

“What Drives Media Slant? Evidence From U.S. Daily Newspapers”

By Matthew Gentzkow & Jesse M. Shapiro

Presented by: Alexander N. Taylor

ataylo46@gmu.edu

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Media Regulation in the US

Ownership regulation justified by a desire for ideological diversity

- Proposition 1: News content has a powerful impact on politics, with ideologically diverse content producing socially desirable outcomes.
- Proposition 2: Unregulated news markets will tend to produce too little ideological diversity.



Purpose

How slanted is newspaper media, and what are the determinants of slant?

- Do newspapers maximize profit through partisan slant?
 - Or, in contrast, do newspapers sacrifice profit to promote their ideology?
- What role do newspaper owners play in political slant?
 - What about newspaper consumers?
- Do political pressure from incumbent politicians or the tastes of reporters/editors shape political slant?

Approach and Findings

They measure newspaper slant by comparing common phrases used in congressional speeches and news articles.

- Use slant measure to estimate models of newspaper supply and demand that incorporate ideology
 - Compare to the estimated slant of profit-maximizing monopolist newspapers
- Also investigate the role of political pressure and reporter/editor tastes in slant

They find that newspapers maximize profit through political slant and are responsive to consumer demand. Newspaper ownership, political pressure, and reporter/editor tastes explain little of the variation in slant between papers.

Data

- Congressional Data
 - 2005 *Congressional Record*, focusing on floor speeches
 - Remove stopwords, stem words and phrases
 - Partisan information on each congressperson
- Daily Newspapers
 - NewsLibrary and ProQuest Newsstand databases
 - 433 daily newspapers, 74% of total circulation
 - Info on owner, HQ location, and market demographics
- Circulation and Consumer Characteristics
 - ZIP code-level data on newspaper circulation
 - Census ZIP code demographic data
 - FEC political donation data
- Final dataset includes 290 papers in markets with positive circulation and sufficiently many FEC donors

Measuring Slant

Approach: Compare phrase frequencies in the newspaper with phrase frequencies in the 2005 *Congressional Record* to identify whether the language is closer to Republican or Democrat language.

- Example: “Death Tax” vs. “Estate Tax”
 - Republicans used “death tax” 365 times and “estate tax” 46 times, Democrats 35 & 195 times
 - Conservative *Washington Times* used “estate tax” 1.3 times as often as “death tax”, liberal *Washington Post* used it 13.7 times as often
- Could measure on counts of all phrases that appear in floor speeches, but computationally infeasible
 - Employ feature selection to select certain phrases that are most associated with each political party

Feature Selection

Let f_{pld} and f_{plr} denote the number of times phrase p of length l (two or three words) is used by Democrats and Republicans, respectively. $f_{\sim pld}$ and $f_{\sim plr}$ are the total occurrences of length- l phrases that are *not* phrase p spoken by members of the respective party:

$$\chi_{pl}^2 = \frac{(f_{plr}f_{\sim pld} - f_{pld}f_{\sim plr})^2}{(f_{plr} + f_{pld})(f_{plr} + f_{\sim plr})(f_{pld} + f_{\sim pld})(f_{\sim plr} + f_{\sim pld})} \quad (1)$$

The higher the value of χ_{pl}^2 , the more indicative the phrase is of partisan affiliation. This statistic avoids selecting phrases that are only used a small number of times by a single party, which could skew results.

Feature Selection

Features are filtered by:

- ① Computing the total number of times each phrase appeared in newspaper headlines and article text from 2000 to 2005, then:
 - restricting two-word phrases to those appearing in greater than 200 but less than 15,000 newspaper headlines
 - restricting three-word phrases to those appearing in greater than 5 but less than 1,000 headlines
 - dropping any phrase that appeared in the full text of more than 400,000 documents
- ② Among remaining phrases, selecting the 500 phrases of each length l with the greatest values of χ^2_{pl} , for a total of 1,000 phrases

Selected Features

MOST PARTISAN PHRASES FROM THE 2005 CONGRESSIONAL RECORD^a

Panel A: Phrases Used More Often by Democrats

Two-Word Phrases

private accounts
trade agreement
American people
tax breaks
trade deficit
oil companies
credit card
nuclear option
war in Iraq
middle class

Rosa Parks
President budget
Republican party
change the rules
minimum wage
budget deficit
Republican senators
privatization plan
wildlife refuge
card companies

workers rights
poor people
Republican leader
Arctic refuge
cut funding
American workers
living in poverty
Senate Republicans
fuel efficiency
national wildlife

Three-Word Phrases

veterans health care
congressional black caucus
VA health care
billion in tax cuts
credit card companies
security trust fund
social security trust
privatize social security
American free trade
central American free

corporation for public
broadcasting
additional tax cuts
pay for tax cuts
tax cuts for people
oil and gas companies
prescription drug bill
caliber sniper rifles
increase in the minimum wage
system of checks and balances
middle class families

cut health care
civil rights movement
cuts to child support
drilling in the Arctic National
victims of gun violence
solvency of social security
Voting Rights Act
war in Iraq and Afghanistan
civil rights protections
credit card debt

(Continues)

Selected Features

TABLE I—Continued

| Panel B: Phrases Used More Often by Republicans | | |
|-------------------------------------------------|---------------------------|--------------------------|
| <i>Two-Word Phrases</i> | | |
| stem cell | personal accounts | retirement accounts |
| natural gas | Saddam Hussein | government spending |
| death tax | pass the bill | national forest |
| illegal aliens | private property | minority leader |
| class action | border security | urge support |
| war on terror | President announces | cell lines |
| embryonic stem | human life | cord blood |
| tax relief | Chief Justice | action lawsuits |
| illegal immigration | human embryos | economic growth |
| date the time | increase taxes | food program |
| <i>Three-Word Phrases</i> | | |
| embryonic stem cell | Circuit Court of Appeals | Tongass national forest |
| hate crimes legislation | death tax repeal | pluripotent stem cells |
| adult stem cells | housing and urban affairs | Supreme Court of Texas |
| oil for food program | million jobs created | Justice Priscilla Owen |
| personal retirement accounts | national flood insurance | Justice Janice Rogers |
| energy and natural resources | oil for food scandal | American Bar Association |
| global war on terror | private property rights | growth and job creation |
| hate crimes law | temporary worker program | natural gas natural |
| change hearts and minds | class action reform | Grand Ole Opry |
| global war on terrorism | Chief Justice Rehnquist | reform social security |

^aThe top 60 Democratic and Republican phrases, respectively, are shown ranked by χ^2_{pl} . The phrases are classified as two or three word after dropping common “stopwords” such as “for” and “the.” See Section 3 for details and see Appendix B (online) for a more extensive phrase list.

Newspaper Slant Measurement

- 1 Use congresspeople's observed ideology to estimate relationship between use of phrase p and speaker ideology
- 2 Use observed relationship to infer newspaper ideology based on phrase use

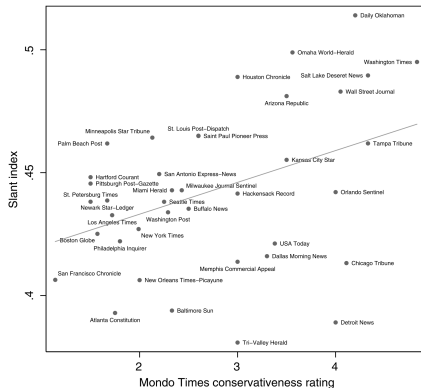


FIGURE 1.—Language-based and reader-submitted ratings of slant. The slant index (y axis) is shown against the average Mondo Times user rating of newspaper conservativeness (x axis), which ranges from 1 (liberal) to 5 (conservative). Included are all papers rated by at least two users on Mondo Times, with at least 25,000 mentions of our 1000 phrases in 2005. The line is predicted slant from an OLS regression of slant on Mondo Times rating. The correlation coefficient is 0.40 ($p = 0.0114$).

Demand for Slant

- Each zip code contains a continuum of households and a set of newspapers available to each household
- Households maximize their utility when selecting newspapers
 - Utility decreases as the household consumes news further from their ideal political slant

$$u_{izn} = \bar{u}_{zn} - \gamma(y_n - \text{ideal}_z)^2 + \epsilon_{izn}$$

Hypotheses

Hypothesis D1: More conservative zip codes have a relatively greater taste for more conservatively slanted news.

Hypothesis D2: Demand has an inverted-U relationship to zip code ideology, peaking where newspaper ideology is closest to the consumer's ideal slant

Supply of Slant

- Newspaper firms earn a fixed amount of profit per copy sold
- Firms maximize based on demanded slant $ideal_n$, but are also allowed to deviate to promote owner ideology μ_g

$$\text{Equilibrium Slant: } y_n^* = \rho_0 + \rho_1 ideal_n + \mu_g$$

Hypotheses

Hypothesis S1: Slant is increasing in consumer Republicanism.

Hypothesis S2: Slant is increasing in owner Republicanism.

Identification Strategy

Estimate their supply and demand models using a structural approach

- Demand
 - Outcome is log odds ratio $\ln(S_{zn}) - \ln(1 - S_{zn})$, where S_{zn} is the share of households in zip code z reading newspaper n
 - Use Republican vote share in 2004 presidential election as IV for news slant
- Supply
 - Outcome is their index of slant (\hat{y}_n)
 - Approximate ideal slant as a linear function of Republican vote share
 - Allows them to use all 429 newspapers in their dataset

Demand for Slant

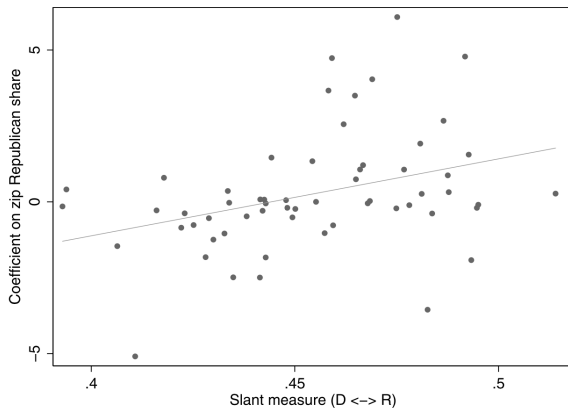


FIGURE 2.—Newspaper slant and coefficients on zip code ideology. The y axis shows the estimated coefficient in a regression of the share of households in the zip code reading each newspaper on the zip code share Republican, for newspapers circulating in more than 200 zip codes. The x axis shows slant measure.

Demand for Slant

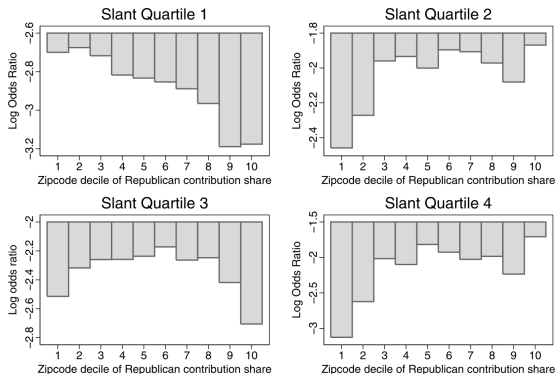


FIGURE 3.—Newspaper demand and zip code ideology by quartiles of newspaper slant. The coefficients on decile dummies in regressions of the share of households in a zip code reading a newspaper on dummies for decile of share donating to Republicans in the 2000–2004 election cycle are shown with market–newspaper fixed effects and weighted by zip code population. The equation is estimated separately for newspapers in each quartile of the distribution of measured slant.

Demand for Slant

TABLE II
EVIDENCE ON THE DEMAND FOR SLANT^a

| Description | Model | | | |
|--------------------------------------------------|---------------------|---------------------|------------------|---------------------|
| | OLS | OLS | OLS | 2SLS |
| (Zip share donating to Republicans) × Slant | 10.66 (3.155) | 9.441 (2.756) | 14.61 (6.009) | 24.66 (7.692) |
| Zip share donating to Republicans | −4.376 (1.529) | −3.712 (1.274) | — | −10.41 (3.448) |
| (Zip share donating to Republicans) ² | −0.4927 (0.2574) | −0.5238 (0.2237) | — | −0.7103 (0.2061) |
| Market–newspaper FE? | X | X | X | X |
| Zip code demographics? | | X | X | X |
| Zip code X market characteristics? | | X | X | X |
| Zip code FE? | | | X | |
| Number of observations | 16,043 | 16,043 | 16,043 | 16,043 |
| Number of newspapers | 290 | 290 | 290 | 290 |

^aThe dependent variable is log odds ratio $\ln(S_{zn}) - \ln(1 - S_{zn})$. Standard errors (in parentheses) allow for correlation in the error term across observations for the same newspaper. Zip code demographics are log of total population, log of income per capita, percent of population urban, percent white, percent black, population per square mile, share of houses that are owner occupied, and the share of population aged 25 and over whose highest level of schooling is college, all as of 2000. “Zip code X market characteristics” refers to a vector of these characteristics interacted with their analogue at the level of the newspaper’s market. An excluded instrument in the model in the last column is an interaction between zip share donating to Republicans and share of Republican in the newspaper’s market in 2004. The first-stage F -statistic on the excluded instrument is 8.79.

Supply of Slant

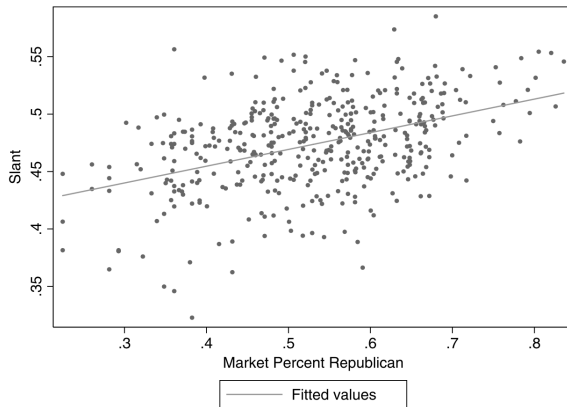


FIGURE 4.—Newspaper slant and consumer ideology. The newspaper slant index against Bush's share of the two-party vote in 2004 in the newspaper's market is shown.

Supply of Slant

TABLE III
DETERMINANTS OF NEWSPAPER SLANT^a

| | OLS | 2SLS | OLS | RE |
|----------------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|
| Share Republican in newspaper's market | 0.1460 (0.0148) | 0.1605 (0.0612) | 0.1603 (0.0191) | 0.1717 (0.0157) |
| Ownership group fixed effects? | | | X | |
| State fixed effects? | | | | X |
| Standard deviation (SD) of ownership effect | | | | 0.0062 (0.0037) |
| Likelihood ratio test that SD of owner effect is zero (<i>p</i> value) | | | | 0.1601 |
| Number of observations | 429 | 421 | 429 | 429 |
| <i>R</i> ² | 0.1859 | — | 0.4445 | — |

^aThe dependent variable is slant index (\hat{y}_n). Standard errors are given in parentheses. An excluded instrument in the 2SLS model is share attending church monthly or more in the newspaper's market during 1972–1998, which is available for 421 of our 429 observations. The first-stage has coefficient 0.2309 and standard error 0.0450. The RE model was estimated via maximum likelihood. See Section 7.2 for details.

Ownership Ideology



FIGURE 6.—Newspaper slant and political contributions. The average slant of newspapers owned by a firm is graphed against the share of total dollars going to Republicans within each category of contributions. Correlation coefficients are -0.04 ($p = 0.90$) for newspaper group executives, 0.29 ($p = 0.34$) for independent newspaper executives, and 0.01 ($p = 0.97$) for newspaper group corporate contributions.

Interpretation of Model Parameters

TABLE IV
ECONOMIC INTERPRETATION OF MODEL PARAMETERS^a

| Quantity | Estimate |
|------------------------------------------------------------------------------------------------------------|--------------------|
| Actual slant of average newspaper | 0.4734 (0.0020) |
| Profit-maximizing slant of average newspaper | 0.4600 (0.0047) |
| Percent loss in variable profit to average newspaper from moving 1 SD away from profit-maximizing slant | 0.1809 (0.1025) |
| Share of within-state variance in slant from consumer ideology | 0.2226 (0.0406) |
| Share of within-state variance in slant from owner ideology | 0.0380 (0.0458) |

^aStandard errors, given in parentheses, are from the delta method. The sample in the first three rows includes 290 newspapers in the demand sample. The sample in the last two rows includes 429 newspapers in the supply sample. The calculation in the fourth row is $(\hat{\lambda}_1^s)^2$ times the within-state variance in R_n , divided by the within-state variance of \hat{y}_n . The calculation in the last row is $\hat{\sigma}_\mu^2$ divided by the within-state variance of \hat{y}_n .

Conclusion

- Demand-Side
 - More conservative news is consumed in more conservative zip codes
 - We observe a U-shaped relationship between demand and zip code ideology, peaking where newspaper slant is closest to the consumer's ideal slant
- Supply-Side
 - Newspapers supply more slant as more is demanded, which is the primary driver of slant
 - Conservative-owned newspapers supply marginally more conservative slant, but this effect is small

Media slant is primarily a result of newspaper firms responding to consumer demand for a particular amount of slant