Elite Media and Downsian Competition*

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Abstract

We introduce mass media in a one-dimensional Downsian model of electoral competition in order to address the following question: to what extent can the media have policy influence when its ideological bias is widely known? Voters and the media have conflicting preferences over policy (i.e., they are ideologically distant), but both value higher ability in the elected official. The media is privately informed about the relative abilities of the candidates and strategically conveys this information through cheap talk endorsements. When the ideological distance between the media and the average voter is small, equilibrium platform choices of candidates converge to the media's ideal policy rather than the voter's. When the ideological distance is large, a mixed strategy equilibrium arises which often takes a polarized form—candidates either choose very populist platforms or very elitist ones catering to the tastes of the media elite. The equilibrium displays platform divergence *ex post*, with the media's partisanship increasing and its influence on voters diminishing with the degree of divergence. The media's information could be immiserizing—the existence of a biased media could hurt a majority of voters in spite of rational voter skepticism about the media's message. The media is sometimes better off delegating message control to an editor who is ideologically closer to the average voter. Informational and ideological heterogeneity among multiple media outlets moderates the effect of the media on electoral competition but typically does not eliminate it.

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1 Introduction

There is widespread belief that in most democracies, the media has a powerful influence on electoral outcomes and policymaking. Moreover, even in countries that enjoy a high degree of press freedom, the media is often seen as biased towards a particular ideology, party, class or cultural group. Critics argue that the media engages in slanted coverage, influencing voters with selective reporting, innuendo, opinionating and even outright lies. By manipulating public opinion through the use of distorted information, the media generates support for policies that serve the interest of an elite minority rather than the average voter.

In the American context, the notion that the mainstream media has a liberal bias has gained wide currency among conservatives and Republicans, and even among some Independents and Democrats. Charges of liberal bias have been levelled at the major TV networks and leading national dailies in polemical bestsellers (Coulter (2002)), insider tell-all books by journalists (Goldberg (2002)) and survey based studies (Lichter, Rothman and Lichter (1986), Groseclose and Milyo (2005)). Several liberal and progressive writers, on the other hand, have denied the existence of liberal bias and have raised the counter-charge of a conservative tilt in reporting, derived from corporate control of all or part of the mass media (Herman and Chomsky (1988), Franken (2003)). A 2009 survey by the Pew Research Center shows that 74% of the voting public believe the media's coverage is biased and one-sided, while only 18% believe it to be fair. Suspicion of the media is so deep rooted in American politics that several media watchdog groups run popular websites and spend considerable resources scanning news stories for bias virtually round the clock.[1] Critics from either end of the political spectrum unite in their view of the media as not a dispassionate disseminator of truth, but a politically motivated player who exerts influence using its voice and reach.[2]

[1] While some media watchdog websites report distortions and embellishments coming from both sides of the political spectrum and reported uncritically in the media (e.g., FactCheck.org), others are unabashedly partisan. For example, the Media Research Center (http://www.mrc.org/public/default.aspx) declares among its goals: "neutralizing liberal media bias" and "advancing the culture of free enterprise in America." It boasts of a staff of 60 and an annual budget of $10 million. In contrast, Fairness and Accuracy in Reporting or FAIR (http://www.fair.org/index.php), a self described "progressive group", dedicates itself to scrutinizing a "mainstream media... increasingly cozy with the economic and political powers they should be watchdogging." FAIR does not provide figures for its total budget or staff on its website, but reports that 80% of its funding comes from subscriptions and contributions, and that its "action alerts" are distributed to "an international network of over 50,000 activists."

[2] In our analysis, we will assume that the media's bias is an objective fact and voters share a common perception about the direction and magnitude of this bias. Research in psychology suggests that bias perceptions are often subjective and dependent on a person's own biases. In particular, partisans are more likely to perceive bias in an information source against their own side or opinion. This phenomenon has been called the hostile media effect by Vallone, Ross and Lepper (1985), who found that pro-Palestinian viewers saw a pro-Israeli slant, and pro-Israeli viewers reached the opposite conclusion, after watching the same film clip on the 1982 Sabra and Shatila massacre in Lebanon. When the existence of bias is itself an unknown factor, accusations of bias can be put to strategic use, and some writers have suggested that the liberal bias charge is aimed at making the American media defensive and over-correct in favor of conservatives (Alterman (2003)). We do not explore the issue of unknown bias in this paper,

Several recent papers have presented evidence that in spite of widespread skepticism about the veracity of news, the media has a significant influence on the choices of voters. Della Vigna and Kaplan (2007) find that in those towns where Fox News was introduced into cable programming, Republicans gained 0.4 to 0.7 percentage point vote share in the Presidential election of 2000. Chiang and Knight (2008) study newspaper endorsements of candidates in various races and their effect on voters. They find that endorsements significantly increase vote shares, but the effect is less pronounced when a left-leaning newspaper endorses a Democrat, or a right-leaning outlet endorses a Republican. These empirical findings suggest that voters rationally discount what they hear from biased sources, but are still open to some amount of persuasion.

Our aim in this paper is to understand the theoretical implications of media bias in a democracy. We construct a framework in which the media has access to some critical information (say about candidates' ability to deal with a national security threat) that is useful to voters. This information is communicated to voters using unverifiable messages (cheap talk), such as endorsements or opinion pieces. Voters and the media care both about the relative abilities of the candidates and the policies they promise during their campaign. However, it is common knowledge that the media is ideologically biased, in the sense that its policy preferences differ from those of the median voter.

We embed these additional features in an otherwise classical Downsian model, where two office-seeking candidates simultaneously choose platforms (i.e., policy promises), the media (privately informed about the candidates' abilities and publicly informed about their policy positions) endorses one of the two candidates, and finally voters vote armed with information about the publicly announced platforms and endorsements, but no direct knowledge about the candidates' abilities. We assume voters are rational Bayesians who are appropriately skeptical of the media's message.

The ideological distance between the voter and the media, combined with the media's access to private information about candidates' personal qualities, gives rise to a number of interesting effects. The media's credibility and influence are endogenously derived as a function of the platform choices of the candidates. If candidates' platforms are very close to each other, the media's preference ordering over them is determined primarily by relative ability, whereas if they are far apart, then it is decided mostly by ideological proximity. Hence, the media's credibility and influence erode with increasing platform differentiation and the voter may ignore the media's endorsement altogether when platforms are sufficiently differentiated. In our model, the media's ideological bias (i.e., its ranking of alternative policies) is exogenous, but its partisan bias (i.e., its ranking of alternative candidates) is endogenous.

The candidates' platform choices, in turn, are shaped by the media's endorsement strategy as well as its influence on voters. Candidates face a tension between two opposing temptations—pander to the voter with populist policies, or woo the media with elitist policies in order to win its endorsement. We show that both these campaign strategies must have a role to play in the equilibrium of our

but it is an interesting topic for further research.

model. Several critical outcomes are, therefore, interdependent and jointly determined—candidates' platform choices, the media's partisanship, its credibility and persuasive effect on voters, and voting behavior.

We show that the candidates' platform choices must involve mixed strategies if the ideological distance between the voter and media in policy space is large. When this happens, the immediate implication is the breakdown of the median voter theorem—there is positive probability that platforms will diverge (though the extent of divergence is stochastic), and almost surely, policy outcomes will not reflect the median voter's most preferred choice. To get some intuition behind these results, consider a candidate's incentives if platforms were to converge. By moving his platform slightly closer to the media's favorite policy, he makes it slightly less attractive to the voter compared to his rival's platform but increases the probability of receiving an endorsement from the media. However, an endorsement discontinuously improves the perceived ability of a candidate and is therefore decisive in the election if platforms are not too far apart. When the media is not too ideologically distant from the voter, this *elitism creep* will lead to complete pandering of the media instead of the voter, and both platforms will converge to the media's most preferred policy. However, if the ideological gap is large, a platform which completely caters to the media's policy interest can be defeated by a *flight to populism*, i.e., a platform choice at the voter's ideal point. This is because the large distance between the platforms makes policy considerations trump ability in the voter's mind, and furthermore, reduces the information content of the endorsement and destroys the media's credibility and influence. The conflicting tugs of elitist and populist pandering can only be balanced via mixed strategies where candidates are uncertain about the exact policy position of their opponent in equilibrium.

For an intermediate range of ideological distance between the voter and the media, the mixed equilibrium displays the additional interesting feature of a "hole in the middle", i.e., the support of candidates' equilibrium strategies is non-convex, putting probability weight on a range of policies close to the voter's ideal point and another close to the media's ideal, but nothing in between. We interpret this as a force towards *polarization.* The incentives of electoral politics preclude any substantial degree of ideological compromise between the average voter and the elite whose views are voiced through the media. This result is in sharp contrast to what some other papers have found (Grossman and Helpman (1999), Andina-Diaz (2006)).

Our welfare analysis produces some surprising results. We demonstrate the possibility of *immiserizing information*—there are situations where the voter would be better off if the media was silenced altogether. In the absence of endorsements, the median voter theorem would be restored but voters must make their choices without access to any information about the candidates' relative merits. We show that this trade-off sometimes works to the voter's advantage. Put another way, by virtue of its critical role of informing citizens about the personal strengths and weaknesses of politicians seeking high office, a media elite can exert such a disproportionate influence over policy

that voters may end up losing more from the resultant elitist bent of campaigns than they gain from knowledge about the candidates' governing abilities. It should be emphasized that our conclusion is based on the assumption that voters are aware of the media's bias, discount its motivated endorsements as needed, and fully understand the effect of various policies on their own well being. In other words, they are not systematically fooled due to an excess of credulity. Since our model leaves out many important details of reality, the analytical result on immiserizing information should not be taken as a reason to support censorship or suppression of press freedom. Nevertheless, it is interesting to note that there are plausible scenarios where the existence of an independent media has negative net value to a majority of voters.

A related result centers on the issue of editorial delegation. We show that in many situations, the owner of a monopoly media outlet is better off turning over control to an editor who is ideologically closer to the voter compared to the owner himself. This is reminiscent of results obtained for pure sender-receiver (cheap talk) games by Dessein (2002) and Holmstrom (1984). Unlike in those papers, we focus on delegation by the sender rather than the receiver, and optimal delegation in our framework achieves only partial moderation, i.e., the optimal editor must still be ideologically distant to the voter, albeit to a lesser degree than the owner. Furthermore, delegation is Pareto improving—it also increases the expected utility of the voter. To understand these results, observe that any change has two potential effects on the media's or voter's utility—policy outcomes could move closer to (or further from) their most preferred policy, and more (or less) information about candidates' abilities could become incorporated in voters' decisions. We show that optimal editorial delegation must have the following properties: candidates' platforms will converge to the *editor's* ideal policy but the *expected* policy outcome remains unchanged relative to the game without delegation (only variance is reduced). The convergence of platforms implies the media under the delegated editor does not display any partisanship, and consequently its endorsement is always credible and influential, avoiding some of the information destruction that arises in the absence of delegation when platforms are too differentiated *ex post* and the media's message is ignored by voters.

The results described so far are based on the assumption of an ideologically homogeneous elite media with an informational monopoly. The final question we explore is the effect of ideological and informational heterogeneity in the media market. We find that if there are two media outlets instead of one with the same information, and if their biases relative to the median voter are in the same direction, the equilibrium outcomes are as if the more ideologically distant outlet did not exist. On the other hand, if the biases are opposite (not necessarily equal), equilibrium platform choices converge back to the voter's ideal point and the median voter theorem is restored. Essentially, depending on the platform choices of the candidates, the voter's ranking of the candidates (under all realized vector of abilities) would coincide with the ranking of one or the other of the two media outlets. Hence, the voter can learn all decision relevant information by listening to the endorsement coming from one source and ignoring the other. In this sense, competition among a ideological

heterogenous media eliminates the possibility that information disseminated by the media may be harmful and lead to pandering by candidates to a particular elite. We also investigate the effect of allowing different media outlets to have different pieces of information relevant for the voters. Such informational heterogeneity within the media reduces the influence of any one outlet, reducing the incentive for candidates to pander to it. However, the lack of an informational monopoly only moderates and does not eliminate the influence of those sections of the media that are commonly perceived to have more relevant information.

The rest of the paper is organized as follows. In Section 2 we discuss the closely related literature. In Section 3 we set up our basic model while in Section 3.2 we analyze the effect of an ideologically biased but informed elite media on electoral competition. In Section 4 we investigate the effect of ideological as well as informational diversity within the media. Section 5 discusses some possible extensions of the model as well as our concluding remarks. The Appendix contains all proofs.

2 Related Literature

There is an emerging theoretical literature on media bias and its implications for electoral politics. Several papers explore the question of why bias may appear in commercial media that is primarily driven by the profit motive. Some authors offer explanations driven by demand side factors—preferences of readers and viewers—while others focus on the supply side—motives of owners and journalists. Mullainathan and Shleifer (2005) and Bernhardt, Krasa and Polborn (2008) assume partisan voters have a taste for biased news that conform closely to their priors. They examine to what extent a profit maximizing media will distort its reporting in response, a media outlet's slant being similar to the choice of a product characteristic in a market with heterogeneous consumers. Baron (2006) presents a model where non-ideological and profit driven media owners find it optimal to allow ideologically motivated journalists to engage in biased reporting, even though it reduces the value of the news to listeners and reduces subscription and revenues. The reason is that ideological journalists are willing to work for lower wages in return for discretion in reporting strategies. Gentzkow and Shapiro (2006) derive bias from reporters' career concerns—slanting news in a direction that confirms readers' priors makes the reporter appear more competent. None of these papers explicitly model political competition and examine its interaction with reporting bias.

Papers which jointly determine campaign strategies, media behavior and voters' choices include Grossman and Helpman (1999), Stromberg (2004), Andina-Diaz (2004) and Chan and Suen (2008). In Grossman and Helpman (1999), voters are unsure how various policies will affect them, but this information is available to political candidates and the leader of an interest group who can issue endorsements publicly. If the realized ideal policies of the interest group and the remaining electorate are independent, candidates will pander to the interest group at the expense of the public. Our paper differs from Grossman and Helpman (1999) in several key aspects. In the latter, candidates confer

favors on a voting bloc of positive measure; in ours they pander to an entity (the media) which is electorally insignificant, i.e., has no votes. Ours is also a model of open pandering, where voters perfectly understand the payoff relevant effects of various policies, and the endorser tries to persuade an audience with whom his policy preferences are known to conflict.

Stromberg (2004) presents a theory where campaign promises reach voters through the media, and due to technological fixed costs, the media provides more news to large voter groups or rich subscribers who generate advertising revenue. As a result, platforms disproportionately cater to these segments of the electorate. Chan and Suen (2008) develop a model where voters have a preference for biased news for instrumental reasons. If the media's message must be coarse due to time or attention constraints, then voters gain most decision relevant information by listening to outlets which are ideologically similar to themselves. Platforms may deviate from the position of the median voter depending on the number of media outlets. In Andina-Diaz (2004), biased media outlets hurt candidates whose platforms are far away from their policy ideal by creating bad publicity. The main difference from our model is that voters are not sophisticated enough to interpret the media's message after taking its bias into account.

In addition to these papers, Besley and Prat (2006) and Anderson and McLaren (2010) discuss theories of media bias where the media communicates with voters not through cheap talk messages but verifiable evidence about candidate traits. The well known unraveling result (Milgrom (1981)) is broken down by assuming that the evidence becomes available only with some probability. Both papers examine reasons for evidence suppression—in the former, the government bribes a commercial media to do so leading to a pro-incumbency bias, while in the latter, the media's own ideological bias is responsible for selective reporting.

Our paper straddles two older literatures—the Hotelling-Downs model of spatial competition (Hotelling (1929), Downs (1954)), and the literature on cheap talk pioneered by Crawford and Sobel (1982). In the spatial model of electoral competition, where the benchmark result is the median voter theorem, Wittman (1983) and Calvert (1985) have demonstrated that policy divergence arises when candidates are ideologically motivated and the median voter's policy position is uncertain. We derive policy divergence with office motivated candidates and deterministic positioning of the median voter. Groseclose (2001) and Aragones and Palfrey (2002) show that in the Wittman-Calvert model with stochastic median, mixed equilibria and stochastic policy divergence arise even when candidates are office seeking if one of them has a valence advantage. In our model, the valence advantage is not common knowledge and is (imperfectly) inferred from the media's message.

There has been a surge of research on cheap talk games in recent times. In our setting, the sender's bias is endogenously derived as a result of electoral competition between the candidates. Because of this competition, the receiver may suffer from immiserizing information (i.e., the receiver is better off if the equilibrium involved babbling). Chakraborty and Yilmaz (2010) consider a model of cheap talk with two-sided private information where the bias of one of one of the speakers is directly

chosen by an interested third party. Chakraborty and Harbaugh (2010) provide an example of a cheap talk game with multidimensional information and multiple receivers where more information hurts all the receivers because of strategic externalities between them.

Our result that competing senders with the same information produce more informative outcomes is reminiscent of Battaglini's (2002) model of multi-dimensional cheap talk with multiple experts and Krishna and Morgan's (2001) model of one dimensional cheap talk. Our result is obtained in a model where there is a single dimension of communication and where the biases of the two experts are endogenous and determined by political competition. In equilibrium, neither expert has any bias.

3 Electoral Competition with an Elite Media

A unit mass of voters face a choice between two candidates in an election. Candidate $i = 1, 2$ is identified by a policy platform $x_i \in [-1, 1]$ and a type $\theta_i \in \mathbb{R}$. Voters have diverse policy preferences but identical preferences on candidate types. A voter is identified by her 'ideal' policy $x \in [-1, 1]$ and the value to voter x from electing candidate i with policy platform x_i and type θ_i is given by

$$u(\theta_i, x_i; x) = \theta_i - \frac{1}{3\Delta^*} d(x_i, x) \tag{1}$$

where $d(.,.)$ is a distance function and $\Delta^* > 0$ is a parameter capturing the importance of a candidate's type θ_i to a voter, relative to the candidate's policy distance $d(x_i, x)$. We let $G(x)$ denote the (atomless) distribution of voters when they are ordered by their ideal policies $x \in [-1, 1]$ and suppose $x_v = 0$ is the median of this distribution.

Candidate policy platforms x_1 and x_2 are observed by all voters. However, the typical voter is uncertain about candidate types θ_1 and θ_2, with F being the commonly held priors associated with θ_1, θ_2. One particular voter however privately learns the realization of θ_1, θ_2 prior to voting and we call this informed voter the media. We suppose that the media's preferences over candidates are like any other voter except that the media has an ideal policy x_m that is distinct from the median voter's ideal policy $x_v = 0$. For notational convenience we suppose in what follows that $x_m > 0$ and common knowledge.[3]

The structure of the voting game is as follows. First, the two candidates simultaneously choose policy platforms x_1 and x_2. The candidates are office-seeking and choose their policies in order to maximize the chances of getting elected. In doing so, they take into account the possible effect of information communicated by the media on the voting behavior of the electorate. After the candidates choose their policy platforms, the media learns the realization of θ_1, θ_2 and sends a (cheap talk) message $m \in M$ that is heard by all voters. We may interpret the message m as an

[3]The model and analysis of this section covers the case of a single ideologically homogenous or elite media. In Section 4 we investigate the effect of ideological and informational heterogeneity across multiple media outlets.

endorsement by the media of one or the other candidate. Finally, all voters vote for their preferred candidate after taking account the policy platforms x_1 and x_2 as well any information contained in the media's message m. The candidate who has the larger share of votes wins the election, with ties resolved uniformly. We focus on perfect Bayesian equilibria.

This simple voting game introduces an informed but ideologically homogenous media with insignificant vote share into the classical Hotelling-Downs model of electoral competition with office-seeking candidates. As in the classical set-up, a policy x can be interpreted as a summary measure of a domestic redistributive policy. Candidates, or the political parties that choose the candidates, commit to their policy platforms x_i perhaps through the choice of the candidate who is committed to a particular redistributive policy. At the time these policy platforms are chosen no information about θ_i is available to anyone. After policy platforms are chosen, the media learns candidate types θ_1 and θ_2. This captures a situation where the media's expertise is about a candidate's ability to deal with a particular foreign policy crisis or national security threat and the media obtains new information about the nature of the crisis prior to voting.[4]

The preference specification in (1) says that all voters have identical preferences over candidate types θ_i but differing preferences over policy platforms x_i. Because voters have identical preferences over candidate abilities to handle foreign policy or national security issues, they may be willing to trade-off their policy interests against their estimates of candidate ability updated after observing media endorsements. We suppose that voters are sophisticated and they take the media's strategic incentives into account when evaluating the media's endorsement of a particular candidate. The media's endorsement is strategic because, like any other voter, the media also compares a candidate's ability θ_i against its own ideological distance $d(x_i, x_m)$ from the candidate's promised policy when deciding whether or not to endorse him.

Notice that because of the additive separability in (1), voters will recognize the *open partisanship* of the media when it asks the voter to vote for a particular candidate, possibly against the voter's own policy interests. Similarly, because it is commonly known that candidates are office-seeking, any policy choice by the candidate that is more in the interest of the media rather than the voter will be seen by the voter as *naked pandering* to the media. In this paper we seek to isolate the effect of such pandering on the media's endorsements and the effect of media endorsements on the behavior of sophisticated voters. To this end, we begin by analyzing the second stage of the game once policy choices x_1 and x_2 have already been made. We call this the endorsement subgame. In this subgame the media will try to strategically use its endorsements in order to influence the electorate. The effect of media endorsements on aggregate voting behavior will in turn determine the winner of the

[4] This set-up allows candidate characteristics to be commonly known but allows the media to have better information about the full implications of voting a particular candidate or political party into office given the media's foreign policy expertise. Our results are unchanged if the candidates also learn their types *after* choosing a policy platform. In Section 5 we discuss in detail modelling alternatives such as the case of informed or ideologically motivated candidates.

election.

3.1 The endorsement subgame

Suppose that the two candidates have made policy choices $x_1, x_2 \in [-1, 1]$ and that the media has sent a message m following which all other voters hold estimates $E[\theta_i|m]$ of candidate types. Our first lemma shows that the behavior of the median voter, $x_v = 0$, is enough to predict the winner of the election.

Lemma 1 *Fix x_1, x_2 and m. In any equilibrium, if the median voter $x_v = 0$ strictly prefers candidate $i = 1, 2$ then candidate i is elected with probability 1.*

Lemma 1 follows from our assumption that voter preferences are additively separable in candidate ability and policy choices and single-peaked and single crossing in the latter. It says that the median voter is decisive in the sense that if the median voter prefers one candidate to the other so does at least a majority of the electorate. In effect, the median voter can be thought of as a single-decision maker in our model and accordingly we focus on the behavior of this voter in what follows, referring often to the median voter simply as the voter.[5]

We turn now to the media's endorsement strategy. In any cheap talk game, there is always a babbling equilibrium where the decision maker (median voter) refuses to ascribe any meaning to the sender's message and accordingly the sender (media) can do no better than to be uninformative. The more interesting case is one where the sender is informative and influences the behavior of the decision maker, i.e., makes the voter vote for the different candidates with probabilities that depend on the media's message. We call such equilibria influential. Our next result characterizes all influential equilibria.

Lemma 2 *Fix x_1, x_2. In any influential equilibrium, the media endorses candidate i if and only if the media prefers candidate i, i.e., if and only if*

$$\theta_i - \theta_j > \frac{1}{3\Delta^*} \left[d(x_i, x_m) - d(x_j, x_m) \right] \tag{2}$$

ignoring zero probability ties. An influential equilibrium exists if and only if

$$E[\theta_i - \theta_j |\ i \text{ endorsed}] \geq \frac{1}{3\Delta^*} \left[d(x_i, 0) - d(x_j, 0) \right] \geq E[\theta_i - \theta_j |\ j \text{ endorsed}] \tag{3}$$

If for different messages sent by the media, the voter behaves differently, the media will always send the message that makes the voter elect the media's preferred candidate with the highest probability. The first part of the result follows from this observation. Consequently, the media's

[5] Because of this all our results also apply to contexts beyond elections, such as the decision to recruit job-market candidates made by the chair of an academic department upon the recommendation of a hiring committee when candidates compete in salary demands.

endorsement strategy can at most reveal the candidate that the media prefers given its private information θ_1,θ_2 and given the observed policy choices x_1, x_2 of the candidates. The inequality (3) then provides the conditions under which the voter finds it in her own interest to follow the media's advice or endorsement.

The key feature which determines whether or not an influential equilibrium exists in a cheap talk game is the conflict of interest between the sender and the decision-maker. In the present context this is given by the relative magnitudes of $d(x_i, x_m) - d(x_j, x_m)$ and $d(x_i, 0) - d(x_j, 0)$, reflecting the partisan conflict between the media and the voter in their evaluations of the candidate policy positions. This partisanship is endogenous in the overall game since it is determined by the differences between the policy positions x_1 and x_2 that are chosen by the two candidates. In this sense, the bias of the media (i.e., bias in the sense of a conflict of interest in cheap talk games) is endogenous in our model. For instance, when the candidates choose identical policies $x_1 = x_2$, then $d(x_i, x_m) - d(x_j, x_m) = 0$ and $d(x_i, 0) - d(x_j, 0) = 0$. In such a case, there is no partisan conflict between the voter and the media. Since all parties have common preferences about candidate types, an influential equilibrium always exists in such cases.

Do influential equilibria exist when candidates choose different policies, $x_1 \neq x_2$? In general, the answer to this question depends on the distance between the policies x_1 and x_2, as well as the curvature properties of the distance function $d(.,.)$ as well as any asymmetries (or curvature) in the joint distribution $F(.,.)$ of θ_1, θ_2. For the sake of tractability and to isolate the key forces at work, we make the following special assumptions about these two functions for the rest of this paper:

A1 Linear distance: $d(x, y) = |x - y|$.

A2 Uniform distribution: $\theta_2 \equiv 0$ while $\theta_1 \equiv \theta$ is uniformly distributed in $[-1, 1]$.

Assumptions A1 and A2 essentially makes the candidates ex-ante symmetric and captures any possible conflict between the media and the voter in the policy differences between the candidates. To see this consider the case where $x_1, x_2 \in [0, x_m]$.[6] Suppose $x_1 - x_2 = \Delta \geq 0$ and notice that from (2) the media will endorse candidate 1 whenever $\theta > -\frac{\Delta}{3\Delta^*}$. From (3), using the distributional assumption A2, it follows that the voter will not find it against her interest to follow the media's endorsement of the more ideologically distant candidate 1 whenever $\Delta \leq \Delta^*$.[7] In other words, the media will manage to persuade the voter to vote for the media's favorite candidate provided the candidate policy positions are not too far apart. The parameter Δ^* measures the influence of the media and the importance of its information. When the candidates choose policy positions that differ by more than Δ^*, the resulting partisan conflict between the media and the median voter is

[6] In Section 3.2 we show that policy choices in this interval will be a feature of the overall equilibrium of our game in all cases.

[7] It is easy to see that the voter will always find it in her interest to follow the advice of the media when the latter endorses the candidate ideologically closer to the voter.

too large for the media to be able to persuade the electorate. When the candidates choose policy platforms that are sufficiently similar and differ by at most Δ^*, there is always an equilibrium of the endorsement subgame where the media can persuade a majority of the electorate to vote for the media's favorite candidate.

The effect of (differences in) candidate policy choices on the credibility and persuasiveness of the media is a key determinant of the strategic considerations facing the candidates. Given the possible multiplicity of equilibria in the endorsement subgame however, this effect depends on the equilibrium selection rule that we employ. We suppose in what follows that whenever an influential equilibrium exists in the endorsement subgame such an equilibrium is played. More precisely, we suppose that even in cases where (3) holds with equality and there are multiple influential equilibria, the one where the voter follows the media's recommendation with probability one is the one that is played. In effect, these assumptions imply that whenever an influential equilibrium exists, the candidate that the media prefers is elected (making ties in vote shares zero probability events). Our selection rule also guarantees that the ex-ante Pareto dominant equilibrium between the sender and receiver is played. For ease of reference, we present this selection rule as an explicit assumption.[8]

A3 Whenever an influential equilibrium exists in the endorsement subgame, the median voter follows the media's recommendation with probability 1.

This completes the analysis of the endorsement subgame. We turn now to the analysis of the overall game, i.e., the choice of policies x_1 and x_2 by the candidates seeking to maximize the probability of victory in the election.

3.2 Equilibrium policy choice

The first implication of our set-up and assumptions is that the well-known median voter theorem does not obtain in our model.

Proposition 1 *For any $\Delta^* > 0$, $x_1 = x_2 = 0$ is not an equilibrium.*

To see why the median voter theorem fails, suppose that contrary to the claim both candidates locate at the median voter's ideal point $x_v = 0$. Because there are no policy differences between the candidates, the media has common interest with the voters with respect to candidate ability. As a result full disclosure of θ is credible and each candidate expects to win the election with probability $\frac{1}{2}$. Consider now a deviation by candidate 1 to a policy position $x_1 = \Delta \in (0, \Delta^*)$ that is closer to the media's ideal point. Using Lemma 2, candidate 1 will be endorsed by the media whenever $\theta > -\frac{\Delta}{3\Delta^*}$. From the ex-ante perspective of candidate 1, this occurs with probability $\Pr[\theta > -\frac{\Delta}{3\Delta^*}] = \frac{1}{2} + \frac{1}{6}\frac{\Delta}{\Delta^*} > \frac{1}{2}$. Furthermore, since $\Delta < \Delta^*$, an influential equilibrium exists in

[8] In Section 5 we discuss in detail the effect of alternative equilibrium selection rules.

the endorsement subgame following the deviation. Therefore, the median voter (and so in fact a majority of voters) will vote for candidate 1 whenever candidate 1 is endorsed by the media. Since the deviation raises the chances of an endorsement and ultimate electoral victory, it is profitable for candidate 1 to choose a policy platform at least slightly closer to the media's ideal.

The argument is more general and reveals that choosing a policy position that is the same as one's opponent but not equal to the media's ideal policy can never be part of an equilibrium. For if a candidate chooses a policy that is slightly more desirable to the media compared to the policy choice of his opponent, then he only slightly alters his attractiveness to the median voter on the policy dimension. Since the media must be influential for small policy differences and since the media's endorsement contains coarse but valuable information about the candidate's ability, such slight media pandering raises the electability of the pandering candidate via a higher chance of a biased media endorsement in his favor. The desire to obtain biased but credible media endorsements may often lead candidates to engage in an *elitism creep*, i.e., make policy choices that are at least slightly closer to the media's ideal compared to one's rival. This incentive to pander to the media is a key strategic consideration facing the candidates and it may be the dominant effect as long as the media is not ideologically too distant from the median voter.

Proposition 2 *Suppose* $x_m \leq \Delta^*$. *In the unique equilibrium there is total media pandering:* $x_1 = x_2 = x_m$.

Proposition 2 considers the case where the media's ideological bias x_m is small relative to the importance of the media's information and influence as measured by the parameter Δ^*. In such a case, even if one candidate chooses the voter's ideal policy $x_v = 0$ and the other chooses the media's ideal policy x_m, media endorsements in favor of the more distant candidate are influential. In fact in this case locating at the media's ideal policy is an 'unbeatable' strategy for a candidate since it guarantees a probability of winning the election that is at least $1/2$ regardless of the policy choice of the other candidate. Consequently, both candidates locating at the x_m is the unique equilibrium. Since the equilibrium displays complete policy convergence there is no conflict of interest between the media and any voter. Consequently, full disclosure of all private information is credible for the media.

When $x_m > \Delta^*$ the ideological conflict of the media is not small relative to the importance of its information. In such a case, there is no pure strategy equilibrium in policy choices. For instance, if one candidate locates at x_m, then the other candidate can destroy the credibility of the media by choosing the median voter's ideal policy $x_v = 0$. The policy differences between the two candidates will then lead the median voter (and so a majority) not to follow the media's advice when the latter endorses the candidate located at x_m. Consequently, the candidate located at $x_v = 0$ will win the election for sure.

The possibility of destroying the media's credibility illustrates a second key feature of the strategic considerations facing the two candidates. When the ideological extremism of the media is large relative to its information ($x_m > \Delta^*$), and one candidate panders to the media via its policy choice, the other candidate has an incentive to engage in a *flight to populism*, i.e., to choose policies that are very different from the other candidate and close to the ideal policy of the median voter. Such a choice destroys the credibility of the media and leads a majority of voters to ignore the information content of biased media endorsements. Consequently, the populist candidate who is closer to the median voter's ideal gets elected regardless of endorsements.

When $x_m > \Delta^*$, the media is ideologically distant from the voter and the candidates are caught between the conflicting tugs of engaging in media pandering in order to obtain favorable endorsements or engaging in a flight to populism in order to destroy the credibility of the media. Our next result shows that this conflict gives rise to a mixed strategy equilibrium in policy choices.

Proposition 3 *Suppose $\Delta^* < x_m < 2\Delta^*$. There is a (symmetric) mixed strategy equilibrium where each candidate chooses a policy x according to the right continuous cdf $H : [-1, 1] \to [0, 1]$ given by*

$$H(x) = \begin{cases} 0 & \text{if } x < 0 \\ 1 - \exp\left[-\frac{x}{4\Delta^*}\right] & \text{if } 0 \leq x < x_m - \Delta^* \\ 1 - \exp\left[-\frac{x_m - \Delta^*}{4\Delta^*}\right] & \text{if } x_m - \Delta^* \leq x < \Delta^* \\ (1 - \alpha_m) \exp\left[-\frac{x_m - x}{4\Delta^*}\right] & \text{if } \Delta^* \leq x < x_m \\ 1 & \text{if } x_m \leq x \end{cases} \tag{4}$$

where H has an atom of size $\alpha_{\Delta^*} = (2 - \alpha_m) \exp[-\frac{x_m - \Delta^*}{4\Delta^*}] - 1$ at $x = \Delta^*$ and another atom of size $\alpha_m = \frac{1}{2} - \frac{1}{4}\frac{x_m}{\Delta^*}$ at $x = x_m$. In equilibrium, the expected policy choice of the elected candidate is equal to Δ^*.

To understand better the properties of the mixed strategy equilibrium characterized by Proposition 3, call the support of H be the set of points $x \in [-1, 1]$ where either (i) H has an atom or (ii) H is strictly increasing to the right. Notice that no $x < 0$ or $x > x_m$ is in the support of H. That is, the candidates choose policies that lie between the ideal policy $x_v = 0$ of the median voter and the ideal policy x_m of the media. Choices outside this zone fair worse than policies in the support of H such as $x = 0$ or $x = x_m$. Figure 1 depicts the mixed strategy equilibrium with the shaded areas corresponding to the probability mass in different areas on the support of H.

Notice from Figure 1 that not all policies in the interval $[0, x_m]$ are in the support of H. The cdf H is a constant for policies in the interval $[x_m - \Delta^*, \Delta^*)$ and the associated mixed strategy concentrates the entire mass of probability on the set of policies $[0, x_m - \Delta^*) \cup [\Delta^*, x_m]$. Because of this 'hole in the middle', the equilibrium policy choices display polarization— either they display media pandering (i.e., lie in the interval $[\Delta^*, x_m]$ and 'close' to x_m) or they display a flight to populism (i.e., lie in

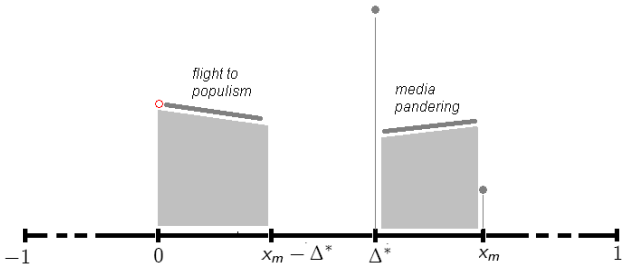

Figure 1: Mixed Equilibrium when $\Delta^* < x_m < 2\Delta^*$

the interval $[0, x_m - \Delta^*)$ and 'close' to $x_v = 0$). Policies in the hole $[x_m - \Delta^*, \Delta^*)$ do worse than the policy choice Δ^* against every policy in the support of H.

To gain more intuition about the underlying the structure of this mixed strategy equilibrium, it is helpful to consider the best responses of each candidate against policy choices made by his opponent. Consider, for instance the case where one candidate makes the perfectly populist choice of locating at the median voters ideal point $x_v = 0$. Given this choice by the opponent, the best response for the other candidate is to pander as much as possible to media but subject to not destroying the media's credibility. This involves moving to the point $x = \Delta^*$ which is the best response to populism. But if one candidate locates at $x = \Delta^*$, then the best response for his opponent is to completely pander to the media and choose $x = x_m$. However, the best response to one's opponent is locating at x_m, is to move a distance greater than Δ^* toward's the median voter's ideal, i.e., choose any policy in $[0, x_m - \Delta^*)$. This destroys the credibility of the media and leads the populist candidate to win for sure. But for any such populist policy choice $x \in [0, x_m - \Delta^*)$ by one's opponent, the best response is to once again pander to the media subject to maintaining the media's credibility, i.e., to choose the policy $x + \Delta^* \in [\Delta^*, x_m)$. This interplay between the conflicting tugs of media pandering and populism determines the mixed strategy equilibrium of Proposition 3.

Proposition 3 characterizes the equilibrium when the media is ideologically distant from the median voter but not too distant: $\Delta^* < x_m < 2\Delta^*$. The next result characterizes a similar mixed strategy equilibrium for the remaining case of a media outlet with extreme ideological bias, $x_m \geq 2\Delta^*$.

Proposition 4 *Suppose* $2\Delta^* \leq x_m$. *There is a (symmetric) mixed strategy equilibrium where each*

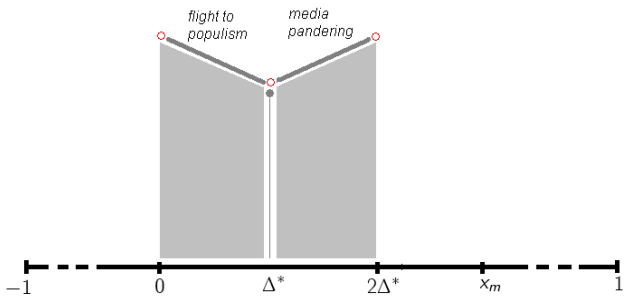

Figure 2: Mixed Equilibrium when $2\Delta^* \leq x_m$.

candidate chooses a policy x according to the right continuous cdf $H : [-1, 1] \to [0, 1]$ given by

$$H(x) = \begin{cases} 0 & \text{if } x < 0 \\ 1 - \exp[-\frac{x}{4\Delta^*}] & \text{if } 0 \leq x < \Delta^* \\ \exp\left[-\frac{2\Delta^* - x}{4\Delta^*}\right] & \text{if } \Delta^* \leq x < 2\Delta^* \\ 1 & \text{if } 2\Delta^* \leq x \end{cases} \tag{5}$$

where H has a single atom of size $\alpha_{\Delta^*} = 2\exp[-\frac{1}{4}] - 1$ at $x = \Delta^*$. In equilibrium, the expected policy choice of the elected candidate is equal to Δ^*.

Similar to the previous result, the mixed strategy equilibrium of Proposition 4 does not have support on $x < 0$ or $x > x_m$. However, it also does not have support on policies in the interval $(2\Delta^*, x_m]$. The entire probability mass of H is contained in the convex interval $[0, 2\Delta^*]$ without a hole in the middle. In essence, regardless of the ideological bias of the media, the candidates face no incentives to deviate from the median voter's ideal policy and pander to the media by an amount greater than $2\Delta^*$ in the policy space. Figure 2 illustrates the mixed strategy equilibrium of Proposition 4.

The intuition behind Proposition 4 is similar to that provided for the previous result. If one candidate chooses the populist policy 0, then his opponent's best response is the pandering policy Δ^* that just maintains the credibility of the media. The best response to such pandering is more extreme pandering via the policy choice $2\Delta^*$ which is Δ^* closer to the media's ideal. However, the best response to $2\Delta^*$ is a flight to populism in the form of policy choices in the interval $[0, \Delta^*)$ that destroys the media's credibility and results in the populist candidate being elected. However, for each such policy choice $x \in [0, \Delta^*)$ by one's opponent, the best response is a policy $x + \Delta^* \in [\Delta^*, 2\Delta^*)$ that panders to the media by an extra amount Δ^*. When the media is more than $2\Delta^*$ away from the median voter, the conflicting tugs of populism and pandering lead to a mixed strategy equilibrium in which candidates choose policies in the interval $[0, 2\Delta^*]$, regardless of the precise location of the

media $x_m \geq 2\Delta^*$. Beyond a point, therefore, an increase in the ideological extremism of the media has no effect on electoral competition.[9]

3.3 Information loss, delegation & welfare

In the mixed strategy equilibria characterized by the previous two results, the two candidates may choose the same policy with positive probability, because of the presence of atoms in the mixed strategy. However, such policy convergence never occurs with positive probability at the ideal point of the median voter and may occur at the ideal point of the media. In this sense, the departure from the median voter theorem is stark.

Furthermore, unlike the median voter theorem, there is also ex-post policy divergence between the candidates with strictly positive probability, exactly because the candidates play mixed strategies.[10] In fact, when the realized policies differ by more than Δ^*, the media's partisan bias is too extreme and the media's information cannot be credibly communicated to the voters. The resulting information loss means that a more able candidate who is in fact preferable for all or a majority of voters may nevertheless lose the election to a less able but more populist candidate. This raises the question whether an extreme media owner has an ex-ante incentive to be more moderate in its endorsements in order to minimize this information loss.

We answer this question by asking whether a media owner has an incentive to delegate its endorsement strategy to an agent who is ideologically closer to the median voter. To model such delegation in the simplest possible manner, we suppose that at an ex-ante stage (i.e., before policy choices by the candidates), a media owner may commit to give access to its information to an editor and allow only the editor to send messages to the voters. The editor has similar preferences to any other voter but with ideology x_e that may not be the same as x_m, the ideology of the media owner. The next result summarizes the effect of such delegation in our model.

Proposition 5 *Suppose at the ex-ante stage the media owner with ideology x_m can commit to delegate to an editor with ideology x_e. All media owners with $x_m > \Delta^*$ will prefer to delegate to an editor with $x_e = \Delta^*$, whereas media owners with ideology $x_m \leq \Delta^*$ will prefer not to delegate. When delegation is feasible, there is policy convergence and no information destruction. Delegation is Pareto improving ex-ante.*

When $x_m > \Delta^*$ and there is no delegation, from Propositions 3 and 4 it can be seen that the expected policy choice of the elected candidate is equal to Δ^*. However, the possibility of policy divergence between the candidates of magnitude greater than Δ^* implies that the media is sometimes unable to credibly convey its information. In such cases, if the media owner commits to delegate to

[9] Given our selection rule, one can show that our equilibrium is the limit of the unique equilibrium on a finite policy grid, as the grid becomes sufficiently fine. See in particular Reny (1999).

[10] Of course, in a symmetric equilibrium, there is no ex-ante expected policy divergence between the candidates.

an editor with ideology $x_e = \Delta^*$, then by Proposition 2, both candidates will completely pander to the editor and locate at Δ^* and the media owner will not lose in terms of the expected net effect on policy. Since delegation results in complete policy convergence however, there will be no partisan conflict of interest between the editor and the voters. As a result, the editor will always be able to credibly disclose all its information and the less able candidate will never be elected. Indeed, such delegation will not only benefit the media owner but also all voters by avoiding the information loss that would arise absent delegation, but will also not alter the expected policy of the elected candidate. Therefore, delegation by a media owner with extreme ideology $x_m > \Delta^*$ to an editor with ideology $x_e = \Delta^*$ is Pareto improving ex-ante. Of course, delegating to an editor with ideology $x_e < \Delta^*$ is not optimal for a media owner with ideology $x_m > \Delta^*$, since this only increases the distance between the media owner's ideal policy and the policy chosen by elected candidate without any offsetting gain in information aggregation. For the same reason, media owners with moderate ideology $x_m \leq \Delta^*$ will choose not to delegate.[11]

While delegation mitigates the harmful effects of electoral competition by eliminating the possibility informational destruction, this still leaves open the question of the overall effect of the media on the welfare of voters. Our next results compares the welfare of the median voter across two cases. In the first case, there is no media so that both candidates locate at the median voter's ideal point in accordance with the median voter theorem. Because of the absence of the media, there is no information aggregation either so that the less able candidate gets elected as often as not. The lack of information aggregation is welfare reducing since the candidates are identical in terms of policy choice. We compare this case without the media with the case of an informed media that we have analyzed above. In doing so we suppose that the media can optimally delegate along the lines of Proposition 5. In such a case, candidates locate at either x_m or Δ^* whichever is smaller. Since candidates choose the same policies there is no conflict of interest between the media (editor) and the voters. As a result, there is full information aggregation and the more able candidate is always elected. Nevertheless, the next result shows that the presence of the media may make a majority of voters worse off because of the resulting distortion in policy choice from the perspective of the median voter.

Proposition 6 *The presence of the media makes a majority of voters worse off ex-ante iff* $x_m > \frac{3}{4}\Delta^*$*, even under optimal delegation.*

Proposition 6 shows that the presence of an informed but relatively extreme media may have detrimental effects on the welfare of a majority of voters via its effect on the electoral promises made by office seeking candidates. In general there are two possible sources of this welfare loss.

[11] Notice that delegation reduces the variance of candidate policy choices but not the mean. This does not occur becaue of any "risk aversion" effect arising curvature in the underlying preferences (e.g., a quadratic distance function) but rather from avoiding inefficient destruction of the media's credibility and the attendant information loss.

First, when the media's ideology is sufficiently extreme, there may be an information loss effect. In balancing between the conflicting tugs of pandering to the media and to a majority of voters, the candidates may choose policy platforms that are too far apart. In such cases, the media loses all credibility and the media's information cannot be incorporated in the voter's decisions. This information destruction effect is eliminated by optimal delegation by media owners as summarized by Proposition 5.

However, Proposition 6 shows that even when such delegation is feasible and information loss is avoided, a second effect remains that may be detrimental for the median voter's welfare. This effect arises from the incentive of each candidate to engage in an elitism creep, i.e., to at least slightly out do the other in pandering to the media. Such a race for the media's affection on the part of the candidates will lead to an overall migration of policy choices away from the median voter's ideal. Since the candidates will locate at the media owner/editor's ideal, the cost of policy migration may dominate the expected value of information the median voter obtains from the media when the media owner/editor is not very close to the median voter.

4 Heterogeneity in the Media

The results of the previous section point out that an informationally and ideologically homogenous media may induce a distortion of elected policies away from the preferred policies of a majority of voters. The distortion may be large enough to swamp the benefit of obtaining information from the media for a majority of voters. In this section we ask if and when heterogeneity within the media may moderate the influence of the media on electoral competition.

We consider two kinds of heterogeneity. In the case of pure *ideological heterogeneity* all media outlets have the same information θ but different ideal policies. We consider this case first. Subsequently, we consider *informational heterogeneity* within the media by introducing a second source of information about the two candidates that all voters (including the media) care about and that is not available to elite media at the time it makes its endorsements but available to voters before they vote.

To capture pure ideological heterogeneity in the simplest possible manner, suppose that there are two media outlets with the same information θ but distinct ideologies x_{m_1} and x_{m_2}, not equal to each other or $x_v = 0$. We maintain all other assumptions of the previous section, including the timing structure. In particular, candidates first choose policy platforms following which both media outlets simultaneously make endorsements, following which voters vote. As before, the median voter will be decisive. And as before, we select the most informative equilibrium from the perspective of the median voter. Our next result shows that ideological heterogeneity within the media may not be enough by itself to restore the median voter theorem unless the outlets are on opposing sides of the median voter.

Proposition 7 *Suppose there are two media outlets with distinct ideologies x_{m_1} and x_{m_2} but the same information θ.*

1. *If $x_{m_2} > x_{m_1} > 0$, then the equilibrium is identical to the case with the single media outlet that has the more moderate ideology x_{m_1}.*

2. *If $x_{m_2} > 0 > x_{m_1}$, then the unique pure strategy equilibrium is for both candidates to locate at the median voter's ideal point and information is fully aggregated.*

The first part of the result says that ideological heterogeneity has the effect of moderation when all outlets are ideologically conflicted relative to the median voter in the same direction. In essence, the median voter will listen to the most moderate outlet when the different outlets provide conflicting advice. As a result, starting from a situation of a homogenous media adding more moderate outlets will have a moderating effect on policy choices and improve the voter's welfare. However, adding more extreme media will have no effect. Furthermore, by the results in the previous section, if the most moderate media outlet is sufficiently extreme the median voter will be worse off compared to the case where there is no media outlet at all.

In the second part of the result, different media outlets are ideologically conflicted in opposite directions relative to the median voter. In these cases the median voter theorem is restored. In essence, when two such media outlets provide conflicting endorsements, it is in the interest of the median voter to listen to the outlet that favors the candidate that is closer to the median voter. This in turn leads the candidates to necessarily locate at the median voter's ideal point.[12]

With three or more media outlets, all with the same information θ, full information revelation is consistent with equilibrium behavior regardless of the policy choices of the candidates or the location of the outlets. This is because the voter can ignore an individual deviation by one media outlet and listen to the common message sent by a majority of media outlets. Consequently, regardless of the distribution of ideologies of multiple media outlets, the median voter theorem will be restored.

We turn now to a more interesting case of informational heterogeneity within the media. To keep things as simple as possible, we model informational heterogeneity via supposing that no individual outlet is an informational monopolist and that each outlet as unique information that is of value to all voters.

We begin by introducing a second kind of information without introducing a second strategic media outlet. More precisely, we keep all other details of the model as in Section 3 but suppose that after the media outlet x_m sends its message, but before voters vote, voters exogenously learn a second piece of information $z_i \in \mathbb{R}$ that is also relevant for evaluating candidate i.[13] The value to

[12] Notice that the second part of the Proposition does not depend on relative distance of the two outlets from the median voter. This is because of the linear distance assumption A1.

[13] Equivalently, the information z is held by a media outlet that has the same ideology as the median voter.

voter x from electing candidate i with policy platform x_i and information θ_i and z_i is given by

$$u(\theta_i, z_i, x_i; x) = \theta_i - z_i - \frac{1}{3\Delta^*} d(x_i, x). \tag{6}$$

We impose the following timing structure. First, candidates simultaneously choose policy platforms x_1, x_2. Next, the media outlet with ideology $x_m > 0$ learns θ_1, θ_2 and sends a message $m \in \mathbf{M}$. Finally, the voters learn the realization of z_1, z_2 and vote after also taking into account the media's message m as well as policies x_1, x_2. In analogy with the previous case, we suppose that $\theta_2 \equiv 0 \equiv z_2$ and $\theta_1 \equiv \theta$ and $z_1 \equiv z$ and suppose that z is independent of θ and uniformly distributed in $[-\lambda, \lambda]$ where $\lambda > 0$ is a parameter that measures the importance of the second kind of information z relative to θ.[14]

We may interpret z as information that arrives late in the election cycle, perhaps from the blogosphere or other sources. At the time that the strategic media outlet sends its message this information is unknown. What is key is that this information is independently valuable for all voters, including the media. This will make the media more willing to disclose finer information about θ beyond a coarse endorsement of its own favored candidate, as we show now.

Consider again the endorsement subgame. Suppose that the candidates have chosen policy positions x_1, x_2 and the media has sent a message m leading voters to estimate a relative value $E[\theta|m]$ for candidate 1 given the media's information. As before, the analog of lemma 1 obtains here and the median voter can be thought of as the decision-maker. Given the voter's observed signal z, the voter will vote for candidate 1 if and only if z is less than a threshold value $t_m \equiv (E[\theta|m] + b_v)$, where $b_v \equiv \frac{1}{3\Delta^*}[d(x_2, x_v) - d(x_1, x_v)]$ is the bias of the voter in favor of candidate 1, given the two policy positions.

From the perspective of the media, the expected payoff from sending a message m and inducing a threshold t_m equals

$$\Pr(z < t_m)(\theta - E[z|z < t_m] - d(x_1, x_m)) + \Pr[z > t_m](-d(x_2, x_m)) = -d(x_2, x_m) + W(\theta, q, b) \tag{7}$$

where

$$W(\theta, q, b_m) \equiv q(\theta + b_m) - \int_0^q \frac{q'}{2\lambda} dq' \tag{8}$$

where $q \equiv \Pr(z < t_m) \in [0, 1]$ is the probability that the voter votes for candidate 1 and $b_m \equiv \frac{1}{3\Delta^*}[d(x_2, x_m) - d(x_1, x_m)]$ is the bias of the media in favor endorsing candidate 1 over candidate 2 based on their policy positions. Since for fixed policy choices, $d(x_2, x_m)$ is a constant, the media's payoff in (7) depends on his message only through its effect on the function W via its effect on q. Notice from (8) that W is supermodular and concave in q. We are now ready to characterize the influential equilibria of this cheap talk game.

[14] The uniform distribution and bounded support assumptions are not key for the main message of this section but yield considerable benefits in terms of tractability.

Consider first the case where $b_v = b_m$. In this case, the media and the voter have common interests since each would like to elect candidate 1 if and only if $\theta - z > b_d = b_m$. In such cases, the media would like to fully disclose θ to the voter. The next lemma characterizes all equilibria of the endorsement subgame when $b_v \neq b_m$ and there is a conflict of interest between the media and the voter.

Lemma 3 *Suppose $b_v \neq b_m$. In any cheap talk equilibrium, the media discloses the interval $[c_{i-1}, c_i)$ in which θ lies, $i = 1, ..., N$ where $c_0 = -1$, $c_N = 1$ and for $i = 1, ..., N-1$,*

$$c_i = E[z|t_i < y < t_{i+1}] - b_m \tag{9}$$

Following the media's message that $\theta \in [c_{i-1}, c_i)$, $i = 1, ..., N-1$, candidate 1 is elected iff $z < t_i$ where

$$t_i = E[\theta|c_{i-1} < \theta < c_i] + b_v \tag{10}$$

for $i = 1, ..., N$. Furthermore, there exists $N^*(b_d, b_m) < \infty$ that is an upper bound on the number of distinct thresholds t_i that can be induced in equilibrium and for each $N = 1, ..., N^*$ there is a unique equilibrium with N partition elements.

Our endorsement subgame is a cheap talk game with a binary decision problem and two independent signals θ and z, one held by the media (sender) and the other by the voter (decision-maker). Lemma 3 shows that the structure of equilibria of this game has a close parallel with the equilibrium of the canonical Crawford-Sobel model with a continuum of decisions and one-sided private information. As before, this cheap talk game is an ingredient of our overall model of electoral competition with the property that candidate policy choices endogenously determine the bias b_m and b_v of the two parties that determine the nature and extent of communication. In what follows, we select the most informative equilibrium (i.e., the one with N^* partition elements) of each endorsement subgame.

Proposition 8 *Consider the informational heterogeneity model outlined above. For all $\lambda \geq 1$, it is an equilibrium for both candidates to locate at the median voter's ideal point. For all $\lambda < 1$, it is not an equilibrium for both candidates to locate at the median voter's ideal point.*

The result shows that the median voter theorem is restored if and only if the information θ held by the ideologically biased elite media with ideal point x_m is less important than the information z independently obtained by voters. We can use this result to introduce multiple strategic media outlets that are ideologically as well as informationally diverse. To this end, suppose that the outlet with information θ has ideology $x_m > 0$ but now the information z is held by a second media outlet with ideology $x_{m'} < 0$. After the candidates choose their policy positions, the two outlets (simultaneously) send messages following which voters vote.

Proposition 9 *Consider the informational and ideological heterogeneity model outlined above. It is an equilibrium for both candidates to locate at the median voter"s ideal point if and only if* $\lambda = 1$.

This result shows that even absent an informational monopoly for any ideologically biased media outlet, the median voter theorem holds only in the knife-edge case where all outlets hold information that is exactly equally important in expected terms.

Section to be Completed

5 Discussion and Concluding Remarks

Section to be Completed

6 Appendix

Proof of Lemma 1.

Straightforward and therefore omitted.■

Proof of Lemma 2.

Follows from the discussion in the text and therefore omitted.■

Proof of Proposition 1.

Follows from the discussion in the text and therefore omitted.■

Proof of Proposition 2. (unique PSE only)

Suppose that in an equilibrium the two candidates locate at x_1, x_2 with $x_1 \neq x_2$. If the media is not influential, then one candidate wins the election with zero probability, whereas if the media is influential, then one candidate wins the election with probability less than $\frac{1}{2}$, the probability with which it is endorsed. In either case, if the candidate who is less likely to win matches the policy position of the other candidate, then the media will be influential and unbiased and either candidate will win with probability $\frac{1}{2}$. We conclude that any pure strategy equilibrium must exhibit policy convergence.

Suppose next that in an equilibrium the two candidates locate at x_1, x_2 with $x_1 = x_2 \neq x_m$. Then the media will be influential and unbiased and each candidate will win with probability $\frac{1}{2}$. If one candidate moves slightly closer to the media by an amount less than Δ^* then the media will still be influential and the deviating candidate will win the election with probability greater than $\frac{1}{2}$. We conclude that the only candidate for a pure strategy equilibrium is $x_1 = x_2 = x_m$.

We check now that this is indeed an equilibrium. Suppose candidate 2 is located at $x_2 = x_m$. If candidate 1 also locates at $x_1 = x_m$, then the media will be unbiased and influential and each candidate will win with probability $\frac{1}{2}$. If candidate 1 deviates to any $x_1 > x_m$, then the media will

remain influential and the deviating candidate will be endorsed with probability less than $\frac{1}{2}$and will win the election if and only if he is endorsed, so such a deviation is not profitable. If candidate 1 deviates to any $x_1 \in [0, x_m]$, then the media will remain influential since $x_m < \Delta^*$ and the deviating candidate will be endorsed and win the election with probability less than $\frac{1}{2}$, so such a deviation is not profitable either. A deviation to $x_1 < 0$ will lead to a media endorsement iff $\theta > \frac{1}{3\Delta^*}(x_m - x_1) > 0$ and such an endorsement will be influential at least as long as $x_1 \geq -x_m$. So candidate 1 will win the election will probability less than $\frac{1}{2}$. On the other hand, x_1 is such that the media is not influential, then $x_1 < -x_m$ and so candidate 1 will win the election with probability zero and such a deviation is not profitable either. Identical remarks apply to deviations by candidate 2.■

Proof of Proposition 3.

We conjecture a right-continuous cdf H with support on $[0, x_m - \Delta^*) \cup [\Delta^*, x_m]$, possibly with atoms α_0 at $x = 0$, α_{Δ^*} at $x = \Delta^*$ and α_m at $x = x_m$, and derivative h except at atoms. Let V^* be the equilibrium expected payoff for each candidate and $V^*(x)$ the payoff from a policy choice x in equilibrium. For $x \in (0, x_m - \Delta^*)$, the expected payoff is

$$\alpha_0 \frac{1 + x/3\Delta^*}{2} + \int_0^{x_m - \Delta^*} \frac{1 + (x-y)/3\Delta^*}{2} h(y)dy$$
$$+\alpha_{\Delta^*} \frac{1 + (x - \Delta^*)/3\Delta^*}{2} + \int_{\Delta^*}^{x+\Delta^*} \frac{1 + (x-y)/3\Delta^*}{2} h(y)dy + \int_{x+\Delta^*}^{x_m} h(y)dy + \alpha_m$$

Using the first-order necessary condition for a local maximum and simplifying we have

$$\frac{1}{6\Delta^*} H(x + \Delta^*) - \frac{2}{3} h(x + \Delta^*) = 0$$

or equivalently,

$$\frac{h(z)}{H(z)} = \frac{1}{4\Delta^*} \text{ for all } z \in (\Delta^*, x_m)$$

Integrating the last expression we obtain

$$H(z) = \exp[\frac{3k}{4} z + K_1];\ z \in (\Delta^*, x_m)$$

where K_1 is an arbitrary constant of integration. Since $\lim_{z \nearrow x_m} H(z) = 1 - \alpha_m$, we must have $K_1 = \ln(1 - \alpha_m) - \frac{3k}{4} x_m$ yielding in turn

$$H(x) = (1 - \alpha_m) \exp[-\frac{x_m - x}{4\Delta^*}];\ x \in (\Delta^*, x_m) \tag{11}$$

Similarly, for $x \in (\Delta^*, x_m)$, the expected payoff is

$$\int_{x-\Delta^*}^{x_m - \Delta^*} \frac{1 + (x-y)/3\Delta^*}{2} h(y)dy + \alpha_{\Delta^*} \frac{1 + (x - \Delta^*)/3\Delta^*}{2}$$
$$+ \int_{\Delta^*}^{x_m} \frac{1 + (x-y)/3\Delta^*}{2} h(y)dy + \alpha_m \frac{1 + (x - x_m)/3\Delta^*}{2}$$

Using the first-order necessary condition for a local maximum and simplifying

$$\frac{1}{6\Delta^*}(1-H(x-\Delta^*))-\frac{2}{3}h(x-\Delta^*)=0$$

or equivalently,

$$\frac{h(z)}{1-H(z)}=\frac{1}{4\Delta^*} \text{ for all } z\in(0,x_m-\Delta^*)$$

Integrating we obtain

$$H(z)=1-\exp[-(\frac{1}{4\Delta^*}z+K_2)];\ z\in(0,x_m-\Delta^*)$$

where K_1 is an arbitrary constant of integration. Since $\lim_{z\searrow 0}H(z)=\alpha_0$, we must have $K_2=-\ln(1-\alpha_0)$ yielding in turn

$$H(x)=1-(1-\alpha_0)\exp[-\frac{x}{4\Delta^*}];\ x\in(0,x_m-\Delta^*) \tag{12}$$

Next we consider the payoffs of policies $x=0$ and $x=\Delta^*$

$$V^*(0)=\alpha_0\frac{1}{2}+\int_0^{x_m-\Delta^*}\frac{1+(0-y)/3\Delta^*}{2}h(y)dy+\alpha_{\Delta^*}\frac{1+(0-\Delta^*)}{2}+\int_{\Delta^*}^{x_m}h(y)dy+\alpha_m$$

and

$$\begin{aligned}V^*(\Delta^*) &= \alpha_0\frac{1+\Delta^*/3\Delta^*}{2}+\int_0^{x_m-\Delta^*}\frac{1+(\Delta^*-y)/3\Delta^*}{2}h(y)dy\\ &\quad+\alpha_{\Delta^*}\frac{1}{2}+\int_{\Delta^*}^{x_m}\frac{1+(\Delta^*-y)/3\Delta^*}{2}h(y)dy+\frac{1+(\Delta^*-x_m)/3\Delta^*}{2}\alpha_m\end{aligned}$$

Since $V^*(\Delta^*)=V^*(0)$ this yields

$$\frac{1}{3}=\int_{\Delta^*}^{x_m}(1+\frac{y}{3\Delta^*})h(y)dy+(1+\frac{x_m}{3\Delta^*})\alpha_m$$

Integrating (by parts), using expression (11) obtained above and simplifying, this yields

$$\alpha_m=\frac{1}{2}-\frac{1}{4}\frac{x_m}{\Delta^*}$$

Notice $\alpha_m\in(0,1)$ since $x_m<2\Delta^*$.

Next consider the expected payoff from $x=x_m$

$$V^*(x_m)=\alpha_{\Delta^*}\frac{1+(x_m-\Delta^*)/3\Delta^*}{2}+\int_{\Delta^*}^{x_m}\frac{1+(x_m-y)/3\Delta^*}{2}h(y)dy+\alpha_m\frac{1}{2}$$

and compare with that from $x=\Delta^*$

$$\begin{aligned}V^*(\Delta^*) &= \alpha_0\frac{1+\Delta^*/3\Delta^*}{2}+\int_0^{x_m-\Delta^*}\frac{1+(\Delta^*-y)/3\Delta^*}{2}h(y)dy\\ &\quad+\alpha_{\Delta^*}\frac{1}{2}+\int_{\Delta^*}^{x_m}\frac{1+(\Delta^*-y)/3\Delta^*}{2}h(y)dy+\frac{1+(\Delta^*-x_m)/3\Delta^*}{2}\alpha_m\end{aligned}$$

Since $V(\Delta^*) = V^*(x_m)$ this yields

$$\frac{(x_m - \Delta^*)/3\Delta^*}{2} = \frac{1 + \frac{x_m}{3\Delta^*}}{2}\alpha_0 + \int_0^{x_m - \Delta^*} \frac{1 + (x_m - y)/3\Delta^*}{2} h(y)dy$$

Integrating (by parts), using expression (12) obtained above and simplifying, we obtain

$$\alpha_0 = 0$$

Finally, we must have

$$\begin{aligned} \alpha_{\Delta^*} &= \lim_{z \searrow \Delta^*} H(z) - \lim_{z \nearrow x_m - \Delta^*} H(z) \\ &= (2 - \alpha_m) \exp[-\frac{x_m - \Delta^*}{4\Delta^*}] - 1 \end{aligned}$$

Using the expression for α_m obtained above, it is easy to verify $\alpha_{\Delta^*} \in (0, 1)$ using $\Delta^* < x_m < 2\Delta^*$. The right continuity of H now yields that all policies in the support must yield the same expected payoff. Using Lemma 2 it is now straightforward to check that any policy $x < 0$ yields payoff strictly less than the policy $x = 0$, any policy $x > x_m$ does worse than the policy $x = x_m$ whereas any policy in $x \in [x_m - \Delta^*, \Delta^*)$ does worse than policy $x = \Delta^*$, all evaluated when playing against H. Computations also verify that the expected policy according to the strategy equals Δ^*, which equals the expected elected policy by symmetry.■

Proof of Proposition 4.

We conjecture a right-continuous cdf H with support on $[0, 2\Delta^*]$, with atom of size α_{Δ^*} at $x = \Delta^*$ and derivative h except at atoms. Let V^* be the equilibrium expected payoff for each candidate and $V^*(x)$ the payoff from a policy choice x in equilibrium.

The expected payoff from $x \in (0, \Delta^*)$ is

$$\begin{aligned} &\int_0^{\Delta^*} \frac{1 + (x - y)/3\Delta^*}{2} h(y)dy + \alpha_{\Delta^*} \frac{1 + (x - \Delta^*)/3\Delta^*}{2} \\ &+ \int_{\Delta^*}^{x + \Delta^*} \frac{1 + (x - y)/3\Delta^*}{2} h(y)dy + \int_{x + \Delta^*}^{2\Delta^*} h(y)dy \end{aligned}$$

Using the first-order necessary condition for a local maximum and simplifying we obtain

$$\frac{h(z)}{H(z)} = \frac{1}{4\Delta^*};\ z \in (\Delta^*, 2\Delta^*)$$

Integrating

$$H(z) = \exp[\frac{3k}{4}z + K_1];\ z \in (\Delta^*, 2\Delta^*)$$

where K_1 is the arbitrary constant of integration. Since $H(2\Delta^*) = 1$, we have $K_1 = -\frac{1}{2}$ so that

$$H(x) = \exp[-\frac{2\Delta^* - x}{4\Delta^*}], x \in (\Delta^*, 2\Delta^*]$$

Similarly, the expected payoff from $x \in (\Delta^*, 2\Delta^*)$

$$\int_{x-\Delta^*}^{\Delta^*} \frac{1+(x-y)/3\Delta^*}{2} h(y)dy + \alpha_{\Delta^*} \frac{1+(x-\Delta^*)/3\Delta^*}{2} + \int_{\Delta^*}^{2\Delta^*} \frac{1+(x-y)/3\Delta^*}{2} h(y)dy$$

Using the first-order necessary condition for a local maximum and simplifying we obtain

$$\frac{h(z)}{1-H(z)} = \frac{1}{4\Delta^*};\ z \in (0, \Delta^*)$$

Integrating

$$H(z) = 1 - \exp[-(\frac{3k}{4}z + K_2)];\ z \in (0, \Delta^*)$$

where K_2 is the arbitrary constant of integration. Since $G(0) = 0$, we obtain $K_2 = 0$ so that

$$H(x) = 1 - \exp[-\frac{x}{4\Delta^*}];\ x \in [0, \Delta^*)$$

Finally,

$$\begin{aligned} \alpha_{\Delta^*} &= \lim_{z \searrow \Delta^*} H(z) - \lim_{z \nearrow x_m - \Delta^*} H(z) \\ &= 2\exp[-\frac{1}{4}] - 1 \end{aligned}$$

The right continuity of H now yields that all policies in the support must yield the same expected payoff. Using Lemma 2 it is now straightforward to check that any policy $x < 0$ yields payoff strictly less than the policy $x = 0$, while any policy $x > x_m$ does worse than the policy $x = x_m$, all evaluated when playing against H. Computations also verify that the expected policy according to the strategy equals Δ^*, which equals the expected elected policy by symmetry.■

Proof of Proposition 5.

Follows from the discussion in the text and therefore omitted.■

Proof of Proposition 6.

When media is absent, both candidates choose policies $x_1 = x_2 = 0$ and the median voter learns no information about types θ. The expected payoff to the median voter in this case equals 0. In contrast, in the presence of the media and assuming optimal delegation, both candidates locate at $x_1 = x_2 = \min[\Delta^*, x_m]$. The median voter's expected payoff is then seen to be, using A2,

$$\frac{1}{2}E[\theta|\theta > 0] - \frac{1}{3\Delta^*}\min[\Delta^*, x_m] \leq \frac{1}{4} - \frac{x_m}{3\Delta^*} < 0$$

iff $x_m > \frac{3}{4}\Delta^*$.■

Proof of Proposition 7.(sketch)

Suppose there are two media outlets m_1 and m_2 with ideologies x_{m_1} and x_{m_2}.

Part (i)

Consider first the case where $0 < x_{m_1} < x_{m_2}$. If $x_1, x_2 \leq 0$ or if $x_1, x_2 \geq x_{m_1}$, then outlet 1 and the voter have common interests and so the voter will be influenced by outlet m_1 only. On the other hand if $0 \leq x_1, x_2 \leq x_{m_1}]$, then the two outlets have common interests, and so the voter might as well be influenced by m_1 only.

So consider the case where $x_1 < x_{m_1} < x_{m_2} < x_2$. We wish to show that in the subgame following policy choices x_1, x_2, the voter will be influenced by the endorsement of the closer outlet m_1 if it is influenced by any outlet at all. Outlet m_i will endorse candidate 1 iff $\theta > \frac{1}{3\Delta^*}(x_{m_i} - x_1) - \frac{1}{3\Delta^*}(x_2 - x_{m_i}) \equiv \tau_{m_i}$. On the other hand, the voter would prefer to vote for candidate 1 iff $\theta > \frac{1}{3\Delta^*}(x_1 - x_2) = \tau_v < 0$. Notice that $\tau_{m_2} > \tau_{m_1} > \tau_v$. When $\theta < \tau_{m_1}$, both outlets will endorse candidate 2 and the condition for such an endorsement to be influential is the same as in the case where m_1 is the only outlet. On the other hand, when $\theta > \tau_{m_2}$, the two outlets make the same endorsement for candidate 1, and since $\tau_{m_2} > \tau_v$ the voter will find such an endorsement influential. The key case to consider is where the two outlets make opposing endorsements so that the voter learns that $\theta \in [\tau_{m_1}, \tau_{m_2}]$. In this case the expected value of θ given the conflicting endorsements is $\frac{\tau_{m_1}+\tau_{m_2}}{2} > \tau_v$ since $\tau_{m_1} > \tau_v$ so that the voter will follow the recommendation of outlet 1.

Next consider the case where $x_1 < x_{m_1} < x_2 < x_{m_2}$. Using analogous notation, $\tau_{m_1} = \frac{1}{3\Delta^*}(x_{m_1} - x_1) - \frac{1}{3\Delta^*}(x_2 - x_{m_1})$ and $\tau_v = \frac{1}{3\Delta^*}(x_1 - x_2)$ as before, whereas $\tau_{m_2} = \frac{1}{3\Delta^*}(x_{m_2} - x_1) - \frac{1}{3\Delta^*}(x_{m_2} - x_2) = -\tau_v$. Notice that once again $\tau_{m_2} > \tau_{m_1} > \tau_v$ so that as in the previous case the voter is influenced by any media outlet if and only if it is influenced by outlet m_1. The result now follows.

Part (ii)

Suppose now $x_{m_1} < 0 < x_{m_2}$. If $x_1, x_2 \leq 0$ or if $x_1, x_2 \geq 0$, at least one outlet and the voter have common interests and so the voter will be influenced by that outlet (only). So suppose $x_1 < 0 < x_2$. If both outlets recommend the same candidate, then the voter will be influenced to vote for that candidate, since the voter is in between the two outlets. So consider the case where the m_1 endorses candidate 1 while m_2 endorses candidate 2. Using analogous notation to the previous case, the voter will be influenced to follow the recommendation of the outlet that has a threshold τ_{m_i} closer the the voter's threshold τ_v. This translates to the voter following the endorsement of the outlet that endorses the candidate closer to the voter.

We now characterize the unique pure strategy equilibrium. Suppose x_1, x_2 are on the same side of the voter so that the voter learns θ perfectly from the outlet on the other side. If $x_1 \neq x_2$, one candidate wins the election with probability less than $\frac{1}{2}$ and this candidate would do strictly better to match the policy position of the other. On the other hand, if both candidates choose the same platforms not equal to the voter's ideal point, then one candidate will do strictly better to move slightly closer to the voter. Consider next the case where the two candidates are on opposite sides of the voter but not equidistant from the voter. If both outlets endorse the same candidate (which cannot occur with probability $\frac{1}{2}$) then that candidate wins , while if they endorse different

candidates the one closer to the voter wins. It follows that one candidate must win with probability strictly less than half and that candidate will do strictly better by matching the policy platform of the other. Finally, consider the case where the the two candidates are on opposite sides of the voter and equidistant from the voter and not at the voter's ideal point. Either candidate will do better by moving slightly closer to the voter.

We conclude that the only candidate for a pure strategy equilibrium is when both locate at the voter's ideal point, in which case each wins withe probability $\frac{1}{2}$. If either deviates away on one side, he wins with strictly lower probability, since the voter now has common interest with the outlet on the other side. This concludes the proof..■

Proof of Lemma 3.

TO BE ADDED.

Proof of Proposition 8.

TO BE ADDED.

Proof of Proposition 9.

TO BE ADDED.

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