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Does informative media commentary reduce politicians' incentives to pander?

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ABSTRACT

Elections sometimes give policy makers incentives to pander, i.e., to implement a policy that voters think is in their best interest, even though the policy maker knows that a different policy is actually better for the voters. Pandering incentives are typically attenuated when voters learn, prior to the election, whether the policy chosen by the incumbent truly was in their best interest. This suggests that the media can improve accountability by reporting to voters information about whether an incumbent made good policy choices. We show that, although media monitoring does sometimes eliminate the incumbent's incentive to pander, in other cases it makes the problem of pandering worse. Furthermore, in some circumstances incumbent incentives are improved when the media acts as a "yes man"—suppressing some information that indicates the policy maker made the wrong choice. We explain these seemingly paradoxical results by focusing on how media commentary affects voters' tendency to apply an asymmetric burden of proof to the incumbent, based on whether she pursues popular or unpopular policies.

> I am persuaded myself that the good sense of the people will always be found to be the best army. They may be led astray for a moment, but will soon correct themselves. The people are the only censors of their governors: and even their errors will tend to keep these to the true principles of their institution. To punish these errors too severely would be to suppress the only safeguard of the public liberty. The way to prevent these irregular interpositions of the people is to give them full information of their affairs thro' the channel of the public papers, & to contrive that those papers should penetrate the whole mass of the people. The basis of our governments being the opinion of the people, the very first object should be to keep that right; and were it left to me to decide whether we should have a government without newspapers or newspapers without a government, I should not hesitate a moment to prefer the latter.
>
> Thomas Jefferson, 1787

> I may not agree with everything you write or report....But I do so with the knowledge that when you are at your best then you help me be at my best. You help all of us who serve at the pleasure of the American people do our jobs better, by holding us accountable, by demanding honesty, by preventing us from taking shortcuts and falling into easy political games that people are so desperately weary of.
>
> Barack Obama, 2009

An active media is often thought to be essential to a well-functioning democracy. When politicians are accountable to voters, the people must be well-informed, lest the government respond to mistaken voter impulses. In Jefferson's terms, newspapers, then, ensure that "the opinion of the people" is kept right by educating citizens about the merits of particular policy choices, and thereby, the argument goes, enhance electoral accountability.[2]

We analyze this Jeffersonian intuition in a formal model of political accountability. Voters in the model are sometimes misinformed about their true interests. The incumbent policy maker has better information about optimal policy choices, and may thus have an incentive to pander—to implement a policy that voters believe is in their best interest, even though the policy maker's superior information indicates the voters are wrong (Canes-Wrone et al., 2001; Maskin and Tirole, 2004; Prat, 2005).[3]

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[2] It is, of course, not clear in Jefferson's letter whether he thought newspapers would provide ex ante education about policy in general or ex post information about the merits of particular policies that politicians had pursued. In this paper we focus on the latter, which is what President Barack Obama had in mind when he cited Jefferson's famous quotation in his speech at the 2009 White House Correspondents dinner.

[3] Swank and Visser (2006) study a related mechanism in a moral hazard context. In their model, incumbents have an incentive to implement projects without properly vetting them, because voters cannot distinguish between the rejecting a bad project and failing to come up with an idea for a project at all.

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We start with a baseline model without a media, and then add a media outlet ("the newspaper"). The newspaper gets private information about which policy best serves voters' interests, and it acts as a commentator, making statements about whether the incumbent chose the correct policy. The newspaper gets to observe the policy choice before commenting, so it may, in the event that it sees a weak signal indicating that the incumbent chose the wrong policy, act as a yes man, herding on the incumbent's choice (Bikhchandani et al., 1992; Scharfstein and Stein, 1990; Prendergast, 1993; Effinger and Polborn, 2001). The newspaper comments before the next election and is thus relevant for voters' decision to retain or replace the incumbent, creating the prospect that media commentary might discipline an electorally motivated incumbent's policy choice.

Our key question is: How does the presence of the newspaper affect the incumbent politician's incentives to pander?[4] In thinking about this question, a crucial distinction is whether the newspaper gives information about the incumbent's policy choice or about the state of the world. Prat (2005) shows that, when information about the state of the world is poor, pandering incentives can be eliminated by not informing voters of the incumbent's policy choice. But when policy choices are observed, it would seem that incumbents will have less incentive to pander when the media gives voters information about whether the incumbent acted in their best interest. After all, Canes-Wrone et al. (2001) and Prat (2005) both show that pandering incentives are lower the greater is the probability that the voters observe the true state before the election.

Our model partially confirms this Jeffersonian intuition; in some circumstances, introducing a media commentator eliminates pandering. But the media does not always eliminate pandering; introducing a fallible media can in fact lead to pandering when it would not have occurred without a media. An additional surprising result is that a yes-man media is in many circumstances more effective than a truthful media at reducing pandering.

To understand why the Jeffersonian intuition can fail, it helps to take a closer look at the basic pandering incentive without a media. Pandering arises because, when the incumbent and the challenger are close in terms of their prior reputations, voters treat the incumbent's possible policy choices asymmetrically. They reelect an incumbent who chooses a popular action unless he is proved wrong, but they only reelect an incumbent who chooses an unpopular action if he is proved right. If, at the time of the next election, it is unclear which policy choice was correct, voters will reelect the incumbent if and only if he chose the initially popular policy. This asymmetric burden of proof creates the incentive for pandering—if the public is sufficiently unlikely to learn whether the incumbent's policy choice was correct, then choosing the action with a lower burden of proof is optimal, even when that action is unlikely to be correct.

The media eliminates pandering when it induces the voter to treat initially popular and initially unpopular actions symmetrically. For example, in some circumstances the incumbent is reelected unless his action is somehow shown to be incorrect, either by a clear public signal that he indeed chose the wrong policy or, in the absence of such public information, by informative media commentary criticizing the incumbent's action. The two actions thus lead to the same burden of proof, and the incumbent has no incentive to pander.

Focusing on asymmetric voter responses also helps explain the potential benefit of a yes-man media, one unwilling to criticize the incumbent unless it observes overwhelmingly clear information that the incumbent chose the wrong policy. When the media is a yes man, its contradictory reports are definitive, i.e., voters know that the media only criticizes the incumbent when it is sure that he chose the wrong policy. As a result, voters treat an incumbent criticized by the media after taking the popular action exactly as they treat an incumbent who is criticized after taking the unpopular action. This symmetry gives a yes-man newspaper a leg up on eliminating pandering. If the media does not act as a yes man, then its contradictory reports are not definitive, and the incumbent may have a prior reputation sufficiently superior to that of his challenger that he can win in the face of media criticism of the popular action, but not the unpopular one.

Although pandering is a response to asymmetric voter responses, it is important to note that, in our model, the media is completely even handed, i.e., symmetric, in its treatment of politicians and of policies—it does not favor a particular candidate, nor does it favor any particular policy. This may seem strange given the extant literature's focus on media bias, both in studies that empirically estimate bias (Groseclose and Milyo, 2005; Ho and Quinn, 2008; Gentzkow and Shapiro, 2007) and in studies that examine its origins and relationship to competition in the media industry (Page, 1996; Arnold, 2004; Baron, 2006; Gentzkow and Shapiro, 2006; Bernhardt et al., 2006). In the analysis that follows we set aside all issues related to bias and competition, i.e., we analyze a model with a single, unbiased, media outlet. We do so not because we find bias and competition uninteresting; on the contrary, we think these issues are quite important. However, for the purpose of our analysis it is important to use a relatively optimistic model, in which the media focuses on providing information rather than trying to push for a particular policy. Ultimately, our goal is to assess a simple and seemingly compelling intuition—that by providing information the media reduces incentives for pandering. Our most surprising results have to do with the fact that this intuition often fails, for reasons independent of bias. Even an unbiased media does not necessarily eliminate pandering, and indeed it can sometimes aggravate the problem.

The paper proceeds as follows. We first introduce the model. Next, we analyze how the media affects incentives for pandering by considering a baseline model without a media and then adding in media commentary. Finally, we briefly extend the model to allow for different media motivations: a reputation-motivated media as well as one that always reports its information and never acts as a yes man.

1. The model

We want to identify the impact of the media's announcement on the incumbent's incentives to take the correct action. To isolate the media's impact, we start with a baseline model without a media, using a simplified variant of the model in Canes-Wrone et al. (2001). The heart of our analysis modifies this baseline model, adding a commentator to explore the media's effect on politicians' incentives to pander.

1.1. Baseline model

1.1.1. Policies and preferences

In each of two periods, a policy must be selected from the set $\{A, B\}$. The optimal policy in a period depends on the state of the world in that period, $\omega \in \{A, B\}$. A representative voter gets payoff 1 for each period in which the policy matches the state, and 0 for each period in which policy does not match the state. The state of the world is independent across the two periods, and in each period state A is more likely: $\Pr(\omega = A) = \pi > 1/2$. The fact that one state is ex ante strictly more likely than the other is critical for there to be incentives for pandering. We do not introduce additional notation to distinguish the two periods, because almost all of the action in the model occurs in the first period. There is no discounting.

In period 1, an incumbent policy maker chooses policy $x_I \in \{A, B\}$. At the end of this period, the voter can either reelect the incumbent or replace him with a challenger. A politician gets payoff $\alpha > 0$ for

[4] Besley and Prat (2006) analyze whether the media can discipline kleptocratic government officials. Egorov et al. (2007) analyze tradeoffs faced by an autocrat who can use a free media to acquire information about bureaucrats' performance, but who worries the media might instigate a revolution by informing voters that he himself has performed badly.

matching his policy choice to the state, plus an ego rent of 1 for each period that he holds office.[5]

1.1.2. Information structure

At the beginning of each period, the voter has no information about the state, aside from the prior. The policy maker, on the other hand, gets an informative private signal, s, about the state. This signal's precision depends on his type, $\theta \in \{H, L\}$. A high quality type learns the true state,

$$\Pr(s = \omega | \theta = H) = 1,$$

whereas a low quality type gets an imperfect signal,

$$\Pr(s = \omega | \theta = L) = q > \pi.$$

By Bayes's Rule,

$$\Pr(\omega = B | s = B, \theta = L) = \frac{(1-\pi)q}{(1-\pi)q + \pi(1-q)} > \frac{1}{2},$$

so the restriction that $q > \pi$ ensures that even a low quality policy maker's signal outweighs the prior. Types are private information and the prior probabilities that the candidates (incumbent and challenger) are high quality are:

$$\Pr(\theta_I = H) = \kappa_I$$
$$\Pr(\theta_C = H) = \kappa_C.$$

We say that the election is *competitive* if κ_I and κ_C are close together.

With probability ρ, the voter learns the true first period state before election day; otherwise he votes knowing only the policy choice, x_I. Formally, the voter's signal is $s_V \in \{A, B, \phi\}$, where ϕ means "no information". If uncertainty resolves then $s_V = \omega$. A low ρ means that either the election is imminent – so there is little time for information to be publicly revealed – or that the policy being chosen is unlikely to produce any easily assessed short run effects.

1.2. Adding the media

The heart of the paper adds a media commentator to the baseline model. We will refer to this commentator as a "newspaper," though obviously the commentator could be some other media outlet. After the incumbent chooses policy, the newspaper makes an announcement $x_N \in \{A, B\}$, declaring which state of the world it believes is more likely. The newspaper maximizes the probability that its announcement matches the true state, i.e., it is intrinsically motivated to give the voter its best assessment of the state.[6]

The newspaper bases its belief about the true state on the prior, the incumbent's action, and a private signal, $s_N \in \{A_H, A_L, B_L, B_H\}$. The signal likelihoods are given in Table 1. This information structure is, in some ways, similar to that of the incumbent. A signal is characterized by both the state it indicates is more likely and by how precise it is. Signals subscripted by H perfectly reveal the state, while those subscripted by L are correct only with conditional probability q. The probability of a perfectly revealing signal is κ_N.

There is, however, a crucial difference between the commentator and the incumbent: the newspaper has only one type, and may receive a signal of either precision. Substantively, this just reflects the media's inability to fully convey to voters all of the subtleties of its information. It is important for our analysis that the set of signals the newspaper might receive is richer than the set of messages it can send—this is what makes yes-man behavior possible.

Table 1
Likelihoods of the newspaper's signals in the two states.

s_N	$\Pr(s_N \mid \omega = A)$	$\Pr(s_N \mid \omega = B)$
A_H	κ_N	0
A_L	$q(1-\kappa_N)$	$(1-q)(1-\kappa_N)$
B_L	$(1-q)(1-\kappa_N)$	$q(1-\kappa_N)$
B_H	0	κ_N

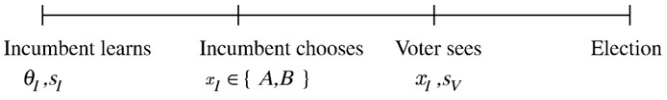
1.3. Equilibrium concept

We focus on *perfect accountability* equilibria, that is, perfect Bayesian equilibria in which the incumbent matches his action to his signal. Such an equilibrium has the normatively desirable property that the incumbent uses his information optimally to promote the voter's policy interests. With this focus, we can sharpen our main question: does the presence of a commentator make the existence of a perfect accountability equilibrium more or less likely? And how does the existence of a perfect accountability equilibrium depend on factors such as the competitiveness of the election ($|\kappa_I - \kappa_C|$) and the probability that uncertainty resolves (ρ)?

When no perfect accountability equilibrium exists, there will be a pandering equilibrium, in which a low quality incumbent sometimes chooses an action that matches voters' prior beliefs about the correct policy, but that does not promote their interests. Details of such equilibria are available upon request.

2. The baseline model

We can now analyze policy choice in the first period of our baseline model. In this baseline, there is no newspaper and the timing is:



This baseline model is a simplified version of Canes-Wrone et al. (2001). As such, we can appeal to a variant of their Proposition 1 for a delineation of when perfect accountability equilibria exist. We illustrate their result in Fig. 1. The challenger's probability of being

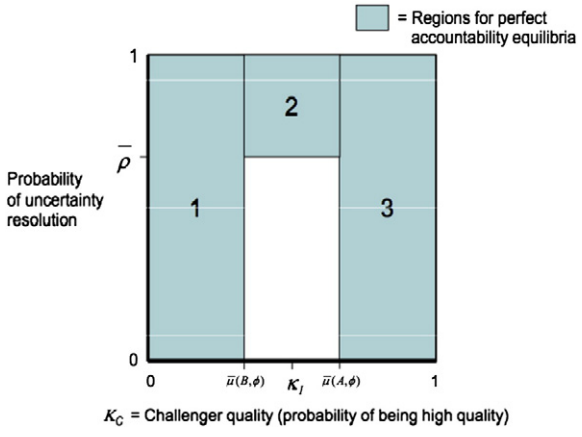


Fig. 1. Baseline model.

[5] Politicians do not care about policy when they are not in office. This is a sufficient, though not necessary, condition to ensure that a low-quality incumbent will not seek to lose office in the hopes of being replaced by a higher-quality official.

[6] Gentzkow and Shapiro (2006) suggest a different model of media motivations, in which the media is concerned about potential customers' beliefs about its quality. Given that our primary focus is on the effects of media behavior, rather than the media itself, we use the simpler assumption that the media is motivated by a desire to report the truth. In the section on extensions, we analyze the case of reputational motivations.

high quality, κ_C, is plotted on the horizontal axis, while the probability of uncertainty resolution, ρ, is on the vertical axis. For the formal statement, we need the following notation: Let $\overline{\mu}(x_I, s_V)$ be the voter's posterior belief about incumbent quality given first period policy x_I, public signal s_V, and the (perfect accountability) equilibrium conjecture that the incumbent chooses $x_I = s_I$. In Fig. 1, these posteriors divide the horizontal axis into three regions. In two of the regions, the incumbent has straightforward incentives to follow his signal. In the remaining region, incentives depend on ρ, the probability that information resolves. To state the precise cutoff, let $v(L) = 1 + q\alpha$ be the value of reelection to a low quality incumbent, let λ_B be a low quality incumbent's posterior probability the state is A given a signal of B, and define

$$\overline{\rho} \equiv \frac{\alpha(2\lambda_B - 1) + v(L)}{2v(L)(1-\lambda_B)}. \quad (1)$$

Proposition 1. *In the baseline model, there is a perfect accountability equilibrium if one of the following conditions holds:*

1. *Challenger reputation is worse than incumbent who chooses $x_I = B$, i.e. $\kappa_C < \overline{\mu}(B, \phi)$.*
2. *Challenger reputation is better than incumbent who chooses $x_I = A$, i.e. $\kappa_C \geq \overline{\mu}(A, \phi)$.*
3. *Uncertainty resolution is likely, i.e. $\rho \geq \overline{\rho}$.*

We give the basic intuition for this result below. This is important because, although the Canes-Wrone et al. (2001) model provides interesting insights about pandering, that paper focused on statements of equilibria, leaving rather opaque many parts of the logic for how the model works. So to build on that model we must first clarify the foundations.

An implication of Bayes's Rule is that an incumbent whose signal agrees with the prior is more likely to have an accurate signal than is an incumbent whose signal disagrees with the prior: $\overline{\mu}(B, \phi) < \overline{\mu}(A, \phi)$. In this case, if the incumbent follows his signal, the optimal reelection rule as a function of the voter's information at the time of the election is that shown in Table 2.

As in several other recent papers (Gentzkow and Shapiro, 2006; Prat, 2005), Canes-Wrone et al. (2001) show that the asymmetry in this rule creates incentives for pandering, i.e., an incumbent choosing a policy that voters believe is optimal even though the incumbent has information indicating that it is not. Basically, if the challenger's reputation falls within the gap between $\overline{\mu}(B, \phi)$ and $\overline{\mu}(A, \phi)$, the voter applies a higher burden of proof to an incumbent who chooses the ex ante unpopular action B than to an incumbent who chooses A; he reelects the incumbent when $x_I = A$ but not when $x_I = B$. This asymmetric burden of proof can lead to pandering.

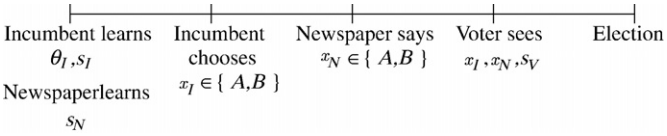
The intuition is straightforward. In the region $\kappa_C \in (\overline{\mu}(B, \phi), \overline{\mu}(A, \phi),)$ the incumbent and the challenger have similar prior probabilities of being high quality. Thus, given that the voter updates positively about the incumbent after he chooses A and negatively when he chooses B, the incumbent knows he faces an asymmetric burden of proof that he must satisfy in order to be reelected, and he has an incentive to choose A. However, if uncertainty resolves he will win reelection if and only if he chose the correct policy, so if the probability of uncertainty resolution is sufficiently high, i.e., $\rho > \overline{\rho}$, there exists a perfect accountability equilibrium.

Table 2
Election winner when $\kappa_C \in (\overline{\mu}(B,\phi), \overline{\mu}(A,\phi))$.

	$x_I = A$	$x_I = B$
$\omega = A$	Incumbent	Challenger
$\omega = B$	Challenger	Incumbent
ϕ	Incumbent	Challenger

3. Media commentary

Now we introduce the newspaper, which makes an announcement after observing the incumbent's action. The timing is:



As usual, we solve the model by working backwards from the end.

3.1. Second period policy and continuation values

As there are no subsequent periods, the period 2 policy maker is concerned only with the immediate impact of his policy choice. He gets utility $\alpha > 0$ from matching the state and zero otherwise, and thus, because $q > \pi$, he will choose the policy corresponding to the state that his signal indicates is more likely.

With this second period strategy in hand, the optimal election rule is easy to derive. The voter wants second period policy to match the state. And he knows that whoever he elects will follow his signal in the second period. Thus the voter elects whichever candidate he believes is more likely to be a high quality type. Writing $\hat{\mu}(h)$ for the voter's assessment of the probability that the incumbent is a high type given history h, an optimal election rule is:

reelect the incumbent if and only if $\hat{\mu}(h) \geq \kappa_C$

where κ_C is the probability that the challenger is high quality.[7]

Given voter behavior and second period concerns, we can derive an expression for the incumbent's indirect payoff function for period 1. He gets an immediate payoff of α if he picks the correct policy, $x_I = \omega$, in period 1. He gets an additional positive payoff if he is reelected:

$$v(\theta) \equiv 1 + (\mathbb{I}[\theta_I = H] + q\mathbb{I}[\theta_I = L])\alpha, \quad (2)$$

where $\mathbb{I}[p]$ is the indicator function for the proposition p. The first term in the expression, 1, is the direct payoff from holding office, while the second term reflects the probability that the incumbent will choose the right action if he is reelected. Note that the second term depends on the incumbent's type.

An incumbent with type θ_I who sees signal s_I in period 1 thus chooses policy x_I to solve:

$$\max_{x_I \in \{A,B\}} \alpha \Pr(x_I = \omega | s_I, \theta_I) + v(\theta_I) \Pr[\hat{\mu}(h) \geq \kappa_C | x_I, s_I].$$

The first term is the incumbent's direct payoff from his first period policy choice, while the second term is his payoff from reelection weighted by the probability of reelection conditional on his signal and policy choice.

3.2. Simplifying voter beliefs

The incumbent's reelection chances depend on the voter's beliefs about his type, so these beliefs, especially the posterior $\hat{\mu}(h)$, play a central role in the analysis. With media commentary, it can be complicated to directly calculate this probability, which depends on the newspaper's strategy, the incumbent's strategy, and their realized

[7] To be precise if $\hat{\mu}(h) > \kappa_C$ the voter must reelect, if $\hat{\mu}(h) < \kappa_C$ the voter must remove the incumbent, and if $\hat{\mu}(h) = \kappa_C$ the voter is indifferent. The incumbent plays a pure strategy in a perfect accountability equilibrium so only for knife-edge parameter values will it be the case that $\hat{\mu}(h) = \kappa_C$.

actions. Fortunately, focusing on perfect accountability equilibria substantially simplifies these calculations.

Updating is particularly straightforward when uncertainty resolves and the voter observes the true state, $s_V=\omega$. In this case, the voter knows for sure whether the incumbent's policy choice was correct. If the incumbent chose the wrong policy, then the voter's conjecture that the incumbent follows his signal and the fact that only the low type can get a wrong signal combine to imply that the probability the incumbent is high quality is 0. On the other hand, if the incumbent chose the correct policy, then the voter knows that $s_I=\omega$. There are two ways this can happen: the incumbent is high quality or he is low quality and got the right signal. Thus Bayes's Rule gives the voter's belief about the probability that the incumbent is high quality as

$$\mu^+ \equiv \frac{\kappa_I}{\kappa_I + q(1-\kappa_I)}.$$

What if the voter does not observe the true state? Because high ability types always set $x_I=s_I=\omega$ in a perfect accountability equilibrium, we can write the posterior in a simple form.

Lemma 1. *Assume that the incumbent matches his action to his signal. Then*

$$\hat{\mu}(h) = \Pr(\omega = x_I \mid h)\mu^+.$$

The proofs for this lemma and several other results are in the Appendix. Intuitively, the voter first revises his beliefs about the true state of the world, $\Pr(\omega=x_I \mid h)$, and then uses those beliefs about the state as weights to form beliefs about the incumbent's type. These beliefs are a weighted average of the best case belief, μ^+, when the incumbent's policy choice is known to be correct, and the worst case belief, 0, when the incumbent's policy choice is known to be wrong.

3.3. Newspaper behavior

The newspaper sometimes acts as a yes man, ignoring its own signal and simply following the incumbent's lead. To see this, suppose the newspaper sees a weak signal that B is the correct policy but also sees the incumbent choose $x_I=A$. In a perfect accountability equilibrium, the newspaper infers that the incumbent's signal was A, so the two signals point in different directions. And the newspaper knows that the incumbent, who might be a high type, gets a signal that is more accurate (on average) than its own, weak, signal. The net impact of these observations is to tilt the newspaper's posterior towards $\omega=A$. Along with the prior bias towards A, this ensures that the newspaper believes the probability that $\omega=A$ is greater than 1/2. And because the newspaper wants to match its announcement to the state, it will ignore its signal and announce $x_N=A$.

We want to explore the implications of a yes-man newspaper in the simplest possible case. To this end, we assume that the incumbent is sufficiently likely to be high quality, and hence to correctly match the policy and the state, so the commentator will be a yes man even when the incumbent's policy choice is B. The following assumption suffices[8]:

Assumption 1.

$$\kappa_I \geq \frac{q(2\pi-1)}{q(2\pi-1) + (1-\pi)}.$$

With the assumption, the commentator's behavior is straightforward to characterize.

Lemma 2. *Under Assumption 1, in any perfect accountability equilibrium, the newspaper is* a partial yes man. *When the newspaper sees a strong signal, A_H or B_H, it follows this signal, announcing $x_N=A$ or $x_N=B$ respectively. However, if the newspaper sees a weak signal, A_L or B_L, it always says that the incumbent was right, announcing $x_N=x_I$.*

Proof. Recall that the newspaper seeks to maximize the probability that $x_N=\omega$. Thus the claim follows from two observations. First, when it sees a strong signal, the newspaper knows that its signal is correct with probability 1, so it announces its signal truthfully. Second, a weak signal A_L or B_L is outweighed by the incumbent's signal, which is truthfully revealed in a perfect accountability equilibrium. To see this last point, use Bayes's Rule to write the newspaper's posterior as

$$\Pr(\omega = A \mid s_I = B, s_N = A_L) = \frac{\pi(1-\kappa_I)(1-q)q}{\pi(1-\kappa_I)(1-q)q + (1-\pi)[\kappa_I + (1-\kappa_I)q](1-q)}$$

which is less than or equal to 1/2 because, under Assumption 1, $\kappa_I \geq \frac{q(2\pi-1)}{q(2\pi-1)+(1-\pi)}$. □

If the newspaper gets imprecise information then it acts as a yes man, always announcing that the incumbent chose the correct policy. With precise information, on the other hand, the newspaper reports its true signal rather than acting as a yes man. So the model predicts that media commentators sometimes suppress evidence that incumbents have made policy mistakes. It is particularly noteworthy that we get this result even though the media's sole objective is to give *accurate* information about the state of the world. In particular, the result is not driven by collusion or side payments because in our model the newspaper cannot be bought off by the incumbent.[9]

As an aside, it is also worth noting that our model can be extended to analyze $M>1$ media outlets, who move sequentially, in the sense that first the incumbent chooses policy, then the first media outlet makes its announcement, then the second media outlet makes its announcement, and so on. In such a model, as long as no previous media report has contradicted the incumbent's policy choice, media outlets who receive a weak signal A_L or B_L will act as yes men, whereas those who see a definitive signal A_H or B_H will follow their signals. Thus our model can be easily reinterpreted to cover this case, by changing the media's (collective) probability of seeing a perfectly revealing signal from κ_N in the variant we present here to $\check{\kappa}_N = 1-(1-\kappa_N)^M$.

3.4. Voter updating

A history at which the voter votes is a triple $h=(x_I, x_N, s_V)$, so we can write $\hat{\mu}(x_I, x_N, s_V)$ for her posterior belief that the incumbent is high quality, under the conjecture that the incumbent sets $x_I=s_I$ and that Lemma 2 describes the newspaper's strategy. Lemma 1 lets us calculate these posteriors for every history that the voter might observe. What really matters is their ranking.

Lemma 3. *With media commentary,*

$$0 = \hat{\mu}(A,x_N,B) = \hat{\mu}(B,x_N,A) = \hat{\mu}(B,A,\phi) = \hat{\mu}(A,B,\phi) < \hat{\mu}(B,B,\phi) < \hat{\mu}(A,A,\phi) < \hat{\mu}(A,x_N,A) = \hat{\mu}(B,x_N,B) < 1.$$

Proof. The newspaper disagrees with the incumbent only if it has a signal that shows with certainty that the incumbent choose the wrong policy. Since this can only happen if the incumbent is low quality, we have $0=\hat{\mu}(B, A, \phi)=\hat{\mu}(A, B, \phi)$.

[8] Without this assumption, conditions for the existence of a perfect accountability equilibrium will be a mixture of the conditions we derive in the current section and those we discuss below for the case of a nonstrategic media. We leave the details to the interested reader.

[9] For a model in which incumbents may buy off the media, see Besley and Prat (2006).

It remains to show that $\hat{\mu}(B, B, \phi) < \hat{\mu}(A, A, \phi)$. By Lemma 1, this inequality is equivalent to

$$\Pr(\omega = B | x_I = B, x_N = B) < \Pr(\omega = A | x_I = A, x_N = A)$$

where

$$\Pr(\omega = B | x_I = B) = \frac{(1-\pi)[\kappa_I + q(1-\kappa_I)]}{(1-\pi)[\kappa_I + q(1-\kappa_I)] + \pi(1-q)(1-\kappa_I)(1-\kappa_N)}$$

and

$$\Pr(\omega = A | x_I = A) = \frac{\pi[\kappa_I + q(1-\kappa_I)]}{\pi[\kappa_I + q(1-\kappa_I)] + (1-\pi)(1-q)(1-\kappa_I)(1-\kappa_N)}.$$

Substituting and simplifying, the inequality reduces to

$$\frac{1}{1 + \frac{(1-q)(1-\kappa_I)(1-\kappa_N)}{[\kappa_I + q(1-\kappa_I)]} \frac{\pi}{(1-\pi)}} < \frac{1}{1 + \frac{(1-q)(1-\kappa_I)(1-\kappa_N)}{[\kappa_I + q(1-\kappa_I)]} \frac{(1-\pi)}{\pi}}$$

which holds because $\pi > 1/2$. □

Two aspects of this posterior ranking are critical to the structure of the equilibrium. First, we again have pandering incentives, because $\hat{\mu}(B, B, \phi) < \hat{\mu}(A, A, \phi)$. Second, the partial yes-man nature of the newspaper's strategy implies that $0 = \hat{\mu}(B, A, \phi) = \hat{\mu}(A, B, \phi)$. The newspaper only disagrees with the incumbent's policy choice if it receives a precise signal that the incumbent chose the wrong policy. So if $x_N \neq x_I$ the voter knows that $x_I \neq \omega$; because a high quality incumbent never chooses $x_I \neq \omega$, the voter thus knows for sure that the incumbent is low quality.

Fig. 2 illustrates the conditions under which a perfect accountability equilibrium exists, depending on the parameters of the model. Lemma 3 divides the horizontal axis into several regions for challenger quality κ_C; in each region, the voter uses a different election rule in a perfect accountability equilibrium. We next derive those rules and determine whether the incumbent will actually follow his signal given those rules.

3.5. Reelection and policy choice

Lemma 3 gives us four cases to consider. If $\kappa_C \leq \hat{\mu}(B, B, \phi)$, then the incumbent wins unless either uncertainty resolves and his choice was wrong, or the newspaper announces that he chose the wrong policy. These two events can happen only if he actually chose the wrong policy, because a partial yes-man newspaper only criticizes the incumbent if its signal definitively reveals he was wrong. These electoral incentives which are summarized in Table 3, which shows the voter's action as a function of the incumbent's policy choice ($x_I = A$ or $x_I = B$) and the voter's best information about the optimality of this choice at the time of the election ($\omega = A$, $\omega = B$, $x_N = A$, or $x_N = B$). Given this voter behavior, the incumbent strictly prefers to match the policy to his signal, $x_I = s_I$. Thus there is a perfect accountability equilibrium in region 1 of Fig. 2.

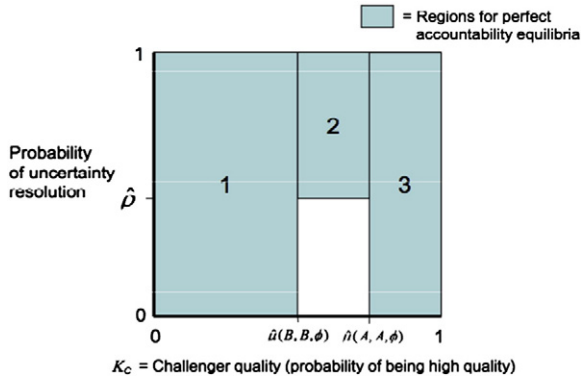


Fig. 2. With media commentary.

Table 3
Election winner when $\kappa_C < \hat{\mu}(B,B,\phi)$.

	$x_I = A$	$x_I = B$
$\omega = A$	Incumbent	Challenger
$\omega = B$	Challenger	Incumbent
$x_N = A$	Incumbent	Challenger
$x_N = B$	Challenger	Incumbent

If $\kappa_C \in (\hat{\mu}(A, A, \phi), \hat{\mu}(A, x_N, A))$, the incumbent wins only if uncertainty resolves and his choice was correct: $x_I = s_V$. Because his signal is informative, this gives him a strict incentive to match his signal. And if $\kappa_C > \hat{\mu}(A, x_N, A)$ the incumbent can never win, so he prefers to follow his signal. These electoral incentives, which are summarized in Table 4, imply that there is a perfect accountability equilibrium in region 3 of Fig. 2.

In contrast, if $\kappa_C \in (\hat{\mu}(B, B, \phi), \hat{\mu}(A, A, \phi))$ then there are nontrivial pandering incentives, as summarized in Table 5, which corresponds to region 2 of Fig. 2. If the incumbent plays A he wins reelection unless he is proved wrong, either by the public signal revealing a state different than the policy or by a media contradiction. If he plays B, in contrast, he only wins if he is proved correct by the public signal—media commentary in support of his policy is insufficient to convince the voters to reelect him.

The relevant incentive constraint for pandering in this case is easy to derive.

Lemma 4. *If $\kappa_C \in (\hat{\mu}(B, B, \phi), \hat{\mu}(A, A, \phi))$, the incumbent chooses A if and only if*

$$(\alpha + \rho\nu(\theta_I))(2\Pr(\omega = A | s_I, \theta_I) - 1) + (1-\rho)\nu(\theta_I)\Pr(x_N = A | s_I, \theta_I) \geq 0.$$

As in the baseline model, there is no incentive problem for an incumbent who sees signal A. Such an incumbent has a posterior $\Pr(\omega = A | s_I = A, \theta_I) > 1/2$, and the incentive constraint is satisfied.

The case of signal $s_I = B$ is more interesting. For either type of incumbent, the first term in the inequality in Lemma 4 gives the incumbent an incentive to follow his signal because $\Pr(\omega = A | s_I, \theta_I) < 1/2$. The second term, however, represents an incentive to pander. Our next result shows that it is pandering by low, rather than high, quality incumbents, which is most difficult to deter.

Lemma 5. *Given the electoral incentives in Table 5, for any parameters at which a low quality incumbent wants to follow a B signal, a high quality incumbent also wants to follow a B signal.*

As in the baseline model, whether a low quality incumbent will follow a signal $s_I = B$ depends on the probability of uncertainty resolution. Define the notation

$$\lambda_B \equiv \Pr(\omega = A | s_I = B, \theta_I = L)$$

and

$$\hat{\gamma} \equiv \Pr(x_N = A | s_I = B, \theta_I = L) = \lambda_B + (1-\lambda_B)(1-\kappa_N).$$

Table 4
Election winner when $\kappa_C \in (\hat{\mu}(A, A, \phi), \overline{\mu}(A, x_N, A))$ or $\kappa_C > \overline{\mu}(A, x_N, A)$.

$\kappa_C \in (\hat{\mu}(A, A, \phi), \overline{\mu}(A, x_N, A))$			$\kappa_C > \overline{\mu}(A, A)$		
	$x_I = A$	$x_I = B$		$x_I = A$	$x_I = B$
$\omega = A$	Incumbent	Challenger	ω = A	Challenger	Challenger
$\omega = B$	Challenger	Incumbent	ω = B	Challenger	Challenger
$x_N = A$	Challenger	Challenger	xN = A	Challenger	Challenger
$x_N = B$	Challenger	Challenger	xN = B	Challenger	Challenger

Table 5
Election winner when $\kappa_C \in (\hat{\mu}(B, B, \phi), \hat{\mu}(A, A, \phi))$.

	$x_I = A$	$x_I = B$
$\omega = A$	Incumbent	Challenger
$\omega = B$	Challenger	Incumbent
$x_N = A$	Incumbent	Challenger
$x_N = B$	Challenger	Challenger

Then Lemma 4, implies that the incumbent follows his signal if and only if

$$(\alpha + \rho v(L))(2\lambda_B - 1) + (1-\rho)v(L)\hat{\gamma} \leq 0$$

or

$$\rho \geq \frac{\alpha(2\lambda_B - 1) + v(L)\hat{\gamma}}{2v(L)(1-\lambda_B) - v(L)(1-\hat{\gamma})} \equiv \hat{\rho}. \quad (3)$$

In summary, we have derived the following set of results:

Proposition 2. *In the model with media commentary, there is a perfect accountability equilibrium if one of the following conditions holds:*

1. $\kappa_C < \hat{\mu}(B, B, \phi)$*, i.e., challenger reputation is worse than an incumbent who chooses* $x_I = B$ *and is supported by the newspaper, which announces* $x_N = B$.
2. $\kappa_C \geq \hat{\mu}(A, A, \phi)$*, i.e., challenger reputation better than an incumbent who chooses* $x_I = A$ *and is criticized by the newspaper, which announces* $x_N = A$.
3. $\rho > \hat{\rho}$*, i.e., uncertainty resolution is likely.*

3.6. Assessing the Jeffersonian intuition

We can see the impact of the media on the existence of a perfect accountability equilibrium by comparing the conditions in Propositions 1 and 2. In each case, the set of parameter values allowing a perfect accountability equilibrium is characterized by (i) an interval of challenger reputations in which there are pandering incentives, and (ii) a threshold level for the probability of the public signal required for incumbents to not succumb to these incentives.

Regarding the threshold probability for the public signal, our results are unambiguous: media commentary makes incumbents less likely to pander in the event that there is some potential gain from doing so. This follows from direct comparison of Eqs. (1) and (3), showing that $\overline{\rho} > \hat{\rho}$, i.e., commentary reduces the cutoff for the probability of resolution necessary to ensure a perfect accountability equilibrium. The intuition is as follows: whereas in the baseline model the incumbent could attain the electoral benefits of pandering simply by choosing policy *A*, in the model with the newspaper the electoral benefits of pandering are less certain because they also depend, in part, on the newspaper's actions.

Our results are less clear-cut, however, regarding the interval of challenger reputations for which there are pandering incentives. In particular, the interval where *A* and *B* are treated asymmetrically is shifted in the presence of media commentary.

$$\overline{\mu}(B, \phi) < \hat{\mu}(B, B, \phi) \text{ and } \overline{\mu}(A, \phi) < \hat{\mu}(A, A, \phi).$$

So, although pandering incentives are reduced for some incumbents who face relatively weak challengers (because $\overline{\mu}(B, \phi) < \hat{\mu}(B, B, \phi)$) they are also increased for some incumbents who face strong challengers (because $\overline{\mu}(A, \phi) < \hat{\mu}(A, A, \phi)$). Intuitively, the key to eliminating pandering is to get the voter to apply the same burden of proof after each policy choice the incumbent might make. A newspaper that is informative about the state helps bring this about when the incumbent is slightly ahead, but can destroy the symmetry when the incumbent is moderately behind.

We now briefly note two additional implications of our model. First, comparing the equilibrium with and the equilibrium without the newspaper can be interpreted as a simple comparative static exercise on media quality: the model with no newspaper corresponds to a newspaper whose signals are random noise independent of the state.[10] Given that, it's worth asking whether improvements in newspaper accuracy can induce pandering more generally. The answer is yes. Improvements in newspaper accuracy both reduce $\hat{\rho}$ and shift the $\hat{\mu}$s to the right. Thus for κ_C just greater than $\hat{\mu}(A, A, \phi)$ and ρ sufficiently low, increasing the newspaper's signal accuracy can destroy a perfect accountability equilibrium.

Second, if the media is sufficiently likely to get a fully revealing signal, then pandering does not happen unless the challenger is ahead of the incumbent, $\kappa_C > \kappa_I$.[11] Work on selection effects of repeated elections imply that this condition is unlikely to be satisfied—if the incumbent won office at least partly on quality grounds in the first place, his quality is likely greater than that of a fresh draw from the pool of candidates (Ashworth and Bueno De Mesquita, 2008). This suggests that a partial yes-man newspaper will do an effective job of eliminating pandering, so long as its signal is likely to be accurate.

4. Extensions

We now extend the model in two different directions. First, we analyze what happens if the media, rather than being motivated by a desire to make the correct announcement, is instead motivated by its reputation for quality among consumers. Second, we analyze the case of a media that always reports honestly whether its signal indicates that the incumbent's policy choice was correct. The first extension represents a more pessimistic and cynical view of the media, whereas the second addresses what would seem to be a best case scenario for media incentives.

4.1. Reputational motivations

To analyze reputational motivations, we build on the model of media bias from Gentzkow and Shapiro (2006). Doing so requires some reinterpretation of our model. In particular, assume that the newspaper can be either high or low quality. A high quality newspaper receives perfect signals, whereas a low-quality one receives signals that are correct with conditional probability *q*. The probability that the newspaper is high quality is κ_N. The newspaper wants to appear high-quality in the long run, i.e., it care about the expectation of citizen–consumers' beliefs about their quality once the true value of ω becomes publicly known. Let $\gamma(x_I, x_N, \omega)$ be consumers' beliefs about the probability that the newspaper is high quality given the incumbent's action, the newspaper's announcement, and the true state of the world.

Although a full analysis of equilibria for all parameters is beyond the scope of this paper, it is straightforward to show that if the newspaper is likely to be high quality, i.e., κ_N is high, then there exists an equilibrium in the extension with a reputation-motivated newspaper in which behavior is identical to that derived in our main model.

To see why, start by assuming that a high-quality newspaper is always truthful whereas a low-quality newspaper chooses $x_N = x_I$. Bayes's Rule implies that consumers' posterior beliefs are as follows:

$$\begin{aligned} \gamma(A,A,A) &= \gamma(B,B,B) = \kappa_N \\ \gamma(A,A,B) &= \gamma(B,B,A) = 0 \\ \gamma(A,B,B) &= \gamma(B,A,A) = 1. \end{aligned} \quad (4)$$

[10] We thank an anonymous referee for suggesting this interpretation.
[11] To see this, observe that if κ_N is large enough, we have $\hat{\mu}(B, B, \phi) > \kappa_I$.

Off the equilibrium path, we use beliefs such that if the incumbent chooses an action, the newspaper criticizes it, and this criticism turns out to be mistaken, the consumer believes that the newspaper is low quality.

$$\gamma(A,B,A) = \gamma(B,A,B) = 0.$$

The low quality newspaper's decision to herd or not to herd depends on these consumer beliefs as well as on the newspaper's own belief about the probability that the state of the world is $\omega = A$. For the low quality newspaper, let $\lambda^N(x_I, s_N, \sigma) = \Pr(\omega = A | x_I, s_N, \sigma)$. Note that this belief depends on σ, the probability that a low quality incumbent panders after seeing a signal of B.

The key condition that needs to hold to ensure newspaper herding is that when $x_I = B$, and $s_N = A$ the newspaper announces B. With a reputation-motivated newspaper, the relevant condition is that

$$\lambda^N(B,A,\sigma)\gamma(B,A,A) + [1-\lambda^N(B,A,\sigma)]\gamma(B,A,B) \leq \lambda^N(B,A,\sigma)\gamma(B,B,A) + [1-\lambda^N(B,A,\sigma)]\gamma(B,B,B),$$

which simplifies to

$$\kappa_N \geq \frac{\lambda^N(B,A,\sigma)}{1-\lambda^N(B,A,\sigma)}. \tag{5}$$

Eq. (5) is most difficult to satisfy when $\sigma = 0$, so we can derive a sufficient condition on κ_N for there to exist an equilibrium in a reputational model with behavior that is identical to behavior that we characterized in our main model. Specifically

$$\kappa_N \geq \frac{\lambda^N(B,A,0)}{1-\lambda^N(B,A,0)}. \tag{6}$$

The intuition behind this condition is straightforward. When the newspaper is likely to be high quality and the high quality newspaper follows its signals, then for the low quality newspaper the key is to make the right announcement. Even though, as noted in Eq. (4) consumers will update more positively about the newspaper's statement if it chooses $x_N \neq x_I$ and is proved correct than if it chooses $x_N = x_I$ and is proved correct (i.e., they update to 1 rather than to κ_N), it is nonetheless the case that for κ_N sufficiently high, the newspaper maximizes its expected reputation by maximizing its probability of making the correct announcement.

4.2. Truthful media

We now briefly sketch the case of a media that truthfully reports whether its signal indicates that the incumbent's policy decision was correct, i.e., the newspaper is nonstrategic or it is duty-bound to announce what policy its signal indicates was better, without trying to learn from the incumbent's policy choice. This case is analytically the same as a media that makes an announcement at the same time that the incumbent chooses policy.

As in our main model, $\mu(h)$ is the voter's assessment of the probability that the incumbent is high quality, given history h. With the newspaper's announcement, h is a triple (x_I, x_N, s_V); we use $\tilde{\mu}(x_I, x_N, s_V)$ to denote the voters' posterior given first period policy x_I, newspaper announcement x_N, and public signal s_V (always under the conjecture that there is a perfect accountability equilibrium, so $x_I = s_I$). Lemma 1 makes it straightforward to calculate these posteriors for every history that the voter might observe. For our purposes, the key aspect of these posteriors is their ordinal ranking.

Lemma 6. *With truthful newspaper commentary,*

$$0 = \tilde{\mu}(A,x_N,B) = \tilde{\mu}(B,x_N,A) < \tilde{\mu}(B,A,\phi) < \tilde{\mu}(A,B,\phi) < \tilde{\mu}(B,B,\phi) < \tilde{\mu}(A,A,\phi) < \tilde{\mu}(A,x_N,A) = \tilde{\mu}(B,x_N,B) < 1.$$

The lemma follows straightforwardly from Bayes's Rule. The key inequalities generating pandering incentives are $\tilde{\mu}(B, A, \phi) < \tilde{\mu}(A, B, \phi)$ and $\tilde{\mu}(B, B, \phi) < \tilde{\mu}(A, A, \phi)$. Both have a simple intuition. Suppose the newspaper disagrees with the incumbent's policy choice and the voter does not learn the true state of the world. The observations $(x_I = A, x_N = B)$ and $(x_I = B, x_N = A)$, have the same likelihoods, so the voter's prior belief that A is the more likely state of the world implies that he has more confidence that the incumbent was correct if he chose A. Similarly, if the newspaper's announcement agrees with the incumbent's choice, the incumbent is more likely to be high quality if this policy agrees with the prior, so $\tilde{\mu}(B, B, \phi) < \tilde{\mu}(A, A, \phi)$.

In such circumstances, the incumbent is willing to pander unless the probability of uncertainty resolution is sufficiently high. Specifically, using the notation $\tilde{\gamma} \equiv \Pr(s_N = A | s_I = B, \theta_I = L)$, the cutoff to ensure that a perfect accountability equilibrium exists is

$$\rho \geq \frac{\alpha(2\lambda_B - 1) + \nu(L)\tilde{\gamma}}{2\nu(L)(1-\lambda_B) - \nu(L)(1-\tilde{\gamma})} \equiv \tilde{\rho}. \tag{7}$$

Fig. 3 illustrates conditions under which a perfect accountability equilibrium exists, depending on the parameters of the model.

We now turn to the question of how the newspaper's truthfulness affects incumbent policy choice. It is natural to conjecture that a partial yes-man newspaper is worse than a newspaper that truthfully reports its signal. But this conjecture is only partly correct. A simple comparison of Eqs. (1), (3), and (7) confirms that $\tilde{\rho} < \hat{\rho} < \overline{\rho}$, fitting well with the intuition that the more honestly the newspaper reports its signal, the more beneficial will be the effects on policy choice. However, a focus solely on the probability of uncertainty resolution misses part of the story. Pandering incentives also depend on the difference in the two candidates' reputations, and, for some values of κ_C , there is pandering in the simultaneous model but not in the sequential model. Specifically, the set of challenger qualities for which pandering can occur with a truthful media i.e., $(\tilde{\mu}(B, A, \phi), \tilde{\mu}(A, B, \phi)) \cup (\tilde{\mu}(B, B, \phi), \tilde{\mu}(A, A, \phi))$, is neither a strict superset nor a strict subset of $(\hat{\mu}(B, B, \phi), \hat{\mu}(A, A, \phi))$, the set of challenger qualities, from Proposition 2, for which pandering can occur in our main model. Thus, at least for some parameter values, a truthful newspaper actually makes things worse than a nonstrategic newspaper that truthfully reports $x_N = s_N$.

For some intuition, recall that pandering incentives arise when the voter applies different burdens of proof to the incumbent depending on which policy he chose. With a truthful media, an incumbent with a moderate lead over the challenger may pander because he gets the

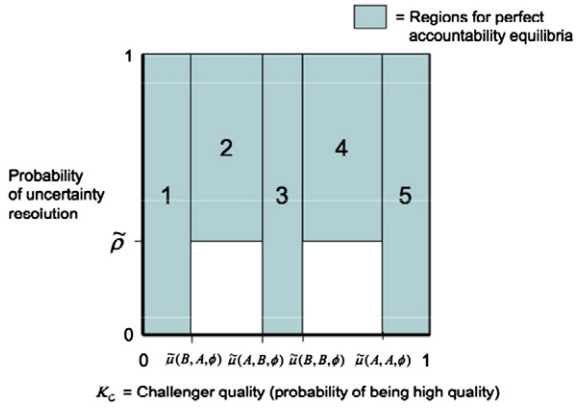


Fig. 3. With truthful media.

benefit of the doubt when he chooses the popular action and the commentator disagrees. A partial yes-man newspaper, on the other hand, only contradicts the incumbent if its signal perfectly reveals that the incumbent's choice was wrong. Thus the voter no longer gives the popular action an easier burden of proof, and pandering is eliminated.[12]

5. Discussion

Previous models of accountability suggest that a policy maker's incentives to pander to public opinion can be reduced by either hiding information about the incumbent's policy choice (Prat, 2005) or by introducing a neutral media commentator who makes informative announcements about whether the incumbent's actions truly promoted voters' interests. We have shown that the actual effect of introducing a commentator is far more subtle than this intuition suggests. The real key to eliminating pandering is to induce the voter to apply the same burden of proof to the incumbent after each possible action that he may take, and we find that although the presence of the media reduces pandering incentives for incumbents who face weak challengers it may increase pandering incentives when the challenger is strong.

It is likely that this mechanism is also a work in the other family of pandering models, in which the voter's uncertainty is not over the incumbent's competence but rather over his policy preferences (e.g., Maskin and Tirole, 2004). In those models, like the one we consider, the incumbent can have an incentive to take the ex ante popular action when the voter will respond asymmetrically to different policies. Although proof will have to await future research, it seems likely that informative media commentary has the potential to induce such asymmetric treatment, and thus pandering, in those models as well.

A particularly interesting implication of the model is that yes-man behavior by the media, while denying information to the voter, can actually provide better incentives for the incumbent to choose the correct policy, compared to a media that always reports truthfully whether its signal indicates that the incumbent's policy choice is correct. This result is surprising, because one might think that media deference to the incumbent would inevitably impede the process of accountability. Instead, deference in the face of low-precision media information can be necessary for incumbents to take correct actions—only if the commentator herds can the incumbent be safe from the fear that a mistaken critique of an already unpopular policy will lead his to be dismissed for taking the right action.

However surprising this result may be, the intuition behind it is not completely new. In fact, Jefferson made a similar argument, a quarter of a century after his famous letter to Carrington. We close with a quotation from a 1811 letter to Colonel William Duane, editor of the Philadelphia *Aurora*, in which Jefferson argued that journalists should be aware of their own limitations and hesitant to rush to judgment of elected officials:

> I think an Editor should be independent, that is, of personal influence, and not be moved from his opinions on the mere authority of any individual. But, with respect to the general opinion of the political section with which he habitually accords, his duty seems very like that of a member of Congress. Some of these indeed think that independence requires them to follow always their own opinion, without respect for that of others. This has never been my opinion, nor my practice, when I have been of that or any other body. Differing, on a particular question, from those whom I knew to be of the same political principles with myself, and with whom I generally thought and acted, a consciousness of the fallibility of the human mind, and of my own in particular, with a respect for the accumulated judgment of my friends, has induced me to suspect erroneous impressions in myself, to suppose my own opinion wrong, and to act with them on theirs...As far as my good will may go, for I can no longer act, I shall adhere to my government executive and legislative, and, as long as they are republican, I shall go with their measures, whether I think them right or wrong; because I know they are honest, and are wiser and better informed than I am.

[12] An informal statement is that, with a strategic newspaper, disagreement with the incumbent is "more informative" than in the case of the truthful newspaper. This should not be confused with the formal notion of informativeness—the two information structures are not ordered by Blackwell's garbling criterion.

6. Proofs

Proof of Lemma 1. Consider the following learning process. The voter first learns h, and then learns the true state. (The second step may or may not be redundant). The voter's belief at the time of the election corresponds to the intermediate stage of this process.

At the final stage of the process, the voter's belief about incumbent quality is either 0 or μ^+. Since a probability of an event is just the expected value of an indicator function, the martingale property of Bayesian updating implies $\hat{\mu}(h)=\Pr(\theta_I=H|h)=E(\Pr(\theta_I=H|h,\omega))$, where the expectation is with respect to the realization of the final stage of learning. But the expectation is just $\Pr(\omega=A|h)\Pr(\theta_I=H|h,\omega=A)+\Pr(\omega=B|h)\Pr(\theta_I=H|h,\omega=B)$, which gives the result. □

Proof of Lemma 4. The incumbent wins if he is proved correct or if he chooses A and the newspaper agrees. Then choosing A gives payoff

$$(\alpha+\rho\nu(\theta_I))\Pr(\omega=A|s_I,\theta_I)+(1-\rho)\nu(\theta_I)\Pr(s_N=A|s_I,\theta_I),$$

while choosing B gives payoff

$$(\alpha+\rho\nu(\theta_I))(1-\Pr(\omega=A|s_I,\theta_I)).$$

Thus the incumbent chooses A if and only if

$$(\alpha+\rho\nu(\theta))(2\Pr(\omega=A|s_I,\theta_I)-1)+(1-\rho)\nu(\theta_I)\Pr(s_N=A|s_I,\theta_I)\geq 0. \quad (8)$$

□

Proof of Lemma 5. Based on Eq. (8), the difference between a low type's gain from choosing A rather than B, and the high type's gain is

$$\begin{aligned}\Delta=&(\alpha+\rho\nu(L))(2\lambda_B-1)+(1-\rho)\nu(L)[\lambda_B+(1-\lambda_B)(1-\kappa_N)]\\&+(\alpha+\rho\nu(H))-(1-\rho)\nu(H)(1-\kappa_N).\end{aligned}$$

Substituting in for $\nu(L)$ and $\nu(H)$ from Eq. (2) yields

$$\begin{aligned}\Delta=&(\alpha+\rho(1+q\alpha))(2\lambda_B-1)+(1-\rho)(1+q\alpha)[\lambda_B+(1-\lambda_B)(1-\kappa_N)]\\&+(\alpha+\rho(1+\alpha))-(1-\rho)(1+\alpha)(1-\kappa_N).\end{aligned} \quad (9)$$

At $\rho=0$, this reduces to

$$\alpha(2\lambda_B-1)+(1+q\alpha)[\lambda_B+(1-\lambda_B)(1-\kappa_N)]+\alpha-(1+\alpha)(1-\kappa_N).$$

We claim this expression is positive. Since $\lambda_B+(1-\lambda_B)(1-\kappa_N)>(1-\kappa_N)$ it suffices to show

$$\begin{aligned}&\alpha(2\lambda_B-1)+(1+q\alpha)(1-\kappa_N)+\alpha-(1+\alpha)(1-\kappa_N)>0\\&2\lambda_B>(1-q)(1-\kappa_N)\\&2\frac{\pi(1-q)}{\pi(1-q)+(1-\pi)q}>(1-q)(1-\kappa_N)\\&2\pi>\pi(1-q)(1-\kappa_N)+(1-\pi)q(1-\kappa_N).\end{aligned}$$

This last expression holds because $\pi>\pi(1-q)(1-\kappa_N)$ and $\pi>1/2>(1-\pi)q(1-\kappa_N)$.

Having established that $\Delta(0)>0$, we now differentiate Eq. (9) with respect to ρ to get

$$\begin{aligned}\Delta'(\rho) &= (1+q\alpha)(2\lambda_B-1)-(1+q\alpha)[\lambda_B+(1-\lambda_B)(1-\kappa_N)] \\ &\quad +(1+\alpha)+(1+\alpha)(1-\kappa_N) \\ &= 2\lambda_B-1-[\lambda_B+(1-\lambda_B)(1-\kappa_N)]+2-\kappa_N \\ &\quad +\alpha[q(2\lambda_B-1)-q[\lambda_B+(1-\lambda_B)(1-\kappa_N)]+2-\kappa_N] \\ &= (2-\kappa_N)\lambda_B+(2-\kappa_N)(1-q(1-\lambda_B))\end{aligned} \tag{10}$$

Because $2-\kappa_N>0$, $1-\lambda_B\in(0,1)$, and $q\in(0,1)$ Eq. (10) is strictly greater than zero. Because the difference is positive at $\rho=0$ and increasing everywhere is sufficient to ensure that if the low type's incentive constraint is satisfied, the high type's incentive constraint is also satisfied. □

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