political corruption and mismanagement; and the involvement of citizens in politics (measured through electoral turnout)*".

societies with a large number of swing voters or with great competition among the media. Nevertheless, and since revealing (their types) is never an equilibrium for candidates, we allow politicians and media outlets to use mixed strategies. Here, we obtain that candidates tend to a certain extend to separate their types. Finally, we explore the case of an ideological media industry. The findings here show that if each candidate has the support of one outlet, then no distortion appears; but that asymmetries may arise when just one politician has the loyalty of the media. These results clearly show that ideology is not harmful *per se*, but asymmetries in the support of different candidates may well be.

There is little literature on the role of media in politics. Andina Díaz (2004a) considers the possibility that media influence the public in two different ways: they can reinforce viewers in their prior attitudes, and they can modify the attitude itself. The author studies, under the two set-ups, how media outlets compete when they are either profit-maximizers or ideology-motivated, showing that minimal (ideology) differentiation arises when the outlets compete for audience, whereas maximal differentiation results when they have important political incentives. Andina Díaz (2004b) focuses on the location decisions of political parties in a game where media create the candidates' charisma. The author shows that depending on the way voters attend to the media, the equilibrium location of candidates may differ. In particular, she states that political competition may end in polarization if voters only attend to the outlets that are ideologically close to their convictions. However, political moderation is easily reached if voters get information from various sources. Besley and Prat (2001) study the relationship between the media and the outcomes of a political system. They use an adverse selection model to capture the possible influencing effects of a bad government on the media industry, and they show that if this influence does exist, what deeply depends on the number of media outlets in the economy, then the role of media as a source of information is shadowed. Additionally, Besley and Burgess (2001) find empirical evidence, for Indian states, supporting the idea of a strong correlation between the level of circulation of newspapers and the responsiveness of the governments. Finally, Strömberg has a series of papers (2001) and (2004a), in which he analyzes the influence that the media have on the determination of policy outcomes. Thus, he shows that due to the increasing returns to scale of the media industry, a political bias appears, hurting smaller groups of voters while benefiting larger groups. This could somehow offset the bias introduced by interest groups (which favor these small groups), leading to more desirable policies. This author also analyzes the role of radio (2004b) in reaching heterogeneous groups of voters, and he concludes that counties with more radio listeners usually receive more government funds.

There is also some literature on the problem of the control of politicians. In particular, Barro (1973) and Ferejohn (1986) study how to induce office-holders to choose the policies preferred by the electorate rather than those preferred by themselves. They set up their models in dynamic contexts, and show that the presence of regular elections act as a monitor of the politicians' behavior.

Finally, our paper is also related to the literature on electoral campaigns. Banks (1990) and Harrington (1992) analyze the incentives of candidates to reveal their true policy preferences through the electoral process. In particular, Banks shows how the presence of costs that arise from proposing platforms different from their true intentions can make the electoral process more informative. Nevertheless, for costs to play a role, they should be understood as a punishment, which makes sense in a dynamic model.[5] On the other hand, Harrington proves that an informative equilibrium[6] does exist. However, this equilibrium relies on the condition of having non-powerful offices, i.e., not an absolute majority. The aim of our paper is somehow related to these studies, as we shall also look for the conditions under which candidates make informative speeches. Nevertheless, we introduce an additional player, i.e., media outlets, and we show that the revelation is more likely to occur when the media industry exists.

The paper is organized as follows. Section 2 presents the model and some basic ideas. Section 3 analyzes the benchmark case, where there is no media industry in the economy. In section 4 we introduce a neutral media industry (outlets with no political preference) and we analyze its implications. Section 5 studies the case of an ideological industry. Section 6 concludes.

2 The Model

Two political parties compete for office. The left-wing party is labelled L, and the right-wing party R. Political parties face an electorate of n citizens, where $n = n_{\mathcal{L}} + n_{\mathcal{C}} + n_{\mathcal{R}}$ is a finite and odd number. The group of left-wing agents is $n_{\mathcal{L}}$ and the right-wing is $n_{\mathcal{R}}$. The centrist agents are denoted by $n_{\mathcal{C}}$. We assume $n_{\mathcal{L}} = n_{\mathcal{R}}$, and so guarantee the median voter is in $n_{\mathcal{C}}$.

Prior to the general election, there is a round of primaries. From these internal elections two candidates emerge, who can be either moderate, M, or extreme, E, with $E \in \{L, R\}$ for the left and the right-wing parties respectively. Thus, the set of possible types is $T_{\mathsf{L}} = \{L, M\}$, $T_{\mathsf{R}} = \{R, M\}$ with $t_{\mathsf{L}} \in T_{\mathsf{L}}$, $t_{\mathsf{R}} \in T_{\mathsf{R}}$. A moderate candidate in party L can project himself as being either moderate or extreme. This means that he can propose either moderate, m, or extreme left, l, platforms. The same thing applies to the extreme candidate in party L, and for both types, M and R, in the right-wing party. Thus, the space of platforms is $\mathsf{P_L} = \{l, m\}$, $\mathsf{P_R} = \{r, m\}$ with $\mathsf{p_L} \in \mathsf{P_L}$, $\mathsf{p_R} \in \mathsf{P_R}$.

We propose a signaling game where Nature moves first and chooses the types of both candidates. A candidate's type is his own private information, although voters have priors on it. We denote the probability of candidate L being L (resp. M) as q_{L} (resp. $1 - q_{\mathsf{L}}$), and the probability of candidate R being R (resp. M) as q_{R} (resp. $1 - q_{\mathsf{R}}$). We interpret this as the priors agents have on the proportion of extreme and moderate politicians in each party.

A strategy for a candidate from party L is a function $\Upsilon_{\mathsf{L}} : T_{\mathsf{L}} \to \Delta(\{l, m\})$, and that of a candidate from party R is $\Upsilon_{\mathsf{R}} : T_{\mathsf{R}} \to \Delta(\{r, m\})$. These functions map the types of a candidate into the choice of a platform (allowing for stochastic decisions). Candidates' objective is to win the elections. However, and

[5] In fact Banks says: "*The presence of costs deserves some justification. One possible rational is that voters condition future behavior on past performance and announcements, in essence punishing candidates for past indiscretions. [...] then we can think of the announcements costs in the current model as summarizing the reduced form payoffs from a more dynamic, repeated elections model*".

[6] An equilibrium in which candidates truthfully reveal their types.

since we have a structure where candidates cannot propose party lines out of their ideological spaces, we argue that our parties are both office seeking and ideology motivated.

Voters' objective is to maximize utility, which is defined on the ex-post policy, i.e., the policy implemented by the elected candidate. Hence, voters maximize expected utility. The Bernoulli utilities are:

$$\begin{aligned} u_k(L) &> u_k(M) > u_k(R) \quad \forall k \in n_{\mathcal{L}} \\ u_k(R) &> u_k(M) > u_k(L) \quad \forall k \in n_{\mathcal{R}} \\ u_k(M) &> u_k(L) = u_k(R) \quad \forall k \in n_{\mathcal{C}} \end{aligned}$$

We assume that agents in $n_{\mathcal{L}}$ and $n_{\mathcal{R}}$ are captive voters, i.e., they always vote for the candidates L and R respectively.[7] Hence, the game focuses on the centrist voters, more specifically on the median voter, who can swing the outcome of the election. The median voter, and in general voters in $n_{\mathcal{C}}$, vote for the candidate that maximize their expected utilities. Thus, they will prefer L instead of R if they believe L to be more likely a moderate type than R. In the case of indifference, voters use mixed strategies. For the sake of simplicity, we restrict our attention to the case in which each candidate has a fifty per cent probability of being elected. Nevertheless, some of the results hold true when we consider voters who use any other mixed strategy or even a pure strategy. In such cases, a note is added.

There is a set $\mathcal{S} = \{1, 2, ..., s\}$ of media outlets. The objective of media outlets is to maximize audience, i.e., the fraction of voters that attend to the outlet. In order to increase the audience, an outlet can choose to investigate the candidates. This is so because we assume that centrist voters demand more information.[8] Thus, a media investigating and delivering new information about some candidate will attract the attention of the centrist voters, gaining audience over the other media outlets. In contrast, agents in $n_{\mathcal{L}}$ and $n_{\mathcal{R}}$ are captive voters, and therefore do not take information into account when deciding for whom to cast their votes. This means they do not prefer an outlet that has investigated, but rather pay equal attention to all. Hence, the audience of an outlet is $\frac{n_{\mathcal{L}}+n_{\mathcal{R}}}{s}$ plus the number of centrist voters it attracts.

Media outlets decide whether to investigate or not simultaneously and only after the candidates have proposed their platforms. When media outlets are neutral, they investigate both candidates, whereas when they are ideological, they choose to investigate just the non-preferred politician. We assume that when an outlet investigates, it observes the type/s of the candidate/s and informs the public about them. When no investigation is done, voters obtain no extra information. In such a case, the outlet is constrained to report what candidates have previously proposed in their campaigns. By $\mathsf{M}_i = \{lr, lm, mr, mm\}$ we denote the space of messages for an outlet i and by $\mathsf{m}_i \in \mathsf{M}_i$, $\forall i \in \mathcal{S} = \{1, 2, ..., s\}$ an element of this set.

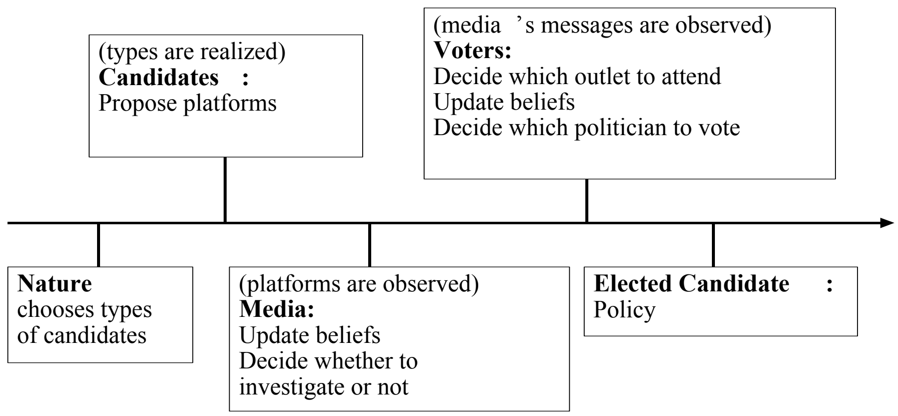
[7] This is an assumption only in the case of voters facing two candidates which are assigned a probability of being moderates equal to one. In any other case, voters in $n_{\mathcal{L}}$ (resp. $n_{\mathcal{R}}$) always prefer candidate L to R (resp. R to L).

[8] Centrist voters are swing voters, i.e., those who are not loyal to a specific candidate. Thus, it is natural to assume that they demand information, as they will take it into account when deciding for whom to vote.

A key assumption we make is that voters do not observe directly whether a particular outlet has chosen to investigate or not, but they infer it from what the media report. That is to say, voters do not observe neither the strategies nor the actions of the media, but only the messages they send. Because of this, and since we assume that no new information can be created, voters will know for sure that an outlet has investigated when it publishes something that is different from what a particular candidate has previously stated in his platform. In this case, the outlet will be rewarded for its investigation and it will gain the centrist voters. In contrast, if media report precisely what the candidates have stated in their platforms, the agents will not be aware of the investigation carried out by the media. This means that the voters are unable to distinguish between the outlets that have investigated and those that have not. In such a case, a media outlet cannot expect any extra audience by investigating the candidates. The direct implication of this assumption is that the outlets will investigate only when the voters can recognize that they have done such investigation. Finally, to investigate implies a strictly positive fixed cost, $K > 0$.

A strategy for an outlet i is a function $\Psi_i : \mathsf{P_L} \times \mathsf{P_R} \rightarrow \Delta(\{I, NI\})$ that maps the platforms proposed by the candidates into the choice of whether to investigate or not (allowing for stochastic decisions). A strategy for a centrist voter is a function $\Gamma_{\mathcal{C}} : \prod_{j=\mathsf{L},\mathsf{R}} \mathsf{P}_j \times \prod_{i=1}^{s} \mathsf{M}_i \rightarrow \Delta(\{\mathsf{L}, \mathsf{R}\})$ that maps the platforms received from both candidates and the messages received from the s media, into the choice of whom to vote for (allowing for stochastic decisions). Note that since voters in $n_{\mathcal{C}}$ and $n_{\mathcal{R}}$ are captive voters, they have no choice to make.

The timeline summarizing the sequence of decisions is depicted below.



Finally, the notion of equilibrium we use is the Perfect Bayesian Equilibrium, which, for this game, is a vector of strategies for candidates, media outlets and centrist voters, and a vector of beliefs for media outlets and centrist voters such that:

(i) Candidates maximize votes, media outlets maximize audience and centrist voters maximize utility.

(ii) The belief of the media on a candidate $j \in \{\mathsf{L}, \mathsf{R}\}$ is derived from Bayes' Rule, i.e.

$\forall \mathsf{p}_j \in \mathsf{P}_j$,

$\mu_j^*(t \mid \mathsf{p}_j) = \frac{\Upsilon_j^*(t)(\mathsf{p}_j)P(t)}{\sum_{t' \in T_j} \Upsilon_j^*(t')(\mathsf{p}_j)P(t')}$ $\forall t \in T_j$, whenever possible.

(iii) The belief of a centrist voter on a candidate $j \in \{\mathsf{L}, \mathsf{R}\}$ is derived from Bayes' Rule, i.e.

$\forall \mathsf{p}_\mathsf{L} \in \mathsf{P}_\mathsf{L}$, $\forall \mathsf{p}_\mathsf{R} \in \mathsf{P}_\mathsf{R}$, $\forall \mathsf{m}_i \in \mathsf{M}_i$,

$\gamma_j^*(t \mid \mathsf{p}_\mathsf{L}, \mathsf{p}_\mathsf{R}, \{\mathsf{m}_i\}_{i \in \mathcal{S}}) = \frac{\xi_j(\{\mathsf{m}_i\}_{i \in \mathcal{S}} | \mathsf{p}_\mathsf{L}, \mathsf{p}_\mathsf{R}; t)\Upsilon_j^*(t)(\mathsf{p}_j)P(t)}{\sum_{t' \in T_j} \xi_j(\{\mathsf{m}_i\}_{i \in \mathcal{S}} | \mathsf{p}_\mathsf{L}, \mathsf{p}_\mathsf{R}; t')\Upsilon_j^*(t')(\mathsf{p}_j)P(t')}$ $\forall t \in T_j$, whenever possible.[9]

3 A Benchmark: The Case without Media

In an economy without a media industry, all the agents know about the candidates is what they themselves state. Therefore, as parties do not lose anything (votes, reputation...) from not being truthful, but can derive an advantage from lying, it is clear that politicians do not have any incentive to make informative speeches.

We denote by $x_\mathsf{L} \in [0, 1]$ (resp. x_R) the belief voters assign to candidate L (resp. R) L being (resp. R) off the equilibrium path. The following proposition states the results that hold in this scenario. It says that only pooling equilibria exist, i.e., equilibria where different types of candidates propose the same platform, which means that they do not make informative speeches.

Proposition 1 *In pure strategies only pooling equilibria exist. Candidates can propose either moderate or extreme platforms and the voters' beliefs off the equilibrium path must satisfy:*

(a) $x_\mathsf{L} > q_\mathsf{R}$ *if* $q_\mathsf{L} > q_\mathsf{R}$.

(b) $x_\mathsf{R} > q_\mathsf{L}$ *if* $q_\mathsf{R} > q_\mathsf{L}$.

(c) $\min\{x_\mathsf{L}, x_\mathsf{R}\} \geq q$, *if* $q_\mathsf{L} = q_\mathsf{R} = q$.

Proof. (i) We first prove that there are no separating equilibria, either truthful or untruthful. Let us consider such a hypothetical separating equilibrium. Here, voters' beliefs are such that they assign a probability of the candidate being moderate equal to one, when the message he sends is the one that the true moderate sends in equilibrium. Then, at least one of the extreme types will find it profitable to mimic the program sent by the moderate type in his party, as in this case voters will recognize him as a truthful moderate and will vote for him.[10]

(ii) We shall now prove that there are no equilibria in which one candidate separates and the other pools. Let us consider such a hypothetical equilibrium. Here, the extreme candidate who separates has an incentive to deviate. This is because the use of his equilibrium platform is a signal of his type (extreme). Likewise, the use of the platform proposed by the moderate type is a signal of his being a moderate.

[9] Where $\xi_j(\{\mathsf{m}_i\}_{i \in \mathcal{S}} \mid \mathsf{p}_\mathsf{L}, \mathsf{p}_\mathsf{R}; t)$ is the probability that the media send the messages $\{\mathsf{m}_i\}_{i \in \mathcal{S}}$, when the candidates have proposed the platforms $\mathsf{p}_\mathsf{L}, \mathsf{p}_\mathsf{R}$ being $t \in T_j$ the type of the candidate j.

[10] One can easily prove that the same reasoning applies when the voters use pure strategies in the case of their being indifferent. The result is therefore robust to these sorts of changes.

Hence, the extreme type will always find it profitable to mimic the platform proposed by the moderate candidate, because this affords him more political support.[11]

(iii) Our next step is to prove that there are equilibria in which candidates pool if conditions (a) or (b) are satisfied. Without loss of generality, let us consider the case $q_{\mathsf{L}} > q_{\mathsf{R}}$. This implies that candidate L is never elected in equilibrium. This is also the case when, by deviating, he is assigned a higher probability of being extreme than candidate R, i.e., when $x_{\mathsf{L}} > q_{\mathsf{R}}$. Thus, $x_{\mathsf{L}} > q_{\mathsf{R}}$ guarantees the existence of pooling equilibria when $q_{\mathsf{L}} > q_{\mathsf{R}}$.[12]

(iv) Finally, we prove that there are equilibria in which candidates pool if $q_{\mathsf{L}} = q_{\mathsf{R}} = q$ and $q \leq \min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$. If $q_{\mathsf{L}} = q_{\mathsf{R}} = q$, candidates get one half of the centrist votes by playing their equilibrium strategies. The additional requirement $q \leq \min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$ implies that politicians do not find it strictly profitable to deviate, as a deviation, in this case, will be understood as a signal of being extreme with an equal or even greater probability. Thus, $q \leq \min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$ guarantees the existence of pooling equilibria when $q_{\mathsf{L}} = q_{\mathsf{R}} = q$.[13] ■

4 Neutral Media

By the term "neutral media" we imply media outlets that have no political preference and, therefore, do not favor any of the candidates. This is the case of the television in the U.K., where there is a CODE[14] that regulates political news, calling for impartiality and neutrality. It is also the case of the BBC radio, which a recent study reveals is perceived as neutral and therefore trusted by the 78% of the UK citizens, while the government, for example, deserves the trust of just 19%.[15]

[11] Here also, the same reasoning holds for any other kind of strategy followed by the voters in the case of their being indifferent.

[12] In these equilibria, there is always one type for each candidate that is cheating, even though they do not gain any additional votes from this sort of behavior. Hence, we could argue that such candidates would prefer to deviate from their cheating behavior and be truthful instead, because their payoffs would not change anyway. Therefore, if candidates are ethical in the case of their being indifferent, no pooling equilibria exist when $q_{\mathsf{L}} \neq q_{\mathsf{R}}$. Additionally, the reasoning in the proof holds true when the indifferent voters use any other mixed or pure strategy. The result is therefore robust to these sorts of changes.

[13] This result is robust to changes in the probabilities voters use when they are indifferent between the candidates. More precisely, the result holds true for values α, β, δ satisfying some conditions according to the probabilities q, x_{L} and x_{R}; where α is the proportion of centrist voters who vote for the left-wing candidate in the case of both candidates proposing the same policy; β is the proportion of centrist voters who vote for L when, in the case of candidate R deviating, are indifferent; and δ is the proportion of centrist voters who vote for L when, in the case of candidate L deviating, are indifferent. Recall that the value of the parameters we use in the proof is one-half. Additionally, note that if candidates prefer to be truthful in the case of their cheating affording them no additional votes, the condition for the existence of such equilibria is stronger. Specifically, it is $q < \min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$.

[14] "*The Broadcasting Act 1990 makes it the statutory duty of the ITC (Independent Television Commission) to draw up, and from time to time, review a code giving guidance as to the rules to be observed for the purpose of preserving due impartiality on the part of licensees as respects matters of political or industrial controversy or relating to current public policy* ". The ITC Programme Code.

[15] *Readers Digest* in a study on the institutions that UK citizens trust. The information is from "El Pais", April 4, 2004.

Recall that the voters vote for the candidate that maximizes their own expected utility, and that, in the case of their being indifferent, each politician is elected with one half probability. The expected utility that a voter derives from a certain candidate is contingent on her belief regarding the type of the politician. Such a belief depends not only on the platforms proposed by the politicians, but also on the information published by the media. For the beliefs in the equilibrium path, the Bayes' Rule applies. For those off the equilibrium path, we assume that voters trust the media whenever they investigate;[16] and voters form beliefs $x_{\mathsf{j}} \in [0,1]$, with $\mathsf{j} \in \{\mathsf{L}, \mathsf{R}\}$, whenever no investigation is done. We argue that media outlets cannot lie, so that information obtained by investigating is hard evidence, and therefore voters trust them. We call this assumption TM. Thus, whenever the media report something different about a candidate's type, the voters identify the candidate as a liar and punish him by voting for his opponent. Such punishment is enacted when the voters are indifferent between the two candidates and one of them has cheated. We denote the punishment the liar suffers by LP. We now clarify how in some cases LP determines the strategies of the centrist voters:[17]

$$\Gamma^*_{\mathcal{C}}(lm, \{lr\}_i) = \mathsf{L} \qquad \Gamma^*_{\mathcal{C}}(mr, \{mm\}_i) = \mathsf{L}$$
$$\Gamma^*_{\mathcal{C}}(lm, \{mm\}_i) = \mathsf{R} \qquad \Gamma^*_{\mathcal{C}}(mr, \{lr\}_i) = \mathsf{R}$$

where $\Gamma^*_{\mathcal{C}}(lm, \{lr\}_i) = \mathsf{L}$ means that the centrists vote for candidate L when the platform profile the voters observe from candidates is (lm), and the message profile the voters receive from at least one media is (lr).

We start by analyzing the case of a monopoly, and show that the results in such a case are analogous to those obtained in the previous section. We then study the case of a duopoly, and show that when the media outlets always investigate, there is no equilibrium in pure strategies. Next, we extend the model to the case of s outlets, and show that the monitoring role of media arises more easily when the competition among the outlets increases. Finally, we analyze the mixed strategies equilibrium.

■ The Monopoly Case

Let us suppose that there is just one media outlet in the industry. This might well be the case in some non-democratic or undeveloped countries, where the media is a state monopoly. Evidence for these countries shows that a high degree of corruption is common, corruption meaning a lack of free media.[18] In this section, we neither model ideological media nor government manipulation.[19] We therefore perform no positive analysis of such countries. Even so, the analysis we carry out is helpful as it shows that the existence of a monopoly is not sufficient to control the politicians' behavior.

Let us suppose that there is a monopoly. In such a case, the outlet chooses not to investigate, as it is a dominant strategy given its position. The candidates would therefore behave as though no media industry existed in the economy, and they would make uninformative speeches.

[16] Specifically, we just need the voters to trust in the media more than in the candidates.

[17] LP determines the vote of an agent when, in the case of indifference, there is a candidate who has cheated.

[18] Adserà, Boix and Payne (2000).

[19] Besley and Prat (2001) show how collusion between government and media can undermine the role the latter plays in informing voters.

■ The Duopoly Case

This is the case of two media outlets. Here we show that a duopoly is not sufficient for a truthful separating equilibrium to exist, i.e., an equilibrium where the candidates reveal their true types. The reason for this is that, in the case of candidates separating their types, no media outlet chooses to investigate, and therefore, the candidates do better by pooling than by separating. In fact, this is so for any number of media outlets in the economy.

Let θ be the generic probability that the media assign to both candidates being truthful in a particular equilibrium. Note that θ might be different in every subgame. Thus, the probability θ is $\mu^*_{\mathsf{L}}(L \mid l)\mu^*_{\mathsf{R}}(R \mid r)$, $\mu^*_{\mathsf{L}}(L \mid l)\mu^*_{\mathsf{R}}(\mathsf{M} \mid m)$, $\mu^*_{\mathsf{L}}(M \mid m)\mu^*_{\mathsf{R}}(R \mid r)$ or $\mu^*_{\mathsf{L}}(M \mid m)\mu^*_{\mathsf{R}}(M \mid m)$, when the platform profile the media observe are either (l, r), (l, m), (m, r) or (m, m), respectively. We provide an example that helps make this point. Let us consider a hypothetical equilibrium where $\Upsilon^*_{\mathsf{L}}(L) = l$, $\Upsilon^*_{\mathsf{L}}(M) = l$, $\Upsilon^*_{\mathsf{R}}(R) = m$, $\Upsilon^*_{\mathsf{R}}(M) = m$. In this case, there are four possible situations: (i) The media outlets observe the equilibrium platform profile (l, m). Here, $\theta = q_{\mathsf{L}}(1 - q_{\mathsf{R}})$. (ii) The candidate R deviates. Then, the platform profile the media observe is (l, r), and therefore $\theta = q_{\mathsf{L}} x_{\mathsf{R}}$. (iii) The candidate L deviates. The platform profile the outlets observe is (m, m), and then $\theta = (1 - x_{\mathsf{L}})(1 - q_{\mathsf{R}})$. (iv) Both candidates deviate, and the platform profile the media observe is (m, r). Therefore $\theta = (1 - x_{\mathsf{L}})x_{\mathsf{R}}$.

We now present the results for the media sector. The idea of the proposition below is that, in equilibrium, either both media outlets investigate or neither of them does. This happens unless $\frac{1-\theta}{2} n_{\mathcal{C}} = K$, in which case any choice made by the outlets constitutes an equilibrium.

Proposition 2 *In the duopoly case, and for each platform profile, the media outlets play a game in which "to investigate" is a dominant strategy if $\frac{1-\theta}{2} n_{\mathcal{C}} > K$, and "not to investigate" is dominant if $\frac{1-\theta}{2} n_{\mathcal{C}} < K$. Additionally, if $\frac{1-\theta}{2} n_{\mathcal{C}} = K$, any choice made by the outlets constitutes an equilibrium.*

Proof. The generic game the media outlets play has payoffs:

1╲2	I	NI
I	$\frac{1}{2} n_{\mathcal{C}} - K, \frac{1}{2} n_{\mathcal{C}} - K$	$\frac{2-\theta}{2} n_{\mathcal{C}} - K, \frac{\theta}{2} n_{\mathcal{C}}$
NI	$\frac{\theta}{2} n_{\mathcal{C}}, \frac{2-\theta}{2} n_{\mathcal{C}} - K$	$\frac{1}{2} n_{\mathcal{C}}, \frac{1}{2} n_{\mathcal{C}}$

Here, "to investigate" is a dominant strategy if $\frac{1-\theta}{2} n_{\mathcal{C}} > K$, whereas "not to investigate" is dominant if $\frac{1-\theta}{2} n_{\mathcal{C}} < K$. In the case $\frac{1-\theta}{2} n_{\mathcal{C}} = K$, either of the two outlets receives the same payoff regardless of its strategy. Therefore, any choice made by the outlets constitutes an equilibrium. ■

Note that although the voters know the values of $n_{\mathcal{C}}$, K and θ and, therefore, know whether "to investigate"/"not to investigate" is a dominant strategy, they cannot infer anything with regard to the cases where only one outlet investigates. Hence the payoffs of the matrix. Note also that although the prevailing equilibrium of the above game depends on the values of $n_{\mathcal{C}}$, K and θ in the specific subgame, we know that the larger the number of centrist voters, the smaller the costs, or the smaller the value of θ, the more profitable is to investigate. This is what Corollary 1 says.

Corollary 1 *Media investigation is more likely in societies with larger numbers of centrist voters, lower costs, or with politicians who are suspected of cheating.*

The following proposition gives the results for the entire game, where we consider pure strategy profiles.

Proposition 3 *In the duopoly case and in pure strategies:*

(i) *There is no equilibrium in which the media investigate for every platform profile.*

(ii) *There is no equilibrium in which at least one candidate separates, and the media do not investigate for every platform profile.*

(iii) *There are equilibria in which the candidates pool, the media never investigate, and the voters' beliefs off the equilibrium path are:*

(a) $x_{\mathsf{L}} > q_{\mathsf{R}}$ *if* $q_{\mathsf{L}} > q_{\mathsf{R}}$,

(b) $x_{\mathsf{R}} > q_{\mathsf{L}}$ *if* $q_{\mathsf{R}} > q_{\mathsf{L}}$,

(c) $\min\{x_{\mathsf{L}}, x_{\mathsf{R}}\} \geq q$, *if* $q_{\mathsf{L}} = q_{\mathsf{R}} = q$,

where $x_{\mathsf{L}} \in [0,1]$ *(resp.* x_{R}*) is the belief voters assign to candidate* L *(resp.* R*) L being (resp. R) off the equilibrium path, when the media do not investigate.*

Proof. (i) Let us consider a hypothetical equilibrium where $\frac{1-\theta}{2}n_{\mathcal{C}} > K$ for every platform profile. Given the strategies of the outlets, the voters' beliefs are $\gamma_j^*(E \mid p_j, p_k, (\mathsf{m}^j = e, \mathsf{m}^k)) = 1$, $\gamma_j^*(M \mid p_j, p_k, (\mathsf{m}^j = m, \mathsf{m}^k)) = 1$.[20] Note that for some of the cases we use the assumption TM. Given these beliefs, the extreme candidates always prefer to reveal their types rather than cheat. This is because the payoff of the extreme candidate j, when he reveals, is either $q_k(n_j + n_{\mathcal{C}}) + (1-q_k)n_j$ if $\Upsilon_k^*(E) = m$, or $q_k(n_j + \frac{1}{2}n_{\mathcal{C}}) + (1-q_k)n_j$ if $\Upsilon_k^*(E) = e$; whereas his payoff, if he cheats, is either $q_k(n_j + \frac{1}{2}n_{\mathcal{C}}) + (1-q_k)n_j$ if $\Upsilon_k^*(E) = m$, or $q_k n_j + (1-q_k)n_j$ if $\Upsilon_k^*(E) = e$. Thus, the extreme candidates prefer to be truthful.[21] Using analogous arguments, we prove that moderate candidates also prefer to reveal. But if the candidates truthfully separate their types, then $\theta = 1$, and therefore $\frac{1-\theta}{2}n_{\mathcal{C}} < K$, which contradicts the initial assumption. Thus, there is no equilibrium in which the candidates use pure strategies and the media outlets investigate for every platform profile.[22]

(ii) Let us consider a hypothetical equilibrium in which at least one candidate separates and the outlets do not investigate for every platform profile. Here, voters' beliefs coincide with those of the media for the messages that in equilibrium are sent with positive probability. This includes the beliefs on the candidate that separates. Hence, voters' best responses, following these messages, coincide with those in the model without media. Therefore, from point (ii) of Proposition 1, we know that the extreme candidate who

[20] Recall that in the case of $s = 2$, when $\frac{1-\theta}{2}n_{\mathcal{C}} > K$, both media outlets investigate in equilibrium. Hence, m gathers all the information in $\{\mathsf{m}_i\}_{i\in\mathcal{S}=\{1,2\}}$, and we can therefore write $\gamma_j^*(t \mid \mathsf{p_L}, \mathsf{p_L}, \mathsf{m})$ instead of $\gamma_j^*(t \mid \mathsf{p_L}, \mathsf{p_L}, \{\mathsf{m}_i\}_{i\in\mathcal{S}})$.

[21] We use LP.

[22] This result holds true for any other mixed strategy that the indifferent voters use.

separates will want to deviate. Thus, there is no equilibrium in which at least one candidate separates and the outlets do not investigate for every platform profile.[23]

(iii) Let us now suppose a hypothetical equilibrium in which $\frac{1-\theta}{2}n_{\mathcal{C}} < K$ for every platform profile. Let us consider that candidate L pools at a generic platform $\widehat{p}_{\mathsf{L}}$, and candidate R does so at $\widehat{p}_{\mathsf{R}}$. Voters' beliefs coincide with those of the media for the messages $\widehat{p}_{\mathsf{L}}$, $\widehat{p}_{\mathsf{R}}$, i.e., those that, in equilibrium, are sent with positive probability. For any other message off the equilibrium path, $\overline{p}_{\mathsf{L}}$, $\overline{p}_{\mathsf{R}}$, voters' beliefs on candidate j are $\{\gamma_j^*(t \mid \overline{p}_j, p_k, (\mathsf{m}^j = \overline{p}_j, \mathsf{m}^k)\}_{t \in T_j}$, which we denote as x_j, for $j \in \{\mathsf{L}, \mathsf{R}\}$, for the sake of simplicity. The payoff of candidate j in playing $\widehat{p}_j$ is either n_j if $q_j > q_k$; $n_j + \frac{1}{2}n_C$ if $q_{\mathsf{L}} = q_{\mathsf{R}} = q$; or $n_j + n_C$ if $q_j < q_k$, for $j \in \{\mathsf{L}, \mathsf{R}\}$. For an equilibrium to hold, candidates must not gain from a deviation. This means that voters' beliefs off the equilibrium path must satisfy:

(a) $x_{\mathsf{L}} > q_{\mathsf{R}}$ if $q_{\mathsf{L}} > q_{\mathsf{R}}$.

(b) $x_{\mathsf{R}} > q_{\mathsf{L}}$ if $q_{\mathsf{R}} > q_{\mathsf{L}}$.

(c) $\min\{x_{\mathsf{L}}, x_{\mathsf{R}}\} \geq q$, if $q_{\mathsf{L}} = q_{\mathsf{R}} = q$.

The reader can easily verify that such restrictions do not contradict $\frac{1-\theta}{2}n_{\mathcal{C}} < K$, and the media outlets are therefore not interested in deviating. Thus, there are equilibria in which the candidates pool and the outlets do never investigate.[24] ■

Proposition 3 refers to cases in which the media outlets either always investigate or never do so. There are, however, other possibilities. For instance, the media outlets could find it profitable to investigate in equilibrium but not off the equilibrium path, or the other way round.[25] To this respect, we should point out that only pooling equilibria exist, although we do not go into further details.

■ The Oligopoly Case

We now focus on situations in which the media industry is composed of more than two outlets, which is often the case in democratic or better-developed countries. Empirical evidence shows that greater competition among the media is usually linked to healthier democracies.[26] Our aim in this section is to verify how well our model fits such empirical evidence.

To this aim, we analyze our game in the context of more than two media outlets, and observe that in such a case, the strategy "to investigate" is more profitable than it was before. This is so because the greater the competition, the smaller the audience of any outlet that does not investigate. Thus, the greater the number of media outlets, the larger the incentive to investigate, and therefore, the easier it is the control of the politicians' behavior.

Let us denote the number of media outlets that choose to investigate by s_1, and the number of them that choose not to so by s_2, with $s_1 + s_2 = s \geq 2$. Next, we solve for the number of media outlets in s_1 and s_2, which depends on the critical value $\frac{(1-\theta)}{K}n_{\mathcal{C}}$, i.e., on the profitability of investigating.

[23] As in point (ii) of Proposition 1, this reasoning holds true for any other strategy followed by the indifferent voters.

[24] Note that if the candidates are ethical, when cheating gives them no additional support, the number of equilibria is lower. In particular, the only equilibria that survive are those satisfying condition (c) with a strict inequality.

[25] This depends on the values of $n_{\mathcal{C}}$, K and θ in each corresponding subgame.

[26] Remember Figure 1.

Proposition 4 *In the oligopoly case:*

If $\frac{(1-\theta)}{K}n_{\mathcal{C}} \leq 1$, *then* $s_1 = 0$.

If $1 < \frac{(1-\theta)}{K}n_{\mathcal{C}} < 2$ *and* $s = 2$, *then* $s_1 = 0$.

If $1 < \frac{(1-\theta)}{K}n_{\mathcal{C}} < 2$ *and* $s > 2$, *then* $s_1 = 0$ *if* $1 < (1-\theta)\frac{n_{\mathcal{C}}}{K} \leq \frac{1}{[1-\frac{1}{s}]}$, *and* $s_1 = 1$ *if* $\frac{1}{[1-\frac{1}{s}]} \leq (1-\theta)\frac{n_{\mathcal{C}}}{K} < 2$.

If $\frac{(1-\theta)}{K}n_{\mathcal{C}} = 2$ *and* $s = 2$, *then* $s_1 = 0$, $s_1 = 1$ *or* $s_1 = 2$.

If $\frac{(1-\theta)}{K}n_{\mathcal{C}} = 2$ *and* $s > 2$, *then* $s_1 = 1$ *or* $s_1 = 2$.

If $\frac{(1-\theta)}{K}n_{\mathcal{C}} \in [2, s]\backslash\{2, 3, ..., s\}$, *then* $s_1 = \lfloor\frac{(1-\theta)}{K}n_{\mathcal{C}}\rfloor$.

If $\frac{(1-\theta)}{K}n_{\mathcal{C}} \in \{2, 3, ..., s\}$, *then* $s_1 = \frac{(1-\theta)}{K}n_{\mathcal{C}}$ *or* $s_1 = \frac{(1-\theta)}{K}n_{\mathcal{C}} - 1$.

If $\frac{(1-\theta)}{K}n_{\mathcal{C}} \geq s$, *then* $s_1 = s$.

Proof. Let $S_1 = \{i \in S \ / \ \Psi_i^*(\mathsf{p_L}, \mathsf{p_R})(I) > 0\}$ and $S_2 = \{i \in S \ / \ \Psi_i^*(\mathsf{p_L}, \mathsf{p_R})(NI) > 0\}$.

The payoff of an outlet $i \in S_2$ is $\frac{\theta}{s}n_{\mathcal{C}}$ if $s_1 \geq 1$ and $\frac{n_{\mathcal{C}}}{s}$ if $s_1 = 0$. On the other hand, the payoff of an outlet $i \in S_1$ is $\frac{\theta}{s}n_{\mathcal{C}} + \frac{(1-\theta)}{s_1}n_{\mathcal{C}} - K$.

In equilibrium, neither do the media outlets in S_2 want to join S_1, nor do those in S_1 want to join S_2. That is to say,

$\frac{\theta}{s}n_{\mathcal{C}} \geq \frac{\theta}{s}n_{\mathcal{C}} + \frac{(1-\theta)}{s_1+1}n_{\mathcal{C}} - K$ when $0 < s_2 < s$,

$\frac{n_{\mathcal{C}}}{s} \geq \frac{\theta}{s}n_{\mathcal{C}} + (1-\theta)n_{\mathcal{C}} - K$ when $s_2 = s$,

$\frac{\theta}{s}n_{\mathcal{C}} + \frac{(1-\theta)}{s_1}n_{\mathcal{C}} - K \geq \frac{\theta}{s}n_{\mathcal{C}}$ when $s_1 > 1$,

$\frac{\theta}{s}n_{\mathcal{C}} + (1-\theta)n_{\mathcal{C}} - K \geq \frac{n_{\mathcal{C}}}{s}$ when $s_1 = 1$.

Rearranging, we have:

$\frac{(1-\theta)}{K}n_{\mathcal{C}} - 1 \leq s_1$ if $s > s_1 \geq 1$; $\frac{(1-\theta)}{K}n_{\mathcal{C}} \geq s_1$ if $s_1 > 1$; $(1-\theta)\frac{n_{\mathcal{C}}}{K}[1 - \frac{1}{s}] \geq 1$ if $s_1 = 1$; and $(1-\theta)\frac{n_{\mathcal{C}}}{K}[1 - \frac{1}{s}] \leq 1$ if $s_1 = 0$,

and rewriting, we obtain the conditions in Proposition 4. ■

Recall that θ varies with the platform profile. Therefore, the conditions in Proposition 4 must apply correctly in every subgame.

In Proposition 4, we consider $s = 2$ as a particular case of the oligopoly set-up. The results for this case are the same as those we obtained from the duopoly analysis. That is to say, either $s_1 = 0$ or $s_1 = 2$ are possible in equilibrium, except when $\frac{(1-\theta)}{2}n_{\mathcal{C}} = K$, in which case $s_1 = 0, s_1 = 1$ or $s_1 = 2$. The main point of the proposition is that, as s increases, the game the media outlets play no longer has an equilibrium in dominant strategies, which implies that the likelihood of an outlet investigating increases. We formalize this idea in Corollary 2.

Corollary 2 *Ceteris paribus, an increase in the number of media outlets makes finding a situation in which at least one outlet investigates more likely.*

Proof. Let us consider a situation where $s_2 = s$, i.e., no media outlet investigates.

In such a situation, if one outlet decides to investigate, it would be profitable if $\frac{\theta}{s}n_{\mathcal{C}} + (1-\theta)n_{\mathcal{C}} - K > \frac{1}{s}n_{\mathcal{C}}$. That is to say, if $(1-\theta)\frac{s-1}{s}n_{\mathcal{C}} > K$.

Here, note that $\frac{s-1}{s} \geq \frac{1}{2}$ $\forall s \geq 2$, and recall that $(1-\theta)\frac{1}{2}n_{\mathcal{C}} > K$ is the condition that makes the investigation in the duopoly set-up profitable. This completes the proof. ■

The idea of the proof is that the audience gained by the first outlet that chooses to investigate increases with the size of the industry. Hence, there will be values of K for which it was not profitable to investigate before, when $s = 2$, but for which it now is.

We can therefore state that competition among the media is desirable, as it induces outlets to investigate under weaker conditions. This is an important result, because the existence of at least one outlet investigating is enough to guarantee the use of separating strategies by the candidates. But in such a case, no investigation will be done, as the use of this type of strategy by the candidates, makes investigation unprofitable. To summarize then, as s increases, it becomes more likely that at least one outlet will decide to investigate. In such a case, and if this occurs for any platform profile, no equilibrium will exist in pure strategies. Hence, the natural next step is to look for equilibrium in mixed strategies.

■ Symmetric Mixed Strategies Equilibrium

We consider candidates and media outlets that make stochastic decisions. The reason we do so is because as the number of media outlets increases, the likelihood of an equilibrium where no investigation is done decreases. This means that for a high enough number of media outlets, it is quite likely that at least one of them will decide to investigate. We know that in such a case the candidates have a clear best response: to reveal their types. But we also know that in such a case, the media outlets have also a best response: not to investigate. We solve this inconsistency by allowing candidates and media outlets to use mixed strategies.

We assume $q_{\mathsf{L}} = q_{\mathsf{R}} = q$, and we focus on the symmetric mixed strategies equilibrium. For the sake of simplicity, we also assume that the moderate types do not propose extreme platforms. Hence, we just have to define the probability of the extreme types proposing an extreme platform, p; and the probability of the extreme types proposing a moderate platform, $1-p$.

Recall that the media outlets decide whether to investigate the politicians only after they have observed the platforms proposed by the candidates. This means that the probability of the media investigating varies, depending on the platform profile observed in equilibrium. Thus, we have to define three probabilities, which correspond to the three different situations the media can face. Let us denote the probability that an outlet investigates when it observes the profile (l, r) by z_1. Let z_2 be the probability that an outlet investigates when the profile observed is either (l, m) or (m, r). Finally, let z_3 be the probability that an outlet investigates when it observes the profile (m, m). Thus, $(1 - z_i)^s$ with $i \in \{1, 2, 3\}$, is the probability that no media outlet investigates in situation i, and $1 - (1 - z_i)^s$ is the probability that at least one does. We now outline the conditions that define the symmetric mixed strategies equilibrium.

Proposition 5 *In the symmetric mixed strategies equilibrium:*

(*a*) *Moderate types propose moderate platforms with a probability of one.*

(*b*) *Media investigate with a probability of zero when the platform profile observed is* (l, r).

(c) *Extreme types propose extreme platforms with a probability of p, the media investigate with a probability of z_2 when the platform profile observed is either (l, m) or (m, r), and with a probability of z_3 when the profile observed is (m, m). The probabilities p, z_2 and z_3 are implicitly defined by the following three equations:*

$$q\frac{1}{2}n_{\mathcal{C}} - (1-z_2)^s q n_{\mathcal{C}} - (1-z_3)^s (1-q)\frac{1}{2}n_{\mathcal{C}} = 0$$

$$\frac{q(1-p)}{1-pq}\left[\frac{n_{\mathcal{C}}}{s}(1-z_2)^{s-1} - \sum_{j=0}^{s-1}\begin{pmatrix} s-1 \\ j \end{pmatrix} z_2^j (1-z_2)^{s-j-1}\frac{n_{\mathcal{C}}}{j+1}\right] + K = 0$$

$$\left[1 - \frac{(1-q)^2}{(1-pq)^2}\right]\left[\frac{n_{\mathcal{C}}}{s}(1-z_3)^{s-1} - \sum_{j=0}^{s-1}\begin{pmatrix} s-1 \\ j \end{pmatrix} z_3^j (1-z_3)^{s-j-1}\frac{n_{\mathcal{C}}}{j+1}\right] + K = 0$$

Proof. In the appendix. ■

As we cannot procure generic expressions for the probabilities p, z_2 and z_3, and therefore cannot do a comparative static analysis, we provide an example that gives an intuition on the way the mixed strategies equilibrium goes.

Table 2: **A comparison of the equilibrium values for three and four media outlets**

	p		**z1**		**z2**		**z3**	
	s=3	**s=4**	**s=3**	**s=4**	**s=3**	**s=4**	**s=3**	**s=4**
nc=100 k=15 q=0.3	0.2186	0.2755	0	0	0.2063	0.1648	0.9745	0.6714
nc=100 k=40 q=0.3	0	0	0	0	0	0	0	0
nc=125 k=15 q=0.3	0.4141	0.4553	0	0	0.2062	0.1634	1	0.6933
nc=100 k=15 q=0.7	0.8564	0.8677	0	0	0.2063	0.1602	0.9745	0.6677
nc=100 k=40 q=0.7	0.1268	0.2594	0	0	0.211	0.1673	0.6541	0.4519
nc=125 k=15 q=0.7	0.8923	0.9004	0	0	0.2062	0.1599	1	0.6904

The table above presents the equilibrium values for the probabilities p, z_1, z_2 and z_3, for different values for the parameters $n_{\mathcal{C}}, K$ and q. We present the data for the cases of three and four media outlets.

Note that when $n_{\mathcal{C}} = 100$, $K = 40$ and $q = 0.3$ we have zeros. This means that the equilibrium is in pure strategies. In particular, for this parameters configuration, we obtain that there is an equilibrium in which the candidates pool at the moderate platform (hence $p = 0$), the media outlets never investigate (hence $z_i = 0 \; \forall i \in \{1, 2, 3\}$), and x_{L}, x_{R} are close to 0.7. Going back to the table, the data suggests that: (*i*) An increase in q, increases the probability of the candidates proposing the extreme platforms. (*ii*) An increase in K for small values of q, makes investigation unprofitable. The equilibrium will be therefore in pure strategies. On the other hand, an increase in K for high values of q, implies a decrease in the probability of the outlets choosing to investigate. Therefore, the candidates increase their probability of proposing the moderate platform. (*iii*) A rise in $n_{\mathcal{C}}$ increases the profitability of investigation, and therefore reduces the probability of the candidates sending the moderate proposal. (*iv*) Finally, an increase in s implies a decrease in the probability that an outlet investigates. One possible explanation for this is that the already existing outlets have to accommodate the entrance of the new firm and, therefore, have to reduce both z_2 and z_3. This in turn will lead to an increase in the probability of both candidates proposing extreme platforms, because the probability of at least one outlet investigating is greater when $s = 4$ than when $s = 3$.

To summarize then, a rise in the parameters q, $n_{\mathcal{C}}$ and s, implies an increase in the probability that the candidates propose an extreme platform. On the other hand, a rise in K implies an increase in the probability that the candidates propose a moderate platform. Additionally, and more importantly, we observe that the higher the number of media outlets in the economy, the greater the probability that an extreme candidate proposes an extreme platform. That is to say, the fiercer the competition among the media is, the more the candidates tend to separate their types. Then, we cannot have an informative equilibrium,[27] but despite this, we obtain that such an equilibrium is approached when the candidates and the media outlets use mixed strategies and there is a certain number of outlets competing in the industry. Hence, the first policy guide-line we propose is that media competition should be fostered, as it is a good way of monitoring politicians' behavior.

5 Ideological Media

One question to be addressed is the extent to which previous results are robust to the existence of an ideological media industry. By ideological media we mean media outlets that have a political preference and therefore try to favor a given candidate. An example of ideological outlets are newspapers in the U.K., which are strongly partisan, or the case of Italy and Spain, where not only newspapers but also radio and television stations show an ideological bias.[28]

[27] This is due to the assumption that voters do not observe directly whether a media outlet has investigated or not, but they infer it from what the media report.

[28] In Spain there are television channels (*Antena 3*/*Canal Plus*), newspapers (*El Mundo*/*El Pais*), and radio stations (*Onda Cero*/*Cadena Ser*), that favor the right/left-wing parties respectively. The case of Italy is even stronger, where Berlusconi owns the huge media conglomerate, Mediaset.

Media outlets may be ideological either because their core members have a political preference, because they receive funds from a lobby, or for many other reasons one might think of. We do not consider any particular argument for such a bias. We merely identify ideological outlets as those that perceive political benefits from having their preferred politician in office. We denote the political benefit by Λ, with $\Lambda > 0$. We also assume that ideological outlets compete for political benefits, which means they do not care about audience, but merely about Λ. A more general framework would be one in which the outlets compete for both audience and political gains. However, and due to the complexity of such an approach, we skip it and obtain clearer results.

We consider two media outlets, one that prefers the left-wing policies, the other supporting right-wing policies. We label these outlets L (left) and R (right). Thus, media L will receive a benefit of Λ in the event that candidate L is elected for office, and media R receives a benefit of Λ if candidate R is elected. As we have already stated, ideological outlets only investigate their non-preferred politician. The reason for this is that they do not have any incentive to investigate their supported politicians, as, in such a case, the information revealed could damage him and subsequently the outlet. Hence, the decision for media L (resp. R), is whether to investigate candidate R (resp. L) or not. This implies that media L gives valuable information only about candidate R, whereas media R does the same about candidate L. Hence, the voters attend to the two outlets but select from each one only the information that they know can be relevant. They then update their beliefs using Bayes' Rule and finally decide for whom to vote.

We now specify the assumptions we use to determine the beliefs off the equilibrium path. As in the previous section, we assume that whenever candidate $\mathsf{j} \in \{\mathsf{L}, \mathsf{R}\}$ does not use his equilibrium strategy, the $k \in \{\mathrm{L}, \mathrm{R}\}$, $k \neq j$ outlet does not investigate him and there is nothing that contradicts this fact, voters form belief $x_\mathsf{j} \in [0, 1]$, with $\mathsf{j} \in \{\mathsf{L}, \mathsf{R}\}$.[29] However, if the candidate is off his equilibrium path and the corresponding outlet does not investigate him but there is evidence that contradicts this fact, then the voters trust the media regarding the new information. Likewise, we assume that the voters trust the media whenever the candidates use their equilibrium strategies, the media do not investigate but the evidence is against this fact. In either case, assumption TM applies. Finally, in the case of one of the candidates deviating and the corresponding outlet investigating him, voters trust the outlet. Here also, assumption TM applies. The reason that the agents in our model trust in media more than in candidates is because the media cannot lie, and therefore information obtained through investigation is hard evidence.

We focus our attention on the case $q_\mathsf{L} = q_\mathsf{R} = q$. We start the analysis with the study of the monopoly set-up and show that, under certain conditions, a political bias might be introduced in the candidates' game.[30] Next, we analyze the duopoly set-up and show that such political favors no longer arise. This stresses the following idea: ideology is not harmful *per se*, but the possibility of asymmetries in the

[29] Where x_j is the probability of candidate $\mathsf{j} \in \{\mathsf{L}, \mathsf{R}\}$ being extreme, when he does not use his equilibrium strategy, the $k \in \{\mathrm{L}, \mathrm{R}\}$, $k \neq j$ outlet does not investigate him and there is nothing that contradicts this fact.

[30] Where bias means that the candidate with the support of the media has an advantage over his rival in their run for office.

support of different candidates may well be.[31]

[31] In Spain, the two main opposition parties, PSOE and IU, claimed to the Spanish Television (TVE) that their leaders should be interviewed by this television as much as the President of Spain and leader of the Conservative Party is (Diario de León, 22 April 2003).

■ The Monopoly Case

Let us consider the case of just one ideological medium. This set-up could be understood as an approximation to the reality of some non-democratic countries, where the state usually owns the media, which is used for manipulation purposes.

Without loss of generality, we assume that the monopoly is right-wing, R, which means that it is the left-wing politician who might be investigated, but that the right-wing will never be.

The results obtained from this setup differ from those of the case of a neutral monopoly. On the one hand, we now obtain that the monopoly finds it profitable to investigate under certain circumstances, which was not the case at all in the previous analysis. This difference is explained by the fact that in the ideological set-up, the outlet wants its candidate to be elected, which happens to be easier if the other politician is found cheating, which naturally requires that he is investigated. On the other hand, we now obtain that the existence of an ideological monopoly may bias the political game in favor of its candidate.

The following proposition states that only pooling equilibria exist. It also states that in all the equilibria, the left-wing candidate is never investigated when he deviates, which implies that he cannot signal his type by deviating.[32] As such, the left-wing candidate derives no benefit from the existence of a right-wing media.

We have worked out the entire characterization of these equilibria, but, for reasons of space, have relegated it to the Appendix.

Proposition 6 *In the monopoly case and in pure strategies, only pooling equilibria exist. In all these equilibria, the left-wing candidate is never investigated when he deviates, which guarantees that he cannot signal his type by so doing.*

The proposition establishes that only pooling equilibria exist, which is nothing more than what we got in the neutral media set-up. Additionally, it also states that the left-wing candidate has no way of signalling his type. In other words, he cannot derive any benefit from the existence of a media outlet. Indeed, the existence of such a media can only damage the left-wing candidate, as it would introduce a bias in favor of the right-wing politician. We now explain this bias.

In all equilibria, but those in which the left-wing candidate is investigated in equilibrium, either candidate gains one half of the votes. In those exceptional cases, winning the election (in expected terms) depends on the value of the probability q. In particular, if $q < \frac{1}{2}$, the left-wing candidate wins, whereas if $q > \frac{1}{2}$, it is the right-wing candidate who wins. Finally, if $q = \frac{1}{2}$, they tie and therefore, each politician gets one half of the votes. We here observe that the sets of parameter values sustaining the equilibria in which the right-wing candidate wins have higher measure than the sets of parameter values sustaining the equilibria in which the left-wing candidate wins. Therefore, the existence of an right-wing media favors the right-wing candidate in his running for office. The next Corollary formalizes this idea.

[32] The media outlet never investigates the left-wing candidate when he deviates and proposes a extreme platform. In so doing, it guarantees that the voters will never meet a moderate left-wing type.

Corollary 3 *The existence of an ideological monopoly favors the candidate supported by the outlet in his running for office.*

Proof. We focus on the equilibria in which the left-wing candidate is investigated in equilibrium. Let us suppose that the parameters q, K and Λ are uniformed and independently distributed.

In such a case, let us consider the equilibrium (mm, rr), $\Psi_{\mathrm{R}}(m,r) = I$, $\Psi_{\mathrm{R}}(m,m) = I$, $\Psi_{\mathrm{R}}(l,r) = NI$, $\Psi_{\mathrm{R}}(l,m) = NI$, $x_{\mathsf{L}} > q$, $x_{\mathsf{R}} = 1$. The set of parameter values sustaining this equilibrium is $\left\{K : 0 < K \leq q\frac{\Lambda}{2}\right\}$. We know that candidate L wins when $q < \frac{1}{2}$, and thus, the measure of the set sustaining the equilibrium in which this candidate wins is $\int_0^{\frac{1}{2}} q\frac{\Lambda}{2}dq = \frac{\Lambda}{16}$. On the other hand, candidate R wins when $q > \frac{1}{2}$, and thus, the measure of the set sustaining the equilibrium in which he wins is $\int_{\frac{1}{2}}^1 q\frac{\Lambda}{2}dq = \frac{3\Lambda}{16}$. The latter set is higher than the former, and thus, we can say that candidate R wins with a higher probability.

Let us consider (mm, rr), $\Psi_{\mathrm{R}}(m,r) = I$, $\Psi_{\mathrm{R}}(m,m) = I$, $\Psi_{\mathrm{R}}(l,r) = NI$, $\Psi_{\mathrm{R}}(l,m) = NI$, $x_{\mathsf{L}} > q$, $x_{\mathsf{R}} \in (0,1)$. The set of parameters that sustains this equilibrium is $\{K : 0 < K \leq q\Lambda\}$. We observe that $\int_0^{\frac{1}{2}} q\Lambda dq = \frac{\Lambda}{8}$, and $\int_{\frac{1}{2}}^1 q\Lambda dq = \frac{3\Lambda}{8}$, and thus, there is a bias in favor of the right-wing candidate.

Let us now consider (mm, mm), $\Psi_{\mathrm{R}}(m,m) = I$, $\Psi_{\mathrm{R}}(m,r) = I$, $\Psi_{\mathrm{R}}(l,m) = NI$, $\Psi_{\mathrm{R}}(l,r) = NI$, $x_{\mathsf{L}} > q$, $x_{\mathsf{R}} \in [0,1]$. The set of parameters that sustains this equilibrium is $\{K : 0 < K \leq q\Lambda\}$. There is therefore a bias in favor of the right-wing candidate.

Let us now consider the equilibrium (mm, rr), $\Psi_{\mathrm{R}}(m,r) = I$, $\Psi_{\mathrm{R}}(m,m) = NI$, $\Psi_{\mathrm{R}}(l,r) = NI$, $\Psi_{\mathrm{R}}(l,m) = NI$, $x_{\mathsf{L}} > q$, $q < x_{\mathsf{R}} < 1$. The set of parameters is now $\{K : 0 < K = q\Lambda\}$, which has zero measure and thus, there is no bias in favor of any of the candidates.

The same occurs in the case of the equilibrium (mm, mm), $\Psi_{\mathrm{R}}(m,m) = I$, $\Psi_{\mathrm{R}}(m,r) = NI$, $\Psi_{\mathrm{R}}(l,m) = NI$, $\Psi_{\mathrm{R}}(l,r) = NI$, $x_{\mathsf{L}} > q$, $q < x_{\mathsf{R}} \leq 1$.

Let us now consider (mm, rr), $\Psi_{\mathrm{R}}(m,r) = I$, $\Psi_{\mathrm{R}}(m,m) = NI$, $\Psi_{\mathrm{R}}(l,r) = NI$, $\Psi_{\mathrm{R}}(l,m) = NI$, $x_{\mathsf{L}} > q$, $q < x_{\mathsf{R}} = 1$. The set of parameters in such a case is $\left\{K : q\frac{\Lambda}{2} \leq K \leq q\Lambda\right\}$. Thus, $\int_0^{\frac{1}{2}} q\frac{\Lambda}{2}dq = \frac{\Lambda}{16}$, and $\int_{\frac{1}{2}}^1 q\frac{\Lambda}{2}dq = \frac{3\Lambda}{16}$. There is therefore a bias in favor of the right-wing candidate.

Finally, let us consider the equilibrium (mm, pp), $\Psi_{\mathrm{R}}(m,p) = I$, $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$, $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, $x_{\mathsf{L}} > q$, $q = x_{\mathsf{R}} \geq \frac{1}{2}$, $p \in \{r, m\}$. The set of parameters that sustains this equilibrium is $\left\{K : q\frac{\Lambda}{2} \leq K \leq q\Lambda\right\}$. Thus, $\int_{\frac{1}{2}}^1 q\frac{\Lambda}{2}dq = \frac{3\Lambda}{16}$. Note however that $q < \frac{1}{2}$ and $q \geq \frac{1}{2}$ are exclusive, and then, there is not an equilibrium in which candidate L wins. There is therefore a bias in favor of the right-wing candidate. ■

■ The Duopoly Case

Finally, let us consider the case of two media outlets competing in the industry. As previously pointed out, we assume that each media has a preferred candidate. Thus, media L will support candidate L, whereas media R will support candidate R.

We now obtain that with two media outlets with different political preferences, it is no longer possible to find an equilibrium in which one candidate is favored. The reason for this is that the bias introduced by the media cancels each other out when there is an outlet on each side of the ideological space. Hence, if we want politics to be fair, we should not worry about the existence of ideological outlets, but rather about the asymmetries that may arise in the support of different candidates.

The problem that ideological media brings is that the incentive to investigate decreases, i.e., ideological outlets will investigate less than they would do if they were neutral. The reason for this is that ideological outlets want to make their preferred candidate's campaign easier. Therefore, they should not signal that the other candidate is moderate. This implies that the media outlets will not investigate when they observe that the other politician sends an extreme platform, either in equilibrium or off the equilibrium path. Hence, moderate candidates will not be able to signal their types by deviating, and the voters will therefore be worse off than in a situation in which they could do so.[33]

The following proposition states that only pooling equilibria exist. Here also, the complete characterization of the equilibria is presented in the Appendix.

Proposition 7 *In the duopoly case and in pure strategies, only pooling equilibria exist.*

Proposition 7 gives an insight into the implications of an ideological set-up. From the proof of the proposition, we learn that the bias that previously appeared no longer arise. That is to say, there is not any candidate that wins with a higher probability. The following Corollary formalizes this idea.

Corollary 4 *The existence of an outlet in each side of the ideological space makes no longer unfair the political game.*

To summarize then, the main idea that arises from the comparison of the monopoly and the duopoly results, is that ideology is not harmful *per se*, although the possibility of asymmetries in the encouragement of different candidates may well be. Hence, our second policy guide-line is that governments should not worry about the existence of ideological media outlets, but rather about the asymmetries that may arise in the support of different candidates.[34]

6 Conclusion

Electoral campaigns are important as they are the way politicians use to present their platforms and skills in their run for office. However, empirical evidence shows that they are not always accurate signals of the parties' goals. The role of media is therefore to improve the quality of these signals, by threatening candidates with the loss of their reputations if they are found cheating.

The main objective of this paper is to show that the media play an important role in the political game. To this aim, we have analyzed an electoral competition game where candidates have private

[33] For example, the neutral media set-up.

[34] Ideology does not play an important role in our model because we assume that all the centrist voters receive the same extra information. If this were not the case, but different voters were exposed to different information instead, the results we present in the model may well change. Thus, the innocuous role of the ideology should be carefully understood.

information about their own types. Voters want to find out the targets of the parties, since they know that, once in office, politicians implement their preferred policies. At first, the agents do not have any other information about such policies except what the candidates themselves release in their platforms. In such a context, we show that the existence of a media industry improves the quality of the political game. This is so because the media have incentives to investigate and reveal the true intentions of the politicians. This is sufficient, under certain conditions, to discipline politicians' behavior. We show that the control of the candidates becomes easier as the competition among the outlets increases. We also show that this monitoring role of the media depends positively on the number of swing voters in the population and negatively on the cost of the investigation. Nevertheless, and since revealing their types is never an equilibrium for candidates, we analyze the mixed strategies equilibrium, in which candidates and media outlets use stochastic decisions. On this point, we observe that candidates tend somehow to separate their types. Finally, we explore the case of an ideological media industry. The results we report here indicate that if each candidate has the support of one media outlet, no distortion appears. However, if just one candidate has the loyalty of the media the results might well change, and this candidate could gain from such a bias. Thus, the two policy guide-lines we provide are: first, media competition should be fostered, as it is a good way of controlling politicians' behavior; secondly, the existence of ideological outlets is not harmful as long as each candidate is supported by one of the media outlets.[35]

Despite the theoretical results derived from the model, the evidence available for different countries shows that media is not always a threat to candidates. Nevertheless, we think that the data provided here on government corruption and newspapers' circulation give some empirical support to our theoretical results. We also believe that the findings of our model reflect somehow what holds for democratic countries, where, although there is sometimes evidence of selfish behaviors in politicians, their reputations depend, primarily, on what the media say.

References

[1] Adserà, A., C. Boix and M. Payne [2000]. "Are You Being Served? Political Accountability and Quality of Government". Inter-American Development Bank Research Dep. Working Paper 438.

[2] Andina Díaz, A. [2004a]. "Media Competition: Audience vs. Political Influence". Working Paper, IVIE, 19.

[3] Andina Díaz, A. [2004b]. "Political Competition when Media Create Candidates' Charisma". Mimeo, Universidad de Alicante.

[4] Banks, J.S. [1990]. "A Model of Electoral Competition with Incomplete Information". *Journal of Economic Theory*, 50, 309-325.

[35] The innocuous role of ideology in our model is due to the fact that all the centrist voters receive the same information. If this were not the case, our results may well change, and the role of ideology should be therefore reinterpreted.

[5] Barendt, E. [1998]. *Politics and the Media. Harlots and Prerogatives at the turn of the millennium.* Edited by Jean Seaton. The Political Quarterly.

[6] Barro, R.J. [1973]. "The Control of Politicians: An Economic Model". *Public Choice*, 14, 19-42.

[7] Besley, T. and R. Burgess [2002]. "The Political Economy of Government Responsiveness: Theory and Evidence from India". *Quarterly Journal of Economics*, 117(4), 1415-1452.

[8] Besley, T. and A. Prat [2001]. "Handcuffs for the Grabbing Hand? Media Capture and Government Accountability". Mimeo, LSE.

[9] Crotty, W. [1985]. *The Party Game*. W. H. Freeman and Company. New York.

[10] Dyck, A. and L. Zingales [2002]. "The Corporate Governance Role of the Media". *The Right to Tell: The Role of Media in Development*. Edited by R. Islam. The World Bank, Washington, DC.

[11] Ferejohn, J. [1986]. "Incumbent performance and electoral control". *Public Choice*, 50, 5-25.

[12] Harrintong, J.E. [1992]. "The revelation of information through the electoral process: An exploratory analysis". *Economics and Politics*, 4, 3, 255-275.

[13] Krukones, M.G. [1984]. *Promises and Performance. Presidential Campaigns as Policy Predictors.* Lanham: University Press of America.

[14] Potters, J., R. Sloof and F. Van Winden [1997]. "Campaign expenditures, contributions and direct endorsements: The strategic use of information and money to influence voter behavior". *European Journal of Political Economy*, 13, 1-31.

[15] Strömberg, D. [2001]. "Mass Media and Public Policy". *European Economic Review*, 45, 652-663.

[16] Strömberg, D. [2004a]. "Mass Media Competition, Political Competition, and Public Policy". Forthcoming, *Review of Economic Studies.*

[17] Strömberg, D. [2004b]. "Radio's Impact on Public Spending". Forthcoming, *Quarterly Journal of Economics.*

[18] Worcester, R.M. [1995]. "The use of panel studies in British general elections". *Political Communications. The General Election Campaign of 1992.* Edited by Ivor Crewe and Brian Gosschalk. Cambridge University Press.

7 Appendix

Proposition 5

Proof. Let us consider the symmetric mixed strategies equilibrium defined by the strategies:

$$\Upsilon_{\mathsf{L}}(L)(l) = p \in [0,1] \qquad \Upsilon_{\mathsf{L}}(M)(m) = 1$$
$$\Upsilon_{\mathsf{R}}(R)(r) = p \in [0,1] \qquad \Upsilon_{\mathsf{R}}(M)(m) = 1$$

$$\Psi_i(l,r)(I) = z_1 \in [0,1] \ \forall i \in \mathcal{S}$$
$$\Psi_i(l,m)(I) = \Psi_i(m,r)(I) = z_2 \in [0,1] \ \forall i \in \mathcal{S}$$
$$\Psi_i(m,m)(I) = z_3 \in [0,1] \ \forall i \in \mathcal{S}.$$

The media's beliefs must be consistent in equilibrium. That is to say:

$$\mu^*_{\mathsf{L}}(L \mid l) = 1 \qquad \mu^*_{\mathsf{R}}(R \mid r) = 1$$
$$\mu^*_{\mathsf{L}}(M \mid m) = \tfrac{1-q}{1-pq} \qquad \mu^*_{\mathsf{R}}(M \mid m) = \tfrac{1-q}{1-pq}.$$

Let us denote by θ the probability that both candidates are truthful in equilibrium, and recall that θ may be different in each subgame.

We now obtain the expected payoff of an outlet that chooses not to investigate:

$$\theta \frac{n_{\mathcal{C}}}{s} + (1-\theta)\frac{n_{\mathcal{C}}}{s}(1-z_i)^{s-1}$$

and its payoff if it chooses to investigate:

$$\theta \frac{n_{\mathcal{C}}}{s} + (1-\theta)\sum_{j=0}^{s-1} \begin{pmatrix} s-1 \\ j \end{pmatrix} z_i^j (1-z_i)^{s-j-1}\frac{n_{\mathcal{C}}}{j+1} - K$$

Both expected payoffs must be equal in equilibrium. Thus, we obtain three equations that implicitly define the probabilities z_1, z_2 and z_3. With respect to z_1, we know that it is zero in equilibrium. This is so because the moderate candidates do never propose the extreme platforms, and therefore there is no point for media outlets to investigate when they observe the profile (l, r). With respect to z_2 and z_3, we give the equations that implicitly define these two probabilities.

$$(\frac{q(1-p)}{1-pq})\left[\frac{n_{\mathcal{C}}}{s}(1-z_2)^{s-1} - \sum_{j=0}^{s-1}\begin{pmatrix} s-1 \\ j \end{pmatrix} z_2^j (1-z_2)^{s-j-1}\frac{n_{\mathcal{C}}}{j+1}\right] + K = 0 \tag{1}$$

$$(1-\frac{(1-q)^2}{(1-pq)^2})\left[\frac{n_{\mathcal{C}}}{s}(1-z_3)^{s-1} - \sum_{j=0}^{s-1}\begin{pmatrix} s-1 \\ j \end{pmatrix} z_3^j (1-z_3)^{s-j-1}\frac{n_{\mathcal{C}}}{j+1}\right] + K = 0. \tag{2}$$

Once the media outlets have reported their messages, the voters update their beliefs. They are:

$\gamma^*_j(E \mid e, \cdot, (\cdot,\cdot)) = \mu^*_j(E \mid e) = 1$ for $j \in \{\mathsf{L},\mathsf{R}\}$

$\gamma^*_j(M \mid m, \cdot, (e,\cdot)) = 0$ for $j \in \{\mathsf{L},\mathsf{R}\}$

$\gamma^*_j(M \mid m, m, (m,e)) = 1$ for $j \in \{\mathsf{L},\mathsf{R}\}$

$\gamma^*_j(M \mid m, e, (m,e)) = \frac{q\ p(1-q)}{q\ p(1-q)+q^2\ p(1-p)(1-z_2)^s}$ for $j \in \{\mathsf{L},\mathsf{R}\}$

$\gamma^*_j(M \mid m, m, (m,m)) = \frac{(1-q)[(1-q)+q(1-p)(1-z_3)^s]}{(1-q)[(1-q)+q(1-p)(1-z_3)^s]+q(1-p)[(1-q)(1-z_3)^s+q(1-p)(1-z_3)^s]}$ for $j \in \{\mathsf{L},\mathsf{R}\}$.

The extreme candidates take into account the voters' beliefs and the different probabilities with which the media outlets investigate in each situation. Then, they decide the platforms to propose. This gives the third equation:

$$q\frac{1}{2}n_{\mathcal{C}} - (1-z_2)^s q n_{\mathcal{C}} - (1-z_3)^s (1-q)\frac{1}{2}n_{\mathcal{C}} = 0 \quad (3)$$

which implicitly define, together with (1) and (2), the probabilities p, z_2 and z_3. ■

Proposition 6

Proof. The schedule of the proof is as follows. We first prove that there is no equilibrium in which at least one candidate separates, either truthfully or untruthfully. We then consider pooling equilibria of the form (mm, pp), with $p \in \{m, r\}$, and show when there is an equilibrium in which the candidates pool in such a way. Finally, we analyze pooling equilibria of the form (ll, pp), with $p \in \{m, r\}$, and show when there is an equilibrium of this sort.

(i) Let us start considering a hypothetical equilibrium in which at least one candidate separates, either truthfully or untruthfully. Here, voters' beliefs assign a probability of the candidate being moderate equal to one, when the message he sends is the one that the true moderate sends in equilibrium. Thus, the extreme type has an incentive to deviate and mimic the programme sent by the moderate, as in this case voters will recognize him as a truthful moderate and will vote for him.[36]

(ii) Second, let us consider a hypothetical equilibrium in which $\Upsilon^*_{\mathsf{L}}(L) = \Upsilon^*_{\mathsf{L}}(M) = m$, $\Upsilon^*_{\mathsf{R}}(R) = \Upsilon^*_{\mathsf{R}}(M) = p$, with $p, \overline{p} \in \{m, r\}$, $p \neq \overline{p}$. Our way of proceeding here is: first, we analyze the media's behavior; second, we analyze the candidates' behavior. Before proceeding, let us denote by $\gamma^{p_{\mathsf{L}} m^{\mathsf{L}}_{\mathrm{R}}}_{p_{\mathsf{R}} m^{\mathsf{R}}_{\mathrm{R}}} = (\gamma_{\mathsf{L}}(L \mid p_{\mathsf{L}}, m^{\mathsf{L}}_{\mathrm{R}}), \gamma_{\mathsf{R}}(R \mid p_{\mathsf{R}}, m^{\mathsf{R}}_{\mathrm{R}}))$, the belief that the voters have on candidate L being L, given his platform p_{L} and the R media's message on him, $m^{\mathsf{L}}_{\mathrm{R}}$; and the voters' belief on candidate R being R, given his platform p_{R} and the R media's message on him $m^{\mathsf{R}}_{\mathrm{R}}$.[37]

We start with the analysis of the media's behavior.

Let us consider the subgame that follows the candidates' platform profile (l, p), and let us suppose $\Psi_{\mathrm{R}}(l, p) = I$ with $p \in \{m, r\}$. Here, voters' beliefs are $\gamma^{ll}_{pp} = (1^{(TM)}, q)$ and $\gamma^{lm}_{pp} = (0^{(TM)}, q)$, where the superscript (TM) means that the assumption "trust media" applies. The payoff of the outlet when it observes (l, p) is $x_{\mathsf{L}}\Lambda - K$, whereas if it deviates and does not investigate, its payoff is Λ. Hence, $\Psi_{\mathrm{R}}(l, p) = I$ cannot be in equilibrium. Let us now suppose $\Psi_{\mathrm{R}}(l, p) = NI$ with $p \in \{m, r\}$. Here, voters' belief are $\gamma^{ll}_{pp} = (x_{\mathsf{L}}, q)$ and $\gamma^{lm}_{pp} = (0^{(TM)}, q)$.[38] The payoff of the media when it observes (l, p) is either Λ if $x_{\mathsf{L}} > q$, $\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = q$, or 0 if $x_{\mathsf{L}} < q$; whereas if it deviates and investigates, its payoff is either $x_{\mathsf{L}}\Lambda - K$ if $x_{\mathsf{L}} > q$, $x_{\mathsf{L}}\frac{\Lambda}{2} - K$ if $x_{\mathsf{L}} = q$, or $-K$ if $x_{\mathsf{L}} < q$. Hence, $\Psi_{\mathrm{R}}(l, p) = NI$ is possible in equilibrium.

Let us consider the subgame that follows the candidates' platform profile $(l, \overline{p})$, and let us suppose $\Psi_{\mathrm{R}}(l, \overline{p}) = I$ with $\overline{p} \in \{m, r\}$, $p \neq \overline{p}$. Here, voters' beliefs are $\gamma^{ll}_{\overline{pp}} = (1^{(TM)}, x_{\mathsf{R}})$ and $\gamma^{lm}_{\overline{pp}} = (0^{(TM)}, x_{\mathsf{R}})$.

[36] This result is robust to changes in the way voters cast their votes in the case of them being indifferent.

[37] In the case of a right-wing monopoly, $m^{\mathsf{R}}_{\mathrm{R}} = p_{\mathrm{R}}$, as that media never investigates the right-wing candidate.

[38] As already pointed, the assumption TM applies when the media outlet does not investigate in equilibrium, yet, it deviates and sends new information. Here also, we assume that voters trust the media.

The payoff of the outlet when it investigates is always smaller than its payoff when it does not so, as by investigating it can signal that the left-wing candidate is moderate, which is bad for him. Hence, $\Psi_{\mathrm{R}}(l,\overline{p}) = I$ cannot be in equilibrium. Now, let us suppose $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$ with $\overline{p} \in \{m,r\}$, $p \neq \overline{p}$. Here, voters' beliefs are $\gamma^{ll}_{p\overline{p}} = (x_{\mathsf{L}}, x_{\mathsf{R}})$ and $\gamma^{lm}_{p\overline{p}} = (0^{(TM)}, x_{\mathsf{R}})$. The payoff of the outlet is either Λ if $x_{\mathsf{L}} > x_{\mathsf{R}}$ or $x_{\mathsf{L}} = x_{\mathsf{R}} = 0$, $\overline{p} = m$; $\frac{\Lambda}{2}$ if $0 < x_{\mathsf{L}} = x_{\mathsf{R}} < 1$ or $x_{\mathsf{L}} = x_{\mathsf{R}} = 0$, $\overline{p} = r$ or $x_{\mathsf{L}} = x_{\mathsf{R}} = 1$, $\overline{p} = r$; or 0 if $x_{\mathsf{L}} < x_{\mathsf{R}}$, or $x_{\mathsf{L}} = x_{\mathsf{R}} = 1$, $\overline{p} = m$; whereas if it deviates and investigates, its payoff is always smaller. Thus, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$ is possible in equilibrium.

So far, we know that $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$ are possible in equilibrium, and that $\Psi_{\mathrm{R}}(l,p) = I$, $\Psi_{\mathrm{R}}(l,\overline{p}) = I$ are not. We now study the other four possible cases: (1) $\Psi_{\mathrm{R}}(m,p) = I$; (2) $\Psi_{\mathrm{R}}(m,p) = NI$; (3) $\Psi_{\mathrm{R}}(m,\overline{p}) = I$; (4) $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$.

Case (1) $\Psi_{\mathrm{R}}(m,p) = I$. Voters' beliefs are $\gamma^{mm}_{pp} = (0,q)$ and $\gamma^{ml}_{pp} = (1,q)$. The payoff of the outlet is $q\Lambda - K$; whereas if it deviates and investigates, its payoff is 0. Thus, $\Psi_{\mathrm{R}}(m,p) = I$ implies $q\Lambda \geq K$.

Case (2) $\Psi_{\mathrm{R}}(m,p) = NI$. Voters' beliefs are $\gamma^{mm}_{pp} = (q,q)$ and $\gamma^{ml}_{pp} = (1^{(TM)},q)$. The payoff of the outlet is $\frac{\Lambda}{2}$, whereas if it deviates and investigates, its payoff is $(1-q)\frac{\Lambda}{2} + q\Lambda - K$. Thus $\Psi_{\mathrm{R}}(m,p) = NI$ implies $K \geq q\frac{\Lambda}{2}$.

Case (3) $\Psi_{\mathrm{R}}(m,\overline{p}) = I$. Voters' beliefs are $\gamma^{mm}_{p\overline{p}} = (0,x_{\mathsf{R}})$ and $\gamma^{ml}_{p\overline{p}} = (1,x_{\mathsf{R}})$. Proceeding as previously, we obtain that $\Psi_{\mathrm{R}}(m,\overline{p}) = I$ implies either $q\Lambda \geq K$, $x_{\mathsf{R}} \in (0,1)$, $\overline{p} = m$; $q\frac{\Lambda}{2} \geq K$, $x_{\mathsf{R}} \in \{0,1\}$, $\overline{p} = m$; or $q\Lambda \geq K$, $x_{\mathsf{R}} \in [0,1]$, $\overline{p} = r$.[39]

Case (4) $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$. Voters' beliefs are $\gamma^{mm}_{p\overline{p}} = (q,x_{\mathsf{R}})$ and $\gamma^{ml}_{p\overline{p}} = (1^{(TM)},x_{\mathsf{R}})$. Here, $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$ implies either $q > x_{\mathsf{R}}$; $K \geq q\frac{\Lambda}{2}$, $x_{\mathsf{R}} = q$; $K \geq q\frac{\Lambda}{2}$, $x_{\mathsf{R}} = 1$, $\overline{p} = m$; $K \geq q\Lambda$, $q < x_{\mathsf{R}} < 1$, $\overline{p} = m$; or $K \geq q\Lambda$, $q < x_{\mathsf{R}} \leq 1$, $\overline{p} = r$.

We now analyze the candidates' behavior.

(ii.1) Let us consider a hypothetical equilibrium strategy profile (mm,pp), $\Psi_{\mathrm{R}}(m,p) = I$, $\Psi_{\mathrm{R}}(m,\overline{p}) = I$, $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, where conditions in (1) and (3) must be satisfied. Here, candidate L type L gains zero in equilibrium, whereas if he deviates and sends the message l, he gains either $n_{\mathcal{C}}$ if $x_{\mathsf{L}} < q$, $\frac{n_{\mathcal{C}}}{2}$ if $x_{\mathsf{L}} = q$, or 0 if $x_{\mathsf{L}} > q$. Thus, for candidate L type L being in equilibrium we need $q < x_{\mathsf{L}}$. We also observe that candidate L type M has not a profitable deviation. Finally, both types of candidate R gain $qn_{\mathcal{C}}$, whereas if they deviate they gain either $(1-q)\frac{n_{\mathcal{C}}}{2} + qn_{\mathcal{C}}$ if $\overline{p} = m$, $x_{\mathsf{R}} = 0$; $qn_{\mathcal{C}}$ if $\overline{p} = m$, $x_{\mathsf{R}} \in (0,1)$; $q\frac{n_{\mathcal{C}}}{2}$ if $\overline{p} = m$, $x_{\mathsf{R}} = 1$; or $qn_{\mathcal{C}}$ if $\overline{p} = r$, $x_{\mathsf{R}} \in [0,1]$. Thus, for the candidate R being in equilibrium we need either $\overline{p} = r$ or $\overline{p} = m$, $x_{\mathsf{R}} > 0$. This strategy profile conforms therefore an equilibrium when parameters and beliefs satisfy $q < x_{\mathsf{L}}$ and either $K \leq q\frac{\Lambda}{2}$, $\overline{p} = m$, $x_{\mathsf{R}} = 1$; $K \leq q\Lambda$, $\overline{p} = m$, $x_{\mathsf{R}} \in (0,1)$; or $K \leq q\Lambda$, $\overline{p} = r$, $x_{\mathsf{R}} \in [0,1]$.

(ii.2) Let us now consider a hypothetical equilibrium strategy profile (mm,pp), $\Psi_{\mathrm{R}}(m,p) = I$, $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$, $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, where conditions in (1) and (4) must be satisfied. Candidate L does not deviate if $q < x_{\mathsf{L}}$, whereas candidate R neither deviates if either $q < x_{\mathsf{R}}$ or $x_{\mathsf{R}} = q \geq \frac{1}{2}$. Then, this strategy profile conforms an equilibrium when parameters and beliefs satisfy $q < x_{\mathsf{L}}$ and either

[39] We apply the assumption LP when the candidate L is recognized as a liar.

$K = q\Lambda$, $q < x_{\mathsf{R}} < 1$, $\overline{p} = m$; $K = q\Lambda$, $q < x_{\mathsf{R}} \leq 1$, $\overline{p} = r$; $q\frac{\Lambda}{2} \leq K \leq q\Lambda$, $q < x_{\mathsf{R}} = 1$, $\overline{p} = m$; or $q\frac{\Lambda}{2} \leq K \leq q\Lambda$, $q = x_{\mathsf{R}} \geq \frac{1}{2}$.

($ii.3$) We now consider the hypothetical equilibrium strategy profile (mm, pp), $\Psi_{\mathrm{R}}(m,p) = NI$, $\Psi_{\mathrm{R}}(m,\overline{p}) = I$, $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, where conditions in (2) and (3) must be satisfied. Here, either type of candidate L gains $\frac{n_{\mathcal{C}}}{2}$ in equilibrium, whereas one of them deviates, he gains either $n_{\mathcal{C}}$ if $x_{\mathsf{L}} < q$, $\frac{n_{\mathcal{C}}}{2}$ if $x_{\mathsf{L}} = q$, or 0 if $x_{\mathsf{L}} > q$. Thus, for L being in equilibrium we need $q \leq x_{\mathsf{L}}$. Additionally, either type of candidate R gains $\frac{n_{\mathcal{C}}}{2}$, whereas if one of them deviates, he gains either $(1+q)\frac{n_{\mathcal{C}}}{2}$ if $x_{\mathsf{R}} = 0$, $\overline{p} = m$; $qn_{\mathcal{C}}$ if $x_{\mathsf{R}} \in (0,1)$, $\overline{p} = m$; $q\frac{n_{\mathcal{C}}}{2}$ if $x_{\mathsf{R}} = 1$, $\overline{p} = m$; or $qn_{\mathcal{C}}$ if $x_{\mathsf{R}} \in [0,1]$, $\overline{p} = r$. Thus, candidate R does not deviate if either $q \leq \frac{1}{2}$, $x_{\mathsf{R}} \in (0,1)$, $\overline{p} = m$; $x_{\mathsf{R}} = 1$, $\overline{p} = m$; or $q \leq \frac{1}{2}$, $x_{\mathsf{R}} \in [0,1]$, $\overline{p} = r$. Then, this strategy profile conforms an equilibrium when parameters and beliefs satisfy $q \leq x_{\mathsf{L}}$ and either $K = q\frac{\Lambda}{2}$, $x_{\mathsf{R}} = 1$, $\overline{p} = m$; $q\frac{\Lambda}{2} \leq K \leq q\Lambda$, $q \leq \frac{1}{2}$, $x_{\mathsf{R}} \in (0,1)$, $\overline{p} = m$; or $q\frac{\Lambda}{2} \leq K \leq q\Lambda$, $q \leq \frac{1}{2}$, $x_{\mathsf{R}} \in [0,1]$, $\overline{p} = r$.

($ii.4$) Last, let us consider a hypothetical equilibrium strategy profile (mm, pp), $\Psi_{\mathrm{R}}(m,p) = NI$, $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$, $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, where conditions in (2) and (4) must be satisfied. Candidate L does not deviate when $q \leq x_{\mathsf{L}}$, whereas candidate R neither does when $q \leq x_{\mathsf{R}}$. Then, this strategy profile conforms an equilibrium when parameters and beliefs satisfy $q \leq x_{\mathsf{L}}$ and either $K \geq q\frac{\Lambda}{2}$, $q = x_{\mathsf{R}}$; $K \geq q\frac{\Lambda}{2}$, $q \leq x_{\mathsf{R}} = 1$, $\overline{p} = m$; $K \geq q\Lambda$, $q < x_{\mathsf{R}} < 1$, $\overline{p} = m$; or $K \geq q\Lambda$, $q < x_{\mathsf{R}} \leq 1$, $\overline{p} = r$.

(iii) Finally, let us consider a hypothetical equilibrium in which $\Upsilon^*_{\mathsf{L}}(L) = \Upsilon^*_{\mathsf{L}}(M) = l$, $\Upsilon^*_{\mathsf{R}}(R) = \Upsilon^*_{\mathsf{R}}(M) = p$, with $p, \overline{p} \in \{m, r\}$, $p \neq \overline{p}$. We start analyzing the media's behavior.

Proceeding as in (ii), we obtain that only $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, with $p \in \{m, r\}$, are possible in equilibrium. Next, we analyze the other four possible cases: (1) $\Psi_{\mathrm{R}}(m,p) = I$; (2) $\Psi_{\mathrm{R}}(m,p) = NI$; (3) $\Psi_{\mathrm{R}}(m,\overline{p}) = I$; (4) $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$.

Case (1) $\Psi_{\mathrm{R}}(m,p) = I$. Here, voters' beliefs are $\gamma^{mm}_{pp} = (0^{(TM)}, q)$ and $\gamma^{ml}_{pp} = (1^{(TM)}, q)$. The payoff of the outlet is $x_{\mathsf{L}}\Lambda - K$, whereas if it deviates its payoff is 0. Thus, $\Psi_{\mathrm{R}}(m,p) = I$ implies $x_{\mathsf{L}}\Lambda \geq K$.

Case (2) $\Psi_{\mathrm{R}}(m,p) = NI$. Voters' beliefs are $\gamma^{mm}_{pp} = (x_{\mathsf{L}}, q)$ and $\gamma^{ml}_{pp} = (1^{(TM)}, q)$. The payoff of the outlet is either Λ if $q < x_{\mathsf{L}}$, $\frac{\Lambda}{2}$ if $q = x_{\mathsf{L}}$, or 0 if $q > x_{\mathsf{L}}$; whereas if it deviates its payoff is either $\Lambda - K$ if $q < x_{\mathsf{L}}$, $(1 - x_{\mathsf{L}})\frac{\Lambda}{2} + \Lambda x_{\mathsf{L}} - K$ if $q = x_{\mathsf{L}}$, or $\Lambda x_{\mathsf{L}} - K$ if $q > x_{\mathsf{L}}$. Thus $\Psi_{\mathrm{R}}(m,p) = NI$ implies either $q < x_{\mathsf{L}}$; $K \geq x_{\mathsf{L}}\frac{\Lambda}{2}$, $q = x_{\mathsf{L}}$; or $K \geq x_{\mathsf{L}}\Lambda$, $q > x_{\mathsf{L}}$.

Case (3) $\Psi_{\mathrm{R}}(m,\overline{p}) = I$. Voters' beliefs are $\gamma^{mm}_{\overline{pp}} = (0^{(TM)}, x_{\mathsf{R}})$ and $\gamma^{ml}_{\overline{pp}} = (1^{(TM)}, x_{\mathsf{R}})$. Hence, $\Psi_{\mathrm{R}}(m,\overline{p}) = I$ implies either $x_{\mathsf{L}}\Lambda \geq K$, $x_{\mathsf{R}} \in (0,1)$, $\overline{p} = m$; $x_{\mathsf{L}}\Lambda \geq K$, $x_{\mathsf{R}} \in [0,1]$, $\overline{p} = r$; or $x_{\mathsf{L}}\frac{\Lambda}{2} \geq K$, $x_{\mathsf{R}} \in \{0,1\}$, $\overline{p} = m$.

Case (4) $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$. Voters' beliefs are $\gamma^{mm}_{\overline{pp}} = (x_{\mathsf{L}}, x_{\mathsf{R}})$ and $\gamma^{ml}_{\overline{pp}} = (1^{(TM)}, x_{\mathsf{R}})$. Then, $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$ implies either $x_{\mathsf{L}} > x_{\mathsf{R}}$; $x_{\mathsf{L}} = x_{\mathsf{R}} = 1$; $K \geq x_{\mathsf{L}}\frac{\Lambda}{2}$, $0 < x_{\mathsf{R}} = x_{\mathsf{L}} < 1$; $K \geq x_{\mathsf{L}}\frac{\Lambda}{2}$, $x_{\mathsf{L}} = x_{\mathsf{R}} = 0$, $\overline{p} = m$; $K \geq x_{\mathsf{L}}\frac{\Lambda}{2}$, $x_{\mathsf{L}} < x_{\mathsf{R}} = 1$, $\overline{p} = m$; $K \geq x_{\mathsf{L}}\Lambda$, $x_{\mathsf{L}} < x_{\mathsf{R}} < 1$; $K \geq x_{\mathsf{L}}\Lambda$, $x_{\mathsf{L}} < x_{\mathsf{R}} = 1$, $\overline{p} = r$; or $K \geq x_{\mathsf{L}}\Lambda$, $x_{\mathsf{L}} = x_{\mathsf{R}} = 0$, $\overline{p} = r$.

We now analyze the candidates' behavior.

($iii.1$) Let us consider a hypothetical equilibrium strategy profile (ll, pp), $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, $\Psi_{\mathrm{R}}(m,p) = I$, $\Psi_{\mathrm{R}}(m,\overline{p}) = I$, where conditions in (1) and (3) must be satisfied. Candidate L type

M gains $\frac{n_{\mathcal{C}}}{2}$ in equilibrium, whereas if he deviates and sends the message m he gains $n_{\mathcal{C}}$. Therefore, this strategy profile cannot constitute an equilibrium.

($iii.2$) The same argument proves that the strategy profile (ll, pp), $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, $\Psi_{\mathrm{R}}(m,p) = I$, $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$ neither constitutes an equilibrium.

($iii.3$) We now consider the strategy profile (ll, pp), $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, $\Psi_{\mathrm{R}}(m,p) = NI$, $\Psi_{\mathrm{R}}(m,\overline{p}) = I$, where conditions in (2) and (3) must hold. Candidate L gains $\frac{n_{\mathcal{C}}}{2}$ in equilibrium, whereas if he deviates he gains either $n_{\mathcal{C}}$ if $x_{\mathsf{L}} < q$, $\frac{n_{\mathcal{C}}}{2}$ if $x_{\mathsf{L}} = q$, or 0 if $x_{\mathsf{L}} > q$. Thus, for L being in equilibrium we need $q \leq x_{\mathsf{L}}$. Analogously, for R being in equilibrium we need $q \leq x_{\mathsf{R}}$. Then, this strategy profile conforms an equilibrium when parameters and beliefs satisfy either $K \leq x_{\mathsf{L}}\Lambda$, $q < x_{\mathsf{L}}$, $x_{\mathsf{R}} = 1$, $\overline{p} = r$; $K \leq x_{\mathsf{L}}\Lambda$, $q < x_{\mathsf{L}}$, $q \leq x_{\mathsf{R}} < 1$; $K \leq x_{\mathsf{L}}\frac{\Lambda}{2}$, $q < x_{\mathsf{L}}$, $x_{\mathsf{R}} = 1$, $\overline{p} = m$; $x_{\mathsf{L}}\frac{\Lambda}{2} \leq K \leq x_{\mathsf{L}}\Lambda$, $q = x_{\mathsf{L}}$, $q \leq x_{\mathsf{R}} < 1$; $x_{\mathsf{L}}\frac{\Lambda}{2} \leq K \leq x_{\mathsf{L}}\Lambda$, $q = x_{\mathsf{L}}$, $x_{\mathsf{R}} = 1$, $\overline{p} = r$; or $K = x_{\mathsf{L}}\frac{\Lambda}{2}$, $q = x_{\mathsf{L}}$, $x_{\mathsf{R}} = 1$, $\overline{p} = m$.

($iii.4$) Finally, let us consider a hypothetical equilibrium strategy profile (ll, pp), $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, $\Psi_{\mathrm{R}}(m,p) = NI$, $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$, where conditions in (2) and (4) must be satisfied. Both candidates do not want to deviate if $q \leq \min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$. Thus, this strategy profile conforms an equilibrium when parameters and beliefs satisfy either $q \leq x_{\mathsf{R}} < x_{\mathsf{L}}$; $q < x_{\mathsf{L}} = x_{\mathsf{R}} = 1$; $K \geq x_{\mathsf{L}}\Lambda$, $q \leq x_{\mathsf{L}} < x_{\mathsf{R}} < 1$; $K \geq x_{\mathsf{L}}\frac{\Lambda}{2}$, $q \leq x_{\mathsf{L}} = x_{\mathsf{R}} < 1$; $K \geq x_{\mathsf{L}}\frac{\Lambda}{2}$, $q \leq x_{\mathsf{L}} < x_{\mathsf{R}} = 1$, $\overline{p} = m$; or $K \geq x_{\mathsf{L}}\Lambda$, $q \leq x_{\mathsf{L}} < x_{\mathsf{R}} = 1$, $\overline{p} = r$. ■

Proposition 7

Proof. Here, we use the same schedule for the proof as previously. Firstly, we prove that there is no equilibrium in which at least one candidate separates, either truthfully or untruthfully. Second, we consider pooling equilibria of the form (mm, mm), and show when this type of equilibria exist. Third, we analyze pooling equilibria such as (ll, rr). Finally, we study equilibria of the form (ll, mm) or (mm, rr).

(i) Let us start considering a hypothetical equilibrium in which at least one candidate separates, either truthfully or untruthfully. Arguing as in the proof of Proposition 6, we observe that voters' belief on the candidate that separates are such that they assign a probability of the candidate being moderate equal to one, when the message he sends is the one that the true moderate sends in equilibrium. Thus, the extreme type that separates has an incentive to deviate and mimic the platforms sent by the moderate, as in this case voters will recognize him as a truthful moderate and will vote for him.[40].

(ii) Second, let us consider a hypothetical equilibrium in which $\Upsilon^*_{\mathsf{L}}(L) = \Upsilon^*_{\mathsf{L}}(M) = m$, $\Upsilon^*_{\mathsf{R}}(R) = \Upsilon^*_{\mathsf{R}}(m) = m$. Here, the messages the media can observe are four: the equilibrium messages (m, m), and the off the equilibrium messages (l, m), (m, r) and (l, r). We denote by $\gamma^{p_{\mathsf{L}} m^{\mathsf{L}}_{\mathsf{R}}}_{p_{\mathsf{R}} m^{\mathsf{R}}_{\mathsf{L}}} = (\gamma_{\mathsf{L}}(L \mid p_{\mathsf{L}}, m^{\mathsf{L}}_{\mathsf{R}}), \gamma_{\mathsf{R}}(R \mid p_{\mathsf{R}}, m^{\mathsf{R}}_{\mathsf{L}}))$, the belief that voters have on candidate L being L, given his platform p_{L}, and the R media's message on him, $m^{\mathsf{L}}_{\mathsf{R}}$; and the voters' belief on candidate R being R, given his platform p_{R}, and the L media's message on him $m^{\mathsf{R}}_{\mathsf{L}}$. We now analyze the media's behavior, and then the candidates' behavior. Let us start with the media's behavior.

Case (1). Let us consider the subgame that follows the equilibrium platform profile (m, m). Let us

[40] The result is also robust to changes in the way voters cast their votes in the case of them being indifferent.

suppose $\Psi_{\text{L}}(m,m) = I$, $\Psi_{\text{R}}(m,m) = I$. Here, voters' beliefs are $\gamma_{mm}^{mm} = (0,0)$ and $\gamma_{mr}^{ml} = (1,1)$. The payoff of either outlet is $(1-q)^2\frac{\Lambda}{2} + q(1-q)\Lambda + q^2\frac{\Lambda}{2} - K$, whereas by deviating the outlets gets $(1-q)\frac{\Lambda}{2}$. Thus $\Psi_{\text{L}}(m,m) = I$, $\Psi_{\text{R}}(m,m) = I$ implies $q\frac{\Lambda}{2} \geq K$. Let us now suppose $\Psi_{\text{L}}(m,m) = I$, $\Psi_{\text{R}}(m,m) = NI$. Here, voters' beliefs are $\gamma_{mm}^{mm} = (q,0)$ and $\gamma_{mr}^{ml} = (1^{(TM)},1)$. Thus, the payoff of L is $q\Lambda - K$, whereas if it deviates it gets 0. In contrast, the payoff of R is $(1-q)\Lambda$, whereas if it deviates it gains $(1-q)\Lambda + q^2\frac{\Lambda}{2} - K$. Thus, $\Psi_{\text{L}}(m,m) = I$, $\Psi_{\text{R}}(m,m) = NI$ implies $q^2\frac{\Lambda}{2} \leq K \leq q\Lambda$. Analogously, we obtain that $\Psi_{\text{L}}(m,m) = NI$, $\Psi_{\text{R}}(m,m) = I$ implies $q^2\frac{\Lambda}{2} \leq K \leq q\Lambda$. Finally, let us suppose $\Psi_{\text{L}}(m,m) = NI$, $\Psi_{\text{R}}(m,m) = NI$. In this case, voters' beliefs are $\gamma_{mm}^{mm} = (q,q)$ and $\gamma_{mr}^{ml} = (1^{(TM)},1^{(TM)})$. The payoff of either outlet is $\frac{\Lambda}{2}$, whereas if it deviates it gains $(1-q)\frac{\Lambda}{2} + q\Lambda - K$. Thus, $\Psi_{\text{L}}(m,m) = NI$, $\Psi_{\text{R}}(m,m) = NI$ implies $K \geq q\frac{\Lambda}{2}$.

Case (2). Let us suppose that candidate L deviates. The platform profile the media observe is therefore (l,m). Suppose additionally $\Psi_{\text{L}}(l,m) = NI$, $\Psi_{\text{R}}(l,m) = NI$. In such a case, voters' beliefs are $\gamma_{mm}^{ll} = (x_{\mathsf{L}},q)$ and $\gamma_{mr}^{lm} = (0^{(TM)},1^{(TM)})$. The payoff of the right-wing outlet is either Λ if $x_{\mathsf{L}} > q$, $\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = q$, or 0 if $x_{\mathsf{L}} < q$, whereas if it deviates and investigates is either $x_{\mathsf{L}}\Lambda - K$ if $x_{\mathsf{L}} > q$, $x_{\mathsf{L}}\frac{\Lambda}{2} - K$ if $x_{\mathsf{L}} = q$, or $-K$ if $x_{\mathsf{L}} < q$. Additionally, the payoff of outlet L is either 0 if $x_{\mathsf{L}} > q$, $\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = q$, or Λ if $x_{\mathsf{L}} < q$, whereas if it deviates its payoff is either $q\Lambda - K$ if $q < x_{\mathsf{L}}$, $(1-q)\frac{\Lambda}{2} + q\Lambda - K$ if $x_{\mathsf{L}} = q$, or $\Lambda - K$ if $x_{\mathsf{L}} < q$.[41] Hence, $\Psi_{\text{L}}(l,m) = NI$, $\Psi_{\text{R}}(l,m) = NI$ implies either $K \geq q\Lambda$ if $q < x_{\mathsf{L}}$, $K \geq q\frac{\Lambda}{2}$ if $q = x_{\mathsf{L}}$, or $x_{\mathsf{L}} < q$. Suppose now $\Psi_{\text{L}}(l,m) = I$, $\Psi_{\text{R}}(l,m) = NI$. In such a case, voters' beliefs are $\gamma_{mm}^{ll} = (x_{\mathsf{L}},0)$ and $\gamma_{mr}^{lm} = (0^{(TM)},1)$. Proceeding as previously, we obtain that $\Psi_{\text{L}}(l,m) = I$, $\Psi_{\text{R}}(l,m) = NI$ implies $q\Lambda \geq K$. Finally, one can prove that neither $\Psi_{\text{L}}(l,m) = NI$, $\Psi_{\text{R}}(l,m) = I$, nor $\Psi_{\text{L}}(l,m) = I$, $\Psi_{\text{R}}(l,m) = I$ holds in equilibrium.

Case (3). Using analogous arguments we obtain that either $\Psi_{\text{L}}(m,r) = NI$, $\Psi_{\text{R}}(m,r) = NI$, $K \geq q\Lambda$, $x_{\mathsf{R}} > q$; $\Psi_{\text{L}}(m,r) = NI$, $\Psi_{\text{R}}(m,r) = NI$, $K \geq q\frac{\Lambda}{2}$, $x_{\mathsf{R}} = q$; $\Psi_{\text{L}}(m,r) = NI$, $\Psi_{\text{R}}(m,r) = NI$, $x_{\mathsf{R}} < q$; or $\Psi_{\text{L}}(m,r) = NI$, $\Psi_{\text{R}}(m,r) = I$, $q\Lambda \geq K$ holds in equilibrium.

Case (4). Let us now suppose that both candidates deviate and the platform profile the media observe is (l,r). Suppose also $\Psi_{\text{L}}(l,r) = NI$, $\Psi_{\text{R}}(l,r) = NI$. In such a case, voters' beliefs are $\gamma_{rr}^{ll} = (x_{\mathsf{L}},x_{\mathsf{R}})$ and $\gamma_{rm}^{lm} = (0^{(TM)},0^{(TM)})$. The payoff of outlet L is either 0 if $x_{\mathsf{L}} > x_{\mathsf{R}}$, $\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = x_{\mathsf{R}}$, or Λ if $x_{\mathsf{L}} < x_{\mathsf{R}}$, whereas if it deviates its payoff is always smaller. The same occurs to R. Thus $\Psi_{\text{L}}(l,r) = NI$, $\Psi_{\text{R}}(l,r) = NI$ is possible in equilibrium. Let us now consider $\Psi_{\text{L}}(l,r) = I$, $\Psi_{\text{R}}(l,r) = I$. In this case, voters' beliefs are $\gamma_{rr}^{ll} = (1^{(TM)},1^{(TM)})$ and $\gamma_{rm}^{lm} = (0^{(TM)},0^{(TM)})$. The payoff of L is $x_{\mathsf{R}}x_{\mathsf{L}}\frac{\Lambda}{2} + x_{\mathsf{R}}(1-x_{\mathsf{L}})\Lambda + (1-x_{\mathsf{R}})(1-x_{\mathsf{L}})\frac{\Lambda}{2} - K$, whereas if it deviates its payoff is $x_{\mathsf{L}}\frac{\Lambda}{2} + (1-x_{\mathsf{L}})\Lambda$. The analysis for media R gives similar results. Thus, $\Psi_{\text{L}}(l,r) = I$, $\Psi_{\text{R}}(l,r) = I$ cannot hold in equilibrium. Analogously, neither $\Psi_{\text{L}}(l,r) = I$, $\Psi_{\text{R}}(l,r) = NI$, nor $\Psi_{\text{L}}(l,r) = NI$, $\Psi_{\text{R}}(l,r) = I$ hold in equilibrium.

The next step is to analyze the candidates' behavior.

(ii.1) Let us consider the hypothetical equilibrium strategy profile (mm,mm), $\Psi_j(m,m) = NI$, $\Psi_{\text{L}}(l,m) = I$, $\Psi_{\text{R}}(l,m) = NI$, $\Psi_{\text{L}}(m,r) = NI$, $\Psi_{\text{R}}(m,r) = I$, $\Psi_j(l,r) = NI$, for $j \in \{\text{L},\text{R}\}$. For an equilibrium of this sort to exists, we need $q\frac{\Lambda}{2} \leq K \leq q\Lambda$. We observe that the candidates gain $\frac{n_{\mathcal{C}}}{2}$ in equilibrium, whereas by deviating they gain $qn_{\mathcal{C}}$. Hence, this strategy profile conforms an equilibrium

[41] We use the assumption LP.

when $q\frac{\Lambda}{2} \leq K \leq q\Lambda$ and $q \leq \frac{1}{2}$.

(ii.2) Let us consider the hypothetical equilibrium strategy profile (mm, mm), $\Psi_j(m,m) = NI$, $\Psi_{\text{L}}(l,m) = I$, $\Psi_{\text{R}}(l,m) = NI$, $\Psi_j(m,r) = NI$, $\Psi_j(l,r) = NI$, for $j \in \{\text{L},\text{R}\}$. The candidate L is in equilibrium if $q \leq \frac{1}{2}$, whereas the candidate R is so if $x_{\mathsf{R}} \geq q$. Hence, this strategy profile conforms an equilibrium when $q \leq \frac{1}{2}$ and either $q\frac{\Lambda}{2} \leq K \leq q\Lambda$, $x_{\mathsf{R}} = q$ or $K = q\Lambda$, $x_{\mathsf{R}} > q$.

(ii.3) Proceeding as above we obtain that there is an equilibrium (mm, mm), $\Psi_j(m,m) = NI$, $\Psi_j(l,m) = NI$, $\Psi_{\text{L}}(m,r) = NI$, $\Psi_{\text{R}}(m,r) = I$, $\Psi_j(l,r) = NI$, for $j \in \{\text{L},\text{R}\}$, when $q \leq \frac{1}{2}$ and either $q\frac{\Lambda}{2} \leq K \leq q\Lambda$, $x_{\mathsf{L}} = q$ or $K = q\Lambda$, $x_{\mathsf{L}} > q$.

(ii.4) Let us now consider the hypothetical equilibrium strategy profile (mm, mm), $\Psi_j(m,m) = NI$, $\Psi_j(l,m) = NI$, $\Psi_j(m,r) = NI$, $\Psi_j(l,r) = NI$ for $j \in \{\text{L},\text{R}\}$. Either candidate gains $\frac{n_{\mathcal{C}}}{2}$ in equilibrium, whereas if one, let us say candidate $j \in \{\mathsf{L},\mathsf{R}\}$, deviates, he gains either $n_{\mathcal{C}}$ if $x_j < q$, $\frac{n_{\mathcal{C}}}{2}$ if $x_j = q$, or 0 if $x_j > q$. Thus, for the equilibrium to exists we need $q \leq \min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$. Then, this strategy profile conforms an equilibrium when parameters and beliefs satisfy either $q\frac{\Lambda}{2} \leq K$, $q = x_{\mathsf{L}} = x_{\mathsf{R}}$; $q\Lambda \leq K$, $q < x_{\mathsf{L}}$, $q \leq x_{\mathsf{R}}$; or $q\Lambda \leq K$, $q = x_{\mathsf{L}}$, $q < x_{\mathsf{R}}$.

We still have to analyze those cases in which at least one candidate is investigated in equilibrium. Here, we distinguish two set-ups: the first one is when the two outlets investigate in equilibrium; the second set-up is when only one outlet does. With respect to the first case, we observe that either of the two extreme candidates gains $q\frac{n_{\mathcal{C}}}{2}$ in equilibrium, whereas if one deviates he gains either $qn_{\mathcal{C}}$ (if by so doing his opponent is investigated), or at least $\frac{n_{\mathcal{C}}}{2}$ (if by so doing his opponent is not investigated). Therefore, there is no equilibrium in which both outlets investigate in equilibrium. Now, let us consider the cases in which only one politician is investigated in equilibrium. Here, we observe that there is no equilibrium in which the candidate who is investigated in equilibrium is not when he deviates. The reason is that the extreme type of this candidate gets zero in equilibrium, whereas he gets $qn_{\mathcal{C}}$ if he deviates and proposes an extreme platform. With respect to the remaining cases, we obtain the following results.

(ii.5) There is an equilibrium (mm, mm), $\Psi_{\text{L}}(m,m) = I$, $\Psi_{\text{R}}(m,m) = NI$, $\Psi_{\text{L}}(l,m) = I$, $\Psi_{\text{R}}(l,m) = NI$, $\Psi_j(m,r) = NI$, $\Psi_j(l,r) = NI$, $q < x_{\mathsf{R}}$, for $j \in \{\text{L},\text{R}\}$, when $q\Lambda = K$.

(ii.6) There is an equilibrium (mm, mm), $\Psi_{\text{L}}(m,m) = NI$, $\Psi_{\text{R}}(m,m) = I$, $\Psi_j(l,m) = NI$, $\Psi_{\text{L}}(m,r) = NI$, $\Psi_{\text{R}}(m,r) = I$, $\Psi_j(l,r) = NI$, $q < x_{\mathsf{L}}$, for $j \in \{\text{L},\text{R}\}$, when $q\Lambda = K$.

(ii.7) There is an equilibrium (mm, mm), $\Psi_{\text{L}}(m,m) = I$, $\Psi_{\text{R}}(m,m) = NI$, $\Psi_j(l,m) = NI$, $\Psi_j(m,r) = NI$, $\Psi_j(l,r) = NI$, for $j \in \{\text{L},\text{R}\}$, when $q < x_{\mathsf{R}}$, $q\Lambda = K$ and either $q < x_{\mathsf{L}}$ or $q = x_{\mathsf{L}} \geq \frac{1}{2}$.

(ii.8) There is an equilibrium (mm, mm), $\Psi_{\text{L}}(m,m) = NI$, $\Psi_{\text{R}}(m,m) = I$, $\Psi_j(l,m) = NI$, $\Psi_j(m,r) = NI$, $\Psi_j(l,r) = NI$, for $j \in \{\text{L},\text{R}\}$, when $q < x_{\mathsf{L}}$, $q\Lambda = K$ and either $q < x_{\mathsf{R}}$ or $q = x_{\mathsf{R}} \geq \frac{1}{2}$.

(iii) Third, let us consider a hypothetical equilibrium in which $\Upsilon^*_{\mathsf{L}}(L) = \Upsilon^*_{\mathsf{L}}(M) = l$, $\Upsilon^*_{\mathsf{R}}(R) = \Upsilon^*_{\mathsf{R}}(M) = r$. The messages the media can observe are four: the equilibrium messages (l,r), and the off the equilibrium messages (l,m), (m,r) and (m,m). As previously, we start analyzing the media's behavior.

Case (1). Let us consider the equilibrium platform profile (l,r). Let us suppose $\Psi_{\text{L}}(l,r) = I$, $\Psi_{\text{R}}(l,r) =$

I. Voters' beliefs are $\gamma^{ll}_{rr} = (1,1)$ and $\gamma^{lm}_{rm} = (0,0)$. Then, the payoff of either outlet is $q^2\frac{\Lambda}{2} + q(1-q)\Lambda + (1-q)^2\frac{\Lambda}{2} - K$, whereas if it deviates its payoff is $q\frac{\Lambda}{2} + (1-q)\Lambda$. Thus, the outlet finds it profitable to deviate. Analogously, we obtain that neither $\Psi_{\mathrm{L}}(l,r) = I$, $\Psi_{\mathrm{R}}(l,r) = NI$, nor $\Psi_{\mathrm{L}}(l,r) = NI$, $\Psi_{\mathrm{R}}(l,r) = I$ holds in equilibrium. Then, let us consider $\Psi_{\mathrm{L}}(l,r) = NI$, $\Psi_{\mathrm{R}}(l,r) = NI$. Here, voters' beliefs are $\gamma^{ll}_{rr} = (q,q)$ and $\gamma^{lm}_{rm} = (0^{(TM)}, 0^{(TM)})$. The payoff of either outlet is $\frac{\Lambda}{2}$, whereas if it deviates its payoff is $q\frac{\Lambda}{2} - K$. Thus $\Psi_{\mathrm{L}}(l,r) = NI$, $\Psi_{\mathrm{R}}(l,r) = NI$ can hold in equilibrium.

Case (2). Let us suppose that candidate R deviates. Then, the platform profile the media observe is (l,m). Let us suppose $\Psi_{\mathrm{L}}(l,m) = NI$, $\Psi_{\mathrm{R}}(l,m) = NI$. Voters' beliefs are $\gamma^{ll}_{mm} = (q, x_{\mathsf{R}})$ and $\gamma^{lm}_{mr} = (0^{(TM)}, 1^{(TM)})$. The payoff of the left-wing outlet is either Λ if $x_{\mathsf{R}} > q$, $\frac{\Lambda}{2}$ if $x_{\mathsf{R}} = q$, or 0 if $x_{\mathsf{R}} < q$, whereas if it deviates and chooses to investigate its payoff is either $\Lambda - K$ if $x_{\mathsf{R}} > q$, $x_{\mathsf{R}}\Lambda + (1-x_{\mathsf{R}})\frac{\Lambda}{2} - K$ if $x_{\mathsf{R}} = q$, or $x_{\mathsf{R}}\Lambda - K$ if $x_{\mathsf{R}} < q$. On the other hand, the payoff of media R is either 0 if $x_{\mathsf{R}} > q$, $\frac{\Lambda}{2}$ if $x_{\mathsf{R}} = q$, or Λ if $x_{\mathsf{R}} < q$, whereas if it deviates its payoff is either $-K$ if $x_{\mathsf{R}} > q$, $q\frac{\Lambda}{2} - K$ if $x_{\mathsf{R}} = q$, $q\Lambda - K$ if $0 < x_{\mathsf{R}} < q$, or $q\Lambda + (1-q)\Lambda - K$ if $x_{\mathsf{R}} = 0$. Hence, $\Psi_{\mathrm{L}}(l,m) = NI$, $\Psi_{\mathrm{R}}(l,m) = NI$ implies either $x_{\mathsf{R}} > q$; $K \geq x_{\mathsf{R}}\Lambda$ if $x_{\mathsf{R}} < q$; or $K \geq x_{\mathsf{R}}\frac{\Lambda}{2}$ if $x_{\mathsf{R}} = q$. Let us now suppose $\Psi_{\mathrm{L}}(l,m) = NI$, $\Psi_{\mathrm{R}}(l,m) = I$. Voters' beliefs are $\gamma^{ll}_{mm} = (1, x_{\mathsf{R}})$ and $\gamma^{lm}_{mr} = (0, 1^{(TM)})$. The payoff of the right-wing media is either $\Lambda - K$ if $x_{\mathsf{R}} = 0$, $q\Lambda - K$ if $x_{\mathsf{R}} \in (0,1)$, or $-K$ if $x_{\mathsf{R}} = 1$, whereas if it deviates its payoff is either Λ if $x_{\mathsf{R}} < 1$ or 0 if $x_{\mathsf{R}} = 1$. Thus, $\Psi_{\mathrm{L}}(l,m) = NI$, $\Psi_{\mathrm{R}}(l,m) = I$ cannot be in equilibrium. Finally, note that we do not analyze the cases $\Psi_{\mathrm{L}}(l,m) = I$, $\Psi_{\mathrm{R}}(l,m) = NI$, and $\Psi_{\mathrm{L}}(l,m) = I$, $\Psi_{\mathrm{R}}(l,m) = I$. The reason is that, as we will show later on, the candidates have a profitable deviation when they are not investigated in equilibrium, but it is the candidate who deviates. Therefore, neither $\Psi_{\mathrm{L}}(l,m) = I$, $\Psi_{\mathrm{R}}(l,m) = NI$ nor $\Psi_{\mathrm{L}}(l,m) = I$, $\Psi_{\mathrm{R}}(l,m) = I$ can hold in equilibrium.

Case (3). Analogous arguments show that $\Psi_j(m,r) = NI$, for $j \in \{\mathsf{L}, \mathsf{R}\}$, implies either $K \geq x_{\mathsf{L}}\Lambda$, $x_{\mathsf{L}} < q$; $K \geq x_{\mathsf{L}}\frac{\Lambda}{2}$, $x_{\mathsf{L}} = q$; or $x_{\mathsf{L}} > q$.

Case (4). Finally, let us consider that both candidates deviate, and the platform profile the media observe is (m,m). Let us suppose $\Psi_{\mathrm{L}}(m,m) = I$, $\Psi_{\mathrm{R}}(m,m) = I$. Voters' beliefs are $\gamma^{mm}_{mm} = (0^{(TM)}, 0^{(TM)})$ and $\gamma^{ml}_{mr} = (1^{(TM)}, 1^{(TM)})$. The payoff of outlet L is $(1-x_{\mathsf{L}})(1-x_{\mathsf{R}})\frac{\Lambda}{2} + x_{\mathsf{R}}(1-x_{\mathsf{L}})\Lambda + x_{\mathsf{L}}x_{\mathsf{R}}\frac{\Lambda}{2} - K$, whereas if it deviates its payoff is $(1-x_{\mathsf{L}})\frac{\Lambda}{2}$. The analysis is analogous for media R. Thus, $\Psi_{\mathrm{L}}(m,m) = I$, $\Psi_{\mathrm{R}}(m,m) = I$ implies $K \leq \frac{\Lambda}{2}\min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$. Let us now suppose $\Psi_{\mathrm{L}}(m,m) = I$, $\Psi_{\mathrm{R}}(m,m) = NI$. Here, voters' beliefs are $\gamma^{mm}_{mm} = (x_{\mathsf{L}}, 0^{(TM)})$ and $\gamma^{ml}_{mr} = (1^{(TM)}, 1^{(TM)})$. The payoff of L is either $(1-x_{\mathsf{R}})\frac{\Lambda}{2} + x_{\mathsf{R}}\Lambda - K$ if $x_{\mathsf{L}} = 0$, $x_{\mathsf{R}}\Lambda - K$ if $x_{\mathsf{L}} \in (0,1)$, or $x_{\mathsf{R}}\frac{\Lambda}{2} - K$ if $x_{\mathsf{L}} = 1$, whereas if it deviates it gets either 0 if $x_{\mathsf{L}} > 0$, or $\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = 0$. On the other hand, the payoff of R is either $(1-x_{\mathsf{R}})\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = 0$, $(1-x_{\mathsf{R}})\Lambda$ if $x_{\mathsf{L}} \in (0,1)$, or $(1-x_{\mathsf{R}})\Lambda + x_{\mathsf{R}}\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = 1$, whereas if it deviates it gains either $(1-x_{\mathsf{R}})\frac{\Lambda}{2} + x_{\mathsf{R}}x_{\mathsf{L}}\frac{\Lambda}{2} - K$ if $x_{\mathsf{L}} = 0$, $(1-x_{\mathsf{R}})\Lambda + x_{\mathsf{R}}x_{\mathsf{L}}\frac{\Lambda}{2} - K$ if $x_{\mathsf{L}} \in (0,1)$, or $(1-x_{\mathsf{R}})\Lambda + x_{\mathsf{R}}\frac{\Lambda}{2} - K$ if $x_{\mathsf{L}} = 1$. Thus, $\Psi_{\mathrm{L}}(m,m) = I$, $\Psi_{\mathrm{R}}(m,m) = NI$ implies either $K \leq x_{\mathsf{R}}\frac{\Lambda}{2}$, $x_{\mathsf{L}} \in \{0,1\}$, or $x_{\mathsf{L}}x_{\mathsf{R}}\frac{\Lambda}{2} \leq K \leq x_{\mathsf{R}}\Lambda$, $x_{\mathsf{L}} \in (0,1)$. Analogously, we obtain that $\Psi_{\mathrm{L}}(m,m) = NI$, $\Psi_{\mathrm{R}}(m,m) = I$ implies either $K \leq x_{\mathsf{L}}\frac{\Lambda}{2}$, $x_{\mathsf{R}} \in \{0,1\}$, or $x_{\mathsf{L}}x_{\mathsf{R}}\frac{\Lambda}{2} \leq K \leq x_{\mathsf{L}}\Lambda$, $x_{\mathsf{R}} \in (0,1)$. Finally, let us consider $\Psi_{\mathrm{L}}(m,m) = NI$, $\Psi_{\mathrm{R}}(m,m) = NI$. Voters' beliefs are $\gamma^{mm}_{mm} = (x_{\mathsf{L}}, x_{\mathsf{R}})$ and $\gamma^{ml}_{mr} = (1^{(TM)}, 1^{(TM)})$. Here, $\Psi_{\mathrm{L}}(m,m) = NI$, $\Psi_{\mathrm{R}}(m,m) = NI$ implies either $x_{\mathsf{L}} = x_{\mathsf{R}} = 1$; $x_{\mathsf{L}} = x_{\mathsf{R}} < 1$, $K \geq x_{\mathsf{L}}\frac{\Lambda}{2}$;

$x_{\mathsf{L}} < x_{\mathsf{R}} = 1$, $K \geq \frac{\Lambda}{2}x_{\mathsf{L}}$; $x_{\mathsf{R}} < x_{\mathsf{L}} = 1$, $K \geq \frac{\Lambda}{2}x_{\mathsf{R}}$; $x_{\mathsf{L}} < x_{\mathsf{R}} < 1$, $K \geq \Lambda x_{\mathsf{L}}$; or $x_{\mathsf{R}} < x_{\mathsf{L}} < 1$, $K \geq \Lambda x_{\mathsf{R}}$.

Now, we analyze the candidates' behavior.

($iii.1$) Let us consider the hypothetical equilibrium strategy profile (ll, rr), $\Psi_j(l,r) = NI$, $\Psi_j(l,m) = NI$, $\Psi_j(m,r) = NI$, $\Psi_j(m,m) = I$, with $j \in \{\mathrm{L}, \mathrm{R}\}$. We observe that either politician gains $\frac{n_{\mathcal{C}}}{2}$ in equilibrium, whereas if one, let us say candidate j, with $j \in \{\mathsf{L}, \mathsf{R}\}$, deviates, he gains either $n_{\mathcal{C}}$ if $x_j < q$, $\frac{n_{\mathcal{C}}}{2}$ if $x_j = q$, or 0 if $x_j > q$. Hence, $q \leq \min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$. Thus, this strategy profile conforms an equilibrium when parameters and beliefs satisfy either $K = \frac{\Lambda}{2}q$, $q = \min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$; or $K \leq \frac{\Lambda}{2}\min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$, $q < \min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$.

($iii.2$) Let us now consider the hypothetical equilibrium strategy profile (ll, rr), $\Psi_j(l,r) = NI$, $\Psi_j(l,m) = NI$, $\Psi_j(m,r) = NI$, $\Psi_j(m,m) = NI$, for $j \in \{\mathrm{L}, \mathrm{R}\}$. The payoffs are as in the previous case, therefore $q \leq \min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$. Then, this strategy profile conforms an equilibrium when parameters and beliefs satisfy either $x_{\mathsf{L}} = x_{\mathsf{R}} = 1$; $q \leq x_{\mathsf{L}} = x_{\mathsf{R}} < 1$, $K \geq \frac{\Lambda}{2}x_{\mathsf{L}}$; $q \leq x_{\mathsf{L}} < x_{\mathsf{R}} = 1$, $K \geq \frac{\Lambda}{2}x_{\mathsf{L}}$; $q \leq x_{\mathsf{R}} < x_{\mathsf{L}} = 1$, $K \geq \frac{\Lambda}{2}x_{\mathsf{R}}$; $q \leq x_{\mathsf{L}} < x_{\mathsf{R}} < 1$, $K \geq \Lambda x_{\mathsf{L}}$; or $q \leq x_{\mathsf{R}} < x_{\mathsf{L}} < 1$, $K \geq \Lambda x_{\mathsf{R}}$.

($iii.3$) Let us now consider the hypothetical equilibrium strategy profile (ll, rr), $\Psi_j(l,r) = NI$, $\Psi_j(l,m) = NI$, $\Psi_j(m,r) = NI$, $\Psi_{\mathrm{L}}(m,m) = I$, $\Psi_{\mathrm{R}}(m,m) = NI$, for $j \in \{\mathrm{L}, \mathrm{R}\}$. Proceeding as previously, we obtain that this strategy profile conforms an equilibrium when either $q = x_{\mathsf{R}} < x_{\mathsf{L}} = 1$, $K = q\frac{\Lambda}{2}$; $q = x_{\mathsf{R}} < x_{\mathsf{L}} < 1$, $q\frac{\Lambda}{2} \leq K \leq q\Lambda$; $q = x_{\mathsf{R}} = x_{\mathsf{L}}$, $q\frac{\Lambda}{2} \leq K \leq q\Lambda$; $q = x_{\mathsf{L}} < x_{\mathsf{R}}$, $q\frac{\Lambda}{2} \leq K \leq x_{\mathsf{R}}\Lambda$; $q < x_{\mathsf{L}} < 1$, $q < x_{\mathsf{R}}$, $x_{\mathsf{L}}x_{\mathsf{R}}\frac{\Lambda}{2} \leq K \leq x_{\mathsf{R}}\Lambda$; or $q < x_{\mathsf{R}}$, $x_{\mathsf{L}} = 1$, $K \leq x_{\mathsf{R}}\frac{\Lambda}{2}$.

($iii.4$) In a similar way, we obtain that there is an equilibrium such as (ll, rr), $\Psi_j(l,r) = NI$, $\Psi_j(l,m) = NI$, $\Psi_j(m,r) = NI$, $\Psi_{\mathrm{L}}(m,m) = NI$, $\Psi_{\mathrm{R}}(m,m) = I$, for $j \in \{\mathrm{L}, \mathrm{R}\}$, when either $q = x_{\mathsf{L}} < x_{\mathsf{R}} = 1$, $K = q\frac{\Lambda}{2}$; $q = x_{\mathsf{L}} < x_{\mathsf{R}} < 1$, $q\frac{\Lambda}{2} \leq K \leq q\Lambda$; $q = x_{\mathsf{R}} = x_{\mathsf{L}}$, $q\frac{\Lambda}{2} \leq K \leq q\Lambda$; $q = x_{\mathsf{R}} < x_{\mathsf{L}}$, $q\frac{\Lambda}{2} \leq K \leq x_{\mathsf{L}}\Lambda$; $q < x_{\mathsf{R}} < 1$, $q < x_{\mathsf{L}}$, $x_{\mathsf{L}}x_{\mathsf{R}}\frac{\Lambda}{2} \leq K \leq x_{\mathsf{L}}\Lambda$; or $q < x_{\mathsf{L}}$, $x_{\mathsf{R}} = 1$, $K \leq x_{\mathsf{L}}\frac{\Lambda}{2}$.

Finally, note that when the candidates are not investigated when they send the equilibrium messages (l, r), but it is the candidate who deviates, no equilibrium exists. The reason is that the moderate candidate who off the equilibrium path is investigated gains $\frac{n_{\mathcal{C}}}{2}$ in equilibrium, whereas by deviating he gets $n_{\mathcal{C}}$. Thus, no equilibrium of this type exists.

(iv) Last, let us consider a hypothetical equilibrium in which one candidate pools at the moderate policy, and the other does so at the extreme policy. Without loss of generality, we analyze the case $\Upsilon^*_{\mathsf{L}}(L) = \Upsilon^*_{\mathsf{L}}(M) = l$, $\Upsilon^*_{\mathsf{R}}(R) = \Upsilon^*_{\mathsf{R}}(M) = m$.[42] Here, the messages the media can observe are four: the equilibrium messages (l, m), and the off the equilibrium messages (l, r), (m, m) and (m, r). As previously, we start analyzing the media's behavior.

Case (1). Let us start with the equilibrium platform profile (l, m). Let us suppose $\Psi_{\mathrm{L}}(l,m) = NI$, $\Psi_{\mathrm{R}}(l,m) = NI$. Voters' beliefs are $\gamma^{ll}_{mm} = (q, q)$ and $\gamma^{lm}_{mr} = (0^{(TM)}, 1^{(TM)})$. The payoff of either outlet is $\frac{\Lambda}{2}$. Therefore, media R does not have an incentive to deviate, since it gains $q\frac{\Lambda}{2} - K$ by deviating. In contrast, the outlet L gains $(1-q)\frac{\Lambda}{2} + q\Lambda - K$ by deviating. Hence, $\Psi_{\mathrm{L}}(l,m) = NI$, $\Psi_{\mathrm{R}}(l,m) = NI$ implies $K \geq \frac{\Lambda}{2}q$. Now, let us consider $\Psi_{\mathrm{L}}(l,m) = I$, $\Psi_{\mathrm{R}}(l,m) = NI$. Voters' beliefs are $\gamma^{ll}_{mm} = (q, 0)$

[42] The analysis for the case $\Upsilon^*_{\mathsf{L}}(L) = \Upsilon^*_{\mathsf{L}}(M) = m$, $\Upsilon^*_{\mathsf{R}}(R) = \Upsilon^*_{\mathsf{R}}(M) = r$, is analogous to the one we present.

and $\gamma^{lm}_{mr} = (0^{(TM)}, 1)$. The payoff of the left-wing outlet is $q\Lambda - K$, whereas if it deviates it gains 0. On the other hand, the payoff of R is $(1-q)\Lambda$, whereas if it deviates it gains $(1-q)\Lambda - K$. Therefore, $\Psi_{\mathrm{L}}(l,m) = I$, $\Psi_{\mathrm{R}}(l,m) = NI$ implies $q\Lambda \geq K$. Finally, note that neither $\Psi_{\mathrm{L}}(l,m) = NI$, $\Psi_{\mathrm{R}}(l,m) = I$, nor $\Psi_{\mathrm{L}}(l,m) = I$, $\Psi_{\mathrm{R}}(l,m) = I$ holds in equilibrium. The reason is that media R always finds it profitable to deviate and choose not to investigate.

Case (2). The reader can easily check that only $\Psi_j(l,r) = NI$, for $j \in \{\mathrm{L},\mathrm{R}\}$, can hold in equilibrium.

Case (3). Now, let us consider the platform profile (m,m), and let us suppose $\Psi_{\mathrm{L}}(m,m) = I$, $\Psi_{\mathrm{R}}(m,m) = I$. Voters' beliefs are $\gamma^{mm}_{mm} = (0^{(TM)}, 0)$ and $\gamma^{ml}_{mr} = (1^{(TM)}, 1)$. The payoff of media L is $(1-x_{\mathsf{L}})(1-q)\frac{\Lambda}{2} + q(1-x_{\mathsf{L}})\Lambda + x_{\mathsf{L}} q\frac{\Lambda}{2} - K$, whereas if it deviates its payoff is $(1-x_{\mathsf{L}})\frac{\Lambda}{2}$. The analysis is analogous for media R. Thus $\Psi_{\mathrm{L}}(m,m) = I$, $\Psi_{\mathrm{R}}(m,m) = I$ implies $K \leq \frac{\Lambda}{2}\min\{q, x_{\mathsf{L}}\}$. Now, let us suppose $\Psi_{\mathrm{L}}(m,m) = I$, $\Psi_{\mathrm{R}}(m,m) = NI$. Voters' beliefs are $\gamma^{mm}_{mm} = (x_{\mathsf{L}}, 0)$ and $\gamma^{ml}_{mr} = (1^{(TM)}, 1)$. The payoff of L is either $(1-q)\frac{\Lambda}{2} + q\Lambda - K$ if $x_{\mathsf{L}} = 0$, $q\Lambda - K$ if $x_{\mathsf{L}} \in (0,1)$, or $q\frac{\Lambda}{2} - K$ if $x_{\mathsf{L}} = 1$, whereas if it deviates it gets either 0 if $x_{\mathsf{L}} > 0$, or $\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = 0$. The payoff of R is either $(1-q)\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = 0$, $(1-q)\Lambda$ if $x_{\mathsf{L}} \in (0,1)$, or $(1-q)\Lambda + q\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = 1$, whereas if it deviates it gains either $(1-q)\frac{\Lambda}{2} - K$ if $x_{\mathsf{L}} = 0$, $(1-q)\Lambda + x_{\mathsf{L}} q\frac{\Lambda}{2} - K$ if $x_{\mathsf{L}} \in (0,1)$, or $(1-q)\Lambda + q\frac{\Lambda}{2} - K$ if $x_{\mathsf{L}} = 1$. Thus, $\Psi_{\mathrm{L}}(m,m) = I$, $\Psi_{\mathrm{R}}(m,m) = NI$ implies either $K \leq q\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = 0$, $x_{\mathsf{L}} q\frac{\Lambda}{2} \leq K \leq q\Lambda$ if $x_{\mathsf{L}} \in (0,1)$, or $K \leq q\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = 1$. In a similar way, we obtain that $\Psi_{\mathrm{L}}(m,m) = NI$, $\Psi_{\mathrm{R}}(m,m) = I$ implies $x_{\mathsf{L}} q\frac{\Lambda}{2} \leq K \leq x_{\mathsf{L}}\Lambda$. Finally, let us suppose $\Psi_{\mathrm{L}}(m,m) = NI$, $\Psi_{\mathrm{R}}(m,m) = NI$. In such a case, voters' beliefs are $\gamma^{mm}_{mm} = (x_{\mathsf{L}}, q)$ and $\gamma^{ml}_{mr} = (1^{(TM)}, 1^{(TM)})$. The payoff of outlet L is either Λ if $x_{\mathsf{L}} < q$, $\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = q$, or 0 if $x_{\mathsf{L}} > q$, whereas if it deviates its payoff is either $\Lambda - K$ if $x_{\mathsf{L}} < q$, $(1-q)\frac{\Lambda}{2} + q\Lambda - K$ if $x_{\mathsf{L}} = q$, $q\Lambda - K$ if $q < x_{\mathsf{L}} < 1$, or $q\frac{\Lambda}{2} - K$ if $x_{\mathsf{L}} = 1$. In contrast, the payoff of media R is either 0 if $x_{\mathsf{L}} < q$, $\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = q$, or Λ if $x_{\mathsf{L}} > q$, whereas if it deviates its payoff is either $x_{\mathsf{L}}\Lambda - K$ if $x_{\mathsf{L}} < q$, $(1-x_{\mathsf{L}})\frac{\Lambda}{2} + x_{\mathsf{L}}\Lambda - K$ if $x_{\mathsf{L}} = q$, or $\Lambda - K$ if $q < x_{\mathsf{L}}$. Thus, $\Psi_{\mathrm{L}}(m,m) = NI$, $\Psi_{\mathrm{R}}(m,m) = NI$ implies either $K \geq x_{\mathsf{L}}\Lambda$ if $q > x_{\mathsf{L}}$; $K \geq \frac{\Lambda}{2}q$ if $q = x_{\mathsf{L}}$; $K \geq q\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = 1$; or $K \geq q\Lambda$ if $q < x_{\mathsf{L}} < 1$.

Case (4). Proceeding as usual we obtain that either $\Psi_{\mathrm{L}}(m,r) = NI$, $\Psi_{\mathrm{R}}(m,r) = NI$, $K \geq \Lambda x_{\mathsf{L}}$, $x_{\mathsf{L}} < x_{\mathsf{R}}$; $\Psi_{\mathrm{L}}(m,r) = NI$, $\Psi_{\mathrm{R}}(m,r) = NI$, $K \geq \Lambda x_{\mathsf{L}}$, $x_{\mathsf{L}} = x_{\mathsf{R}} = 0$; $\Psi_{\mathrm{L}}(m,r) = NI$, $\Psi_{\mathrm{R}}(m,r) = NI$, $K \geq \frac{\Lambda}{2}x_{\mathsf{L}}$, $x_{\mathsf{L}} = x_{\mathsf{R}} \in (0,1)$; $\Psi_{\mathrm{L}}(m,r) = NI$, $\Psi_{\mathrm{R}}(m,r) = NI$, $x_{\mathsf{L}} > x_{\mathsf{R}}$; $\Psi_{\mathrm{L}}(m,r) = NI$, $\Psi_{\mathrm{R}}(m,r) = NI$, $x_{\mathsf{L}} = x_{\mathsf{R}} = 1$; or $\Psi_{\mathrm{L}}(m,r) = NI$, $\Psi_{\mathrm{R}}(m,r) = I$, $K \leq x_{\mathsf{L}}\Lambda$ can be part of an equilibrium.

We now analyze the candidates' behavior.

$(iv.1)$ Let us consider the hypothetical equilibrium strategy profile (ll, mm), $\Psi_j(l,m) = NI$, $\Psi_j(l,r) = NI$, $\Psi_{\mathrm{L}}(m,m) = I$, $\Psi_{\mathrm{R}}(m,m) = NI$, $\Psi_j(m,r) = NI$, for $j \in \{\mathrm{L},\mathrm{R}\}$. Either candidate gains $\frac{n_{\mathcal{C}}}{2}$ in equilibrium. If L deviates, he gains either $\frac{1+q}{2}n_{\mathcal{C}}$ if $x_{\mathsf{L}} = 0$, $qn_{\mathcal{C}}$ if $x_{\mathsf{L}} \in (0,1)$, or $q\frac{n_{\mathcal{C}}}{2}$ if $x_{\mathsf{L}} = 1$. If R does, he gains either $n_{\mathcal{C}}$ if $x_{\mathsf{R}} < q$, $\frac{n_{\mathcal{C}}}{2}$ if $x_{\mathsf{R}} = q$, or 0 if $x_{\mathsf{R}} > q$. Hence, for the equilibrium to hold we need either $q \leq x_{\mathsf{R}}$, $x_{\mathsf{L}} = 1$ or $q \leq \min\{\frac{1}{2}, x_{\mathsf{R}}\}$, $x_{\mathsf{L}} \in (0,1)$. Thus, this strategy profile conforms an equilibrium when parameters and beliefs satisfy either $K = q\frac{\Lambda}{2}$, $q \leq x_{\mathsf{R}} \leq x_{\mathsf{L}} = 1$; $q\frac{\Lambda}{2} \leq K \leq q\Lambda$, $q \leq x_{\mathsf{R}} < x_{\mathsf{L}} < 1$, $q \leq \frac{1}{2}$; $x_{\mathsf{L}}\frac{\Lambda}{2} \leq K \leq q\Lambda$, $q \leq x_{\mathsf{R}} = x_{\mathsf{L}} < 1$, $q \leq \frac{1}{2}$; or $\max\{\frac{q}{2}, x_{\mathsf{L}}\}\Lambda \leq K \leq \min\{q, x_{\mathsf{L}}\}\Lambda$, $q \leq x_{\mathsf{R}}$, $0 < x_{\mathsf{L}} < x_{\mathsf{R}}$, $q \leq \frac{1}{2}$.

(iv.2) Analogously, there is an equilibrium (ll, mm), $\Psi_j(l,m) = NI$, $\Psi_j(l,r) = NI$, $\Psi_{\mathsf{L}}(m,m) = I$, $\Psi_{\mathsf{R}}(m,m) = NI$, $\Psi_{\mathsf{L}}(m,r) = NI$, $\Psi_{\mathsf{R}}(m,r) = I$, for $j \in \{\mathrm{L},\mathrm{R}\}$, when either $q\frac{\Lambda}{2} \leq K \leq \min\{q, x_{\mathsf{L}}\}\Lambda$, $q \leq \min\{\frac{1}{2}, x_{\mathsf{R}}\}$, $x_{\mathsf{L}} \in (0,1)$; or $K = q\frac{\Lambda}{2}$, $q \leq x_{\mathsf{R}}$, $x_{\mathsf{L}} = 1$.

(iv.3) Let us now consider the hypothetical equilibrium strategy profile (ll, mm), $\Psi_j(l,m) = NI$, $\Psi_j(l,r) = NI$, $\Psi_j(m,m) = NI$, $\Psi_j(m,r) = NI$, for $j \in \{\mathrm{L},\mathrm{R}\}$. For this equilibrium to exist, $q \leq \min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$. Thus, this strategy profile conforms an equilibrium when parameters and beliefs satisfy either $K \geq q\frac{\Lambda}{2}$, $q \leq x_{\mathsf{R}} \leq x_{\mathsf{L}} = 1$; $K \geq q\Lambda$, $q \leq x_{\mathsf{R}} < x_{\mathsf{L}} < 1$; $K \geq q\Lambda$, $q = x_{\mathsf{L}} < x_{\mathsf{R}}$; $K \geq q\frac{\Lambda}{2}$, $q = x_{\mathsf{L}} = x_{\mathsf{R}}$; $K \geq x_{\mathsf{L}}\Lambda$, $q < x_{\mathsf{L}} < x_{\mathsf{R}}$; or $K \geq \max\{q, x_{\mathsf{L}}\frac{1}{2}\}\Lambda$, $q < x_{\mathsf{L}} = x_{\mathsf{R}} < 1$.

(iv.4) Analogously, there is an equilibrium (ll, mm), $\Psi_j(l,m) = NI$, $\Psi_j(l,r) = NI$, $\Psi_j(m,m) = NI$, $\Psi_{\mathsf{L}}(m,r) = NI$, $\Psi_{\mathsf{R}}(m,r) = I$, for $j \in \{\mathrm{L},\mathrm{R}\}$, when either $q\frac{\Lambda}{2} \leq K \leq \Lambda$, $q \leq x_{\mathsf{R}}$, $x_{\mathsf{L}} = 1$; $q\Lambda \leq K \leq x_{\mathsf{L}}\Lambda$, $q \leq x_{\mathsf{R}}$, $q < x_{\mathsf{L}} < 1$; or $q\frac{\Lambda}{2} \leq K \leq q\Lambda$, $q = x_{\mathsf{L}} \leq x_{\mathsf{R}}$.

(iv.5) Let us now consider the hypothetical equilibrium strategy profile (ll, mm), $\Psi_{\mathsf{L}}(l,m) = I$, $\Psi_{\mathsf{R}}(l,m) = NI$, $\Psi_j(l,r) = NI$, $\Psi_{\mathsf{L}}(m,m) = I$, $\Psi_{\mathsf{R}}(m,m) = NI$, $\Psi_j(m,r) = NI$, for $j \in \{\mathrm{L},\mathrm{R}\}$. For candidates being in equilibrium, we need $q < x_{\mathsf{R}}$ and $x_{\mathsf{L}} \in (0,1]$. Thus, this strategy profile conforms an equilibrium when either $K \leq q\frac{\Lambda}{2}$, $q < x_{\mathsf{R}} \leq x_{\mathsf{L}} = 1$; $x_{\mathsf{L}}q\frac{\Lambda}{2} \leq K \leq q\Lambda$, $q < x_{\mathsf{R}} < x_{\mathsf{L}} < 1$; $x_{\mathsf{L}}\frac{\Lambda}{2} \leq K \leq q\Lambda$, $q < x_{\mathsf{R}} = x_{\mathsf{L}} < 1$; or $x_{\mathsf{L}}\Lambda \leq K \leq q\Lambda$, $0 < x_{\mathsf{L}} < x_{\mathsf{R}}$, $q < x_{\mathsf{R}}$.

(iv.6) Analogously, there is an equilibrium (ll, mm), $\Psi_{\mathsf{L}}(l,m) = I$, $\Psi_{\mathsf{R}}(l,m) = NI$, $\Psi_j(l,r) = NI$, $\Psi_{\mathsf{L}}(m,m) = I$, $\Psi_{\mathsf{R}}(m,m) = NI$, $\Psi_{\mathsf{L}}(m,r) = NI$, $\Psi_{\mathsf{R}}(m,r) = I$, for $j \in \{\mathrm{L},\mathrm{R}\}$, when either $x_{\mathsf{L}}q\frac{\Lambda}{2} \leq K \leq \min\{q, x_{\mathsf{L}}\}\Lambda$, $q < x_{\mathsf{R}}$, $x_{\mathsf{L}} \in (0,1)$, or $K \leq q\frac{\Lambda}{2}$, $q < x_{\mathsf{R}} \leq x_{\mathsf{L}} = 1$.

(iv.7) Let us now consider the hypothetical equilibrium strategy profile (ll, mm), $\Psi_{\mathsf{L}}(l,m) = I$, $\Psi_{\mathsf{R}}(l,m) = NI$, $\Psi_j(l,r) = NI$, $\Psi_j(m,m) = NI$, $\Psi_j(m,r) = NI$, for $j \in \{\mathrm{L},\mathrm{R}\}$. For this equilibrium to exist we need $q < x_{\mathsf{R}}$ and either $q < x_{\mathsf{L}}$ or $q = x_{\mathsf{L}}$, $q \geq \frac{1}{2}$. Thus, this strategy profile conforms an equilibrium when parameters and beliefs satisfy either $q\frac{\Lambda}{2} \leq K \leq q\Lambda$, $q < x_{\mathsf{R}} \leq x_{\mathsf{L}} = 1$; $K = q\Lambda$, $q < x_{\mathsf{R}} < x_{\mathsf{L}} < 1$; $K = q\Lambda$, $\frac{1}{2} \leq q = x_{\mathsf{L}} < x_{\mathsf{R}}$; or $K = q\Lambda$, $\frac{x_{\mathsf{L}}}{2} \leq q < x_{\mathsf{L}} = x_{\mathsf{R}} < 1$.

(iv.8) Analogously, there is an equilibrium (ll, mm), $\Psi_{\mathsf{L}}(l,m) = I$, $\Psi_{\mathsf{R}}(l,m) = NI$, $\Psi_j(l,r) = NI$, $\Psi_j(m,m) = NI$, $\Psi_{\mathsf{L}}(m,r) = NI$, $\Psi_{\mathsf{R}}(m,r) = I$, for $j \in \{\mathrm{L},\mathrm{R}\}$, when $q < x_{\mathsf{R}}$ and either $q\frac{\Lambda}{2} \leq K \leq q\Lambda$, $q < x_{\mathsf{L}} = 1$; $q\frac{\Lambda}{2} \leq K \leq q\Lambda$, $q = x_{\mathsf{L}} \geq \frac{1}{2}$; or $K = q\Lambda$, $q < x_{\mathsf{L}} < 1$.

Finally, note that there are no equilibria in which the right-wing media investigates when the candidates send the messages (m, m). The reason is that in such a case, the moderate type in the left-wing candidate gains by deviating, as the deviation allows him to reveal his "good" type. Thus, no equilibrium of this sort exists.

This completes the proof. ■