The Media as Agenda Setter in the Electorial Competition

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Abstract

We develop a model of agenda selection by the media with informed and uninformed agents and voting. When the media selects the agenda it compares the related profit streams it can generate from pushing different topics. The media has options concerning how hard to push an agenda but also how much to slant the news in order to cater to subgroups of its readership. Agents will chose whether to buy the news based on information content and ideological spin. The medias action will affect voting outcomes at the end of the process.

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1 Introduction

According to McCombs (1972) mass media force attention to certain issues or persons in the public sphere. Mass media are able to not only introduce these issues to a wider public but they also influence the way that these issues are perceived. In this sense the media raise awareness and the public changes its perception of how important certain issues are. The public does not necessarily change what it thinks about the issue though.

We will develop a model of agenda selection by the media in a model with informed and uninformed agents and voting. When the media selects the agenda it compares the related profit streams it can generate from pushing different topics. The media has options concerning how hard to push an agenda but also how much to slant the news in order to cater to subgroups of its readership. Agents will chose whether to buy the news based on information content and ideological spin. The media's action will affect voting outcomes at the end of the process.

According to (Drazen, 2000, p. 71) agenda setting in general concerns (i) the rules of how proposals come up for a vote and (ii) the rules for the following voting process. He further describes agenda setting as crucial to what policies are chosen, so much so that the strength of the effect may be surprising. Even without a direct influence on what voters actually think about a topic, the mere presence of an issue in the media will increase its perceived importance by the general public.

We call this the agenda-setting ability of mass media. In this context West (2001) refers to agenda setting as the "process by which issues evolve from specific grievances into prominent causes worthy of government and public consideration [...], with powerful implications for the political process" (page 107).

There have been refinements in the definitions as to when a news topic con-

stitutes an agenda in different media. McCombs (1972) specifies agendas during election campaigns in terms of space, position or air time.[1]

A second issue concerns the question of news bias. Many surveys confirm that the public perceives mass media as biased. In a poll by the American Society of Newspaper Editors (ASNE 1999) 29% of the respondents report that they believe that media bias is "having an agenda, and shaping the news report to fit it" (page 4) and that media bias is "favorism to a particular social or political group" (page 4).[2]

Media bias could have a variety of sources. Bias could reflect the preferences or world view of the owner. Media bias could also just reflect the bias of media employees as is argued in Sutter (2001). A demand-side explanation for media bias would be that individuals have a demand for stories that are consistent with their political or social opinions. A profit maximizing media might therefore cater its reporting towards wealthy groups and thereby bias the news content.

There are two slightly opposing views as to why the media set agendas. The first is a pure profit maximization motive. The media picks those issues that will attract the most interest and accordingly expand the number of recipients optimally. This translates into higher revenue streams from paying recipients but also into higher income due to increased advertising. This will introduce a

[1] According to (McCombs (1972), page 178-179) a political agenda during an election campaign satisfies one of the following definitions:

1. Television: Any story 45 seconds or more in length and/or one of three lead stories.
2. Newspaper: Any story which appeared as the lead on the front page or any page under a three-column headline in which at least one-third of the story (a minimum of five paragraphs) was devoted to political news coverage.
3. News Magazines: Any story more than one column or any item which appeared in the lead at the beginning of the news section of the magazine.
4. Editorial Page Coverage of Newspaper and Magazine: Any item in the lead editorial position (the top left corner of the editorial page) plus all items in which one-third (at least five paragraphs) of an editorial or columnist comment was devoted to political campaign coverage.

[2] Cited from Baron (2004).

media bias towards the rich and young, since they are the target audience for most advertisers. Strömberg (2004) builds a game theoretic model around this idea.

A second motive addresses the issue of maximizing an augmented objective function that incorporates the media's liking of an ideology, social welfare or its own reputation. In this sense the media are considered to be social institutions, comparable to a government or political party. Kahn and J.Kenney (2002) well represent this view. According to their analysis, "The press has been performing agenda selection roles in the United States for the better part of two centuries. [...] the press was unabashedly partisan. Newspaper were not viewed not as objective purveyors of information, but as a sources of political propaganda." (page 382). However, one could interpret this second motive as an additional profit channel that arises whenever a policy is established that is close to the media's angle of past news coverage. The media can then profit from gains in reputation which can be reflected in higher stock prices of the newspaper, more advertising demand, etc. Knight (2004) finds the outcome of elections (winning platforms or political parties) represented in stock market prices of sympathizing companies. In this sense, the "right" media can directly profit from establishing a "right" policy or establishing a "right" policy platform and vice versa.

The main questions we will address in our paper is the mechanism of agenda selection. How does the media determine which topics or news issues will be part of the agenda set. For that purpose we define the demand for mass media via information-seeking behavior of voters in a political process. Agenda selection takes the information-seeking pattern of voters into account when forming expectations about future profit streams of alternative agenda sets. We therefore incorporate the attitude of voters towards informative information and persuasive information about political issues into the model.

Following McCombs (1972) voters in our model express a "level of affect"

about political issues in the election campaign. They will distinguish between the pure information content of news and a level of slanting they perceive. The concept of "the level of affect" denotes a"pro/con" orientation, a feeling of liking or disliking. McCombs (1972) classified this attitude as "all affect", "affect dominant", "some affect but not dominant" or "no affect at all". Simply speaking, some voters evaluate information based on a highly closed-minded base and others keep an open mind.

The profit maximizing behavior of the media in our model has two main properties which can fill the gap between two opposing views of media goals specified above. The first is that mass media take the political preference of voters into account when choosing its own (optimal) ideological position. Second, the media simultaneously consider the voter's level of affect towards the issues to maximize profits. Based on this objective function, the media will select the agenda set, its optimal biasedness and the intensity of news coverage of those issues in the agenda set. We assume that voting will only occur on issues in the agenda set[3]. The media are able to affect the number of informed voters on issues in the agenda set. All other issues that are not included in the agenda set will be irrelevant for voting and policies addressing such issues will remain at their status quo level.

The paper is organized as follows.

2 Model

The first model is a simple one-dimensional agenda space version. There are five types of players in the model, informed voters, uninformed voters two competing

[3]The priming effect hypothesis in journalism states that by making some issues more salient than others, the media influence "the standards by which governments, presidents, policies, and candidates for public office are judged"(Iyengar and Kinder (1987), page63). In this sense, voting will only occur on issues in the agenda set. Iyengar and Kinder (1987), Roberts (1992) and Sheafer and Weimann (2005) investigated the impact of media agenda setting on the voting preference of subjects.

political parties and the media. For simplicity, we call this player the newspaper, although it represents mass media in general (newspapers, radio, television or cable news and online news).

2.1 The Voting Population

The voting population is normalized to one. Initially there are only uninformed voters. Uninformed voters draw their preference or opinion about each issue $i \in I$ from distributions which can be normal, exponential or uniform distributions denoted by $G(x_i)$.[4] Since we do not try to model ideological conflict at this stage we assume that there is only one media opinion, call it x_i^* about each issue $i \in I$. A voter can learn and consequently adopt the media's point of view by reading the newspaper. Informed voters make their voting decision about issue i based on

$$U_i^{in} = -\left(p_i - x_i^*\right)^2,$$

where p_i is the policy outcome on issue i. Likewise, uninformed voters base their decision on

$$U_i^{ui} = -\left(p_i - x_i\right)^2.$$

2.2 The Newspaper

The newspaper maximizes profits. It does so by first picking an agenda set $A \subset I$ out of the set of all issues I. For now we restrict the agenda set to be a singleton. Second, it maximizes profits by selecting the number of articles it wants to print and the level of slanting it wants to use. The newspaper is able to inform voters about what issue has become the agenda and also about the view and opinion of this agenda issue. In this sense, the newspaper can influence the number of informed voters on the agenda topic by choosing the intensity of its news service

[4] We restrict the distribution categories to the ones most often used in economics and where general results are readily available.

on this issue. The objective function of mass media is based on Strömberg (2002) and given by

$$\begin{aligned} i^* &= \arg\max \pi^m(N_i, S_i), \text{ where} \\ \pi^m(N_i, S_i) &= \max_{\{N_i, S_i\}} \{pr \cdot D(N_i, S_i) - C(N_i) - d \cdot D(N_i, S_i)\}. \end{aligned}$$

We then denote issue $a = i^*$ to be the agenda issue. Variable pr is the price of the newspaper, $D(N_i, S_i)$ is the demand for the newspaper dependent on the number of articles N_i and the level of slanting S_i, $C(N_i)$ **denotes variable costs caused by gathering, editing and writing,** $C'(N_i) > 0, C''(N_i) > 0$ and d is the redistribution cost.[5]

Since the newspaper is the only institution that can inform voters, the fraction of informed voters is automatically formed by the people who read the newspaper. Hence, the fraction of informed voters is equal to $D(N_a, S_a)$. Based on Stromberg (2001) and Mullainathan and Shleifer (2005) the voter in each group will buy the newspaper if

$$\beta + v_1(N_a) - v_2(N_a) - pr > 0, \tag{1}$$

where β represents the general value of reading newspapers which is not specific to characters. It follows uniform distribution on [0,1] denoted by $F(\beta)$, $v_1(N_a)$ denotes the pure value of information the newspaper provides based on the number of articles N_a on agenda a and $v_2(N_a)$ captures the disutility from reading an article which is not close to their prior beliefs.

The basic logic is the following: On the one hand a newspaper article conveys facts and data. Readers value the pure informational value of a news source. On the other hand, a newspaper also conveys its own views and opinions which can cause disutility for the reader, especially if the readers opinion is not confirmed by the newspaper. Mullainathan and Shleifer (2005) point out that the public

[5] See Strömberg (2002) for a similar cost structure.

enjoys and remembers articles consistent with their beliefs.

For the sake of exposition we assume the following parametric forms for v_1 and v_2 :

$$\begin{aligned} v_1(N_a) &= \phi_a^g N_a, \\ v_2(N_a) &= \phi_a^g \left(x_a^* - x_a\right)^2 N_a, \end{aligned}$$

Variable ϕ_a^g captures the agenda specific level of "affect" of a voter in group g. Expression $\left(x_a^* - x_a\right)^2$ represents the preference for reading news that confirm an existing opinion. This preference, or disutility, is also agenda specific.

The level of affect ϕ_a^g has a close relationship with the prior "salience order" of issues of each individual voter. For instance, if some voters have a high political interest in say, tax issues, then they are more likely to actively seek pure information (e.g. facts, data) about tax policy in a political process. In addition, people who are more interested in tax policy will tend to have more entrenched prior beliefs about it and therefore suffer relatively more from information about taxes that does not confirm their prior beliefs.

In what follows, we assume that if voters have a prior salience order over possible issues $i \in I$, like $p_1 \succ p_2 \succ p_3$ then the level of affect parameter ϕ has order as $\phi_1 > \phi_2 > \phi_3$ and ϕ_a^g is group - as well as issue-specific.

We also assume that the media report issues with a slant S_a, so that media bias x_a^* is equal to $\bar{p}_a + S_a$, that is the status quo policy $\bar{p}$ on agenda a plus the profit maximizing spin the newspaper puts on its news. Mullainathan and Shleifer (2005) point to the fact that "Newspapers can slant the presentation of the news to cater to the preference of their audiences. The term "slanting" [...] is defined as the process of selecting details that are favorable or unfavorable to the subject being described." (page 4).

Demand $D(N_a^*, S_a^*)$ is implicitly defined by equation (1) which can be rewrit-

ten as

$$\beta + \phi_a^G N_a - \phi_a^G \left(\bar{p}_a + S_a - x_a\right)^2 N_a - pr > 0. \tag{2}$$

The fraction of informed voters *in* is given by $D(N_a^*, S_a^*)$ and a fraction of uninformed voters *ui* is $1 - D(N_a^*, S_a^*)$. This is a very strong assumption. A voter who decides to buy a newspaper after evaluating the number of articles on the agenda topic as well as the level of slanting, will automatically adopt the newspaper's point of view. One could relax this assumption and state that a reader only partially adjusts her position in moving closer to the newspaper's opinion. Since this would complicate our analysis we do cover this aspect yet.

3 Solving the Model

The basic political process in this model can be summarized as follows. A politician simultaneously handles a lot of policies during the election campaign, e.g. tax policy, education policy, health care and so on. These are the possible issues for an election and they form the policy set. Out of this pool of issues the newspaper, in the first step, will pick one topic that it wants to become the agenda for this election. Consequently, the agenda set is a singleton. In the second step, the newspaper decides how much to slant the news and how intensively to push the agenda by picking the number of articles it wants to run on the agenda topic. This will influence the number of informed voters on the agenda. In the third step, there will be a vote on the agenda topic. All other policies remain at their respective status quo levels. The policy about the agenda is determined by electoral competition where the median voter decides the policy. In order to solve this model we apply backward induction over these three stages.

3.1 The Third Stage

In the third stage, the election process determines the policy p_a for agenda a given the fraction of informed voters $D(N_a^*, S_a^*)$. We simply assume that two competing political parties maximize their respective voting share to win in the electoral competition. However, when deciding N_a and S_a the newspaper does not take the election outcome into account, which implies that N_a^* and S_a^* are determined by pure maximizing behavior of media over the first two stages. The following proposition describes the outcome of the election process in the 3rd stage:

Proposition 1 *The equilibrium policy outcome p_a^* on issue a in the agenda set exists and is unique.*

Proof. We can apply the median voter theorem (Black 1958) to show the existence of equilibrium.(incomplete). ■

3.2 The Second Stage

In the second stage the newspaper decides how much it slants the news choosing variable S_a^* and how many articles N_a^* it wants to print. From equation (2) we have

$$\beta_i + \phi_a^g N_a - \phi_a^g \left(\bar{p}_a + S_a - x_i\right)^2 N_a - pr > 0.$$

Since the slanting behavior of mass media only influences the utility of potential readers (which will have direct effects on the demand for the newspaper), the newspaper can simply chose optimal slanting S_a^* independently so solve

$$\max_{S_a^*} E[\beta_i + \phi_a^g N_a - \phi_a^g \left(\bar{p}_a + S_a - x_i\right)^2 N_a].$$

The newspaper will form the expectation over the known distributions $F(\beta_i), G(x_i)$ and $H(\phi_a^g)$. Distributions $F(\beta_i)$ and $G(x_i)$ are given by assumption. Distribution

$H(\phi_a^g)$ is driven by the information aggregation process of individuals in the first stage which we will describe shortly.

Finally, given S_a^* and the distributions $F(\beta_i), G(x_i)$ and $H(\phi_a^g)$, the newspaper picks N_a^* to solve

$$\max_{\{N_a\}} \left\{ (pr - d) \left[1 - E_{x_i, \phi_a^g} \left\{ F[\phi_a^g \{-1 + (\bar{p}_a + S_a^* - x_i)^2\} N_a + pr] \right\} \right] - C(N_a) \right\}.$$

3.3 The First Stage

In the first stage the newspaper picks the agenda a based on information about its readership. Mass media survey the public opinion or use outside survey data to research their readership. Smith (1980) reports that Gallup conducted nearly 200 large scale opinion polls since World War II. This information about the readership will influence which topics will be given a prominent position in the news.

This kind of process can be thought of a "signaling and selecting process" between a sender (the readers) and a receiver (the newspaper). Voters send signals about their preferences and the receiver selects the agenda based on this signal. We thereby assume that voters report their preference truthfully and have no incentive to act strategically. Based on this information the newspaper also infers the distribution of the affect parameter $H(\phi_a^g)$.

We next construct the first stage of the model. We assume there exist three elements in the policy set, $I = \{p_1, p_2, p_3\}$.[6] All voters reveal their salience order (preference ranking of elements in policy set) truthfully. The private salience order is endogenously determined, which implies that ϕ_a^g and x_i are not i.i.d[7] but all other pairs are i.i.d. The Voda rule is adopted for signalling; that is, all voters

[6] We can easily generalize our model in *n-dimensional* policy set cases.

[7] It implies that ideology preference can influence how individual perceive the salience of the issues. For example, individuals with different political preferences will regard the salience of certain issues in the media with different way.

are required to rank the order of all possible alternatives in the policy set. The value of salience parameter ϕ_i is given in correspondence to the salience order on p_i. In other words, if the salience order is given by

$$\Re_i = \begin{cases} p_1 \succ p_2 \succ p_3 \\ p_1 \succ p_3 \succ p_2 \\ p_2 \succ p_1 \succ p_3 \\ p_2 \succ p_3 \succ p_1 \\ p_3 \succ p_1 \succ p_2 \\ p_3 \succ p_2 \succ p_1 \end{cases}$$

then the value of salience parameter is assumed to be given correspondingly as,

$$\phi_{\Re_i} = \begin{cases} (\phi_1, \phi_2, \phi_3) \ s.t \ \phi_1 > \phi_2 > \phi_3, \\ (\phi_1, \phi_2, \phi_3) \ s.t \ \phi_1 > \phi_3 > \phi_2, \\ (\phi_1, \phi_2, \phi_3) \ s.t \ \phi_2 > \phi_1 > \phi_3, \\ (\phi_1, \phi_2, \phi_3) \ s.t \ \phi_2 > \phi_3 > \phi_1, \\ (\phi_1, \phi_2, \phi_3) \ s.t \ \phi_3 > \phi_1 > \phi_2, \\ (\phi_1, \phi_2, \phi_3) \ s.t \ \phi_3 > \phi_2 > \phi_1, \end{cases} \text{ where } \phi \subset \mathbb{R}^3.$$

Each element of vector ϕ has three possible values: ϕ^L,ϕ^M, and ϕ^H which denote low,middle and high value.

Definition 1 *An equilibrium consists of a signalling rule, s for voter and selection rule for mass media, denoted a such that*
[1] for the feasible policy set in the election $\{p_1, p_2, p_3\}$ *and given status quo* $\{\bar{p}_1, \bar{p}_2, \bar{p}_3\}$, *signalling rule* s^* *is equal to the salience order matched by the order of conditional utility gains. The conditional utility gain in the election* UG_i^h *is the utility gain*

of each voter i under the condition that issue h is selected as agenda, so that if

$$UG_i^j(E_i[p_j^*], \bar{p}_j, x_i) \geq UG_i^k(E_i[p_k^*], \bar{p}_k, x_i) \geq UG_i^l(E_i[p_l^*], \bar{p}_l, x_i),$$

for $j \neq k \neq l$, then $s_i^* = \{p_j \succeq p_k \succeq p_l\}$, where $UG_i^h = -\left(E_i[p_h^*] - x_i\right)^2 + \left(\bar{p}_h - x_i\right)^2$, and $s_i^* \in \Re_i; h = j,k,l;\ j = 1,2,3;\ k = 1,2,3;\ l = 1,2,3$ and $E_i[p_h^*]$ represents the expectation of policy outcome and $\Re_i$ denotes the set of feasible signals. Since p_h^* is the aggregate choice variable it is reasonable that each voter is assumed to take the expected value for policy outcomes in the first stage as given.

[2] For the distribution of $\phi, h(\phi)$ given by the aggregation of signalling, equilibrium agenda selection $a^* = p_j$ which satisfies

$$\begin{aligned}
\pi_j^m(S_j^*, N_j^*) &= (pr - d) \cdot \left[1 - E_{x_i,\phi_j^g} F[\phi_j^g\{-1 + \left(\bar{p}_j + S_j^* - x_i\right)^2\}N_j^* + pr]\right] - C(N_j^*) \\
&> \\
\pi_{-j}^m(S_{-j}^*, N_{-j}^*) &= (pr - d) \cdot \left[1 - E_{x_i,\phi_{-J}^g} F[\phi_{-j}^g\{-1 + \left(\bar{p}_{-j} + S_{-j}^* - x_i\right)^2\}N_{-j}^* + pr]\right] - C(N_{-j}^*)
\end{aligned}$$

for all $j \neq k,l \in I, j = 1,2,3; k = 1,2,3; l = 1,2,3$ and $\pi_j^m(S_j^*, N_j^*)$ denotes the maximum profit value from choosing $a^* = p_j \in I$ and I denotes the feasible policy sets. If $\pi_j^m(S_j^*, N_j^*) = \pi_{-j}^m(S_{-j}^*, N_{-j}^*)$, then we'll flip a coin.

We next state our first result.

Proposition 2 *Equilibrium signalling rule, s_i^* exists and is unique*

Proof. *By the assumption $G(x_i)$ can be the normal, exponential or uniform. It follows that $E_i[p_h^*], x_i, \bar{p}_h \in \mathbb{R}$. We can define a metric space which is an ordered pair $E = \mathbb{R}$ and $d(a,b) = \mid a - b \mid, a, b \in \mathbb{R}$ such that*

(1) $d\left(E_i[p_h^*], x_i\right), d\left(\bar{p}_h, x_i\right) \geqq 0$ *for all* $E_i[p_h^*], x_i, \bar{p}_h \in \mathbb{R}$

(2) $d\left(E_i[p_h^*], x_i\right) = 0, d\left(\bar{p}_h, x_i\right) = 0$ *if and only if* $E_i[p_h^*] = x_i, \bar{p}_h = x_i$

(3) $d\left(E_i[p_h^*], x_i\right) = d\left(x_i, E_i[p_h^*]\right)$ *and* $d\left(\bar{p}_h, x_i\right) = d\left(x_i, \bar{p}_h\right)$ *for all* $E_i[p_h^*], x_i, \bar{p}_h \in \mathbb{R}$.

(4) *By triangle inequality,* $d\left(E_i[p_h^*], \bar{p}_h\right) \leqq d\left(x_i, E_i[p_h^*]\right) + d\left(\bar{p}_h, x_i\right)$

By the properties of absolute value,

$$-d\left(E_i[p_h^*], \bar{p}_h\right) \leqq \ d\left(\bar{p}_h, x_i\right) - d\left(E_i[p_h^*], x_i\right) \leqq d\left(E_i[p_h^*], \bar{p}_h\right).$$

Since $GU_i^h = -\left(E_i[p_h^*] - x\right)^2 + \left(\bar{p}_h - x\right)^2$ *is equivalent to* $GU_i^{h\prime} = -d\left(E_i[p_h^*], x_i\right) + d\left(\bar{p}_h, x_i\right)$ *in terms of order we use the latter expression for the proof.* $GU_i^{h\prime}(E_i[p_h^*], x_i, \bar{p}_h)$ *is such that*

$$-d\left(E_i[p_h^*], \bar{p}_h\right) \leqq GU_i^{h\prime}(E_i[p_h^*], x_i, \bar{p}_h) \leqq d\left(E_i[p_h^*], \bar{p}_h\right)$$

By the order property of real number system we can rank the $GU_i^{h\prime}(E_i[p_h^*], x_i, \bar{p}_h)$ *over the feasible policy set and given status quo. Henceforth, equilibrium signalling rule exists and is uniquely determined.* ■

By proposition 2, we have a feasible signalling set and feasible group sets accordingly as

$$s_i = \left(\begin{array}{ll} p_1 \succ p_2 \succ p_3, \forall_i \in Group\ a & p_2 \succ p_1 \sim p_3, \forall_i \in Group\ k \\ p_1 \succ p_3 \succ p_2, \forall_i \in Group\ b & p_2 \sim p_1 \succ p_3, \forall_i \in Group\ l \\ p_2 \succ p_1 \succ p_3, \forall_i \in Group\ c & p_2 \succ p_3 \sim p_1, \forall_i \in Group\ m \\ p_2 \succ p_3 \succ p_1, \forall_i \in Group\ d & p_2 \sim p_3 \succ p_1, \forall_i \in Group\ n \\ p_3 \succ p_1 \succ p_2, \forall_i \in Group\ e & p_3 \succ p_1 \sim p_2, \forall_i \in Group\ o \\ p_3 \succ p_2 \succ p_1, \forall_i \in Group\ f & p_3 \sim p_1 \succ p_2, \forall_i \in Group\ p \\ p_1 \succ p_2 \sim p_3, \forall_i \in Group\ g & p_3 \succ p_2 \sim p_1, \forall_i \in Group\ q \\ p_1 \sim p_2 \succ p_3, \forall_i \in Group\ h & p_3 \sim p_2 \succ p_1, \forall_i \in Group\ r \\ p_1 \succ p_3 \sim p_2, \forall_i \in Group\ i & p_1 \sim p_2 \sim p_3, \forall_i \in Group\ s \\ p_1 \sim p_3 \succ p_2, \forall_i \in Group\ j & \end{array} \right)$$

By the aggregation of signalling, $H(\phi)$ follows the discrete distribution given by

$$h(\phi)^8 = \left(\begin{array}{ll} \int\limits_{a,b,g,h,i,j,l,p,s \in G} x_i dx_i \ if \ \phi = \phi_1^H & \int\limits_{b,d,g,i,k,m \in G} x_i dx_i \ if \ \phi = \phi_3^M \\ \int\limits_{c,d,h,k,l,m,n,r,s \in G} x_i dx_i \ if \ \phi = \phi_2^H & \int\limits_{d,f,n,r \in G} x_i dx_i if \ \phi = \phi_1^L \\ \int\limits_{e,f,j,n,o,p,q,r,s \in G} x_i dx_i \ if \ \phi = \phi_3^H & \int\limits_{b,e,j,p \in G} x_i dx_i \ if \ \phi = \phi_2^L \\ \int\limits_{c,e,k,m,o,q \in G} x_i dx_i \ \ if \ \phi = \phi_1^M & \int\limits_{a,c,h,l \in G} x_i dx_i \ if \ \phi = \phi_3^H \\ \int\limits_{a,f,g,i,o,q \in G} x_i dx_i \ if \ \phi = \phi_2^M & \end{array} \right) where \ G = \{a, b, c.....s\}$$

Proposition 3 *Equilibrium agenda selection, a^*, exists and is unique.*

Proof. *We can easily prove this proposition by showing that there exists a maximum profit value over the policy sets (1). The optimal slanting: Since $H(\phi_a^g)$ is given by 1st stage expected utility can be rewritten by*

$$\begin{aligned} & E[\beta_i N_a + \phi_a^g N_a - \phi_a^g \left(\bar{p}_a + S_a - x_i\right)^2 N_a] \\ = \ & E[\beta_i] N_a + \sum_{g \in G} h(\phi_a^g) \phi_a^g \left[1 - \{(\bar{p}_a + S_a)^2 - 2(\bar{p}_a + S_a) E_{x_i \in g}[x_i] + E_{x_i \in g}[x_i^2]\}\right] N_a \end{aligned}$$

Since $\frac{\partial^2 EU(S_a)}{\partial S_a^2} = -2N_a \sum_{g \in G} f(\phi_a^g) \phi_a^g \leqq 0$, the first order condition is sufficient to find S_a^*. Taking the first derivative, we can get S_a^*.

$$S_a^*. = -\bar{p}_a + \frac{\sum_{g \in G} h(\phi_a^g) \phi_a^g E_{x_i \in g}[x_i]}{\sum_{g \in G} \phi_a^g}$$

Henceforth, S_a^*.exists and is unique. (2) The optimal coverage(number of art-

[8]Here, we add another assumption.If salience order is $p_j \sim p_k \succ p_l$ then ϕ_j and ϕ_l have high value. Similraly, if salience order is $p_j \succ p_k \sim p_l$ ϕ_j and ϕ_l have middle value. Finally, in case of $p_j \sim p_k \sim p_l, \phi_j$, ϕ_k and ϕ_l have high value.

icle): The insight is from Caplin and Nalebuff (1991) and Anderson and Nesterov (1995). Since

$$\frac{\partial^2 D(N_a)}{\partial N_a^2} = \frac{\partial^2 \left[1 - E_{x_i,\phi_a^g}\left(F\left\{\phi_a^g[-1 + (\bar{p}_a + S_a^* - x_i)^2\right\}N_a + pr]\right\}\right)]}{\partial N_a^2}$$

$$\frac{\partial^2 \left[1 - \sum_{g\in G} F\left\{h(\phi_a^g)\phi_a^g\left\{-1 + (\bar{p}_a + S_a^*)^2 - 2(\bar{p}_a + S_a^*)E_{x_i\in g}[x_i] + E_{x_i\in g}[x_i^2]\right\}N_a + p\right.\right.}{\partial N_a^2}$$

$$\leqq 0$$

the first order condition is guaranteed to be maximum. Solving the first order condition we can get

$$(pr - d)\sum_{g\in G}\Omega_a^g \cdot f\left[\Omega_a^g \cdot N_a + pr\right] = -\frac{\partial C(N_a)}{\partial N_a}$$

where $h(\phi_a^g)\phi_a^g[-1+\{(\bar{p}_a+S_a^*)^2-2(\bar{p}_a+S_a^*)E_g[x_i]+E_g[x_i^2]\} = \Omega_a^g < 0$. *Since* $f(\bullet)$ *is constant,then* N_a^* *exist and is unique. It follows that the maximum profit value,* $\pi^* = \pi_a^m(N_a^*, S_a^*)$ *exists and is uniquely determined over the feasible policy sets. Henceforth, by the order property of real number system equilibrium of agenda selection,* a^*,*exists and is unique.* ■

4 Conclusion

We develop a model of agenda selection by the media with informed and uninformed agents and voting. When the media selects the agenda it compares the related profit streams it can generate from pushing different topics. The media has options concerning how hard to push an agenda but also how much to slant the news in order to cater to subgroups of its readership. Agents will chose whether to buy the news based on information content and ideological spin. The

medias action will affect voting outcomes at the end of the process.

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