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MEDIA BIAS AND ELECTORAL COMPETITION

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We present a model of electoral competition with uninformed voters. There is a market for news with ideological media outlets. We consider two market structures: monopoly and duopoly. We show that if each party has the support of an outlet, 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 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

In modern societies, media provide most of the information that citizens use to make their private and public choices. This fact confers the media a great power as, by influencing citizens, they may affect electoral outcomes, public policies, legislation, etc. Some recent papers document this phenomenon. Among them, Besley and Burgess (2002), who observe a strong correlation between the level of circulation of newspapers in Indian states and the responsiveness of their governments; or Stromberg (2004), who finds that US counties with more radio listeners received more New Deal relief funds.

It is precisely this belief that the media can affect the public what induces certain media owners to promote their political viewpoints and

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agendas through the media. This fact may translate into a media bias: By selectively omitting information, by highlighting details that are favorable or unfavorable to a particular issue, etc., the media distorts the news. In this case, we say that there is a media bias. Evidence of this bias is documented by Lott and Hassett (2004) and Groseclose and Milyo (2005), among others, who find a strong liberal bias in US newspapers; and by Ansolabehere *et al.* (2006), who observe that US newspaper editorials support more heavily the politicians in office.

The present paper is intended to analyze the effects of media bias on election outcomes. To this aim, we consider a situation in which an election campaign between two candidates of unknown motives is going to take place.[1] There are one/two politically orientated media outlets, that want to maximize the probability that their preferred politician gets elected.[2] Media outlets choose whether to investigate the policy position of their non-preferred candidate. If an outlet undertakes investigation, we assume it observes the true intention of the politician and publishes that information. Voters are aware of the political orientation of the media and use the reports sent by the outlets to update their beliefs on the motives of the candidates and to decide for whom to vote. We consider two media market structures: a monopoly and a duopoly. We analyze how the decision of the media to undertake investigation depends on the structure of the media industry and on the promises made by the politicians. We also analyze whether media bias translates into a political bias and how it affects voters' welfare. Our results show that if only one party is endorsed by the media, media can get its candidate elected by revealing unfavorable information about

[1] Krukones (1984) provides evidence that politicians' goals are not always known at the time of the election. In particular, he observes that from 1912 to 1976, the candidates running for the White House only fulfilled 65% of the campaign promises concerning foreign policies.

[2] Implicit in this assumption is the idea that media outlets obtain some kind of benefit if their preferred party gets into office. These benefits or rents may take various forms in real-life. They range from the private benefit of a media owner that actively participates in the political life (a classical example is the three times Italian Primer Minister Silvio Berlusconi, who controls Fininvest, a private company that includes three national tv broadcasters and a number of important newspapers); to the grant or renewal of an administrative license that regulates the operation of a media outlet (see the case of Radio Caracas Televisión, RCTV, the only Venezuela's opposition TV station with national reach, that went off air in May 2007 after President Hugo Chavez did not renew its licence (BBC news, 28 May 2007)); to the more obscure rent obtained by a media owner that, by operating in other industries, can benefit from a favorable legislation of those sectors.

the other candidate. However, if the two parties are endorsed by the media, either party has the same probability of winning the election. We also observe that, in equilibrium, at most one media investigates, which determines that the probability that the good (moderate) politician is elected is the same under a monopoly than under a duopoly structure, and that this probability is higher with a media industry than without it.

Our model builds on the recent and growing literature on media bias. The theoretical research on this topic can be broadly divided up into two main strands: the so called *demand side models* and the *supply side models*. Demand side models consider that readers (or viewers) have preferences for a certain type of media content. Thus, Mullainathan and Shleifer (2005) show that if consumers have beliefs that like to see confirmed by the media, then audience maximizer media outlets would slant their stories toward these beliefs. In contrast, the papers that focus on the supply side of the problem consider that media outlets have preferences for influencing political outcomes (or some other relevant variable). This argument is empirically supported by Della Vigna and Kaplan (2007), who show that exposure to media bias persuades voters, which helps to explain why certain individuals, families or lobbies have interests in controlling the media, as many theoretical papers assume. Among these papers, we find Vaidya (2005) and Besley and Prat (2006), for whom media bias is a result of being captured by government; or Baron (2006), Anderson and McLaren (2005), Balan *et al.* (2005) and Bovitz *et al.* (2002), for whom media bias is the consequence of the bias of some of the actors that participate in the news production (journalists, media owners and all of them, respectively).

The paper we present focuses on the supply side of the problem and so, share with the aforementioned papers the idea that media owners want to influence political outcomes. In all of the these papers, however, no electoral competition is modeled. Only Besley and Prat (2006) consider that citizens have to choose whether to reelect an incumbent of unknown motives, about whom the media may reveal information. In our paper, however, two candidates campaign and both of them can have the support of the media. This allows us to analyze which campaign promises are compatible, in equilibrium, with the behavior of the media or, to say it differently, how the decision of the media to undertake investigation depends on the promises made by the politicians. Another important difference between our paper and

those already mentioned concerns media behavior. Most of these papers (Vaidya (2005), Besley and Prat (2006), Anderson and McLaren (2005) and Bovitz *et al.* (2002)) assume that media cannot raise false allegations, but can hide relevant information (and publish nothing). Baron (2006) and Balan *et al.* (2005) consider, however, that media have full discretion to publish whatever they want. Our approach is different to theirs. We consider that media have full discretion to decide whether to undertake investigation or not (of their non preferred politician), but that they are *forced* to publish the information they obtain, meaning that media cannot be silent on a topic, nor publish a lie on purpose. [3]

Finally, the model we consider is reminiscent of Andina-Díaz (2009), the key difference being the assumed objective of the media. Andina-Díaz (2009) considers that media are audience-maximizers and have no political preference.[4] Her focus is on how the structure of the demand and the supply side of the market for news affects the revelation of information. The present paper, however, considers that media have a political orientation and its purpose is to learn about the effects of this media bias on electoral competition and on voters' welfare.

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

2. The model

We consider an election campaign between two political parties. There is a media industry and a finite number of citizens who vote according to their preference and their expectation about the post-election policy.

– *Political parties.* There is a laborist party L and a conservative party C. Each party is represented by a candidate, who can be either moderate or extreme. We denote by M a moderate type and by L (C) an extreme type of party L (C). The sets of types are thus

[3] See Section 2 for an extended discussion of this matter.

[4] This is a reasonable assumption in some countries, like the UK, where the Independent Television Commission, ITC, regulates political news, calling for impartiality and plurality. In particular, the ITC says: "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".

$T_{\mathsf{L}} = \{L, M\}$ and $T_{\mathsf{C}} = \{C, M\}$, with $t_{\mathsf{L}} \in T_{\mathsf{L}}$ and $t_{\mathsf{C}} \in T_{\mathsf{C}}$. We consider that Nature moves first and chooses the type of the candidate that will represent each party. The type is private information to the candidate and is not known to the rest of the actors, who only know that a candidate is extreme with probability $q \in (0, 1)$. The model thus fits most clearly election campaigns between two recently elected candidates whose stands are not totally known at the time of the election.[5]

Candidates' objective is to win office. To this aim, they propose their platforms, choosing either a moderate or an extreme platform, and run for office. The space of platforms is thus $\mathsf{P}_{\mathsf{L}} = \{l, m\}$ and $\mathsf{P}_{\mathsf{C}} = \{c, m\}$, for candidates in party L and C respectively, with $\mathsf{p}_{\mathsf{L}} \in \mathsf{P}_{\mathsf{L}}$ and $\mathsf{p}_{\mathsf{C}} \in \mathsf{P}_{\mathsf{C}}$. We assume that platforms are non-binding and that, conditional on being elected, a politician prefers to implement the policy that corresponds to his type. We denote by Υ_{L} a strategy for the candidate of party L and by Υ_{C} a strategy for the candidate of party C.

– *Media outlets.* We consider media outlets that want to maximize the probability that their preferred political party gets elected. We assume that if a media outlet gets its candidate elected, it obtains a (political) rent of $\Lambda > 0$. Media competition is solely for political rents, meaning that media do not care about audience but merely about Λ. Candidates and voters understand the motives of the media.

We consider two media market structures: a monopoly and a duopoly. Abusing notation, let L be the media outlet supporting the laborist party and let C be the one supporting the conservative party. Media outlets observe politicians' platforms, update beliefs on the candidates' types and decide (simultaneously in the case of two outlets) whether to investigate the policy position of their non-preferred candidate or not.[6] It is assumed that to investigate implies a strictly positive fixed cost, $K > 0$. A strategy for outlet $i \in \{\mathrm{L}, \mathrm{C}\}$, Ψ_i, is thus a function that

[5] The assumption that a candidate's motivation (type) is not known to his rival is common in the literature. See, for example, Sutter (2006), where candidates' private information refers to their disposition toward acts that benefit themselves; Harrington (1992), where candidates' preferred policies (left or right) are private information; Callander (2008), where candidates are either office motivated or policy motivated and it is unknown to their rivals; or Aragonés and Palfrey (2003), for whom candidates' ideal points as well as their tradeoffs between policy preferences and winning is private information.

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

maps each pair of candidates' platforms into a decision of whether to investigate the non-preferred politician, I, or not, NI. We assume that when a media outlet does not investigate, it gets no extra information on the candidate' true type and so, no new information is published. In particular, in this case, the outlet simply publishes the announcements made by the candidates 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 truthfully publishes this information (it also publishes the campaign announcement made by its aligned candidate).[7] Thus, in this case, new information can be revealed. For each $i \in \{\mathrm{L}, \mathrm{C}\}$, we denote by $\mathsf{R}_i = \{lc, lm, mc, mm\}$ the space of messages or reports of outlet i and by $\mathsf{r}_i \in \mathsf{R}_i$ an element of this set, where the first (second) component of r_i refers to the laborist (conservative) party.

– *Voters.* We consider a finite and odd number n of rational (moderate) voters. Voters observe candidates' platforms and media's reports, update beliefs on the candidates' types and decide for whom to vote. We assume that voters maximize expected utility, which is defined on the post-election policy, and that their preference profile satisfy $M \succ L \sim C$.[8] A citizen thus votes for party L if she believes that its candidate is more likely a moderate type than the candidate of party C (and viceversa). In case of indifference, a coin flip determines her vote.

[7] Consider now that the media can send whatever message about their non-preferred candidate's type (regardless the outcome of an investigation). In this case, in equilibrium, media cannot separate messages when they learn the type of their (non-preferred) candidate. To see it, note that, in such a situation, there are cases where the viewers can infer, from the message of a media outlet, that a candidate is moderate. But in such cases, that medium will have incentives to deviate so that the viewers believe that the candidate is extreme. Therefore, only pooling equilibria shall be expected in this case. Moreover, note that, if it is the case, media's messages will not affect voters' beliefs and hence, since investigation is costly, media shall not investigate in equilibrium (for *natural* values of the out-of-equilibrium path beliefs). As a result, we should expect the media to choose not to investigate and the citizens to disregard media information. To summarize, if the media want to influence citizens and so electoral outcomes, they cannot freely manipulate news.

[8] Alternatively, we can consider that there are three types of voters: laborists (l), conservatives (c) and moderates (m); with preferences $L \succ_l M \succ_l C$, $C \succ_c M \succ_c L$ and $M \succ_m L \sim_m C$. In this case, our results hold whenever the median voter is moderate.

The timing of the game is as follows. First, Nature selects a candidate (who is endowed with a type) for each party. Candidates propose non-binding platforms and run for office. Ideological media outlets observe the candidates' platforms and decide whether to investigate the policy position of their non-preferred candidate. Voters observe the candidates' platforms and the media's reports, update beliefs on the candidates types and then decide for whom to vote. Payoffs are realized. Everything in the model is common-knowledge except for the true intentions of the politicians.

3. Equilibrium analysis

We focus on pure strategy equilibria. Our equilibrium concept 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:

1) Candidates maximize their number of votes, media outlets maximize their political rents and voters maximize their expected utility.

2) The belief of media outlets on candidate $j \in \{\mathsf{L}, \mathsf{C}\}$ 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.

3) The belief of voters on candidate $j \in \{\mathsf{L}, \mathsf{C}\}$ is derived from Bayes' Rule, i.e., $\forall \mathsf{p}_j \in \mathsf{P}_j$, $\forall \mathsf{r}_i \in \mathsf{R}_i$,

$\gamma_j(t \mid \mathsf{p}_j, \{\mathsf{r}^j_{i \neq j}\}_{i \in \{\mathrm{L,C}\}}) = \frac{\xi_j\left(\{\mathsf{r}^j_{i \neq j}\}_{i \in \{\mathrm{L,C}\}} | \mathsf{p}_j; t\right)\Upsilon_j(t)(\mathsf{p}_j)P(t)}{\sum_{t' \in T_j} \xi_j\left(\{\mathsf{r}^j_{i \neq j}\}_{i \in \{\mathrm{L,C}\}} | \mathsf{p}_j; t'\right)\Upsilon_j(t')(\mathsf{p}_j)P(t')}$ $\forall t \in T_j$, whenever possible, where $\xi_j\left(\{\mathsf{r}^j_{i \neq j}\}_{i \in \{\mathrm{L,C}\}} \mid \mathsf{p}_j; t\right)$ is the probability that medium i, where $i \in \{\mathrm{L}, \mathrm{C}\}$, reports r^j_i about (its non-preferred) candidate j, where $j \in \{\mathsf{L}, \mathsf{C}\}$, $j \neq i$, when candidate j has proposed platform p_j, being $t \in T_j$ his type.

Regarding the beliefs off the equilibrium path, we assume that whenever candidate $j \in \{\mathsf{L}, \mathsf{C}\}$ does not use his equilibrium strategy, the media do not investigate him and there is nothing that contradicts this fact, voters believe that candidate j is extreme with probability

$x_j \in (0,1)$.[9] In any other case, we assume that voters trust the media regarding the new information (assumption TM).[10]

We therefore assume that, out-of-equilibrium path, voters trust the media more than the candidates. To see the reason for this assumption note that, in the present paper, the politicians can send any message but the media cannot deliberately manipulate news. In other words, the media cannot intentionally publish a lie, meaning that if a media outlet investigates (and so, has accurate information about the type of a candidate), its report on the investigated politician is always truthful. This imposed structure makes sense because if we allowed the media to send any message on their non-preferred candidate's type (regardless the outcome of an investigation), media messages would not affect citizens' beliefs and so, in equilibrium, would not alter the probability that their preferred politician is elected (see footnote 7). But as media compete for political rents, they benefit from the victory of their politician. Hence, they have incentives to internally *regulate* against manipulation. This helps to explain why rational voters who understand the motives of the media take into account media information when casting their vote.

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. To say it differently, in this

[9] 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.

[10] Assumption TM thus applies in the following cases: 1) A candidate does not use his equilibrium strategy and either the media investigate him or the media do not investigate him but the evidence contradicts this fact; and 2) the candidates use their equilibrium strategy, the media do not investigate but the evidence contradicts this fact.

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 C. We first analyze the behavior of the media outlet in this case, and then characterize the equilibria of the entire game.

PROPOSITION 2 *Let* C *be the sole outlet in the ideological media market. Then* $\Psi_C(l, \cdot) = I$ *never occurs, either in equilibrium or off the equilibrium path.*

The proof is in the Appendix. This result says that, in equilibrium, the monopoly never investigates its non-preferred candidate when he proposes the extreme platform. The intuition is that if the voters believe that outlet C investigates, they will take the information revealed by the media about candidate L as truthful. In this event, outlet C learns that, by investigating, it will signal a moderate candidate with a certain positive probability; whereas, by not investigating, voters will erroneously learn that the candidate is extreme. Given that media C wants candidate C to win office, it never investigates candidate L when he proposes an extreme platform. As a result, a moderate left-wing candidate can never take advantage of the media, meaning that he cannot signal his (moderate) type by campaigning.

Regarding the equilibria of the entire game, Lemma 1 presents the characterization of these equilibria. This lemma is relegated to the Appendix because of its technical characterization and because of space constraints. The result can however be summarized as follows: in equilibrium, for any platform profile of candidate C, candidate L is never investigated when he proposes an extreme platform (Proposition 2) and may be investigated when he campaigns as a moderate.

Lemma 1 is however important because of another result that we derive from it. This result if formalized in Proposition 3 below and it basically says that a monopolistic media industry introduces a bias in the political game. The reason is that, under a monopoly, the party supported by the media wins the election with a higher probability than the other party. Hence, the 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 cases because if the monopoly does not investigate in the equilibrium path, either candidate obtains (in expected terms) one half of the votes, so no bias exists. However, if the outlet does investigate, the left-wing candidate obtains (in expected terms), in equilibrium, $(1-q)n$ votes. Or to say it differently, L wins the election if $q < \frac{1}{2}$ and C does if $q > \frac{1}{2}$. Here, there is room for bias.[11]

PROPOSITION 3 *Suppose that the parameters q, K and Λ are uniformly and independently distributed. Let* C *be the sole outlet in the ideological media market. Then, the set of values of parameters that sustain the equilibria in which party* C *wins, has higher measure than the set of values of parameters that sustain the equilibria in which party* L *does.*

The proof is in the Appendix.

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 laborist party and let C be the one preferring the conservative party.

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

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

[11] Note that for this bias to exist, we need some asymmetry in the investigation. This means that no bias (of this type) would exist in the presence of (at least) one commercial media outlet that competed for audience, if citizens are unbiased. Because if this were not the case, i.e., citizens like the media to confirm their beliefs, audience-driven media outlets would slant their reports toward citizens positions (see Mullainathan and Shleifer (2005)). Likewise, if the media received audience and policy-related benefits and the citizens were unbiased, we would expect our result to hold if policy-related benefits overweight audience-driven profits. Otherwise, the tradeoff that such kind of media would experience would result in the media maximizing audience and so being informative and unbiased (see Balan *et al.* (2005)).

The proof is in the Appendix. Proposition 4 says that, in equilibrium, media outlets with a political motive never investigate an extreme platform announcement. The reason is that whenever the voters think that a media outlet investigates, that medium has incentives to save the cost of the investigation and make the citizens believe that the candidate under control is extreme.

A more interesting result is the one formalized in Proposition 5 below. It says that there is no equilibrium in which the two candidates make moderate announcements and the two media outlets investigate.

PROPOSITION 5 *For all* $t_{\mathsf{L}} \in \{L, M\}$, $t_{\mathsf{C}} \in \{M, C\}$, *there is no equilibrium where* $\Upsilon_{\mathsf{L}}(t_{\mathsf{L}}) = \Upsilon_{\mathsf{C}}(t_{\mathsf{C}}) = m$ *and* $\Psi_{\mathrm{L}}(m, m) = \Psi_{\mathrm{C}}(m, m) = I$ *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 candidates. Since the two media investigate, this candidate obtains $q\frac{n}{2}$ votes in equilibrium. Now, let us consider that 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 votes (if the other candidate is investigated) or $\frac{n}{2}$ votes (if his opponent is not investigated). Hence, an 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), at most one media outlet investigates. This is the same as in the monopolistic 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* C *support party* C*, and let media* 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 media outlet, and the two parties and the two media outlets are symmetric, then the equilibria must be symmetric.[12]

Hence, from the comparison of the monopoly (Proposition 3) and the duopoly (Proposition 6) we observe that, for political competition to be balanced, 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. 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. Hence, we now obtain the probability that a moderate candidate is picked when either no media outlet investigates or just 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)

[12] The working paper version of this paper, Andina-Díaz (2004), presents the complete characterization of all the pooling equilibria in the duopoly case. There we obtain that: 1) the only equilibria in which both candidates pool at the moderate platform require that at most one media outlet investigates in the equilibrium path and that such outlet chooses not to investigate if its non-preferred politician deviates (to send the extreme platform); 2) the only equilibria in which both candidates pool at the extreme platform require that media outlets neither investigate in the equilibrium path nor when a candidate unilaterally deviates; and (iii) the only equilibria in which one candidate pools at the extreme platform and the other does at the moderate platform requires that either no candidate is investigated in the equilibrium path, or only the candidate that proposes the moderate platform is investigated in the equilibrium path and none of the candidates are investigated when they unilaterally deviate.

than under no market for news.[13] 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, as we have already mentioned, our intuition is that, in equilibrium, the media would choose not to investigate and the citizens would disregard the media information. In this case, the existence of a market for news would add nothing to the political game. As a result, we conclude that the innocuous role of politically biased media 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 political parties and voters. Voters want to find out the targets of parties as they realize that, once in office, politicians implement their preferred policy. In this setup, we analyze the incentives of politically biased media, that cannot manipulate news, to acquire costly information. We consider two media market structures: a monopoly and a duopoly. Our results show that if each party has the support of one media outlet, 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,

[13] In a related paper, Besley and Prat (2006) consider a game in which the government can buy the silence of the media and so hide bad news about its quality. Note that, in terms of the present paper, we can interpret silenced media as ideological media (in the sense that both types of media favor the interests of a group). Besley and Prat (2006) find that, because of their assumption that (bad) information can be silenced, voters' welfare (measured as the probability that a bad incumbent is not reelected) is the same under silenced (or biased) media than under no media industry. In our paper, however, politically biased media reveals relevant information to voters (through their *negative advertising*). Hence, even the presence of one ideological media that biases the political process improves the voters' welfare (in the sense explained above).

as this party will get into office with a higher probability than the other party. Additionally, we show that the existence of a market for news increases voters' welfare and that, in equilibrium, welfare does not depend on the number (one or two) of media outlets.

Although we do not explicitly model the case of more than two ideological outlets, it is worth discussing the implications of such generalization. In this case, and if we consider that all the ideologically aligned media receive the political rent if their party gets into office, our intuition is that, in equilibrium, it will never be more than one outlet investigating each party. For if it were not the case, all the outlets that investigate would find it profitable to (unilaterally) deviate, as they would save the cost and would get the political rent anyway. In this case, the information available to voters will be the same as with two media, thereby the political equilibria will remain the same.

Another interesting extension would be to consider that the market for news is composed of politically biased media and audience-driven media. This is possibly the most realistic scenario. In this case, our results would no longer hold (we should expect the commercial media to treat the two parties equally, which would imply a symmetry of results), unless asymmetry is introduced in the demand side of the market. This is precisely done by Mullainathan and Shleifer (2005) and Gentzkow and Shapiro (2006), who analyze how consumers preferences for a certain type of content affects the behavior of the commercial media. The introduction of a bias, both in the demand and the supply side of the market for news is, however, something still unexplored that we think merits future research.

Appendix A1.

A1.1 Proof of Proposition 2

Let us denote by $\gamma^{p_{\mathsf{L}} m_{\mathrm{C}}^{\mathsf{L}}}_{p_{\mathsf{C}} m_{\mathrm{C}}^{\mathsf{C}}} = (\gamma_{\mathsf{L}}(L \mid p_{\mathsf{L}}, m_{\mathrm{C}}^{\mathsf{L}}), \gamma_{\mathsf{C}}(C \mid p_{\mathsf{C}}, m_{\mathrm{C}}^{\mathsf{C}}))$ the belief that the voters have on candidate L being L, given his platform p_{L} and medium C's message on him, $m_{\mathrm{C}}^{\mathsf{L}}$; and the voters' belief on candidate C being C, given his platform p_{C} and medium C's message on him $m_{\mathrm{C}}^{\mathsf{C}}$.[14]

[14] In the case of a right-wing monopoly, $m_{\mathrm{C}}^{\mathsf{C}} = p_{\mathsf{C}}$ always holds.

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

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

In all the cases, the payoff to the outlet if it investigates is $\mu_{\mathsf{L}}(L \mid p_{\mathsf{L}})\Lambda - K$, and its payoff if it deviates is Λ. Hence, neither $\Psi_{\mathrm{C}}(l, p_{\mathsf{C}}) = I$ nor $\Psi_{\mathrm{C}}(l, \overline{p}_{\mathsf{C}}) = I$ can occur in equilibrium. ■

LEMMA 1 *In the monopoly case, the following are the only (pure strategy) equilibria of the entire game:*

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

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

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

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

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

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

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

(**i**) Let us consider a hypothetical equilibrium in which $\Upsilon_{\mathsf{L}}(L) = \Upsilon_{\mathsf{L}}(M) = m$, $\Upsilon_{\mathsf{C}}(C) = \Upsilon_{\mathsf{C}}(M) = p$, with $p, \overline{p} \in \{m, c\}$, $p \neq \overline{p}$.

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

-Candidates' behavior. Case $(i.1)$. Let us consider the strategy profile (SP hereafter): (mm, pp), $\Psi_{\mathrm{C}}(m,p) = I$, $\Psi_{\mathrm{C}}(m,\overline{p}) = I$, $\Psi_{\mathrm{C}}(l,p) = NI$, $\Psi_{\mathrm{C}}(l,\overline{p}) = NI$, where conditions in cases (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 no profitable deviation. Finally, both types of candidate C gain qn in equilibrium, whereas if they deviate they gain qn. Thus, candidate C 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),

$\Psi_{\mathrm{C}}(m,p) = I$, $\Psi_{\mathrm{C}}(m,\overline{p}) = NI$, $\Psi_{\mathrm{C}}(l,p) = NI$, $\Psi_{\mathrm{C}}(l,\overline{p}) = NI$, where conditions in cases (3) and (6) must be satisfied. Candidate L does not deviate if $q < x_{\mathsf{L}}$, whereas candidate C neither deviates if either $q < x_{\mathsf{C}}$ or $x_{\mathsf{C}} = q \geq \frac{1}{2}$. Then, this SP conforms an equilibrium when parameters and beliefs satisfy either $q < \min\{x_{\mathsf{L}}, x_{\mathsf{C}}\}$ and $K = q\Lambda$; or $\frac{1}{2} \leq q = x_{\mathsf{C}} < x_{\mathsf{L}}$ and $q\frac{\Lambda}{2} \leq K \leq q\Lambda$. *Case* $(i.3)$. We now consider the SP: (mm, pp), $\Psi_{\mathrm{C}}(m,p) = NI$, $\Psi_{\mathrm{C}}(m,\overline{p}) = I$, $\Psi_{\mathrm{C}}(l,p) = NI$, $\Psi_{\mathrm{C}}(l,\overline{p}) = NI$, where conditions in cases (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 C gains $\frac{n}{2}$, whereas if one of them deviates, he gains qn. Thus, candidate C 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), $\Psi_{\mathrm{C}}(m,p) = NI$, $\Psi_{\mathrm{C}}(m,\overline{p}) = NI$, $\Psi_{\mathrm{C}}(l,p) = NI$, $\Psi_{\mathrm{C}}(l,\overline{p}) = NI$, where conditions in cases (4) and (6) must be satisfied. Candidate L does not deviate when $q \leq x_{\mathsf{L}}$, and candidate C neither does when $q \leq x_{\mathsf{C}}$. Then, this SP conforms an equilibrium when parameters and beliefs satisfy either $q = x_{\mathsf{C}} \leq x_{\mathsf{L}}$ and $K \geq q\frac{\Lambda}{2}$; or $q < x_{\mathsf{C}}$, $q \leq x_{\mathsf{L}}$ and $K \geq q\Lambda$.

(**ii**) We now consider a hypothetical equilibrium in which $\Upsilon_{\mathsf{L}}(L) = \Upsilon_{\mathsf{L}}(M) = l$, $\Upsilon_{\mathsf{C}}(C) = \Upsilon_{\mathsf{C}}(M) = p$, with $p, \overline{p} \in \{m, c\}$, $p \neq \overline{p}$.

-Media's behavior. Proceeding as in (i), we obtain that $\Psi_{\mathrm{C}}(l,p) = NI$ and $\Psi_{\mathrm{C}}(l,\overline{p}) = NI$, with $p \in \{m, c\}$, are possible in equilibrium. *Case* (1). $\Psi_{\mathrm{C}}(m,p) = I$. Voters' beliefs are $\gamma_{pp}^{mm} = (0^{(TM)}, q)$ and $\gamma_{pp}^{ml} = (1^{(TM)}, q)$. The payoff to the outlet is $x_{\mathsf{L}}\Lambda - K$, whereas if it deviates its payoff is 0. Thus, $\Psi_{\mathrm{C}}(m,p) = I$ implies $x_{\mathsf{L}}\Lambda \geq K$. *Case* (2). $\Psi_{\mathrm{C}}(m,p) = NI$. Voters' beliefs are $\gamma_{pp}^{mm} = (x_{\mathsf{L}}, q)$ and $\gamma_{pp}^{ml} = (1^{(TM)}, q)$. The payoff to 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 $\Psi_{\mathrm{C}}(m,p) = NI$ 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). $\Psi_{\mathrm{C}}(m,\overline{p}) = I$. Voters' beliefs are $\gamma_{\overline{pp}}^{mm} = (0^{(TM)}, x_{\mathsf{C}})$ and $\gamma_{\overline{pp}}^{ml} = (1^{(TM)}, x_{\mathsf{C}})$. Hence, $\Psi_{\mathrm{C}}(m,\overline{p}) = I$ implies $x_{\mathsf{L}}\Lambda \geq K$. *Case* (4). $\Psi_{\mathrm{C}}(m,\overline{p}) = NI$. Voters' beliefs are $\gamma_{\overline{pp}}^{mm} = (x_{\mathsf{L}}, x_{\mathsf{C}})$ and $\gamma_{\overline{pp}}^{ml} = (1^{(TM)}, x_{\mathsf{C}})$. Then, $\Psi_{\mathrm{C}}(m,\overline{p}) = NI$ implies either $x_{\mathsf{L}} > x_{\mathsf{C}}$; $K \geq x_{\mathsf{L}}\frac{\Lambda}{2}$ and $x_{\mathsf{C}} = x_{\mathsf{L}}$; or $K \geq x_{\mathsf{L}}\Lambda$ and $x_{\mathsf{L}} < x_{\mathsf{C}}$.

-Candidates' behavior. Case $(ii.1)$. Let us consider the SP: (ll, pp), $\Psi_C(l,p) = NI$, $\Psi_C(l,\overline{p}) = NI$, $\Psi_C(m,p) = I$, $\Psi_C(m,\overline{p}) = I$, where conditions in cases (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), $\Psi_C(l,p) = NI$, $\Psi_C(l,\overline{p}) = NI$, $\Psi_C(m,p) = I$, $\Psi_C(m,\overline{p}) = NI$ neither constitutes an equilibrium. *Case* $(ii.3)$. We now consider the SP: (ll, pp), $\Psi_C(l,p) = NI$, $\Psi_C(l,\overline{p}) = NI$, $\Psi_C(m,p) = NI$, $\Psi_C(m,\overline{p}) = I$, where conditions in cases (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 C being in equilibrium we need $q \leq x_{\mathsf{C}}$. Then, this SP conforms an equilibrium when parameters and beliefs satisfy either $K \leq x_{\mathsf{L}}\Lambda$, $q < x_{\mathsf{L}}$ and $q \leq x_{\mathsf{C}}$; or $x_{\mathsf{L}}\frac{\Lambda}{2} \leq K \leq x_{\mathsf{L}}\Lambda$ and $q = x_{\mathsf{L}} \leq x_{\mathsf{C}}$. *Case* $(ii.4)$. Finally, let us consider the SP: (ll, pp), $\Psi_C(l,p) = NI$, $\Psi_C(l,\overline{p}) = NI$, $\Psi_C(m,p) = NI$, $\Psi_C(m,\overline{p}) = NI$, where conditions in cases (2) and (4) must be satisfied. Both candidates do not want to deviate if $q \leq \min\{x_{\mathsf{L}}, x_{\mathsf{C}}\}$. Thus, this SP conforms an equilibrium when parameters and beliefs satisfy either $q \leq x_{\mathsf{C}} < x_{\mathsf{L}}$; $K \geq x_{\mathsf{L}}\Lambda$ and $q \leq x_{\mathsf{L}} < x_{\mathsf{C}}$; or $K \geq x_{\mathsf{L}}\frac{\Lambda}{2}$ and $q \leq x_{\mathsf{L}} = x_{\mathsf{C}}$. ■

A1.2 Proof of Proposition 3

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

Consider the equilibrium (mm, pp), $\Psi_C(m,p) = I$, $\Psi_C(m,\overline{p}) = I$, $\Psi_C(l,p) = NI$, $\Psi_C(l,\overline{p}) = NI$, $q < x_{\mathsf{L}}$. The set of values of parameters that sustain 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 C wins is $\int_{\frac{1}{2}}^{1} q\Lambda dq = \frac{3\Lambda}{8}$. Hence, party C wins the election with a higher probability.

Let us consider the equilibrium (mm, pp), $\Psi_C(m,p) = I$, $\Psi_C(m,\overline{p}) = NI$, $\Psi_C(l,p) = NI$, $\Psi_C(l,\overline{p}) = NI$, $q < x_{\mathsf{L}}$, $q = x_{\mathsf{C}} \geq \frac{1}{2}$. The set of values of parameters 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 C 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 C.

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

A1.3 Proof of Proposition 4

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

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

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

Let $j \in \{\mathsf{L}, \mathsf{C}\}$, $E \in \{L, C\}$ and $e \in \{l, c\}$, for the laborist and the conservative party respectively.

Suppose $\Psi_{\mathrm{L}}(l,c) = I$ and $\Psi_{\mathrm{C}}(l,c) = I$. 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 to outlet L if it investigates is $\mu_{\mathsf{L}}(L \mid p_{\mathsf{L}})\mu_{\mathsf{C}}(C \mid p_{\mathsf{C}})\frac{\Lambda}{2} + (1 - \mu_{\mathsf{L}}(L \mid p_{\mathsf{L}}))\mu_{\mathsf{C}}(C \mid p_{\mathsf{C}})\Lambda + (1-\mu_{\mathsf{L}}(L \mid p_{\mathsf{L}}))(1-\mu_{\mathsf{C}}(C \mid p_{\mathsf{C}}))\frac{\Lambda}{2} - K$, 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 $\Psi_{\mathrm{C}}(l,c) = I$, $\Psi_{\mathrm{L}}(l,c) = I$ cannot hold in equilibrium. Suppose now $\Psi_{\mathrm{L}}(l,c) = I$ and $\Psi_{\mathrm{C}}(l,c) = NI$. 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 C are $\gamma_{\mathsf{C}}(C \mid c,c) \in \{1, 1^{(TM)}\}$, for $p_{\mathsf{C}} \in \{c, m\}$; and they are $\gamma_{\mathsf{C}}(C \mid c,m) \in \{0, 0^{(TM)}\}$, for $p_{\mathsf{C}} \in \{c, m\}$ respectively. The payoff to outlet L if it investigates is $\mu_{\mathsf{C}}(C \mid p_{\mathsf{C}})\Lambda - K$, and its payoff if it does not is Λ. Then, if $\Psi_{\mathrm{C}}(l,c) = NI$, $\Psi_{\mathrm{L}}(l,c) = I$ cannot hold in equilibrium.

Summarizing, $\Psi_{\mathrm{L}}(l,c) = I$ cannot hold in equilibrium. Analogously, we prove that neither $\Psi_{\mathrm{L}}(m,c) = I$, $\Psi_{\mathrm{C}}(l,c) = I$, nor $\Psi_{\mathrm{C}}(l,m) = I$, can hold in equilibrium. This completes the proof. ■

References

Anderson, S. P. and J. McLaren (2005): "Media mergers and media bias with rational consumers", Mimeo, University of Virginia.

Andina-Díaz, A. (2004): "Asymmetric information and election campaigns: The monitoring role of media", *WP 32, IVIE* .

Andina-Díaz, A. (2009): "Media competition and information disclosure", *Social Choice and Welfare* forthcoming.

Ansolabehere, S., R. Lessem and J. M. Snyder (2006): "The orientation of newspaper endorsements in U.S. elections, 1940-2002", *Quarterly Journal of Political Science* 1, pp. 393-404.

Aragonés, E. and T. R. Palfrey (2003): "Spatial competition between two candidates of different quality: The effects of candidate ideology and private information", *Working Paper* 573.03, UFAE and IAE.

Balan, D. J., P. DeGraba and A. L. Wickelgren (2005): "Ideological persuasion in the media", Mimeo, Federal Trade Commission and University of Texas at Austin.

Baron, D. P. (2006): "Persistent media bias", *Journal of Public Economics* 90, pp. 1-36.

Besley, T. and A. Prat (2006): "Handcuffs for the grabbing hand? Media capture and government accountability", *The American Economic Review* 96, pp. 720-736.

Besley, T. and R. Burgess (2002): "The political economy of government responsiveness: Theory and evidence from India", *Quarterly Journal of Economics* 117, pp. 1415-1451.

Bovitz, G. L., J. N. Druckman and A. Lupia (2002): "When can a news organization lead public opinion? Ideology versus market forces in decisions to make news", *Public Choice* 113, pp. 127-155.

Callander, S. (2008): "Political motivations", *Review of Economic Studies* 75, pp. 671-697.

DellaVigna, S. and E. Kaplan (2007): "The Fox news effect: Media bias and voting", *Quarterly Journal of Economics* 122, pp. 1187-1234.

Gentzkow, M. and J. M. Shapiro (2006): "Media bias and reputation", *Journal of Political Economy* 114, pp. 280-316.

Groseclose, T. and J. Milyo (2005): "A measure of media bias", *The Quarterly Journal of Economics* 120, pp. 1191-1237.

Harrington, J. E. (1992): "The revelation of information through the electoral process: An exploratory analysis", *Economics and Politics* 4, pp. 255-275.

Krukones, M. G. (1984), *Promises and Performance: Presidential Campaigns as Policy Predictors* Lanham, MD: University Press of America.

Lott, J. R. and K. A. Hassett (2004): "Is newspaper coverage of economic events politically biased?", Mimeo, American Enterprise Institute.

Mullainathan, S. and A. Shleifer (2005): "The market for news", *The American Economic Review* 95, pp. 1031-1053.

Stromberg, D. (2004): "Radio's impact on public spending", *The Quarterly Journal of Economics* 119, pp. 189-221.

Sutter, D. (2006): "Media scrutiny and the quality of public offcials", *Public Choice* 129, pp. 25-40.

Vaidya, S. (2005): "Corruption in the media's gaze", *European Journal of Political Economy* 21, pp. 667-687.

Resumen

Este trabajo presenta un modelo de competencia electoral con votantes desinformados. Suponemos existen medios de comunicación ideológicos que maximizan la probabilidad de que el partido afín gane las elecciones. Entre los resultados, obtenemos que si ambos políticos cuentan con apoyo mediático, la probabilidad de ganar las elecciones es la misma para cada uno de ellos. Sin embargo, este hecho cambia cuando es únicamente un candidato el que cuenta con este apoyo. Asimismo, estudiamos el bienestar de los votantes y obtenemos que el aspecto importante es si existe o no una industria de medios de comunicación y no el número de medios de la industria.

Palabras clave: Elecciones; control; medios de comunicación ideológicos.

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