WORKING PAPERS

N° 1597

March 2026

# "Media market structure and confirmatory news"

Elena Panova

Toulouse School of Economics

# Media market structure and confirmatory news*

Elena Panova[†]

March 17, 2026

**Abstract**

This paper studies the effect of media market competition on confirmatory bias, the tendency to confirm common priors to appear competent, while accounting for both single- and multi-homing. It finds that competition helps sustain informative reporting when priors are relatively precise, but has the opposite effect when priors are diffuse. The reason is that when competing outlets are perceived as similarly competent, consumers optimally multi-home. This creates strategic complementarity in informative reporting and helps sustain it when the priors are relatively precise. However, when perceived competencies diverge, consumers single-home with the outlet they view as most competent, creating incentives for confirmatory reporting when the priors are diffuse.

*Key words: confirmation bias, competition, single- and multi-homing.*
*JEL codes: L82, L10, D82.*

*This work is based on the second chapter of my Ph.D. dissertation. I am grateful to Jean Tirole for his advice. I thank Andrew Rhodes and Sara Shagahani for their insightful comments on this version. I am also extremely grateful to Matthew Mitchell (the Editor) and the anonymous Referee for their constructive suggestions. I acknowledge financial support from the ANR under grant ANR-17-EURE-0010 (Investissements d'Avenir program).

[†]Toulouse School of Economics, University of Toulouse Capitole and ISFA Institut de Science Financière et d'Assurances, Université Lyon 1. E-mail: e_panova@yahoo.com

# 1 Introduction.

The media have a high degree of freedom in reporting and may bias news in favor of certain views, if not through outright fabrication, then at least through selective reporting (slanting). There is growing evidence of various biases (Puglisi and Snyder 2015). Confirmatory bias, discussed in the literature, is the tendency to confirm common priors in an attempt to appear competent. Competition has been proposed as a means to decrease confirmatory bias, as consumers can better evaluate the quality of news by comparing reports from different outlets (Gentzkow and Shapiro 2006). However, many consumers tend to buy news from only one outlet, a phenomenon commonly termed single-homing.[1]

This paper studies the effect of media market competition on confirmatory bias, while allowing for both single- and multi-homing. We consider a two-period model in which consumers purchase news to inform their private decisions. News reported in period one affects consumers' posteriors about media competence, hence their demand for news in period two. The media reports news so as to maximize its expected demand. We compare two market structures (monopoly vs. duopoly) in terms of their efficiency in sustaining informative rather than confirmatory reporting.

A monopoly market sustains informative reporting unconditionally when priors on the optimal decision (hereafter, *priors*) are sufficiently diffuse, that is, close to one half. The reason is that diffuse priors provide little guidance for consumer decisions, making demand for news insensitive to whether previously reported news aligns with the priors. With more precise priors, consumers become more selective, creating reputation concerns for the media. Sustaining informative reporting in this case requires a sufficiently high probability that consumers eventually discover the quality of news through feedback.

[1] For example, in the sample of Italian daily newspapers studied by Affeldt et al. (2021), the newspaper-specific mean percentage of readers who single-home, averaged over the period 1992-2006, ranges from 25% to 62%.

An additional outlet in the market creates two effects on reporting incentives. When outlets are perceived as similarly competent, consumers optimally multi-home, which creates *strategic complementarity* in informative reporting and helps sustain it when priors are relatively precise. However, when outlets' perceived competences diverge, consumers optimally single-home with the outlet they view as most competent. This creates *relative reputation concerns* and, therefore, incentives for confirmatory reporting when priors are diffuse, introducing a requirement for informative reporting in this range of priors. As a result, a duopoly market structure helps sustain informative reporting when priors are relatively precise, but has the opposite effect when priors are diffuse.

This insight contributes to the sizable literature on the effects of competition in media markets, as surveyed by Gentzkow and Shapiro (2010) and Gentzkow et al. (2015). While competition is generally viewed as reducing supply-driven biases, its effects on demand-driven biases (such as the one studied here) are more ambiguous, with different effects having been discussed.[2] One prominent message from this literature is that competition may lead to excessive differentiation. It may shift news content toward the opposite extremes of consumer priors, either because consumers enjoy news aligned with their priors (Mullainathan and Shleifer 2005) or because they select reports biased toward their priors to minimize the likelihood of errors in the most likely state (Burke 2008).[3] It may also induce media outlets to bias their editorial strategy away from issues of common interest toward issues on which consumer preferences are heterogeneous (Perego and Yüksel 2022). Alternatively, it may lead to an excessively homogeneous supply of information when consumers have coordination motives (Galperti and Trevino 2020). Furthermore, a larger number of reports may disperse consumer attention,

[2]Biases originating on the supply side may arise from partisan control (Durante and Knight 2012), political capture (Enikolopov and Petrova 2016), or advertiser influence (Beattie et al. 2021). An example of a demand-side bias is the tendency to cater to readers' partisan preferences (Gentzkow and Shapiro 2010).

[3]Burke (2008) builds on Suen (2004) by introducing endogenous information supply.

and thereby decrease the quality of news (Chen and Suen 2023).

These arguments are made in settings where consumers have no uncertainty about an outlet's characteristics. Other papers, including this paper, examine environments with such uncertainty, which creates signaling distortions in reporting. A growing literature studies the speed-accuracy trade-off, in particular the effects of competition on this trade-off (see Pant and Trombetta 2025, and references therein). Among this literature, Shahanaghi (2023) is the only paper that identifies an adverse effect: competition exacerbates preemption motives, a channel not studied here. Here the focus is on news content rather than the timing of reporting.

Thus, this paper relates to the literature on the effects of competition on information transmission by the media, and more broadly by experts with career concerns. One strand of this literature assumes that experts may be biased and signal their preference alignment with decision makers (see Nika 2023 and references therein). In this setting, competition pushes reporting in the direction opposite to the potential bias (Nika 2013). Another strand, including papers applied to the media (Gentzkow and Shapiro 2006, Ascensión and García-Martínez 2020),[4] assumes that experts are unbiased and instead maximize consumers' perceptions of their competence.

This paper belongs to the latter strand. Its novelty lies in endogenizing consumers' single- and multi-homing decisions and in analyzing their implications for informative reporting. Competition helps sustain informative reporting when consumers multi-home, but exacerbates incentives to confirm common priors under single-homing, due to concerns for relative reputation, reminiscent of Cummins and Nyman (2005), who study investment advice with single-homing.

[4] A central feature of Ascensión and García-Martínez (2020) is that media outlets strategically withhold information to reduce consumer feedback on news quality.

## 2 A model of market for news.

Consider a two-period model of the media market with a continuum of identical consumers and two possible market structures: a *monopoly* with a single outlet indexed by $i = 1$, and a *duopoly* with two outlets indexed by $i = 1, 2$. Figure 1, at the end of this section, illustrates the timeline of events.

**Demand for news.** In each period $t = 1, 2$, each consumer makes a binary private decision (e.g., voting or investing). He receives a positive payoff (say, of 1) if and only if his decision matches the period-specific[5] state of nature $x$, which is drawn anew in each period from distribution

$$\Pr(x = 0) = p;\ \Pr(x = 1) = 1 - p, \text{ where } p \geqslant \tfrac{1}{2}. \tag{1}$$

Consumers commonly know the prior distribution (1) of the state, and they can additionally purchase news about the prevailing state from the media. Each report is sold at an arbitrarily small price, normalized to zero for notational convenience. Consumers may purchase either report (*single-homing* with either outlet), both reports (*multi-homing*), or no news.

Period-specific news becomes public at the end of the period, while the period-specific state may either be revealed or remain hidden. With probability $\delta$, it is revaled (denoted by $\varphi = x$); with probability $1 - \delta$, it remains hidden ($\varphi = \varnothing$), where the notation $\varphi$ represents feedback realization.

**Supply of news.** Media outlet $i$ receives a private signal $s_i$ on the prevailing state. The quality of the signal depends on the outlet's time-invariant competence $\theta_i$ which is equally likely to be high (denoted by $\theta_i = 1$) or low (denoted by $\theta_i = 0$). If the competence is high the signal is perfect; if it is low, the signal is noisy. For simplicity, as detailed just below, we assume

[5] Here and below, we omit the period indicator for period-specific variables, as our analysis will focus on period 1: the key action of the model (media pandering in anticipation of future demand) takes place in this period, while period 2 serves to generate that future demand (see Figure 1).

that the signal structure is *nested*:[6]

$$s_i = \begin{cases} x, \text{ if } \theta_i = 1, \text{ or else if } \theta_i = 0 \text{ and } \Delta \leqslant q; \\ 1 - x, \text{ otherwise,} \end{cases} \tag{2}$$

where $q \geqslant \frac{1}{2}$ and variable $\Delta$ is drawn from the uniform distribution on interval $[0, 1]$.[7] Such a signal structure simplifies belief updating in the duopoly case because signals from different outlets differ only if their competences differ, while outlets of the same quality (either low or high) always receive the same signal. Therefore, conditional on outlets reporting their signals, agreement between reports provides no information about competence, whereas disagreement indicates that the outlets' competencies are different.

In order to make the game non-trivial, we focus on a situation in which the common prior is more precise than the signal by a low-competence outlet; and less precise than the signal by an outlet of an "average" competence:

$$q < p < \tfrac{1+q}{2}. \tag{3}$$

Outlet $i$ reports any news $n_i \in \{0, 1\}$ it wishes, regardless of its signal. Its period-specific payoff is equal to its advertising revenues, which are proportional to its period-specific demand.[8] We simplify an outlet's reporting strategy by assuming it has no private information beyond its signal. In particular, outlet $i$ does not know its own competence $\theta_i$, sharing the common belief about its distribution.

[6] Note that our insights are not specific to this particular information structure.

[7] Hence, high competence is necessary (and sufficient) to learn the state if and only if $\Delta$ realizes above a given threshold $q$. A realization of $\Delta$ above the threshold $q$ may be interpreted as a difficult issue, while a realization below that threshold corresponds to an easy issue.

[8] We assume that an outlet receives a price per "eyeball" from advertisers. For simplicity, and without any qualitative impact on the insights, the price is the same regardless of whether the "eyeball" is exclusive or not.

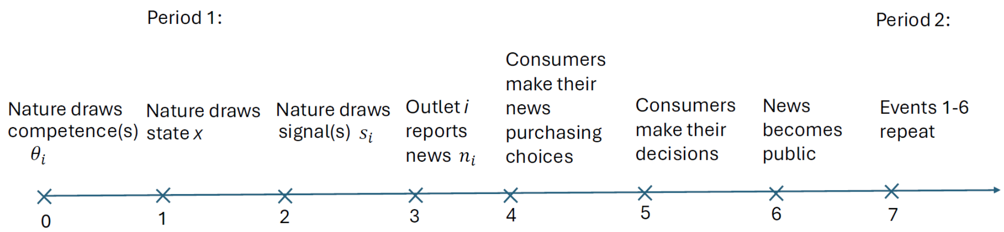


Figure 1: timeline of events.

# 3 Market structure and informative news.

We solve the above game using the concept of a Perfect Bayesian Equilibrium, focusing on the most informative pure-strategy symmetric equilibria, hereafter termed, for short, *equilibria.* In such equilibria, an outlet reveals its signal in period 2, as the news content no longer affects its revenues. The outlet may reveal its signal in different ways, depending on consumers' beliefs. For concreteness, we focus on equilibria in which the outlet directly (hereafter, *truthfully*) reports its signal.

In period 1, by contrast, an outlet reports strategically, choosing the content that maximizes its expected demand in period 2. Two types of equilibria may arise: (i) a *babbling* equilibrium, in which the period-1 news is uninformative; and (ii) the *informative* news equilibrium, in which an outlet reveals (once again, truthfully reports) its signal in period 1.

The babbling equilibrium exists for all parameter values. We compare two media market structures, monopoly and duopoly, in terms of their efficiency in sustaining the informative equilibrium.

**Monopoly media market.** The monopoly media market sustains the informative news equilibrium if and only if the demand for news in period 2, under the belief that the outlet reports its signal, is such that the outlet has no incentive to deviate from reporting its signal in period 1. Demand for news in period 2 is described by the following lemma.

**Lemma 1 (monopoly demand).** *Suppose that consumers believe that the outlet reports its signal. (i) If the prior probability p lies below threshold*

$$\underline{p}(q) = \frac{1+q^2-(1-q)\sqrt{1+q^2}}{2q}, \tag{4}$$

*consumers purchase news in period* 2 *if and only if the period*-1 *news is verified as correct* ($n_1 = \varphi = x$) *or its quality remains uncertain* ($\varphi = \varnothing$)*. (ii) Otherwise, they purchase news in period* 2 *if and only if the period*-1 *news is verified as correct* ($n_1 = \varphi = x$) *or it is confirmatory and its quality remains uncertain* ($n_1 = 0$, $\varphi = \varnothing$)*.*

The proof of Lemma 1 is presented in Appendix A and can be explained as follows. In the absence of news, consumers' only information about the state is the common prior. They are willing to pay an arbitrarily small amount for news if and only if the probability that news coincides with the true state exceeds the precision of the common prior belief:

$$q + (1-q)\Pr(\theta_1 = 1 \mid \varphi,\ n_1) > p. \tag{5}$$

This condition holds when the posterior belief about the outlet's competence, $\Pr(\theta_1 = 1 \mid \varphi,\ n_1)$, is sufficiently high, making the news a more reliable guide. It is met if period-1 news is verified as correct ($n_1 = \varphi = x$) and also when the news is confirmatory ($n_1 = 0$, $\varphi = \varnothing$). The reason, well understood in the reputational cheap-talk literature, is that confirmatory news signals high competence.[9] Conversely, contrarian news signals low competence. As the precision of common prior increases, this negative signal becomes increasingly strong. At the same time, consumers become more selective: the left-hand side of inequality (5) increases. Consumers cease to purchase news following contrarian reports once the threshold (4) is reached.

Lemma 1 helps analyze the outlet's incentives for truthful reporting and identify when the informative news equilibrium is sustainable.

[9] The higher the outlet's competence, the closer its signal realizations are to the prior mean of the state (e.g., Gentzkow and Shapiro 2006, Ottaviani and Sørensen 2006).

**Proposition 1**. *A monopoly media market sustains the informative news equilibrium if and only if the precision of common prior p lies below either threshold (4) or*

$$p^m(q,\delta) = \frac{(2\delta-1)(1+q)}{(2\delta-1)(1+q)+1-q}. \tag{6}$$

The proof presented in Appendix B goes as follows. If the precision of the common prior lies below the threshold (4), or if the outlet's signal is confirmatory, the outlet simply avoids reporting news that contradicts the prevailing state if revealed. Therefore, it reports its signal, which is correlated with the state. However, when the precision of the common prior exceeds the threshold (4) and the outlet's signal is contrarian, the outlet's incentives are ambiguous: if consumers discover the true state (which happens with probability $\delta$), it is optimal to report the signal; otherwise, it is optimal to deviate from truthful reporting and confirm the prior. The former consideration dominates if and only if

$$\delta \Pr(x = 1 \mid s_1 = 1) \geqslant \delta \Pr(x = 0 \mid s_1 = 1) + 1 - \delta. \tag{7}$$

Threshold (6) equates the incentive constraint (7).

**Duopoly media market.** The informative news equilibrium is sustained in the duopoly if and only if the period-2 demand for news, given the belief that each outlet reports its signal truthfully, is such that neither outlet has an incentive to deviate from truthful reporting in period 1. Note that consumers may choose to buy no news, to *single-home* by purchasing from one outlet, or to *multi-home* by purchasing from both. Their demand for news in period 2 is described by the following lemma.

**Lemma 2 (duopoly demand).** *Suppose that consumers believe reporting to be truthful. (i) If both outlets report the same news in period* 1*, consumers either multihome or they purchase no news in period* 2*. Specifically, they multihome unless the period-*1 *news is revealed to be false* ($\varphi = x$, $n_1 = n_2 = 1 - x$)*, or is contradictory* ($n_1 = n_2 = 1$, $\varphi = \varnothing$) *and the* *precision of the common prior exceeds the threshold*

$$\overline{p}(q) = \frac{1+3q^2-(1-q)\sqrt{1+3q^2}}{2q(1+q)}. \tag{8}$$

*(ii) If the period-*1 *news differs, consumers singlehome, choosing the outlet whose report matches the state when the state is revealed, and the outlet whose news is confirmatory otherwise.*

The proof of this Lemma, presented in Appendix C, assumes (for concreteness and without loss of generality) that consumers perceive outlet 1 to be at least as competent as outlet 2, that is,

$$\arg\max_{i=1,2} \{\Pr(\theta_i = 1 \mid n_1, n_2, \varphi)\} = 1. \tag{9}$$

Therefore, they choose this outlet if they singlehome. They prefer single-homing to purchasing no news if and only if inequality (5) holds, as follows directly from the analysis of the monopoly media market benchmark. Their preference for multi-homing relative to single-homing or purchasing no news requires further analysis.

To understand consumers' preferences between single-homing and multi-homing, suppose that they purchased the report from outlet 1 (hereafter, for short, *report* 1). This report is erroneous with probability $1 - q$ in either state. Since state 0 is more likely, the report is more likely to be erroneous when it is contrarian. Therefore, if consumers follow the report, they are more likely to erroneously decide 1 in state 0 (hereafter, *type I error*) than to erroneously decide 0 in state 1 (*type II error*). If they additionally purchase report 2, they can adjust their decision making by choosing 0 when report 1 is contrarian and report 2 is confirmatory. Such an adjustment is more likely to correct a type $I$ error than to create a type $II$ error if and only if

$$p\Pr(\theta_1 = 0, \theta_2 = 1 \mid n_1, n_2, \varphi) > (1-p)\Pr(\theta_1 = 1, \theta_2 = 0 \mid n_1, n_2, \varphi). \tag{10}$$

Therefore, consumers prefer multi-homing to single-homing if and only if inequality (10) holds.

Note that if the outlets report different news in period 1, consumers infer that only one of them is competent, most likely outlet 1. Therefore, the posterior on the right-hand side of inequality (10) is sufficiently high for this inequality to be violated, and the posterior $\Pr(\theta_1 = 1 \mid n_1, n_2, \varphi)$ sufficiently high for inequality (5) to hold, which explains statement (ii).

Suppose now that the outlets report the same news in period 1. Then, they are equally likely to be competent. If it is revealed that the period-1 reports were false, the outlets' competence is clearly low, so consumers purchase no news. Suppose that no such revelation occurs. Then, inequality (10) holds, meaning that consumers prefer multi-homing to single-homing. It remains to establish their preferences between multi-homing and purchasing no news. Recall that the optimal decision without purchasing news is 0. The above discussion suggests, and we prove, that the optimal adjustment with multi-homing is to choose 1 if and only if both reports are contrarian. This adjustment is more likely to correct a type $I$ error than to create a type $II$ error if and only if:

$$\begin{gathered}(1-p)\left(q+(1-q)\Pr\left(\theta_1=\theta_2=1 \mid \varphi, n_1, n_2\right)\right) > \\ p(1-q)\Pr\left(\theta_1=\theta_2=0 \mid n_1, n_2, \varphi\right).\end{gathered} \tag{11}$$

This condition holds unless the period-1 news is contrarian and the precision of the common prior exceeds the threshold (8).

We now use Lemma 2 to analyze the outlet's incentives for truthful reporting, and identify when the informative equilibrium is sustainable.

**Proposition 2.** *A duopoly media market sustains the informative news equilibrium if and only if the precision of common prior $p$ lies below threshold (6) or the least of thresholds (8) and*

$$p^c(q,\delta) = \tfrac{\delta(3+q)+q-1}{4\delta}. \tag{12}$$

The proof is presented in Appendix D. By Lemma 2, an outlet's incentives to truthfully report a contrarian signal in period 1 are characterized by the incentive constraint (7) when the precision of the common prior exceeds threshold (8), and by a weaker incentive constraint

$$\begin{aligned}\delta \Pr(x = 1 \mid s_i = 1) + (1 - \delta) \Pr(s_{-i} = 1 \mid s_i = 1) \geqslant \\ \delta \Pr(x = 0 \mid s_i = 1) + (1 - \delta)\end{aligned} \tag{13}$$

otherwise. The incentive constraint (7) binds at threshold (6), while the incentive constraint (13) binds at threshold (12).

**Discussion.** Comparison of Propositions 1 and 2 shows that either a monopoly or a duopoly market structure may be more efficient in sustaining the informative news equilibrium.

**Corollary.** *Below the lower threshold* $\underline{p}$ *specified by equation (4), the monopoly performs weakly better than the duopoly in sustaining the informative equilibrium; between the thresholds* $\underline{p}$ *and* $\overline{p}$ *the opposite is true, while above the upper threshold* $\overline{p}$*, the performance of either market structure is the same.*

Figure 2 provides an illustration.

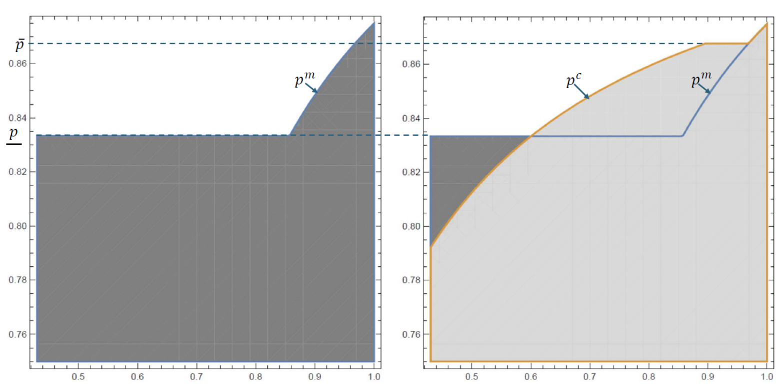


Figure 2: Parameter areas of the informative equilibrium ($q = 0.75$). The monopoly media market sustains it in the area shaded dark grey (left). The duopoly media market sustains the informative news equilibrium in the area shaded light grey (right).

The monopoly media market sustains it in the area that is shaded dark grey (Figure 2, left). Note that below the lower threshold $\underline{p}$, the informative news equilibrium is sustained *for any* $\delta$. The incentive constraint (7), which is met in the region bounded by the threshold $p^m$, becomes relevant only when the precision of the common prior exceeds threshold $\underline{p}$.

The duopoly media market sustains the informative news equilibrium in the area that is shaded light grey (Figure 2, right). Notice that the light-shaded area contains the dark-shaded area between thresholds $\underline{p}$ and $\overline{p}$, whereas the opposite holds below threshold $\underline{p}$.

The reason is that competition in the market generates two countervailing effects, discussed in the introduction. On the one hand, competition allows consumers to select an outlet for single-homing, creating incentives for each outlet to appear at least as competent as its competitor (*relative reputation concerns*). As a result, below threshold $\underline{p}$, the informative equilibrium is no longer sustained for any $\delta$. Instead, it requires the incentive constraint (13) to be satisfied, which holds only in the region bounded by the threshold $p^c$. However, and this is the second effect, this constraint is weaker than the monopoly media incentive constraint (7) due to an additional term $(1-\delta)\Pr(s_{-i}=1 \mid s_i=1)$ that appears on the left-hand side. This term reflects the fact that when an outlet reports contrarian news and consumers remain uncertain about its quality, the outlet still sells its report in the future if the competitor's news is also contrarian as long the precision of the common prior remains below the upper threshold $\overline{p}$ (*strategic complementarity*). Due to this term, threshold $p^c$ lies above the monopoly threshold $p^m$.

# 4 Conclusion.

This paper analyzes how media market structure affects news quality, focusing on the bias toward reporting news that confirms common priors to appear competent. By allowing consumers to single- or multi-home, we show that competition enhances news quality when issues have relatively precise common priors, such as weather forecasts or scheduled sports outcomes, but exacerbates confirmation bias for controversial topics where quality remains uncertain, such as politics or climate change. These insights can motivate further theoretical research that accounts for endogenous multi-homing decisions, inform empirical studies on media bias, and guide policies aimed at improving the quality of news.

# References


[1] Affeldt, P., Argentesi, E. and L. Filistrucchi, (2021), "Estimating Demand with Multi-Homing in Two-Sided Markets," *working paper DSE N° 1165*, available at SSRN: https://ssrn.com/abstract=3932240 or http://dx.doi.org/10.2139/ssrn.3932240.

[2] Ascensión, A. D. and J. A. García-Martínez (2020), "Reputation and news suppression in the media industry," *Games and Economic Behavior*, vol.123:240-271.

[3] Beattie, G., Durante, R., Knight, B., and A. Sen (2021), "Advertising Spending and Media Bias: Evidence from News Coverage of Car Safety Recalls," *Management Science*, 67(2):698-719.

[4] Burke J. (2008), "Primetime Spin: Media Bias and Belief Confirming Information," *Journal of Economics and Management Strategy*, 17(3): 663-665.

[5] Chen, H. and W. Suen (2023), "Competition for Attention and News Quality," *American Economic Journal: Microeconomics*, 15(3):1-32.

[6] Cummins, J. G., and I. Nyman (2005), "The Dark Side of Competitive Pressure," *The RAND Journal of Economics*, 36(2):361-377.

[7] DellaVigna S. and E. La Ferrara (2015), "Economic and Social Impacts of the Media," in *Handbook of Media Economics*, Simon Anderson, David Strömberg, Joel Waldfogel (eds.), Elsevier:723-768.

[8] Durante, R. and B. Knight (2012), "Partisan Control, Media Bias and Viewer Responses: Evidence from Berlusconi's Italy," *Journal of the European Economic Association*, 10(3):451-481.

[9] Enikolopov, R. and M. Petrova, (2016), "Media Capture: Empirical Evidence," in *Handbook of Media Economics*, Simon Anderson, David Strömberg, Joel Waldfogel (eds.), Elsevier: 687-700.

[10] Galperti, S. and I. Trevino (2020), "Coordination motives and competition for attention in information markets," *Journal of Economic Theory*, vol.188, 105039, 0022-0531.

[11] Gentzkow, M. and J. M. Shapiro (2006), "Media Bias and Reputation," *Journal of Political Economy*, 114(2):280-316.

[12] Gentzkow, M. and J. M. Shapiro (2008), "Competition and Truth in the Market for News," *Journal of Economic Perspectives*, 22(2):133-154.

[13] Gentzkow, M. and J. M. Shapiro (2010), "What Drives Media Slant? Evidence from U.S. Daily Newspapers," *Econometrica*, 2010, 78(1):35-71.

[14] Gentzkow, M., Shapiro J. M. and D. F. Stone (2015), "Media Bias in the Marketplace: Theory," Handbook of Media Economics, ed. S. P. Anderson, J. Waldfogel, D. Strömberg, Chapter 14:623-645.

[15] Mullainathan, S. and A. Shleifer (2005), "The Market for News," *American Economic Review*, 95:1031-1053.

[16] Nika, M. (2013), "Conforming to stand out: A model of career Concerns with Biased experts," *Ph.D. Dissertation chapter.*

[17] Nika, M. (2023), "Reputation formation and reinforcement of biases in a post-truth world," *Journal of Economic Behavior & Organization*, 215:455-478.

[18] Ottaviani, M. and P. Sørensen (2006), "Reputational Cheap Talk," *Rand Journal of Economics*, 37(1):155-175.

[19] Pant A. and F. Trombetta (2025), "The Newsroom Dilemma," *Economic Inquiry*, 63(4):1009-1035.

[20] Perego, J. and S. Yüksel (2022), "Media Competition and Social Disagreement," *Econometrica*, 90(1):223-265.

[21] Puglisi, R. and J. M. Snyder (2015), "Empirical Studies of Media Bias," in *Handbook of Media Economics*, Simon Anderson, David Strömberg, Joel Waldfogel (eds.), Elsevier: 647-667.

[22] Shahanaghi, S. (2023), "Competition and Herding in Breaking News," *working paper*, available at https://papers.sshahanaghi.com/preemption%20main.pdf.

[23] Suen, W. (2004), "The Self-Perpetuation of Biased Beliefs," *The Economic Journal*, 114:377-396.

# Appendix A: proof of Lemma 1.

**Notation set A.1.** $\Omega$ *denotes information purchased by consumers in period* 2*,* $d : \Omega \to \{0, 1\}$ *their decision rule,* $U(d(\Omega))$ *the associated expected payoff,* $d^*(\Omega)$ *the optimal decision rule. For convenience, hereafter we write* $d$ *as a function of the elements of the set* $\Omega$ *rather than of the set itself:* $d(\varnothing)$ *instead of* $d(\{\varnothing\})$ *and* $d(n_1)$ *instead of* $d(\{n_1\})$*.*

We prove Lemma 1 by considering period-2 events backwards (recall that consumers believe that $n_1(s_1) = s_1$ in either period).

**Step 1** describes consumers' optimal use of information $d^*(\Omega)$ and the expected payoff in period 2 corresponding to this decision. According to the distribution (1), $d^*(\varnothing) = 0$ and

$$U(d^*(\varnothing)) = p. \tag{14}$$

If $\Omega = \{n_1\}$, there are four possible unconditional decision rules:

$$d_0(n_1) = 0,\ d_1(n_1) = 1,\ d_{n_1}(n_1) = n_1, \text{ and } d_{1-n_1}(n_1) = 1 - n_1.$$

The associated expected payoffs are: $U(d_0(n_1)) = p$, $U(d_1(n_1)) = 1 - p$,

$$U(d_{n_1}(n_1)) = q + (1 - q)\Pr(\theta_1 = 1 \mid \varphi,\ n_1),$$

and $U(d_{1-n_1}(n_1)) = (1 - \Pr(\theta = 1 \mid \varphi,\ n_1))\,q$. By these equations and the implied inequalities $U(d_1(n_1)) < U(d_0(n_1))$ and $U(d_{1-n_1}(n_1)) < U(d_{n_1}(n_1))$, the optimal rule is $d_{n_1}(n_1)$ if inequality (5) holds and $d_0(n_1)$ otherwise:

$$d^*(n_1) = \begin{cases} n_1, \text{ if inequality (5) holds,} \\ 0, \text{ otherwise;} \end{cases} \tag{15}$$

$$\text{and } U(d^*(n_1)) = \max\{q + (1 - q)(1 - \Pr(\theta = 1 \mid \varphi,\ n_1)),\ p\}. \tag{16}$$

**Step 2** describes consumers' demand for news in period 2. Recall that news is sold at an arbitrarily small price. By equations (14) and (16), consumers purchase news in period 2 if and only if inequality (5) holds. We verify this condition for the four possible realizations of the pair $(n_1, \varphi)$ in period 1. Suppose first that $n_1 = 1 - x$, $\varphi = x$. By Bayes rule (which we use here and below to specify the posteriors),

$$\Pr(\theta = 1 \mid n_1 = 1 - x, \varphi = x) = 0. \tag{17}$$

By equation (17) and the lower bound in the set of inequalities (3), inequality (5) is violated. Suppose now that $n_1 = 1$ and $\varphi = \varnothing$. By true equation

$$\Pr(\theta = 1 \mid \varphi = \varnothing,\ n_1 = 1) = \tfrac{1-p}{(1-p)(1+q)+p(1-q)},$$

inequality (5) holds when $p = q$, and fails when $p = \frac{1+q}{2}$. Furthermore,

$$\tfrac{\partial}{\partial p}\Pr(\theta = 1 \mid \varphi = \varnothing,\ n_1 = 1) = -\tfrac{1-q}{((1-p)(1+q)+p(1-q))^2} < 0.$$

Therefore, there exists a threshold such that inequality (5) holds if and only if $p$ lies below this threshold. This threshold equates the right- and left-hand sides of inequality (5) and is given by equation (4). Suppose, finally, that $n_1 = 0$ and $\varphi = \varnothing$, or that $n_1 = \varphi = x$. True equations

$$\Pr(\theta = 1 \mid \varphi = x,\ n_1 = x) = \tfrac{1}{1+q}, \text{ and}$$

$$\Pr(\theta = 1 \mid \varphi = \varnothing,\ n_1 = 0) = \tfrac{p}{p(1+q)+(1-p)(1-q)}, \text{ imply}$$

$$\Pr(\theta = 1 \mid \varphi = x, n_1 = x) > \Pr(\theta = 1 \mid \varphi = \varnothing, n_1 = 0) \geqslant \tfrac{1}{2}. \tag{18}$$

Note that, by the upper bound in the set of inequalities (3), inequality (5) holds if $\Pr(\theta = 1 \mid \varphi, n_1)$ is replaced with $\frac{1}{2}$. This remark combined with set of inequalities (18) imply that inequality (5) holds**.**

# Appendix B: proof of Proposition 1.

The outlet's incentive constraint for truthful reporting in period 1 requires that its expected demand in period 2 following report $n_1 = s_1$ is weakly greater than that following report $n_1 = 1 - s_1$.

**Step 1 (incentives to report confirmatory signal)**. Suppose first that period 1 signal is $s_1 = 0$. By Lemma 1, the outlet's incentive contraint is given by inequality

$$\Pr(x = 0 \mid s_1 = 0) \geqslant \Pr(x = 1 \mid s_1 = 0) \tag{19}$$

if $p$ lies below threshold (4), and by inequality

$$\delta \Pr(x = 0 \mid s_1 = 0) + 1 - \delta \geqslant \delta \Pr(x = 1 \mid s_1 = 0) \tag{20}$$

otherwise. By Bayes rule,

$$\Pr(x = 0 \mid s_1 = 0) = \tfrac{p(1+q)}{p(1+q)+(1-p)(1-q)},\ \Pr(x = 1 \mid s_1 = 0) = \tfrac{(1-p)(1-q)}{p(1+q)+(1-p)(1-q)}. \tag{21}$$

By set of equations (21) and true inequalities $p \geqslant \frac{1}{2}$ and $q \geqslant \frac{1}{2}$,

$$\Pr(x = 0 \mid s_1 = 0) > \Pr(x = 1 \mid s_1 = 0),$$

which implies that either incentive constraint (19) or (20) is satisfied.

**Step 2 (incentives to report contrarian signal)**. Suppose now that period-1 signal is $s_1 = 1$. By Lemma 1, the outlet's incentive constraint is given by inequality

$$\Pr(x = 1 \mid s_1 = 1) \geqslant \Pr(x = 0 \mid s_1 = 1), \tag{22}$$

if $p$ lies below threshold (4), and by inequality (7) otherwise. By Bayes rule,

$$\Pr(x = 1 \mid s_1 = 1) = \tfrac{(1-p)(1+q)}{(1-p)(1+q)+p(1-q)}, \ \Pr(x = 0 \mid s_1 = 1) = \tfrac{p(1-q)}{(1-p)(1+q)+p(1-q)}. \tag{23}$$

By set of equations (23) and the upper inequality in set (3), the incentive constraint (22) is verified. At the same time, the incentive constraint (7) holds if and only if both $\delta > \frac{1}{2}$ and $p$ lies below threshold (6) which equates the incentive constraint (7). Note that threshold (6) is increasing in $\delta$ and it is equal to 0 when $\delta = \frac{1}{2}$. Therefore, condition $\delta > \frac{1}{2}$ is redundant: it holds whenever threshold (6) lies above threshold (4).

# Appendix C: proof of Lemma 2.

Suppose that consumers believe that $n_i(s_i) = s_i$ for either $i = 1, 2$ and in either period.

**Step 1 (consumer information and the expected payoff)**.

Appendix A shows that: $d^*(\varnothing) = 0$ and equation (14) holds; $d^*(n_i)$ is given by set of equations (15) re-indexed with "$i$" instead of "1" and $U(d^*(n_i))$ is given by equation (16) re-indexed in the same way. Suppose that $\Omega = \{n_1, n_2\}$. Equation (9) holds without loss of generality. We consider 16 possible decision-making rules, and show (details available upon request) that, for any rule $d(n_1, n_2)$ among them

$$U(d(n_1, n_2)) \leqslant \max\{U(d_0(n_1, n_2)), U(d_{n_1}(n_1, n_2)), U(d_{n_1 n_2}(n_1, n_2))\},$$

where $d_0(n_1, n_2) = 0$, $d_{n_1}(n_1, n_2) = n_1$, $d_{n_1 n_2}(n_1, n_2) = n_1 n_2$;[10] and

$$U(d^*(n_1, n_2)) = \max\{U(d_0(n_1, n_2)), U(d_{n_1}(n_1, n_2)), U(d_{n_1 n_2}(n_1, n_2))\}, \tag{24}$$

$$\text{where } U(d_0(n_1, n_2)) = p, \tag{25}$$

$$U(d_{n_1}(n_1, n_2)) = q + (1-q)\Pr(\theta_1 = 1 \mid \varphi, n_1, n_2), \text{ and} \tag{26}$$

$$U(d_{n_1 n_2}(n_1, n_2)) = q + (1-q)(p(1 - \Pr(\theta_1 = \theta_2 = 0 \mid \varphi, n_1, n_2)) + (1-p)\Pr(\theta_1 = \theta_2 = 1 \mid \varphi, n_1, n_2)). \tag{27}$$

**Step 2 (demand for news).** Recall that either report is sold at an arbitrarily small price. By equation (24), consumers multihome in period 2 if and only if

$$U(d_{n_1 n_2}(n_1, n_2)) > \max\{U(d_0(n_1, n_2)), U(d_{n_1}(n_1, n_2))\}.$$

which by equations (25) to (27) is equivalent to set of inequalities

$$(1-p)\Pr(\theta_1 = \theta_2 = 1 \mid \varphi, n_1, n_2) + p(1 - \Pr(\theta_1 = \theta_2 = 0 \mid \varphi, n_1, n_2)) > \Pr(\theta_1 = 1 \mid \varphi, n_1, n_2), \text{ and} \tag{28}$$

$$q + (1-q)((1-p)\Pr(\theta_1 = \theta_2 = 1 \mid \varphi, n_1, n_2) + p(1 - \Pr(\theta_1 = \theta_2 = 0 \mid \varphi, n_1, n_2))) > p. \tag{29}$$

The consumers singlehome if and only if inequality (28) is violated and $U(d_{n_1}(n_1, n_2)) > U(d_0(n_1, n_2))$, which by equations (25) and (26) is equivalent to inequality (5). When both inequalities (5) and (28) are violated, consumers purchase no news. Inequality (28) is equivalent to inequality (10), while inequality (29) is equivalent to inequality (11).

Consider possible histories $(n_1, n_2, \varphi)$. Suppose first that $n_1 = 1 - n_2$. By Bayes rule,

$$\Pr(\theta_1 = 1 \mid n_1 = x, n_2 = 1 - x, \varphi = x) = 1, \tag{30}$$

$$\Pr(\theta_1 = 1 \mid n_1 = 0, n_2 = 1, \varphi = \varnothing) = p, \text{ and} \tag{31}$$

$$\Pr(\theta_1 = \theta_2 \mid n_1 = 1 - n_2, \varphi) = 0,$$

[10] Recall that for notational convenience we write $d(n_1, n_2)$ instead of $d(\{n_1, n_2\})$.

which implies that inequality (28) is violated. At the same time, by equations (30) and (31), $\Pr(\theta_1 = 1 \mid n_1, n_2, \varphi) \geqslant p$, while by the upper bound in set of inequalities (3), $p < 1$. Therefore, inequality (5) holds. Hence, consumers singlehome.

Suppose now that $n_1 = n_2$. If $n_1 = n_2 = 1-x$ and $\varphi = x$, both inequalities (5) and (29) fail because

$$\Pr(\theta_1 = \theta_2 = 1 \mid n_1 = 1-x, n_2 = 1-x, \varphi = x) =$$
$$\Pr(\theta_1 = 1 \mid n_1 = 1-x, n_2 = 1-x, \varphi = x) = 0, \text{ while}$$

$$\Pr(\theta_1 = \theta_2 = 0 \mid n_1 = 1-x, n_2 = 1-x, \varphi = x) = 1.$$

Hence, consumers purchase no news. It remains to consider three histories: $n_1 = n_2 = \varphi = x$; $n_1 = n_2 = 0$ and $\varphi = \varnothing$; and $n_1 = n_2 = 1$ and $\varphi = \varnothing$. For any of these histories, inequality (28) holds. The reason is that this inequality is equivalent to (10), and for any of these three histories

$$\Pr(\theta_1 = 0, \theta_2 = 1 \mid n_1, n_2, \varphi) = \Pr(\theta_1 = 1, \theta_2 = 0 \mid n_1, n_2, \varphi) > 0.$$

Hence, consumers either multihome or purchase no news, depending on whether or not inequality (29) holds. We find that it holds when $n_1 = n_2 = \varphi = x$: By true equations

$$\Pr(\theta_1 = \theta_2 = 1 \mid \varphi = x, n_1 = x, n_2 = x) = \tfrac{1}{1+3q},$$

$$\Pr(\theta_1 = \theta_2 = 0 \mid \varphi = x, n_1 = x, n_2 = x) = \tfrac{q}{1+3q},$$
$$\Pr(\theta_i = 1 \mid \varphi = x, n_1 = x, n_2 = x) = \tfrac{1+q}{1+3q},$$

the left-hand side of inequality (29) lies above the right extreme of the interval (3). Inequality (29) also holds when $n_1 = n_2 = 0$, $\varphi = \varnothing$: By true equations

$$\Pr(\theta_1 = \theta_2 = 1 \mid n_1 = 0, n_2 = 0, \varphi = \varnothing) = \tfrac{p}{p(1+3q)+(1-p)(1-q)},$$

$$\Pr(\theta_1 = \theta_2 = 0 \mid n_1 = 0, n_2 = 0, \varphi = \varnothing) = \tfrac{pq+(1-q)(1-p)}{p(1+3q)+(1-p)(1-q)},$$
$$\Pr(\theta_i = 1 \mid n_1 = 0, n_2 = 0, \varphi = \varnothing) = \tfrac{p(1+q)}{p(1+3q)+(1-p)(1-q)},$$

the left-hand side of inequality (29) lies above the right extreme of the interval (3):

$$q+\frac{(1-q)p(1+(1+q)q)}{p(1+3q)+(1-p)(1-q)}>\frac{1+q}{2}\text{ or, equivalently, }2p(1-q)+2pq^2>1-q.$$

When $n_1=n_2=1$, $\varphi=\varnothing$, by true equations

$$\Pr(\theta_1=1\mid n_1=1,n_2=1,\varphi=\varnothing)=\Pr(\theta_2=1\mid n_1=1,n_2=1,\varphi=\varnothing),$$

$$\Pr(\theta_1=\theta_2=1\mid n_1=1,n_2=1,\varphi=\varnothing)=\frac{1-p}{(1-p)(1+3q)+p(1-q)},$$
$$\Pr(\theta_1=\theta_2=0\mid n_1=1,n_2=1,\varphi=\varnothing)=\frac{p(1-q)+q(1-p)}{(1-p)(1+3q)+p(1-q)},$$
$$\Pr(\theta_i=1\mid n_1=1,n_2=1,\varphi=\varnothing)=\frac{(1-p)(1+q)}{(1-p)(1+3q)+p(1-q)},$$

inequality (29) holds at the left extreme of the interval (3), that is for $p=q$:

$$q+\frac{1-q}{1+4q}(1+2q)>q,$$

and it fails at the right extreme of the interval (3), that is for $p=\frac{1+q}{2}$:

$$q+(1-q)\left(\frac{1-q}{2}\frac{1}{1+4q}+\frac{1+q}{2}\left(1-\frac{1+2q}{1+4q}\right)\right)<\frac{1+q}{2}\text{ or, equivalently, }2q<3.$$

Inequality (29) is the tighter, the higher $p$:

$$\begin{aligned}&sign\left[\frac{\partial}{\partial p}\left((1-p)\Pr(\theta_1=\theta_2=1\mid\varphi=\varnothing,n_1=1,n_2=1)-\right.\right.\\&\left.\left.p\Pr(\theta_1=\theta_2=0\mid\varphi=\varnothing,n_1=1,n_2=1)\right)\right]=\\&=sign\left[1-2pq+q^2\left((1-2p)^2+2-2p\right)\right]>0\text{ for }p\leqslant\frac{1+q}{2},\end{aligned}$$

which implies that there exists a threshold of parameter $p$ such that inequality (29) holds if and only if $p$ lies below this threshold. We find this threshold by equalizing the left- and the right-hand side of inequality (29). It is given by equation (8).

# Appendix D: proof of Proposition 2.

Step 2 describes conditions for informative reporting. Outlet $i$ has strong incentives to report its signal if $s_i = 0$. Suppose that $s_i = 1$.

Step 2.1. Suppose first that $p$ lies weakly above threshold (8). By step 1, the incentives' constraint for informative reporting is given by inequality (7) indexed with $i$ instead of 1.

Step 2.2. Suppose now that $p$ lies below threshold (8). By step 1, the incentives' constraint for informative reporting is given by inequality (13). Using true equation

$$\Pr\left(s_{-i} = 1 \mid s_i = 1\right) = \frac{(3q+1)(1-p)+p(1-q)}{2((1-p)(1+q)+p(1-q))},$$

we find that inequality (13) holds if and only if $p$ lies above threshold (12) which equalizes its right- and left-hand sides.