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Abstract

This paper examines the incentives of ideological media outlets to acquire costly information in a context of asymmetric information between political parties and voters. We consider two market structures: a monopoly media market and a duopoly one. We show that if each party has the support of a medium, either party has the same probability of winning the election. However, if just one of the parties has the support of the media, the results might well change, as this party will get into office with a higher probability than the other party. We also analyze voters' welfare in this context and show that the important aspect is whether a media industry exists, and not the number of media outlets.

Keywords: Election; Accountability; Media; Bias
JEL: D72; D82

1 Introduction

The public concern with the control of politicians is a recurrent topic within the literature on political economy. It was first studied by Barro (1973) and Ferejohn (1986), who analyzed 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 showed that the presence of regular elections act as a monitoring device of politicians' behavior.

More recently, a number of empirical and theoretical papers that consider the media as watchdogs have appeared. Among them, Besley and Burgess (2002) present evidence, for Indian states, of a strong correlation between the level of circulation of newspapers and the responsiveness of governments. Adserà et al. (2003) show that an increasingly informed electorate makes for more government

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effectiveness and for fewer corrupt practices. Djankov et al. (2003) prove that government ownership of media undermines political and economical freedom. On the theoretical side, Besley and Prat (2006) and Vaidya (2005) show that collusion between the government and the media can undermine corruption deterrence and Chan and Suen (2006) prove that media induce politicians to choose policies that better match the preference of the median voter.

This paper explores the interaction between media outlets with a political motive and election campaigns. Our aim is to study whether ideological media outlets can be a control of politicians' behavior and whether the existence of such media may bias the political game. To make our point, we consider the model in Andina-Díaz (2007) as our baseline. In Andina-Díaz (2007), we investigate the incentives of neutral media outlets to control politicians in a context of asymmetric information between political parties and voters. We also investigate how an increase in competition in the media market affects such incentives. The main result of this paper is that the readers' purchasing habits is a key variable that determines whether media competition favors information disclosure or not. We also show that if the number of newspapers is large, the candidates' incentives to reveal their information do not depend on the readers' purchasing habits.

An important assumption we make in Andina-Díaz (2007) is that media outlets are neutral, i.e., they do not have a political preference. This is a reasonable assumption in some countries (a classical example is television in the UK, where the Independent Television Commission, ITC, regulates political news, calling for impartiality and plurality),[1] but does not fit the reality of many others (especially in emerging and transitional economies).[2] This paper presents an extension of Andina-Díaz (2007), to consider the case of ideological media outlets that aim to contribute to the election of their preferred politician. We simplify and reformulate the model in Andina-Díaz (2007) to incorporate media outlets that no longer care about audience but merely about political rents. We consider two market structures: a monopoly media market and a duopoly one. For each of the market structures, we study the incentives of ideological media outlets to acquire costly information (assuming they cannot manipulate news) and the political equilibria that exist in each case. We obtain that all the (pure strategies) equilibria are pooling equilibria, i.e., the existence of a market for news does not result in full information disclosure in the political game. Further, our results show that the quality of the political game may be undermined if the media do not support all the parties equally. In particular, we prove that if each party has the support of one medium, either party has the same probability of winning the election. However, if just one of the parties has the support of the media, the results might well change, as this party will get into office with a higher probability than the other

[1]"*The Broadcasting Act 1990 makes it the statutory duty of the ITC 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.

[2]See Djankov et al. (2003).

party. We also analyze voters' welfare in this context and observe that it is higher under a market for news than under no such industry, and that, in equilibrium, having one or two media outlets does not matter for voters.

The paper is organized as follows. In Section 2 we present the model. In Section 3 we derive the equilibria and analyze the political and welfare implications. Finally, we conclude in Section 4.

2 The model

We consider two political parties that compete for office. Each party is represented by a candidate. The candidates in a party may differ in their extremism so as to their preferred policy. Nature selects a candidate in each party that proposes a non-binding platform and runs for office. Ideological media outlets observe the candidates' platforms and decide whether to investigate their non-preferred candidate or not. Voters observe the candidates' platforms and the media's messages, update beliefs on the candidates types and decide for whom to vote.

Political parties. Let L be the left-wing party and R be the right-wing one. Each party is represented by a candidate. A priori, candidates in each party can be either moderate, M, or extreme, with L for the left and R for the right-wing party. Thus, the set of possible types is $T_{\mathsf{L}} = \{L, M\}$, $T_{\mathsf{R}} = \{R, M\}$ with $t_{\mathsf{L}} \in T_{\mathsf{L}}$, $t_{\mathsf{R}} \in T_{\mathsf{R}}$. Nature moves first and chooses the type of the two candidates (one for each party). A candidate's type is his own private information, although voters have priors on it. The prior probability that a candidate is extreme is q, with $q \in (0, 1)$.

The two candidates propose non-binding platforms and run for office.[3] The space of platforms is $\mathsf{P}_{\mathsf{L}} = \{l, m\}$, $\mathsf{P}_{\mathsf{R}} = \{r, m\}$ for candidates in party L and R respectively, with $\mathsf{p}_{\mathsf{L}} \in \mathsf{P}_{\mathsf{L}}$, $\mathsf{p}_{\mathsf{R}} \in \mathsf{P}_{\mathsf{R}}$. A (pure) strategy for a candidate from party L is a function $\Upsilon_{\mathsf{L}} : T_{\mathsf{L}} \to \{l, m\}$, and that of a candidate from party R is $\Upsilon_{\mathsf{R}} : T_{\mathsf{R}} \to \{r, m\}$. Candidates' goal is to win the election.

Media outlets. We consider an ideological media market, i.e., media outlets that obtain political benefits if their preferred party gets into office. Let $\Lambda > 0$ be the political benefit. We assume that media competition is solely for political benefits, i.e., outlets do not care about audience but merely about Λ.

We consider two market structures: a monopoly media market and a duopoly one. Let L be the media outlet preferring the left-wing party and R be the one preferring the right-wing party. Media outlets observe politicians' platforms, update beliefs on the candidates' types and decide (simultaneously in the case of two outlets) whether to investigate their non-preferred candidate or not.[4] A (pure) strategy for outlet $i \in \{\mathrm{L}, \mathrm{R}\}$ is a function $\Psi_i : \mathsf{P}_{\mathsf{L}} \times \mathsf{P}_{\mathsf{R}} \to \{I, NI\}$. We assume that when a media outlet does not investigate, it gets no information on the can-

[3]In a one-shot game, it implies that the elected politician will implement his type as the policy.

[4]The media outlets could also choose to investigate their preferred candidate, but this would rarely occur in equilibrium, so we disregard this case.

didate' true type and so, it reports in the paper what the two candidates have told in their campaigns. In contrast, when a media outlet investigates, we assume that it observes the true type of its non-preferred candidate (the one it investigates) and reports this information in the paper (as well as the campaign platform for its preferred candidate).[5] We denote by $\mathsf{M}_i = \{lr, lm, mr, mm\}$ the space of messages (reports) of outlet i, $\forall i \in \{\mathrm{L}, \mathrm{R}\}$, and by $\mathsf{m}_i \in \mathsf{M}_i$ an element of this set, where the first (second) component of m_i refers to the left-wing (right-wing) party. Finally, to investigate implies a strictly positive fixed cost, $K > 0$.

Voters. We consider a finite and odd number n of (moderate) voters. Voters maximize their expected utility, which is defined on the policy implemented by the elected candidate (his type). Voters' preferences are $M \succ L \sim R$.[6]

Voters observe candidates' platforms and media's messages, update beliefs on the candidates' types and decide for whom to vote. A strategy for voter v is a function $\Gamma_v : \prod_{j=\mathsf{L},\mathsf{R}} \mathsf{P}_j \times \prod_{i=\mathrm{L},\mathrm{R}} \mathsf{M}_i \rightarrow \{\mathsf{L}, \mathsf{R}\}$ that maps all pair of candidates' platforms and media's messages into the choice of whom to vote for. Citizen v votes for L (R) if she believes L (R) to be more likely a moderate type than R (L). In case of indifference, a coin flip determines her vote.

3 Equilibrium analysis

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 voters, and a vector of beliefs for media and voters, such that:

(i) Candidates maximize their number of votes, media outlets maximize their political payoffs and voters maximize their expected utility.

(ii) The belief of media outlets on 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 voters on candidate $j \in \{\mathsf{L}, \mathsf{R}\}$ is derived from Bayes' Rule, i.e., $\forall \mathsf{p}_j \in \mathsf{P}_j$, $\forall \mathsf{m}_i \in \mathsf{M}_i$,

$\gamma_j^*(t \mid \mathsf{p}_j, \{\mathsf{m}_{i \neq j}^j\}_{i \in \{\mathrm{L},\mathrm{R}\}}) = \frac{\xi_j\left(\{\mathsf{m}_{i \neq j}^j\}_{i \in \{\mathrm{L},\mathrm{R}\}} | \mathsf{p}_j; t\right)\Upsilon_j^*(t)(\mathsf{p}_j)P(t)}{\sum_{t' \in T_j} \xi_j\left(\{\mathsf{m}_{i \neq j}^j\}_{i \in \{\mathrm{L},\mathrm{R}\}} | \mathsf{p}_j; t'\right)\Upsilon_j^*(t')(\mathsf{p}_j)P(t')}$ $\forall t \in T_j$,

whenever possible, where $\xi_j\left(\{\mathsf{m}_{i \neq j}^j\}_{i \in \{\mathrm{L},\mathrm{R}\}} \mid \mathsf{p}_j; t\right)$ is the probability that medium i, where $i \in \{\mathrm{L}, \mathrm{R}\}$, sends message m_i^j about (its non-preferred) candidate j, where $j \in \{\mathsf{L}, \mathsf{R}\}$, $j \neq i$, when candidate j has proposed platform p_j, being $t \in T_j$ his type.

[5]Note that if we allow media outlets to manipulate news (to hide information) and we consider that this is common knowledge, in equilibrium, voters will not take into account media news and mass media will make no difference

[6]Alternatively, we can consider that there are three types of voters: leftists (l), rightists (r) and moderates (m); with preferences $L \succ_l M \succ_l R$, $R \succ_r M \succ_r L$ and $M \succ_m L \sim_m R$. In this case, our results hold whenever partisan voters are captive and the median voter is moderate.

Regarding the beliefs off the equilibrium path, we assume that: (i) Whenever candidate $j \in \{\mathsf{L}, \mathsf{R}\}$ does not use his equilibrium strategy, the media do not investigate him and there is nothing that contradicts this fact, voters believe that this candidate is extreme with probability $x_j \in (0, 1)$.[7] (ii) If the candidate is off his equilibrium path and the media do not investigate him but there is evidence that contradicts this fact, voters trust the media regarding the new information (assumption TM). (iii) Likewise, voters trust the media whenever the candidates use their equilibrium strategy, the media do not investigate but the evidence is against this fact (assumption TM). (iv) Finally, voters trust the media when one of the candidates deviates and the media investigate him (assumption TM).

Note that off the equilibrium path, we assume that the voters trust the media more than the candidates. To see the reason for this assumption, note that the model reads that politicians can send any message but the media cannot manipulate news, *i.e.*, they cannot *create* unverifiable information.[8] Or to say it differently, if the media investigate (this is the only case in which the media may say something different to that written in a platform), the information published is true.

We are now in position to obtain the first result of the model.

Proposition 1. *There is no equilibrium in which at least one candidate separates, either truthfully or untruthfully.*

The proof of the result is as follows. In any situation in which at least one candidate separates, Bayes' rule dictates the voters to believe that the candidate that separates is moderate when he sends the message that the true moderate sends in equilibrium. Hence, the extreme type that separates has an incentive to deviate and mimic the platform sent by the moderate, as in this case voters will recognize him as a truthful moderate and will vote for him. This rules out the possibility of separating equilibria in the model. Or to say it differently, in this model, media do not induce politicians to make informative speeches. In the rest of the paper we therefore analyze pooling equilibria.

3.1 Monopoly media market

We consider the case of a sole outlet in the ideological media market, which, without loss of generality, we assume that prefers party R. We first analyze the behavior of the medium in this case, and then characterize the equilibria of the entire game.

Proposition 2. *Let* R *be the sole outlet in the ideological media market. Then* $\Psi_{\mathrm{R}}(l, \cdot) = I$ *never occurs, either in equilibrium or off the equilibrium path.*

[7] The working paper version of this paper, Andina-Díaz (2004), considers $x_j \in [0, 1]$. In this version, however, we use $x_j \in (0, 1)$, which allows us to simplify the analysis without major consequences to our qualitative results.

[8] Anderson and McLaren (2005), Besley and Prat (2006), Chan and Suen (2006) and Corneo (2006), among others, present models in which the media can withhold information relevant to voters.

Proof. 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 medium R'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 medium R's message on him $m^{\mathsf{R}}_{\mathrm{R}}$.[9]

To prove the result, let us consider a (pooling) hypothetical equilibrium in which $\Upsilon^*_{\mathsf{L}}(L) = \Upsilon^*_{\mathsf{L}}(M) = p_{\mathsf{L}}$, $\Upsilon^*_{\mathsf{R}}(R) = \Upsilon^*_{\mathsf{R}}(M) = p_{\mathsf{R}}$, where $p_{\mathsf{L}}, \overline{p}_{\mathsf{L}} \in \{l, m\}$, $p_{\mathsf{R}}, \overline{p}_{\mathsf{R}} \in \{m, r\}$, $p_{\mathsf{L}} \neq \overline{p}_{\mathsf{L}}$, $p_{\mathsf{R}} \neq \overline{p}_{\mathsf{R}}$.

After observing message l, the belief of media outlet R on candidate L is $\mu_{\mathsf{L}}(L \mid l) \in \{q, x_{\mathsf{L}}\}$, for $p_{\mathsf{L}} \in \{l, m\}$ respectively. Suppose $\Psi_{\mathrm{R}}(l, p_{\mathsf{R}}) = I$. Then, voters' beliefs are either $\gamma^{ll}_{p_{\mathsf{R}} p_{\mathsf{R}}} = (1, q)$, $\gamma^{lm}_{p_{\mathsf{R}} p_{\mathsf{R}}} = (0, q)$ if $p_{\mathsf{L}} = l$; or $\gamma^{ll}_{p_{\mathsf{R}} p_{\mathsf{R}}} = (1^{(TM)}, q)$, $\gamma^{lm}_{p_{\mathsf{R}} p_{\mathsf{R}}} = (0^{(TM)}, q)$ if $p_{\mathsf{L}} = m$, where the superscript (TM) means that assumption TM applies. Suppose now $\Psi_{\mathrm{R}}(l, \overline{p}_{\mathsf{R}}) = I$. Then, voters' beliefs are either $\gamma^{ll}_{\overline{p}_{\mathsf{R}} \overline{p}_{\mathsf{R}}} = (1, x_{\mathsf{R}})$, $\gamma^{lm}_{\overline{p}_{\mathsf{R}} \overline{p}_{\mathsf{R}}} = (0, x_{\mathsf{R}})$ if $p_{\mathsf{L}} = l$; or $\gamma^{ll}_{\overline{p}_{\mathsf{R}} \overline{p}_{\mathsf{R}}} = (1^{(TM)}, x_{\mathsf{R}})$, $\gamma^{lm}_{\overline{p}_{\mathsf{R}} \overline{p}_{\mathsf{R}}} = (0^{(TM)}, x_{\mathsf{R}})$ if $p_{\mathsf{L}} = m$.

In all the cases, the payoff of the outlet if it investigates is $\mu_{\mathsf{L}}(L \mid p_{\mathsf{L}})\Lambda - K$, and its payoff if it does not is Λ. Hence, neither $\Psi_{\mathrm{R}}(l, p_{\mathsf{R}}) = I$ nor $\Psi_{\mathrm{R}}(l, \overline{p}_{\mathsf{R}}) = I$ can occur in equilibrium. □

This result says that, in equilibrium, the monopoly never investigates its non-preferred candidate when he proposes the extreme platform. This implies that a moderate left-wing candidate cannot take advantage of the media, meaning he cannot signal his (moderate) type by deviating.

Regarding the equilibria of the entire game, Lemma 1 in the Appendix presents the characterization of these equilibria. The important result we derive from Lemma 1 is that the existence of a sole outlet in the ideological media market introduces a bias in the political game. The next proposition defines this bias. To prove this result, we focus on the equilibria in which the left-wing candidate is investigated in equilibrium (cases (i.1) and (i.2) in Lemma 1). We do not analyze the other equilibria because if the monopoly does not investigate in equilibrium, either candidate obtains (in expected terms) one half of the votes, so there is no bias. However, if the outlet does investigate, the left-wing candidate obtains (in expected terms) $(1-q)n$ of the votes in equilibrium. Or to say it differently, L wins the election if $q < \frac{1}{2}$ and R does if $q > \frac{1}{2}$. Here, there is room for bias.

Proposition 3. *Suppose that the parameters q, K and Λ are uniformly and independently distributed. Let* R *be the sole outlet in the ideological media market. Then, the sets of parameters values sustaining the equilibria in which party* R *wins, have higher measure than the sets of parameters values sustaining the equilibria in which party* L *does.*

Proof. Let us denote $p, \overline{p} \in \{m, r\}$, $p \neq \overline{p}$. We focus on the equilibria in which the monopoly investigates.

[9] In the case of a right-wing monopoly, $m^{\mathsf{R}}_{\mathrm{R}} = p_{\mathrm{R}}$ always.

Consider the equilibrium (mm, pp), $\Psi_{\mathrm{R}}(m,p) = I$, $\Psi_{\mathrm{R}}(m,\overline{p}) = I$, $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, $x_{\mathsf{L}} > q$. The set of parameters values sustaining this equilibrium is $\{K : 0 < K \leq q\Lambda\}$. The measure of the set sustaining the equilibrium in which party L wins is $\int_0^{\frac{1}{2}} q\Lambda dq = \frac{\Lambda}{8}$. Similarly, the measure of the set sustaining the equilibrium in which R wins is $\int_{\frac{1}{2}}^{1} q\Lambda dq = \frac{3\Lambda}{8}$. Since $\frac{3\Lambda}{8} > \frac{\Lambda}{8}$, party R wins the election with a higher probability.

Let us consider the equilibrium (mm, pp), $\Psi_{\mathrm{R}}(m,p) = I$, $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$, $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, $x_{\mathsf{L}} > q$, $q = x_{\mathsf{R}} \geq \frac{1}{2}$. The set of parameters values that sustain this equilibrium is $\left\{K : q\frac{\Lambda}{2} \leq K \leq q\Lambda\right\}$. Note that for this equilibrium to exist, $q \geq \frac{1}{2}$ must hold. It implies that party L cannot win in this case (for it to occur, $q < \frac{1}{2}$ must hold). Additionally, the measure of the set sustaining the equilibrium in which party R wins is $\int_{\frac{1}{2}}^{1} q\frac{\Lambda}{2} dq = \frac{3\Lambda}{16}$. There is therefore a bias in favor of party R.

Finally, let us consider the equilibrium (mm, rr), $\Psi_{\mathrm{R}}(m,r) = I$, $\Psi_{\mathrm{R}}(m,m) = NI$, $\Psi_{\mathrm{R}}(l,r) = NI$, $\Psi_{\mathrm{R}}(l,m) = NI$, $x_{\mathsf{L}} > q$, $q < x_{\mathsf{R}}$. The set of parameters values that sustain this equilibrium is $\{K : 0 < K = q\Lambda\}$, which has zero measure. Then, there is no bias in this case. □

Proposition 3 shows that the sets of parameters values sustaining the equilibria in which the party with the support of the media wins, have higher measure than those sets sustaining the equilibria in which the other party wins. This means that the party supported by the monopoly wins the election with a higher probability than the other party. Hence the bias.

3.2 Duopoly media market

We now consider the case of two ideological outlets in the media market. Let L be the media outlet preferring the left-wing party and R be the one preferring the right-wing party.

As in the previous case, we obtain that ideological outlets never investigate its non-preferred candidate when he proposes the extreme platform. This result is formalized in the next proposition.

Proposition 4. *Let media outlet* L *support party* L*, and let media outlet* R *support party* R*. Then neither* $\Psi_{\mathrm{L}}(\cdot, r) = I$ *nor* $\Psi_{\mathrm{R}}(l, \cdot) = I$ *occurs, either in equilibrium or off the equilibrium path.*

Proof. Let us denote by $\gamma^{p_{\mathsf{L}} m_{\mathrm{R}}^{\mathsf{L}}}_{p_{\mathsf{R}} m_{\mathrm{L}}^{\mathsf{R}}} = (\gamma_{\mathsf{L}}(L \mid p_{\mathsf{L}}, m_{\mathrm{R}}^{\mathsf{L}}), \gamma_{\mathsf{R}}(R \mid p_{\mathsf{R}}, m_{\mathrm{L}}^{\mathsf{R}}))$, the belief that voters have on candidate L being L, given his platform p_{L}, and the medium R's message on him, $m_{\mathrm{R}}^{\mathsf{L}}$; and the voters' belief on candidate R being R, given his platform p_{R}, and the medium L's message on him $m_{\mathrm{L}}^{\mathsf{R}}$.

Let us consider a (pooling) hypothetical equilibrium in which $\Upsilon_{\mathsf{L}}^{*}(L) = \Upsilon_{\mathsf{L}}^{*}(M) = p_{\mathsf{L}}$, $\Upsilon_{\mathsf{R}}^{*}(R) = \Upsilon_{\mathsf{R}}^{*}(M) = p_{\mathsf{R}}$, where $p_{\mathsf{L}}, \overline{p}_{\mathsf{L}} \in \{l, m\}$, $p_{\mathsf{R}}, \overline{p}_{\mathsf{R}} \in \{m, r\}$, $p_{\mathsf{L}} \neq \overline{p}_{\mathsf{L}}$, $p_{\mathsf{R}} \neq \overline{p}_{\mathsf{R}}$.

After observing message l, the belief of medium R on candidate L is $\mu_{\mathsf{L}}(L \mid l) \in \{q, x_{\mathsf{L}}\}$, for $p_{\mathsf{L}} \in \{l, m\}$ respectively. Analogously, after observing message r, the belief of medium L on candidate R is $\mu_{\mathsf{R}}(R \mid r) \in \{q, x_{\mathsf{R}}\}$, for $p_{\mathsf{R}} \in \{r, m\}$ respectively.

Let $j \in \{\mathsf{L}, \mathsf{R}\}$, $E \in \{L, R\}$ and $e \in \{l, r\}$, for the left and the right-wing party respectively.

Suppose $\Psi_{\mathrm{L}}(l, r) = I$ and $\Psi_{\mathrm{R}}(l, r) = I$. Voters' beliefs on candidate j are $\gamma_j(E \mid e, e) \in \{1, 1^{(TM)}\}$, for $p_j \in \{e, m\}$ respectively, where the superscript (TM) means that assumption TM applies; and they are $\gamma_j(E \mid e, m) \in \{0, 0^{(TM)}\}$, for $p_j \in \{e, m\}$ respectively. The payoff of outlet L if it investigates is $\mu_{\mathsf{L}}(L \mid p_{\mathsf{L}})\mu_{\mathsf{R}}(R \mid p_{\mathsf{R}})\frac{\Lambda}{2} + (1 - \mu_{\mathsf{L}}(L \mid p_{\mathsf{L}}))\mu_{\mathsf{R}}(R \mid p_{\mathsf{R}})\Lambda + (1 - \mu_{\mathsf{L}}(L \mid p_{\mathsf{L}}))(1 - \mu_{\mathsf{R}}(R \mid p_{\mathsf{R}}))\frac{\Lambda}{2} - K$, and its payoff if it does not is $\mu_{\mathsf{L}}(L \mid p_{\mathsf{L}})\frac{\Lambda}{2} + (1 - \mu_{\mathsf{L}}(L \mid p_{\mathsf{L}}))\Lambda$. Then, if $\Psi_{\mathrm{R}}(l, r) = I$, $\Psi_{\mathrm{L}}(l, r) = I$ cannot be in equilibrium. Suppose now $\Psi_{\mathrm{L}}(l, r) = I$ and $\Psi_{\mathrm{R}}(l, r) = NI$. Voters' beliefs on candidate L are $\gamma_{\mathsf{L}}(L \mid l, l) \in \{q, x_{\mathsf{L}}\}$, for $p_{\mathsf{L}} \in \{l, m\}$; and they are $\gamma_{\mathsf{L}}(L \mid l, m) \in \{0^{(TM)}, 0^{(TM)}\}$, for $p_{\mathsf{L}} \in \{l, m\}$ respectively. Voters' beliefs on candidate R are $\gamma_{\mathsf{R}}(R \mid r, r) \in \{1, 1^{(TM)}\}$, for $p_{\mathsf{R}} \in \{r, m\}$; and they are $\gamma_{\mathsf{R}}(R \mid r, m) \in \{0, 0^{(TM)}\}$, for $p_{\mathsf{R}} \in \{r, m\}$ respectively. The payoff of outlet L if it investigates is $\mu_{\mathsf{R}}(R \mid p_{\mathsf{R}})\Lambda - K$, and its payoff if it does not is Λ. Then, if $\Psi_{\mathrm{R}}(l, r) = NI$, $\Psi_{\mathrm{L}}(l, r) = I$ cannot be in equilibrium. Summarizing, $\Psi_{\mathrm{L}}(l, r) = I$ cannot be in equilibrium. Analogously, we prove that neither $\Psi_{\mathrm{L}}(m, r) = I$, $\Psi_{\mathrm{R}}(l, r) = I$, nor $\Psi_{\mathrm{R}}(l, m) = I$, can hold in equilibrium. This completes the proof. $\square$

Proposition 4 says that, in equilibrium, media outlets with a political motive never investigate an extreme platform announcement. The reason is that voters cannot recognize an outlet that deviates and does not investigate, and so, they believe that a candidate that sends an extreme platform is an extreme type. Hence, media outlets do not find it profitable to investigate in this case.

An interesting and important result we obtain in the duopoly case is that there is no equilibrium in which the candidates pool at the moderate message and the two media outlets investigate in the equilibrium path. The next proposition formalizes this result.

Proposition 5. *For all $t_{\mathsf{L}} \in \{L, M\}$, $t_{\mathsf{R}} \in \{M, R\}$, there is no equilibrium where $\Upsilon_{\mathsf{L}}(t_{\mathsf{L}}) = \Upsilon_{\mathsf{R}}(t_{\mathsf{R}}) = m$ and $\Psi_{\mathrm{L}}(m, m) = \Psi_{\mathrm{R}}(m, m) = I$ hold.*

The proof of the result is as follows. Consider that such an equilibrium exists and let us focus on the behavior of (one of) the extreme type candidate. Since the two media investigate, this guy obtains $q\frac{n}{2}$ in equilibrium. Now, let us consider he deviates. From Proposition 4, we know that, if an equilibrium exists, the candidate that proposes an extreme platform is not investigated. Then, by deviating, he gets either qn (if the other candidate is investigated) or $\frac{n}{2}$ (if his opponent is not investigated). Hence, the extreme type candidate finds it profitable to deviate. There is therefore no equilibrium in which the candidates pool at the moderate platform and the two outlets investigate in the equilibrium path.

Note that from Proposition 4 and Proposition 5 we can conclude that there is no equilibrium in which the two media outlets investigate in the equilibrium path. In other words, in the equilibrium path (for the platforms' profile observed in equilibrium), either no media outlet or just one media outlet investigates. This is the same as in the media monopoly case.

Regarding the equilibria of the entire game, we observe that if the two parties have the support of a media outlet, either party has the same probability of winning the election.

Proposition 6. *Let media outlet* R *support party* R*, and let media outlet* L *support party* L*. Then, either party wins the election with the same probability.*

The proof is direct. It is based on the fact that if each party has the support of one medium, and the two parties and the two media outlets are symmetric among them, then the equilibria must be symmetric.[10]

Hence, from the comparison of the monopoly (Proposition 3) and the duopoly (Proposition 6) market structures we observe that, for political competition to be balance, media industry has to be pluralistic in ideology.

In our context, however, it is also interesting to analyze the voters' welfare under the two market structures. Since, in our model, voters want to pick a moderate candidate, we need to compare the probability that a moderate candidate is elected under a media monopoly versus a media duopoly. To this aim, note that from the previous analysis we know that in the two market structures, there is, at most, one media outlet that investigates in the equilibrium path. We now obtain the probability that a candidate of a moderate type is picked when either no medium investigates or one does it.

Let us first consider that no media outlet investigates in the equilibrium path. We obtain that, in a pooling equilibria, the probability that the elected candidate is moderate is $(1-q)^2 + q(1-q)$. In contrast, if one media outlet investigates in the equilibrium path, the probability that the elected candidate is moderate is $(1-q) + q(1-q)$. Since $q > 0$, the probability that the voters pick a moderate candidate is higher under a media market (even in the case of a biased monopoly) than under no market for news. The next proposition formalizes this result.

Proposition 7. *The probability that the elected candidate is moderate is higher when a media industry exists than when it does not. Additionally, this probability is the same with one than with two media outlets.*

Note that this result is partially driven by the assumption that the media cannot hide a verifiable outcome, which tends to make politically biased media comparatively benign. In contrast, if we were to assume that media can manipulate news, our intuition is that, in equilibrium, media outlets would pool at the extreme messages and voters would disregard this information. Hence, the existence of a

[10] The working paper version of this paper, Andina-Díaz (2004), presents the complete characterization of all the pooling equilibria that exist in the duopoly case.

mass media industry would add nothing to the political game in that case. As a result, the innocuous role of ideology should be carefully understood in the context of our model.

4 Conclusion

This model analyzes the role of an ideological media market in a context of asymmetric information between parties and voters. Voters want to find out the targets of parties, as they realize that, once in office, politicians will implement their preferred policy. In this setup, we analyze the incentives of ideological media outlets, which cannot manipulate news, to acquire costly information. We consider two market structures: a monopoly media market and a duopoly one. Our results show that if each party has the support of one medium, either party has the same probability of winning the election. However, if just one of the parties has the support of the media, the results might well change, as this party will get into office with a higher probability than the other party. Additionally, we show that voters' welfare is higher under a market for news than under no such industry, and that, in equilibrium, having one or two media outlets does not matter for voters' welfare.

Although we do not consider the case of more than two ideological outlets in the media market, it is worth discussing the implications of such generalization. If we consider that all the media that prefer the same party receive the political benefit associated when such party gets into office, our intuition is that, in equilibrium, it will never be more than one outlet investigating each party. That is to say, if a particular candidate is investigated, it has to be the case that only one media outlet incurs in such cost. For if it were not the case, all the outlets that investigate would find it profitable to (unilaterally) deviate to not investigate, as they would save the cost and would get the political benefit anyway. Hence, no duplication of investigation costs will appear in equilibrium. Additionally, the information available to voters will not vary, thereby the political equilibria will remain the same.

5 Appendix

Lemma 1. *Monopoly media market. The following are the only (pure strategy) equilibria of the entire game:*

- $\Upsilon^*_{\mathsf{L}}(L) = \Upsilon^*_{\mathsf{L}}(M) = m$, $\Upsilon^*_{\mathsf{R}}(R) = \Upsilon^*_{\mathsf{R}}(M) = p$, $\Psi_{\mathrm{R}}(m,p) = I$, $\Psi_{\mathrm{R}}(m,\overline{p}) = I$, $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$; *when* $q < x_{\mathsf{L}}$ *and* $K \leq q\Lambda$ *hold.*

- $\Upsilon^*_{\mathsf{L}}(L) = \Upsilon^*_{\mathsf{L}}(M) = m$, $\Upsilon^*_{\mathsf{R}}(R) = \Upsilon^*_{\mathsf{R}}(M) = p$, $\Psi_{\mathrm{R}}(m,p) = I$, $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$, $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$; *when either* $q < \min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$ *and* $K = q\Lambda$; *or* $\frac{1}{2} \leq q = x_{\mathsf{R}} < x_{\mathsf{L}}$ *and* $q\frac{\Lambda}{2} \leq K \leq q\Lambda$ *hold.*

- $\Upsilon^*_{\mathsf{L}}(L) = \Upsilon^*_{\mathsf{L}}(M) = m$, $\Upsilon^*_{\mathsf{R}}(R) = \Upsilon^*_{\mathsf{R}}(M) = p$, $\Psi_{\mathrm{R}}(m,p) = NI$, $\Psi_{\mathrm{R}}(m,\overline{p}) = I$, $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$; *when* $q \leq \min\{\frac{1}{2}, x_{\mathsf{L}}\}$ *and* $q\frac{\Lambda}{2} \leq K \leq q\Lambda$ *hold.*

- $\Upsilon^*_{\mathsf{L}}(L) = \Upsilon^*_{\mathsf{L}}(M) = m$, $\Upsilon^*_{\mathsf{R}}(R) = \Upsilon^*_{\mathsf{R}}(M) = p$, $\Psi_{\mathrm{R}}(m,p) = NI$, $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$, $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$; *when either* $q = x_{\mathsf{R}} \leq x_{\mathsf{L}}$ *and* $K \geq q\frac{\Lambda}{2}$; *or* $q < x_{\mathsf{R}}$, $q \leq x_{\mathsf{L}}$ *and* $K \geq q\Lambda$ *hold.*

- $\Upsilon^*_{\mathsf{L}}(L) = \Upsilon^*_{\mathsf{L}}(M) = l$, $\Upsilon^*_{\mathsf{R}}(R) = \Upsilon^*_{\mathsf{R}}(M) = p$, $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, $\Psi_{\mathrm{R}}(m,p) = NI$, $\Psi_{\mathrm{R}}(m,\overline{p}) = I$; *when either* $K \leq x_{\mathsf{L}}\Lambda$, $q < x_{\mathsf{L}}$ *and* $q \leq x_{\mathsf{R}}$; *or* $x_{\mathsf{L}}\frac{\Lambda}{2} \leq K \leq x_{\mathsf{L}}\Lambda$ *and* $q = x_{\mathsf{L}} \leq x_{\mathsf{R}}$ *hold.*

- $\Upsilon^*_{\mathsf{L}}(L) = \Upsilon^*_{\mathsf{L}}(M) = l$, $\Upsilon^*_{\mathsf{R}}(R) = \Upsilon^*_{\mathsf{R}}(M) = p$, $\Psi_{\mathrm{R}}(l,p) = NI$, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$, $\Psi_{\mathrm{R}}(m,p) = NI$, $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$; *when either* $q \leq x_{\mathsf{R}} < x_{\mathsf{L}}$; $K \geq x_{\mathsf{L}}\Lambda$ *and* $q \leq x_{\mathsf{L}} < x_{\mathsf{R}}$; *or* $K \geq x_{\mathsf{L}}\frac{\Lambda}{2}$ *and* $q \leq x_{\mathsf{L}} = x_{\mathsf{R}}$ *hold.*

Proof. Our way of proceeding is: First, we analyze media's behavior; Second, we analyze candidates' behavior. Note that from Proposition 2, $\Psi_{\mathrm{R}}(l,\cdot) = I$, never occurs, either in equilibrium or off the equilibrium path.

(**i**) 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 $p, \overline{p} \in \{m, r\}$, $p \neq \overline{p}$.

Media's behavior. Case (1) : $\Psi_{\mathrm{R}}(l,p) = NI$. Voters' belief are $\gamma^{ll}_{pp} = (x_{\mathsf{L}}, q)$ and $\gamma^{lm}_{pp} = (0^{(TM)}, q)$. The payoff of the 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, 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. *Case* (2) : $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$. Voters' beliefs are $\gamma^{ll}_{\overline{pp}} = (x_{\mathsf{L}}, x_{\mathsf{R}})$ and $\gamma^{lm}_{\overline{pp}} = (0^{(TM)}, x_{\mathsf{R}})$. The payoff of the outlet is either Λ if $x_{\mathsf{L}} > x_{\mathsf{R}}$, $\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = x_{\mathsf{R}}$, or 0 if $x_{\mathsf{L}} < x_{\mathsf{R}}$; whereas if it deviates and investigates, its payoff is always smaller. Thus, $\Psi_{\mathrm{R}}(l,\overline{p}) = NI$ is possible in equilibrium. *Case* (3) : $\Psi_{\mathrm{R}}(m,p) = I$. 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 does not investigate, it is 0. Thus, $\Psi_{\mathrm{R}}(m,p) = I$ implies $q\Lambda \geq K$. *Case* (4) : $\Psi_{\mathrm{R}}(m,p) = NI$. Voters' beliefs are $\gamma^{mm}_{pp} = (q, q)$ and $\gamma^{ml}_{pp} = (1^{(TM)}, q)$. The outlet's payoff is $\frac{\Lambda}{2}$, whereas if it deviates and investigates, it is $q\Lambda + (1-q)\frac{\Lambda}{2} - K$. Thus $\Psi_{\mathrm{R}}(m,p) = NI$ implies $K \geq q\frac{\Lambda}{2}$. *Case* (5) : $\Psi_{\mathrm{R}}(m,\overline{p}) = I$. Voters' beliefs are $\gamma^{mm}_{\overline{pp}} = (0, x_{\mathsf{R}})$ and $\gamma^{ml}_{\overline{pp}} = (1, x_{\mathsf{R}})$. Proceeding as previously, we obtain that $\Psi_{\mathrm{R}}(m,\overline{p}) = I$ implies $q\Lambda \geq K$. *Case* (6) : $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$. Voters' beliefs are $\gamma^{mm}_{\overline{pp}} = (q, x_{\mathsf{R}})$ and $\gamma^{ml}_{\overline{pp}} = (1^{(TM)}, x_{\mathsf{R}})$. Here, $\Psi_{\mathrm{R}}(m,\overline{p}) = NI$ implies either $q > x_{\mathsf{R}}$; $K \geq q\frac{\Lambda}{2}$ and $x_{\mathsf{R}} = q$; or $K \geq q\Lambda$ and $q < x_{\mathsf{R}}$.

Candidates' behavior. Case $(i.1)$: Let us consider the strategy profile (SP, from now on) (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 (3) and (5) 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 if $x_{\mathsf{L}} < q$, $\frac{n}{2}$ 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 in equilibrium, whereas if they deviate they gain qn. Thus, candidate R does not find it strictly profitable to deviate. This SP conforms therefore an equilibrium when parameters and beliefs satisfy $q < x_{\mathsf{L}}$ and $K \leq q\Lambda$. *Case* $(i.2)$: Let us consider the SP (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 (3) and (6) 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 SP conforms an equilibrium when parameters and beliefs satisfy either $q < \min\{x_{\mathsf{L}}, x_{\mathsf{R}}\}$ and $K = q\Lambda$; or $\frac{1}{2} \leq q = x_{\mathsf{R}} < x_{\mathsf{L}}$ and $q\frac{\Lambda}{2} \leq K \leq q\Lambda$. *Case* $(i.3)$: We now consider the SP (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 (4) and (5) must be satisfied. Here, either type of candidate L gains $\frac{n}{2}$ in equilibrium, whereas if one of them deviates, he gains either n if $x_{\mathsf{L}} < q$, $\frac{n}{2}$ 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 $\frac{n}{2}$, whereas if one of them deviates, he gains qn. Thus, candidate R does not deviate if $q \leq \frac{1}{2}$. Then, this SP conforms an equilibrium when parameters and beliefs satisfy $q \leq \min\{\frac{1}{2}, x_{\mathsf{L}}\}$ and $q\frac{\Lambda}{2} \leq K \leq q\Lambda$. *Case* $(i.4)$: Last, let us consider the SP (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 (4) and (6) must be satisfied. Candidate L does not deviate when $q \leq x_{\mathsf{L}}$, and candidate R neither does when $q \leq x_{\mathsf{R}}$. Then, this SP conforms an equilibrium when parameters and beliefs satisfy either $q = x_{\mathsf{R}} \leq x_{\mathsf{L}}$ and $K \geq q\frac{\Lambda}{2}$; or $q < x_{\mathsf{R}}$, $q \leq x_{\mathsf{L}}$ and $K \geq q\Lambda$.

(**ii**) We now 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 $p, \overline{p} \in \{m, r\}$, $p \neq \overline{p}$.

Media's behavior. Proceeding as in (i), we obtain that $\Psi_{\mathrm{R}}(l, p) = NI$ and $\Psi_{\mathrm{R}}(l, \overline{p}) = NI$, with $p \in \{m, r\}$, are possible in equilibrium. *Case* (1) : $\Psi_{\mathrm{R}}(m, p) = I$. 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 $x_{\mathsf{L}} > q$, $\frac{\Lambda}{2}$ if $x_{\mathsf{L}} = q$, or 0 if $x_{\mathsf{L}} < q$; whereas if it deviates its payoff is either $\Lambda - K$ if $x_{\mathsf{L}} > q$, $x_{\mathsf{L}}\Lambda + (1 - x_{\mathsf{L}})\frac{\Lambda}{2} - K$ if $x_{\mathsf{L}} = q$, or $x_{\mathsf{L}}\Lambda - K$ if $x_{\mathsf{L}} < q$. Thus $\Psi_{\mathrm{R}}(m, p) = NI$ implies either $x_{\mathsf{L}} > q$; $K \geq \frac{\Lambda}{2}x_{\mathsf{L}}$ and $x_{\mathsf{L}} = q$; or $K \geq x_{\mathsf{L}}\Lambda$ and $x_{\mathsf{L}} < q$. *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 $x_{\mathsf{L}}\Lambda \geq K$. *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 $x_{\mathsf{L}} > x_{\mathsf{R}}$; $K \geq x_{\mathsf{L}}\frac{\Lambda}{2}$ and $x_{\mathsf{R}} = x_{\mathsf{L}}$; or $K \geq x_{\mathsf{L}}\Lambda$ and $x_{\mathsf{L}} < x_{\mathsf{R}}$.

Candidates' behavior. *Case* $(ii.1)$: Let us consider the SP (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 $\frac{n}{2}$ in equilibrium, whereas if he deviates and sends the message m he gains n. Therefore, this SP cannot constitute an equilibrium. *Case* $(ii.2)$: The same argument proves that the SP (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. *Case* $(ii.3)$: We now consider the SP (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 $\frac{n}{2}$ in equilibrium, whereas if he deviates he gains either n if $x_{\mathsf{L}} < q$, $\frac{n}{2}$ 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 SP conforms an equilibrium when parameters and beliefs satisfy either $K \leq x_{\mathsf{L}}\Lambda$, $q < x_{\mathsf{L}}$ and $q \leq x_{\mathsf{R}}$; or $x_{\mathsf{L}}\frac{\Lambda}{2} \leq K \leq x_{\mathsf{L}}\Lambda$ and $q = x_{\mathsf{L}} \leq x_{\mathsf{R}}$. *Case* $(ii.4)$: Finally, let us consider the SP (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 SP conforms an equilibrium when parameters and beliefs satisfy either $q \leq x_{\mathsf{R}} < x_{\mathsf{L}}$; $K \geq x_{\mathsf{L}}\Lambda$ and $q \leq x_{\mathsf{L}} < x_{\mathsf{R}}$; or $K \geq x_{\mathsf{L}}\frac{\Lambda}{2}$ and $q \leq x_{\mathsf{L}} = x_{\mathsf{R}}$. $\square$

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