

Sources of Media Bias

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Abstract

During presidential campaigns, the media plays an important role by providing background information on candidates to the general public. However, the media can be biased in favor of a specific candidate. This paper aims to investigate the source of media bias by estimating the effect of electoral competition on news coverage. If media bias is generated to cater to the major preferences in the media market, we should see more news coverage of the Republican candidate in markets where the majority of viewers is Republican. However, if the media bias comes from the motivation to impact the outcome of the election, we will see more media bias in media markets where the election is more competitive. In this paper, a simple model is constructed to explain how electoral competition affects media bias under the motivation to impact the election outcome. In the empirical analysis, media bias is measured by the relative length of presidential candidates' sound bites in local TV news stories prior to the 2000 presidential election. The data shows that media bias is greater in media markets where the election is more competitive, which implies that media bias comes primarily from the desire to affect the election outcome.

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1 Introduction

Mass media provides people with information to make decisions. However, the news media is viewed widely as biased (Baron, 2004; Goldberg, 2002; Alterman, 2003). During presidential campaigns, the media may provide unbalanced news reports in favor of a specific candidate. On the one hand, media bias in an election could be motivated by an incentive to impact the electoral outcome. On the other hand, media bias could come from the desire to cater to major preferences of consumers in the media market. By estimating the effect of electoral competition on media bias, this paper aims to distinguish the sources of media bias.

Intuitively, if media bias is generated to cater to consumers' preferences, there will be more media bias in favor of the Republican candidate when there is more Republican support in an area. However, when the area is not a Democratic or Republican stronghold, there should be less media bias. If media bias mainly comes from the desire to affect the election outcome, we should observe increased media bias when the election is more competitive, since that is when the media is more influential. The latter mechanism is somewhat intuitive but not very clear. Therefore, I construct a simple model to explain how electoral competition will increase media bias under the assumption that the news media cares about the election outcome.

In the theoretical model, media bias is generated by media outlets. When deciding the optimal bias, the media outlet faces a tradeoff. The journalist may increase the probability of having the preferred candidate elected by generating more media bias. However, the reputation of the media firm may suffer in the process. The model shows that the marginal benefit of media bias is larger in a close election. As a result, the model has the prediction that media bias is greater when the election is more competitive.

In the empirical analysis, two different data sets are used to investigate the electoral competition effect on media bias: local news archives from the Norman Lear Center in 2000 (Kaplan and Hale, 2001) and the believability surveys conducted by the Pew Research Center in 2002 and 2004. From the data of local news archives, media bias is measured by the relative length of presidential candidates' speaking

time in local TV news stories prior to the 2000 presidential elections. The electoral competitiveness is measured by vote returns in the last presidential election and the daily price of vote share in the Iowa election market. The empirical results show that media bias is greater in media markets where the election is more competitive.

The believability survey conducted by the Pew Research Center provides a subjective measure of media bias. It asks people to rate the believability of the local media and the national media. The data shows that the believability of daily newspapers is lower in media markets where the election is more competitive, while the believability of national papers is not affected by electoral competitiveness. Reported believability of the news outlets could fall as competition increases because people are more anxious or more skeptical when an election is close. However, these unobservable characteristics should also affect the believability of daily newspapers as well as national newspapers. Since the believability of national newspapers is not significantly affected by the electoral competition, we know that the effect of electoral competition on the believability of daily newspaper is not simply because people are more anxious or skeptical. These empirical results imply that media bias does not come from the majority's preferences, but rather it comes from the desire to affect election outcome.

The term "media bias" has been defined in several ways. In Barron's paper, media bias is defined relative to the truth (Barron, 2004). The ASNE¹ found that some people believe that media bias is "favoritism of a particular social or political group", which is closer to the meaning of media bias in this paper. Under this definition, journalists could report the truth but favor one particular political party in his/her selection of information to be reported. In the theoretical model, media outlets can increase the probability of having their preferred candidate elected by increasing the candidate's positive coverage. In the empirical analysis of local news archives, media bias is measured by the relative length of candidates' speaking time. One assumption behind this media bias measure is that both candidates try to maintain a positive image and deliver clear information about themselves to the public. Therefore, when a reporter gives one candidate more sound bites, the reporter helps the candidate deliver

¹The American Society of Newspaper Editors (ASNE), "Perceived Bias," p. 4, www.asne.org

messages to voters and also increases public familiarity. While these assumptions are hard to test, this measure is easy to calculate and can be obtained without any subjective judgement.

The empirical results from the local news archives suggest that media bias is derived from the desire to affect election outcomes and therefore provide support for the supply side approach. However, when there is more than one TV news station in the media market, the motivation to affect election outcomes could also come from the demand side, affected by the audience that shares political views with the media firm. However, the finding from the believability survey can not be completely explained by the demand side factors. There was only one daily newspaper in most media markets, and if there were more than one daily newspaper in the media market, respondents were asked to rank the one that they were most familiar with. Therefore, the demand side factors are unlikely to completely explain the decreased believability of the daily newspaper in a competitive election.

If we assume that the believability of the media is related to consumer welfare, the consumer welfare is weakened when the election is more competitive. In terms of election outcome and voters' welfare, if the media bias is generated to cater to the majority's preference during the election, the election outcome is less likely to be affected. However, if media bias is coming from the motivation to affect election outcome, undecided voters may get biased information, which may result in an undesirable outcome.

This paper relates to the emerging literature that investigates the sources of media bias. The theoretical literature can be divided into two approaches: the demand side approach and the supply side approach. From the demand side approach, media bias originates from consumer preference. Consumers may like to see news that confirms their beliefs (Mullainathan and Shleifer, 2005). Even if consumers would like to choose media that delivers accurate information, their choices may be still affected by their prior beliefs (Gentzkow and Shapiro, 2006); therefore media outlets may have media bias to cater to consumers' beliefs. Empirically, Gentzkow and Shapiro (2006) found that newspaper slants were largely explained by demand side, not supply side. Kim (2008) found that newspapers endorsements of presidential candidates were mainly

affected by owners' preference.

The paper is organized as follows: section 2 is the literature review, section 3 presents the model, section 4 and section 5 illustrate the econometric specifications and empirical results. Section 6 discusses interpretations of the results. Section 7 concludes.

2 Literature Review

2.1 Theories of Media Bias

There is little consensus about why the media is biased or how the competition between media firms affect media bias. Most theories of media bias try to provide a convincing story about where the media bias originates and predictions of how competition between media firms affects media bias.

Under the assumption that readers hold beliefs that they like to see confirmed, Mullainathan and Shleifer (2005) provide a theory about how consumer preference and the competition between newspapers affect media bias. They find that if consumers' beliefs are heterogenous, duopolist newspapers will differentiate themselves by reporting extreme news so that they can charge higher prices. Gentzkow and Shapiro (2006) make the assumption that consumers will update their belief based upon the information they receive and, in addition, will choose a media firm according to reputation. In their model, consumers care for the reputation of media firms. However, consumers' judgements are still affected by their beliefs, therefore media firms will slant the news to cater to consumers' beliefs.

Media bias may also come from the supply side. Baron (2004) explains the persistent media bias based on incomplete information and the career interests of journalists. In his theory, media bias originates from journalists whose career interests lead them to sacrifice current wages for future opportunities. A profit-maximizing news organization tolerates bias only if it gains more on the supply side than it loses on the demand side. Competition from a news organization with less bias could force a higher bias news organization to reduce the discretion granted to its journalists. However, competition between two news organizations with opposing biases can result in

more biased news than with a monopoly news organization.

2.2 Empirical Evidences on Media Bias

Dalton, Beck, and Huckfeldt (1998) find that the editorial stance of local newspapers is correlated with local perceptions of candidates in the 1992 presidential election. Erikson (1976) and Gunther (1992) also provide similar findings. While it is hard to distinguish between the demand side factors and the supply side factors, Gentzkow and Shapiro constructed media slants of newspapers using language selection from 2000 to 2004 and found that most variation in media slants were explained by consumers' preference. Kim (2008) found that newspapers endorsements of presidential candidates were mainly affected by owners' preference.

2.3 Measure of Media Bias

Media sends out information by news stories, editorials, advertisements, or other formats. It is often more difficult to detect media bias from news stories than from other information sources since news stories are usually not slanted in an obvious way. Except for the method of language choice done by Gentzkow and Shapiro(2006B), Groseclose and Milyo (2005) provide a way to measure media bias in the news stories of various media outlets. They counted the citations of think tanks made by the media and computed a score by comparing those citations to citations of think tanks in speeches made by members of Congress. Gentzkow and Shapiro (2006A) use candidates' sound bites in TV news stories to generate a measure of media bias. This could be an objective measure since it is directly calculated by counting sound bites in news stories. In this paper, we also use this method to measure media bias.

3 The Model

In this section, we present a model to explain how the electoral competition affects the media's motivation to report unbalanced news. Under the assumption that media owners care about the election outcome, the model predicts that there will be more media bias when the election is more competitive.

3.1 Preferences and Action

There are two candidates in the election. Candidate D is from the Democratic party and candidate R is from the Republican party. Citizens are divided into three groups- Democrats, Republicans, and Independents. Democrats and Republicans will vote for their candidate. Independents will vote for Democrat or Republican candidates depending on the information they receive from the media. Let π_D , π_R , and π_I denote, respectively, the fraction of voters who are Democrats, Republicans, and Independents.

There is only one media outlet. Two candidates are sending out positive information about themselves in equal amounts to the media. However, the media outlet can choose to give one or the other candidate more positive news reports. Unbalanced news reports will hurt the media firm's reputation and affect their long run profits. Therefore, the media firm will monitor the news reported by the journalist working for the firm. The journalist cares about who will be elected in the election and the wage affected by the quality of news. Suppose that the journalist is a Democrat, the journalist's utility function can be expressed by the following:

$$U = \alpha P_D u_D + (1 - \alpha)u(Q), \quad (1)$$

where P_D is the probability of candidate D to be elected, u_D is the utility he receive if candidate D is elected. $u(Q)$ is the utility affected by the news quality. Let $1/2 + b$ be the fraction of Democrat information covered in the news, where b is the media bias towards the Democratic candidate. Assume that an Independent's vote decision depends on the single information he randomly receives from the media, the probability of voting candidate D , p_D^I , is equal to $1/2 + b$.²

Let r_D^I be the fraction of Independents voting for the candidate D . The probability of candidate D to be elected is

$$\begin{aligned} P_D &= \text{Prob}(\pi_D + r_D^I \pi_I > \pi_R + (1 - r_D^I) \pi_I) & (2) \\ &= \text{Prob}(r_D^I > \frac{1}{2} + \frac{\pi_R - \pi_D}{2\pi_I}) & (3) \end{aligned}$$

²The information from the media firm can affect an Independent's decision by increasing the candidates' charisma (Andina Diaz, 2004). The assumption that an Independent's decision depends on one information from the media could be too simple. However, as long as p_D^I is a function of b with the properties $p_D^I(1/2) = 1/2$ and $p_D^I(b) > 0$, the results we have in the model will not change.

3.2 Electoral Competition and Media Bias

We are interested in how electoral competition affects media bias. Let $\frac{|\pi_R - \pi_D|}{\pi_I}$ be a measure of the electoral competitiveness. We can classify these situations into the following three cases:

- Case 1: $\frac{|\pi_R - \pi_D|}{\pi_I} > 1$. In this case, the election is not competitive. P_D is either 1 or 0. The bias has no effect on the probability of winning for candidate D . The optimal bias b will be 0.
- Case 2: $\frac{|\pi_R - \pi_D|}{\pi_I} < 1$ and $\pi_D - \pi_R > 0$

In this case, there are more Democrats in the media market. Given the probability of an Independent voting for the candidate D , p_D^I , the fraction of Independents voting for the candidate D , r_D^I is approximately distributed as a normal distribution with mean p_D^I , and variance $p_D^I(1 - p_D^I)$. Let $\sigma = (p_D^I(1 - p_D^I))^{1/2}$, we have

$$P_D \cong \Phi\left(\frac{1}{\sigma}\left(\frac{\pi_D - \pi_R}{2\pi_I} + b\right)\right), \quad (4)$$

and

$$\frac{\partial P_D}{\partial b} = \frac{1}{\sigma} \phi\left(\frac{1}{\sigma}\left(\frac{\pi_D - \pi_R}{2\pi_I} + b\right)\right). \quad (5)$$

$\frac{\partial P_D}{\partial b}$ is decreasing in $\frac{|\pi_R - \pi_D|}{\pi_I}$. Given the utility function in equation 1, the first order condition with respect to b is

$$\alpha u_D \frac{\partial P_D}{\partial b} + (1 - \alpha)u'(b) = 0, \quad (6)$$

where $u'(b)$ is $u'(Q)Q'(b)$. $u'(b)$ is negative because bias will hurt the performance of the journalist. The second order condition is

$$\alpha u_D \frac{\partial P_D}{\partial b} + (1 - \alpha)u''(b) < 0. \quad (7)$$

From the first order condition and second order condition, we have the effect of $\frac{|\pi_R - \pi_D|}{\pi_I}$ on the optima b^* :

$$\frac{\partial b^*}{\partial \frac{|\pi_R - \pi_D|}{\pi_I}} = -\frac{\frac{\partial \frac{\partial P_D}{\partial b}}{\partial \frac{|\pi_R - \pi_D|}{\pi_I}}}{\alpha u_D \frac{\partial P_D}{\partial b} + (1 - \alpha)u''(b^*)} = -\frac{\frac{1}{2\sigma^2} \phi'\left(\frac{1}{\sigma}\left(\frac{\pi_D - \pi_R}{2\pi_I} + b\right)\right)}{\alpha u_D \frac{\partial P_D}{\partial b} + (1 - \alpha)u''(b^*)} < 0. \quad (8)$$

Therefore, when the election is more competitive, the journalist will choose to generate more bias.

- Case 3: $\frac{|\pi_R - \pi_D|}{\pi_I} < 1$ and $\pi_D - \pi_R < 0$.

In this case, there are more Republicans in the media market. Similar to case 2, the Democratic journalist could increase P_D by choosing positive b and equation (8) still holds. Therefore, bias b will still increase when the election is more competitive. However, in case 3 we can see $\frac{\partial P_D}{\partial b}$ is increasing in b , while in case 2 $\frac{\partial P_D}{\partial b}$ is decreasing in b as long as $\frac{\pi_D - \pi_R}{2\pi_I} + b < 0$. Therefore, the marginal benefit of generating positive bias is greater in case 3. Intuitively, compared with case 2, the Democratic journalist will generate more bias. Moreover, from the equation (8), we can see the absolute effect of electoral competition on media bias is smaller in case 3, which will result in proportionally larger media bias in case 3.

3.3 Predictions

The main prediction from the model is that when the election is more competitive, the journalist will choose higher bias. When deciding the optimal bias, the journalist faces a tradeoff between increased probability of having the preferred candidate elected and the decreased reputation associated with bias. As we can see in the model, when the election is more competitive, the marginal benefit of media bias from the increased probability is larger due to the property of the underlying normal distribution. Therefore, the optimal bias for the journalist will be higher when the election is more competitive.

In the above model, there is only one media firm in the market. However, it is not difficult to expect the situation with two media firms. In a market with two media firms with opposite political views, each firm will generate media bias in favor of the preferred candidate. As the number of media firms increases, a single media firm may lose some of their audience and become less influential. The number of media firms may also increase media bias in some firms since firms may use target different groups of audience. Therefore, the number of media firms may have an ambiguous effect on

media bias. However, in the equilibrium, the positive effect of electoral competition on media bias will still hold.

4 Evidence from Local TV News

Empirically, in the presidential election, the motivation of generating media bias is not only affected by state level competitiveness but also affected by national level competitiveness. When the election is competitive nationally, all the battleground states become crucial. Therefore, the presidential election in 2000 provides a good chance to observe the electoral effect on media bias.

From the local news archives in 2000 (Kaplan and Hale, 2001), we are able to construct the measure of media bias by using the relative length of the candidates' speaking time. The data encodes the characteristics of local election news coverage broadcast between 5:00pm and 11:35pm prior to the general election for about one month. Stories not related to the election are not included. The characteristics include the length of stories, the length of each candidates' sound bites, and the main issue in those stories.

The sample consists of 74 television stations from 58 of the top 60 markets across the country. In each market, the station that received the most amount of political advertising revenue during the previous month was chosen. Additional stations were chosen to include more broadcasters that had made commitments to meet the 5/30³ standard.

There are 210 media markets in the United States. Those media markets are defined by the Nielsen Media Research. Some of the media markets cross several states and some of the media markets are within one state. Most are defined by counties. Only a few counties are split into different media markets. County composition and some information for each media market are taken from *Broadcasting and Cable Yearbook 2000* and *Demographics USA 2000*.

³White House panel's recommendation of airing 5 minutes of candidate centered discourse (CCD) a night in the last 30 days of a campaign

4.1 Measure of media bias

The media bias measure of station i on date t is constructed by the relative length of candidates' speaking time :

$$bias_{it} = \left(\frac{Rep_{it}}{Rep_{it} + Dem_{it}} - \frac{1}{2} \right)^2,$$

where Rep_{it} and Dem_{it} denote the number of seconds given to the Republican and Democratic president candidates from station i and date t .

4.2 Measure of Electoral Competition

It is difficult to measure electoral competition for every media market everyday during the campaign period in 2000. One possible source is the polls conducted at the state level. However, those state polls are conducted by various institutions and some states have little polls data available. Therefore, three electoral competition measures are constructed: The electoral competition measure over markets based on the vote return in 1996 election, the daily electoral competition based on the Iowa election market, and a predicted electoral competition measure constructed from the above information under the assumption that people in different states change their political attitude in the same way.

A. Measure of electoral competition over markets

To construct an electoral competition measure for each media market, we first construct a competition measure for each state. The state competition measure is constructed by the election return data in the previous presidential election. The state competition measure used for the 2000 regression is defined by the square of the difference of vote share in 1996 :

$$Com_s^{1996} = - \left(\frac{VRep_s^{1996}}{VRep_s^{1996} + VDem_s^{1996}} - \frac{VDem_s^{1996}}{VRep_s^{1996} + VDem_s^{1996}} \right)^2, \quad (9)$$

where $VRep_s^{1996}$ and $VDem_s^{1996}$ are the votes for Republican and Democratic candidates in state s in 1996.

For any media market that is covered by a single state, the above measure is the competition measure for the media market. For the media market that spans across several states, the electoral competition measure is weighted by the total votes in

each state within the media market. Consider the media market across n states. The competition measure for the media market m can be expressed as follows:

$$Competition_m^{1996} = \sum_{s=1}^n w_s Com_s^{1996}, \quad (10)$$

where w_s are the total votes in state s within market m in the 1996 election.

B. Daily electoral competition measure

The price of the vote share in Iowa election market is used to measure electoral competition over the 30-day period prior to the election.⁴ The competition measure on date t is defined by:

$$Competition_t^{2000} = -\left(\frac{PRep_t^{2000}}{PRep_t^{2000} + PDem_t^{2000}} - \frac{PDem_t^{2000}}{PRep_t^{2000} + PDem_t^{2000}}\right)^2, \quad (11)$$

where $PRep_t$ is the price of the Republican candidate's vote share at time t from the Iowa election market.

C. Predicted electoral competition

While $Competition_m$ measures the electoral competition over each market by using the data 4 years before the election, $Competition_t$ measures the electoral competition over the 30-day period prior the election. To get a better competition measurement for each market near the election in 2000, we combine the information from the 1996 election return and the tracking poll in 2000 to construct the variable $Predicted\ Competition_{m,t}$. The first step is to predict the fraction of people who support the Republican candidate in states in 2000 at time t :

$$Rep_{s,t}^{predicted} = VRep_s^{1996} + (PRep_t^{2000} - VRep_{National}^{1996}), \quad (12)$$

where $VRep_{National}^{1996}$ is the national vote share for the Republican candidate in 1996. The second term in the bracket is the national change in Republican supporters. This method implies the assumption that people in different states change their political attitudes in the same direction and by the same magnitude.

⁴The Iowa election market was closed at midnight every day. Therefore, the vote share price on the midnight is matched with the TV news data in the next day. The tracking polls conducted by Gallup group could be also a source to generate the daily electoral competition measure. However, it was a three day average poll and the poll number was released on the day after the three day period. The matching will be less precise in terms of the timing of matching.

Then we use the predicted fraction of Republican supporters in state s at time t to construct the competition measure for state s at time t .

$$Com_{s,t}^{predicted} = -\left(\frac{Rep_{s,t}^{predicted}}{Rep_{s,t}^{predicted} + Dem_{s,t}^{predicted}} - \frac{Dem_{s,t}^{predicted}}{Rep_{s,t}^{predicted} + Dem_{s,t}^{predicted}}\right)^2. \quad (13)$$

Again, for the media market across several states, we generate the competition measure by weighted state competition measure.

$$Competition_{m,t}^{predicted} = \sum_{s=m1}^{ms} w_s Com_{s,t}^{predicted}, \quad (14)$$

4.3 Econometric Specification and Results

The main prediction of the model is that electoral competition will increase media bias. The baseline specification for the test of the this prediction is:

$$bias_{it} = competition_m \beta_1 + competition_t \beta_2 + X_m \gamma + \alpha_i + \epsilon_{it}, \quad (15)$$

where b_{it} is the media bias measure of station i at time t . $Competition_m$ and $competition_t$ are the electoral competition measure over market and over time constructed by the methods in section 2. X_m include some characteristics of the media markets. α_i is the random component for each station.

The competition measures increase when the election is more competitive. Therefore, we expect if the supply side factors are dominant, we expect β_1 and β_2 to be positive, as predicted by the supply-side model. If the demand side factors of media bias are dominant, then we should see negative β_1 and β_2 .

In principle, media bias could also affect electoral competition. If the media generate a large amount of bias in favor of one political party, then the voters' political preference could change due to the media bias. This could change the electoral competition. Therefore, the competition measure could be endogenous. However, if the media bias makes the election less competitive, the results will favor the story that the bias is generated to cater to the preferences of major consumers.

Consider the electoral competition measure over media markets. This measure is driven from the vote return of last presidential election. It could be endogenous if

the media bias of the TV stations between two presidential elections are correlated. Since some TV stations may make the election more competitive while others make the election less competitive, overall, the correlation between media bias and electoral competition caused by the endogeneity should be weak. Consider the daily electoral competition measure. Since there are 210 media markets in the U.S, the causality of the media bias from one local TV station on the national electoral competition is even weaker.

4.4 Baseline Specification Results

Table 1 column 1 presents the result of baseline specification. Column 2 presents the results with time fixed effect. In Column 3, predicted competition measure is used to measure the daily electoral competition of each media market. The results show that media competition increases media bias except for the case of using daily electoral competition measure.⁵ One possible explanation for the weak effect of daily competition measure is that the change in the national electoral competition does not reflect the change in the electoral competition in every media market. For example, in a Republican stronghold or Democrat stronghold, the election may never be close during the election period. The other possible explanation is that the local TV station or the reporter may not update their attitude everyday.

Table 2 presents the result when the electoral competition measure over market is coming from the state polls conducted by the American Research Group in September 2000 instead of the vote return in 1996. Although the size of the state poll was only around 600 people for each state, the time is closer to the election in November 2000. When the vote share of the last presidential election is replaced by the data on state polls in September 2000, the effect of predicted competition measure becomes more significant while other results remain the same.

⁵Another possible data source to generate the daily electoral competition measure is from the daily tracking poll conducted by the Gallup group. While using the daily tracking poll to generate daily electoral competition measure, the results depend on the way to deal with the time issue. The daily tracking poll is a three day average poll. If the poll data is matched with the second of three days the poll was conducted, the result will be more media bias as the election is more competitive. However, if the poll data is matched with the date on which the polling results are released, which is the day after the final day of polling, there will be less media bias when the election is more competitive.

The variable *number of local TV stations* is the total number of TV stations in the media markets, including commercial and non-commercial TV stations. It is used as a proxy of competition between local news programs. Intuitively, the influence of one media firm will be lessened when there are more media firms. Therefore, we should see less media bias when there are more TV stations in the media market. However, this variable is not significant in most specifications.

The variable *total speaking time* is the sum of two candidates' sound bites. This variable has statistical meaning rather than economic meaning. If a journalist is fair to each candidate, when there are more sound bites available in the news stories, we expect to see the fraction of one candidate's sound bites closer to 1/2. This variable is significant in all specifications.

4.5 Potential Problem of the Daily Measure

In the election period, candidates could alternate visits to the battleground states, within days of each other, and the result would be a larger variation in the sound bites of one candidate over time. To make sure the competition effect on media bias is not simply reflected by the daily variation in sound bites caused by candidates' visits, a media bias measure for each station is constructed by the mean of the fraction of Bush's speaking time:

$$bias_i = \left(\frac{Rep_{it}}{Rep_{it} + Dem_{it}} - \frac{1}{2} \right)^2,$$

Table 3 column 1 shows that there is more variation in the fraction of Bush' speaking time caused by the electoral competition. Column 2 and 3 present the OLS results that the stations in the media market where the election is more competitive still have more bias, however, the effect is only 10 percent significant.

4.6 Alternative Media Bias Measure

While the above media bias measure reflect the relative coverage of candidates, the fraction of reporters' speaking time measures the possibility of reporters trying to add more personal opinion in the news story.⁶ While the assumption behind this measure

⁶Center of Media and Public Affairs analyzed the candidates' sound bites of ABC, CBS and NBC evening news programs during the presidential election period from 1988. While they did not find

is strong, it has the advantage that it will not be affected by the alternative visits of candidates. The results of using this media bias measure are presented in Table 5. The electoral competition does not affect the variation of this media bias measure and has a positive effect on media bias for this media bias measure for each station.

5 Evidence from Media Believability

Since electoral competition affects the news coverage in the local TV news programs, it may also affect the way people think about the media if they are aware of the bias. If the media has more bias in the area where the election is more competitive, people who live in that area should be less likely to believe the media.

In the believability survey conducted by the Pew Research Center in 2002 and 2004, the survey question asked people to rank the media's believability. By comparing the effect of electoral competition in the media market on the believability of local TV news, daily newspaper and some other major national news outlets, we can test if the local news outlets are less believable in an area where the election is more competitive. The survey question is "...Please rate how much you think you can believe each organization I name on a scale of 4 to 1. On this four point scale, "4" means you can believe all or most of what the organization says. "1" means you believe almost nothing of what they say..." The news organizations include media outlets such as ABC News, CNN, FOX News, local TV news , USA today, The New York Times, the daily newspaper as well as other news outlets.

I use the ordered Probit model to examine the effect of electoral competition on the believability of the media. The dependent variables are the believability of the daily newspaper, local TV news, USA today and ABC news. Dependent variables include competition measure in the market, education, income and city size. The results are presented in Table 4. The believability of daily newspapers is significantly lower in the market where the election is more competitive. However, the believability of the TV news is not significantly affected by the electoral competition, although it is more affected than the national media.

any significant difference in the fraction of candidates' sound bite, they found that the fraction of the speaking time given to the candidates is particularly low in 2000.

These results could be affected by unobserved characteristics of the consumers. For example, people living in the battleground states may be more skeptical or require more accurate news information. However, if that were the case, these unobserved characteristics would also affect their view on national newspapers and TV programs. Since people living in the battleground states do not differ significantly in their opinions about the believability of USA Today and network TV programs, we are able to exclude this possibility.

The different results of the TV news and daily newspapers could come from their different market structures. In general, in a media market, there are only one or two newspapers in a media market while there are usually more than two local TV stations with news programs. In a monopoly market structure, the supply side factor should be stronger than it is in an oligopoly market. Also, in a market where there are more choices, consumers are more likely to find the product they prefer.

6 Interpretations

The empirical results show that media bias increases in the media market where the election is more competitive. The empirical finding is consistent with the supply side story that the media firm or the reporter has its own political preference.

From the demand side approach, when there is more than one media firm in the market, the electoral competition effect on media bias is less clear. On the one hand, the major preference still matters; on the other hand, media firms may target different group of people and the news reports will be affected by the audience. The audience may prefer more bias as the election is competitive with the incentive consistent with the spirit of the model.

Another possible explanation from the demand side is that people do not care about the election when the election is not competitive. And only when the election is competitive, do people want to watch the election news that share their political views. Therefore, the results are due to the higher demand for news in a competitive election. However, the number of election news stories is not correlated with the electoral competition across markets, which means the demand for news does not

increase much in battleground states.

However, the empirical findings from the believability survey can not be completely explained by the demand side factors. First, a lot of media markets only have one daily newspaper. In this case, the demand side factors will always force the media firm to have less media bias when the election is more competitive. Second, in the media market where there is more than one daily newspaper, since people are asked to rank the believability of the daily newspaper with which they are most familiar, it is hard to explain why the believability is related to electoral competitiveness from the demand side approach.

7 Conclusion

In this paper, a simple model is provided to explain how electoral competition affects media bias under the motivation to influence the election outcome. The prediction of this model is that there will be more media bias when the election is more competitive. From the TV news stories prior to the presidential election in 2000 and the believability survey, I find support for the prediction. Rather than catering to the preferences of major consumers, the desire to affect the election outcome remains dominant.

While the election is more competitive, information from the media is more important for voters when making voting decisions. However, from this study I find that it is even more difficult to get unbiased information when an election is more competitive. If consumer welfare is related to the believability of newspapers, consumer welfare is weakened when the election is more competitive.

This study provides support for the general worries about media bias. If the media bias is generated to cater the majority's preference during the election, the election outcome is less likely to be affected. However, if media bias is motivated by a desire to affect election outcome, undecided voters may get biased and thus inaccurate information.

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Table 1: The effect of electoral competition on media bias in 2000. (Using voter return in 1996)

Dependent variable	Bias _{it}		
	(1)	(2)	(3)
Competition Measure over Market	0.4996** (2.03)	0.4871** (2.41)	
Daily Competition Measure	11.2413 (1.41)		
Predicted Electoral Competition			0.6870* (1.86)
Total Speaking Time	-0.0006*** (4.54)	-0.0004*** (3.20)	-0.0006*** (4.52)
Number of local TV stations	-0.0005 (0.23)	-0.0005 (0.28)	0.0006 (0.26)
5/30 stations	-0.0285 (1.59)	-0.0284* (1.92)	-0.0340* (1.88)
Date(time trend effect)	0.0014** (2.19)		0.0010* (1.84)
Log of population	-0.0123 (0.49)	-0.0188 (0.89)	-0.0279 (1.03)
Constant	29.8697** (2.21)	-0.59*** (3.78)	23.73 (1.36)
Date fixed effect		Yes	
Observations	1061	1061	1061
Number of group(station)	74	74	74

Notes: Dependent Variable $Bias_{it}$ is the absolute difference between fraction of Bush's speaking time and 1/2 in the news stories from station i on date t . The variable *Competition measure over market* is based on the vote share of two candidates in 1996 Presidential election, as defined in section 4.2. The variable *Daily Competition Measure* is based on the midnight prices of the vote share of two candidates in the previous day, as defined in section 4.3. The variable *Total Speaking Time* is the total speaking time of Bush and Gore in the news stories from station i on date t . The variable *5/30 stations* is a dummy variable to indicate if the station made the 5/30 commitment according to White House's suggestion of airing 5 mins of candidates' coverage in the 30 minutes evening news Absolute value of t statistics in parentheses. *significant at 10%; ** significant at 5%; *** significant at 1%.

Table 2: The effect of electoral competition on media bias in 2000 (Using state polls in 2000)

Dependent variable	Media bias		
	(1)	(2)	(3)
Competition Measure over Market	0.6338** (2.53)	0.6056*** (2.88)	
Daily Competition Measure	11.1281** (1.39)		
Predicted Electoral Competition			0.6393 (2.73)
Total Speaking Time	-0.0006*** (4.55)	-0.0003*** (3.21)	-0.0006*** (2.73)
Number of local TV stations	0.0005 (0.21)	0.0004 (0.24)	0.0003 (4.43)
5/30 stations	-0.0340* (1.95)	-0.0340** (2.31)	-0.0335 (2.10)**
Date(time trend effect)	0.0013** (2.20)		
Log of population	-0.0176 (0.70)	-0.0241 (1.13)	-0.0167 (0.67)
Constant	30.05** (2.23)	0.6267*** (3.92)	21.10* (1.66)
Time fixed effect		Yes	
Observations	1061	1061	1061
Number of group(station)	74	74	74

Notes: The variable $Bias_{it}$ is the absolute difference between fraction of Bush's speaking time and 1/2 in the news stories from station i on date t . The variable *Competition measure over market* is based on the state polls in September 2000, as defined in section 4.2. The variable *Daily competition measure* is based on the midnight prices of the vote share of two candidates in the previous day, as defined in section 4.3. *Total speaking time* is the total speaking time of Bush and Gore in the news stories from station i on date t . *5/30 stations* is a dummy variable to indicate if the station made the 5/30 commitment according to White House's suggestion of airing 5 minutes of candidates' coverage in the 30 minutes evening news. Absolute value of t statistics in parentheses. *significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3: The Variance of Media Bias

Dependent variable	Variance	Variance	Bias	Bias
Competition measure over market	0.205 (2.05)**	0.174 (1.73)*	0.530 (1.99)*	0.453 (1.75)*
Number of local TV stations		-0.000 (0.15)		0.002 (0.74)
5/30 stations		-0.011 (1.50)		-0.015 (0.79)
Log of population		-0.006 (0.58)		-0.054 (2.09)**
Constant	0.044 (11.22)***	0.0953 (1.40)	0.077 (7.40)***	0.484 (2.76)
Observations	74	74	74	74

Notes: *Variance* is the variance of the daily fraction of Bush's speaking time given a station. The variable *Bias* is the media bias measure on the station basis, defined by the absolute difference of the average fraction of Bush's speaking time and 1/2. *5/30 stations* is a dummy variable to indicate if the station made the 5/30 commitment according to White House's suggestion of airing 5 minutes of candidates' coverage in the 30 minutes evening news.

Absolute value of t statistics in parentheses.

*significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4: Alternative media bias measure

Dependent variable	Variance	variance	bias	bias
Competition measure over market	0.0134 (0.36)	0.0140 (0.36)	0.3560** (2.10)	0.3620* (2.09)
Number of local TV stations		0.0003 (0.08)		-0.0021 (1.41)
5/30 stations		0.0006 (0.22)		0.0011 (0.10)
Log of population		0.0003 (0.08)		0.0222 (1.27)
Constant	0.0080 (5.42)***	0.0072 (0.27)	0.9949 (127.75)***	0.7138 (6.08)***
Observations	74	74	74	74

Notes: The variable Variance is the variance of the daily fraction of the reporter's speaking time given a station. The fraction of reporters' speaking time is measured by 1-(fraction of bush's speaking time)-fraction of gore's speaking time. The variable Bias is the average of daily fraction of reporters' speaking time for each station. 5/30 stations is a dummy variable to indicate if the station made the 5/30 commitment according to White House's suggestion of airing 5 minutes of candidates' coverage in the 30 minutes evening news. The variable Log of population is the log of population in the media market.

Absolute value of t statistics in parentheses.

*significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5: Electoral competition effect on media believability in 2002 and 2004

Dependent variable	Believability			
	Daily newspaper	Local TV news	USA Today	ABC News
Competition measure over market	-8.6956** (2.32)	-4.6866 (1.23)	-6.04 (1.43)	-2.0412 (0.53)
Year2004	-0.1230** (2.21)	-0.0737 (1.33)	-0.063 (1.03)	-0.1301** (2.29)
Education dummies	√	√	√	√
Family income dummies	√	√	√	√
City size dummies	√	√	√	√
Number of Observations	1513	1547	1264	1472

Notes: Dependent Variable is the believability of the media ranked by the respondents. “4” means the respondent can believe all or most of what the organizations says. “1” means the respondent believes almost nothing of what they say. Education categories include 7 categories from “none, or grade 1-8” to “post-graduate training”. Family income categories include 8 categories from “less than \$10000” to “\$100,000 or more”. City size categories include 4 categories from “a large city” to “a rural area”.

Absolute value of t statistics in parentheses.

*significant at 10%; ** significant at 5%; *** significant at 1%.