

# Gentzkow and Shapiro I

- First, they come up with a measure of ideological slant of newspapers.
- Second, they estimate the elasticity of demand for a newspaper with respect to its ideology.
- Third, they estimate a structural model of newspaper profits and find that newspapers choose the profit maximizing degree of slant (i.e. all demand-side not supply side).

# Gentzkow and Shapiro II

- Do word search on 2005 Congressional Register
  - Top 500 two word phrases and top 500 three word phrases used by Democrats and Republicans respectively according to chi-squared statistic:

$$\chi_p^2 = \frac{(f_{pr} f_{\sim pd} - f_{pd} f_{\sim pr})^2}{(f_{pr} + f_{pd})(f_{pr} + f_{\sim pd})(f_{pd} + f_{\sim pd})(f_{\sim pr} + f_{\sim pd})}$$

- Take out two-word phrases appearing in between 200 and 15,000 headlines and three word phrases appearing in between 5 and 1,000 headlines

# Gentzkow and Shapiro III

- Test words as predictors of ideology on members of congress (will use it to come up with ideology measure of newspaper). Look at relation between congress members share of usage of a phrase and ideology (measured by adjusted ADA scores). First run this for every word:

$$s_{pc} = \alpha_p + \beta_p y_c + \varepsilon_{pc}$$

- Then, create demeaned word shares:

$$\vec{s}_{pc} = s_{pc} - \alpha_p$$

# Gentzkow and Shapiro IV

- Then compute ideology for a congressperson to minimize sum of squared prediction error in word usage:

$$\bar{y}_n = \min \sum_p \left( \vec{s}_{pn} - \beta_p y_n \right)^2 = \frac{\sum_p \beta_p \vec{s}_{pn}}{\sum_p \beta_p^2}$$

- Finally, compare to ADA scores:
  - Regression of estimated ideology on true ideology (where true ideology is ADA scores) has a constant of zero and a coefficient of one.
  - Correlation coefficient between estimated and true ideology is .6.

**Table 1** *Politically loaded phrases from the 2005 Congressional Record*

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  
african american  
budget cuts  
nuclear weapons  
checks and balances  
civil rights  
veterans health  
cut medicaid  
foreign oil  
president plan  
gun violence  
black caucus  
national debt  
public broadcasting  
child support  
student loans

rosa parks  
president budget  
republican party  
change the rules  
minimum wage  
budget deficit  
republican senators  
privatization plan  
wildlife refuge  
card companies  
security trust  
bill cuts  
medicaid cuts  
trade policy  
asian pacific  
cia agent  
billions of dollars  
abuse of power  
manufacturing jobs  
billion in tax  
lost their jobs  
central american  
child labor  
low income  
cut programs

workers rights  
poor people  
republican leader  
arctic refuge  
cut funding  
american workers  
living in poverty  
senate republicans  
fuel efficiency  
national wildlife  
president cheney  
price gouging  
iraq war  
million americans  
house republicans  
assault weapons  
senior citizens  
cost of the war  
karl rove  
spending cuts  
record profits  
bunker buster  
food stamps  
bring our troops  
troops home

*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  
national wildlife refuge  
dependence on foreign oil  
tax cuts for the wealthy  
vice president cheney  
arctic national wildlife  
bring our troops home  
social security privatization  
billion trade deficit  
asian pacific american  
president bush took office  
privatization of social security  
privatizing social security  
party line vote  
child support enforcement  
credit card industry

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 student loans  
american people deserve  
cut food stamps  
health care education  
federal trade commission  
congressional hispanic caucus  
alternative minimum tax  
asian and pacific islander  
global gag rule  
cut social security  
billion in tax breaks  
below the poverty line  
middle class americans  
funding for veterans health  
health care for veterans

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  
little rock nine  
social security plan  
arctic wildlife refuge  
education health care  
social security the president  
social security benefits  
explosive device detonated  
plan to privatize social  
ryan white care  
major oil companies  
outing a cia agent  
fuel economy standards  
improvised explosive device  
president social security  
international labor organization

Source: Authors' calculations from the *Congressional Record*.

Notes: Table shows top words, ranked according to the  $\chi^2$  statistic in a test of the independence between phrases and political party of the speaker. See section 3 for details.

Panel B: Phrases used more often by Republicans

*Two-word phrases*

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
boy scouts	growth rate	time and i move
hate crimes	cell research	legal system
oil for food	property rights	nuclear power
global war	border patrol	democrat leader
medical liability	budget committee	growing economy
highway bill	consent decrees	raising taxes
adult stem	crimes law	witnesses may testify
democratic leader	post office	savings accounts
federal spending	european union	iraqi people
tax increase	president business	forest service
raise taxes	postal service	law we can change
illegal immigrants	terri schiavo	immigration reform
president i move	circuit court	indian affairs
third time	temporary worker	ten commandments
percent growth	war on terrorism	un reform

*Three-word phrases*

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
class action fairness	percent growth rate	judge john roberts
committee on foreign relations	united states postal service	supply of natural gas
deficit reduction bill	american farm bureau	gas natural gas
boy scouts of america	gross national product	chief of naval operations
repeal of the death tax	social security reform	underground storage tank
highway trust fund	export import bank	partial birth abortion
action fairness act	justice of the supreme court	judicial confirmation process
committee on commerce science	price of natural gas	personal savings accounts
cord blood stem	fifth circuit court	near earth objects
medical liability reform	social security system	national security issue
stem cell lines	committee on homeland security	law enforcement and intelligence
blood stem cells	united nations reform	justice william rehnquist
supreme court of the united	million illegal aliens	medical liability crisis
health savings accounts	california supreme court	judge alberto gonzales
banking housing and urban	term care insurance	economic growth and job

Source: Authors' calculations from the *Congressional Record*.

Notes: Table shows top words, ranked according to the  $\chi^2$  statistic in a test of the independence between phrases and political party of the speaker. See section 3 for details.

# Gentzkow and Shapiro V

- Demand Model: Ideology is a linear function of share of contributions to republicans in zipcode  $[r(z)]$ :

$$\overline{y}_z = \alpha + \beta r_z$$

- Utility Function minimizes distance between individual ideology and newspaper ideology:

$$U_{izn} = -\gamma \left( y_n - \overline{y}_z \right)^2 + \varepsilon_{zn} + \xi_{izn}$$

- Thus, share of subscribers in a zip code is given by:

$$S_{zn} = \delta - \gamma \left( y_n - \overline{y}_z \right)^2 + \varepsilon_{zn}$$

- Multiplying this out, we get:

$$S_{zn} = \left( \delta - \gamma \alpha^2 \right) - \gamma \left( y_n^2 - 2\alpha y_n - 2\beta y_n r_z + 2\alpha\beta r_z + \beta^2 r_z^2 \right) + \varepsilon_{zn}$$

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# Gentzkow and Shapiro VI

- Adding newspaper fixed effects, we eliminate the terms with just  $y(n)$ . We also add vector of observable zip code characteristics and interactions of characteristics of zip code and newspaper:

$$S_{zn} = \delta - \gamma\alpha^2 + 2\beta y_n r_z - 2\alpha\beta r_z - \beta^2 r_z^2 + X_z \phi_1 + W_{zn} \phi_2 + \varepsilon_{zn}$$

- Instrument for slant ( $y(n)$ ) with average newspaper area republicanism (at county level):  $R(n)$  multiplied by  $r(z)$ .
- They also do a measurement error correction.



# Gentzkow and Shapiro VII

- Now, they estimate profit maximizing levels of slant for each newspaper by assuming the following profit function:

$$\Pi_n = m_n \sum_z H_z S_{zn}$$

- Solving for first order conditions, they get:

$$\sum_z H_z (y_n - \alpha - \beta r_z) = 0$$

- Which leads to the following solution for the ideal profit maximizing slant for the newspaper:

- - 
$$y_n^* = ideal_n = \alpha + \beta \bar{r}_n$$

# Gentzkow and Shapiro VIII

- They now allow a Becker-style utility function which maximizes the sum of profits and ideology:

$$V_g = \sum_n [\Pi_n - \lambda H_n (y_n - \mu_g)] = \alpha + \beta \bar{r}_n$$

- Solving for first order conditions, they get:

$$y_n^* = ideal_n = \frac{m_n}{m_n \gamma + \lambda} ideal_n + \frac{\lambda}{m_n \gamma + \lambda} \mu_g$$

- They can now estimate the following:

$$\bar{y}_n = ideal_n = \frac{m_n}{m_n \gamma + \lambda} ideal_n + \frac{\lambda}{m_n \gamma + \lambda} \bar{\mu} + \frac{\lambda}{m_n \gamma + \lambda} \bar{\mu}_g + \zeta_n$$

- -

**Table 2** *Estimates of the demand for slant*

Dependent variable: Share of households in zipcode subscribing to newspaper

Description	(1)	(2)	(3)	(4)	(5)
Model	OLS	2SLS	2SLS/RC	2SLS/RC	2SLS/RC
(Zip share donating to Republicans) $\times$ Slant	0.1733 (0.0740)	0.6379 (0.1894)	1.0897 (0.3165)	0.8077 (0.2949)	0.8505 (0.3119)
Zip share donating to Republicans	-0.0165 (0.0362)	-0.2281 (0.0879)	-0.4296 (0.1447)	-0.3251 (0.1380)	-0.3418 (0.1452)
(Zip share donating to Republicans) <sup>2</sup>	-0.0598 (0.0081)	-0.0615 (0.0079)	-0.0638 (0.0135)	-0.0353 (0.0129)	-0.0380 (0.0127)
Market-newspaper FE?	X	X	X	X	X
Zipcode demographics?				X	X
Zipcode X market char.?					X
Estimate of $\alpha$	0.0954	0.3576	0.3942	0.4025	0.4019
(Confidence interval)	(-1.17,0.30)	(0.21,0.40)	(0.30,0.43)	(0.25,0.44)	(0.25,0.44)
Estimate of $\beta$	0.6900	0.1929	0.1171	0.0874	0.0894
(Confidence interval)	(0.32,3.06)	(0.11,0.47)	(0.06,0.29)	(0.02,0.34)	(0.02,0.34)
Estimate of $\gamma$	0.1256	1.6533	4.6547	4.6206	4.7553
(Confidence interval)	(0.004,0.45)	(0.29,4.35)	(0.87,13.1)	(0.29,24.7)	(0.33,22.3)
Number of observations	61845	61845	61845	61845	61845
Number of newspapers	290	290	290	290	290

Source: Authors' calculations based on Audit Bureau of Circulations (newspaper subscriptions), Federal Election Commission (campaign contributions), U.S. Presidential Atlas (county-level voting), U.S. Census (zipcode demographics), Editor and Publisher International Yearbook 2000-2005 (newspaper location).

Notes: Table shows estimates of models of the form of equation (9). Standard errors (in parentheses) are clustered by newspaper. Zipcode 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 owner-occupied, and the share of population 25 and over whose highest level of schooling is college, all as of 2000. "Zipcode X market characteristics" refers to a vector of these characteristics interacted with their analogue at the level of the newspaper's market.

**Table 3** *Ownership and newspaper slant*Dependent variable: Slant index ( $\hat{y}_n$ )

	(1)	(2)	(3)	(4)
Average slant of other newspapers in ownership group	0.6040 (0.1159)	0.5453 (0.1375)	0.4217 (0.1843)	0.2438 (0.2139)
Control for profit-maximizing slant?		X	X	X
Census division fixed effects?			X	
State fixed effects?				X
Number of observations	338	338	338	338
Number of ownership groups	36	36	36	36
$R^2$	0.0877	0.0713	0.0393	0.0130

Source: Authors' calculations based on ProQuest database and *Congressional Record* (slant index), U.S. Presidential Atlas (county-level voting), Editor and Publisher International Yearbook 2000-2005 (newspaper location and ownership).

Notes: Standard errors (in parentheses) clustered by ownership group. See section 3 for derivation of slant index and section 4.4 for details on calculation of profit-maximizing slant. In specifications (2) through (4), slant index is regressed on controls, and then residuals are averaged to form adjusted average slant of other newspapers in ownership group.

**Table 4** *Decomposing the variation in newspaper slant*

Dependent variable: Slant index ( $\hat{y}_n$ )					
	(1)	(2)	(3)	(4)	(5)
Profit-maximizing slant in newspaper's market	—	2.0340 (0.2413)	1.9136 (0.1930)	2.1078 (0.2029)	2.2246 (0.2039)
Ownership group fixed effects?		X			
Census division fixed effects?				X	
State fixed effects?					X
Standard deviation of ownership effect	0.0144 (0.0034)		0.0121 (0.0039)	0.0046 (0.0032)	0.0000 (0.0051)
Ownership share of residual variation	0.1324 (0.0633)		0.0943 (0.0529)	0.0208 (0.0206)	0.0000 (0.0599)
Consumer share of residual variation		0.1910 (0.0453)	0.2005 (0.0404)	0.2071 (0.0399)	0.2238 (0.0410)
Number of observations	413	413	413	413	413
Number of multi-paper groups	36	36	36	36	36

Source: Authors' calculations based on ProQuest database and *Congressional Record* (slant index), U.S. Presidential Atlas (county-level voting), Editor and Publisher International Yearbook 2000-2005 (newspaper location and ownership).

Notes: See section 3 for derivation of slant index. Newspaper market is defined as the newspaper's primary metropolitan statistical area if available, and the newspaper's county if not. Models estimated via maximum likelihood. Standard errors on the standard deviation of the ownership effect and the ownership share of the variation are obtained through a parametric bootstrap. Ownership and consumer share of residual variation are the share of variation in slant explained by ownership group random effects and profit-maximizing slant respectively; in columns (2), (4) and (5) the share(s) are computed after partialling for group, division, and state fixed effects respectively.

**Table 5** *Robustness of the relationship between slant and consumer characteristics*

Dependent variable: Slant index ( $\hat{y}_n$ )				
	(1)	(2)	(3)	(4)
	2SLS	2SLS	OLS	OLS
Instrument(s)	% church	log population, % black, % college		
Profit-maximizing slant in newspaper's market	1.8565 (0.7609)	3.6437 (0.3642)	1.0654 (0.1955)	1.2073 (0.1942)
Log(market population) (2000)			-0.0057 (0.0012)	-0.0014 (0.0015)
Share black in market (2000)			-0.1471 (0.0149)	-0.1408 (0.0147)
Share college-educated in market (2000)			-0.0530 (0.0247)	-0.0304 (0.0247)
Log(number of newspaper employees)				-0.0023 (0.0022)
Log(number of pages)				-0.0133 (0.0052)
Number of Pulitzers, 1970-2006				-0.0004 (0.0005)
Number of observations	406	413	413	413
$R^2$	—	—	0.4231	0.4560

Source: Authors' calculations based on ProQuest database and *Congressional Record* (slant index), U.S. Presidential Atlas (county-level voting), Editor and Publisher International Yearbook 2000-2005 (newspaper location, ownership, and characteristics), DDB Needham LifeStyle survey 1972-1998 (church attendance), U.S. Census 2000 (demographics), <www.pulitzer.org> (number of Pulitzer prizes).

Notes: Standard errors in parentheses. See section 3 for derivation of slant index and section 4.4 for details on calculation of profit-maximizing slant. Specification (1) uses the share attending church monthly from 1972-1998 in the newspaper's primary market as an instrument for ideal slant. Specification (2) uses log population, share black, and share with a college degree in the newspaper's primary market as instruments for slant. Number of employees and number of pages are reported in the 2001 *Editor and Publisher International Yearbook*. In column (4), dummies are included to control for missing values of number of employees and number of pages.

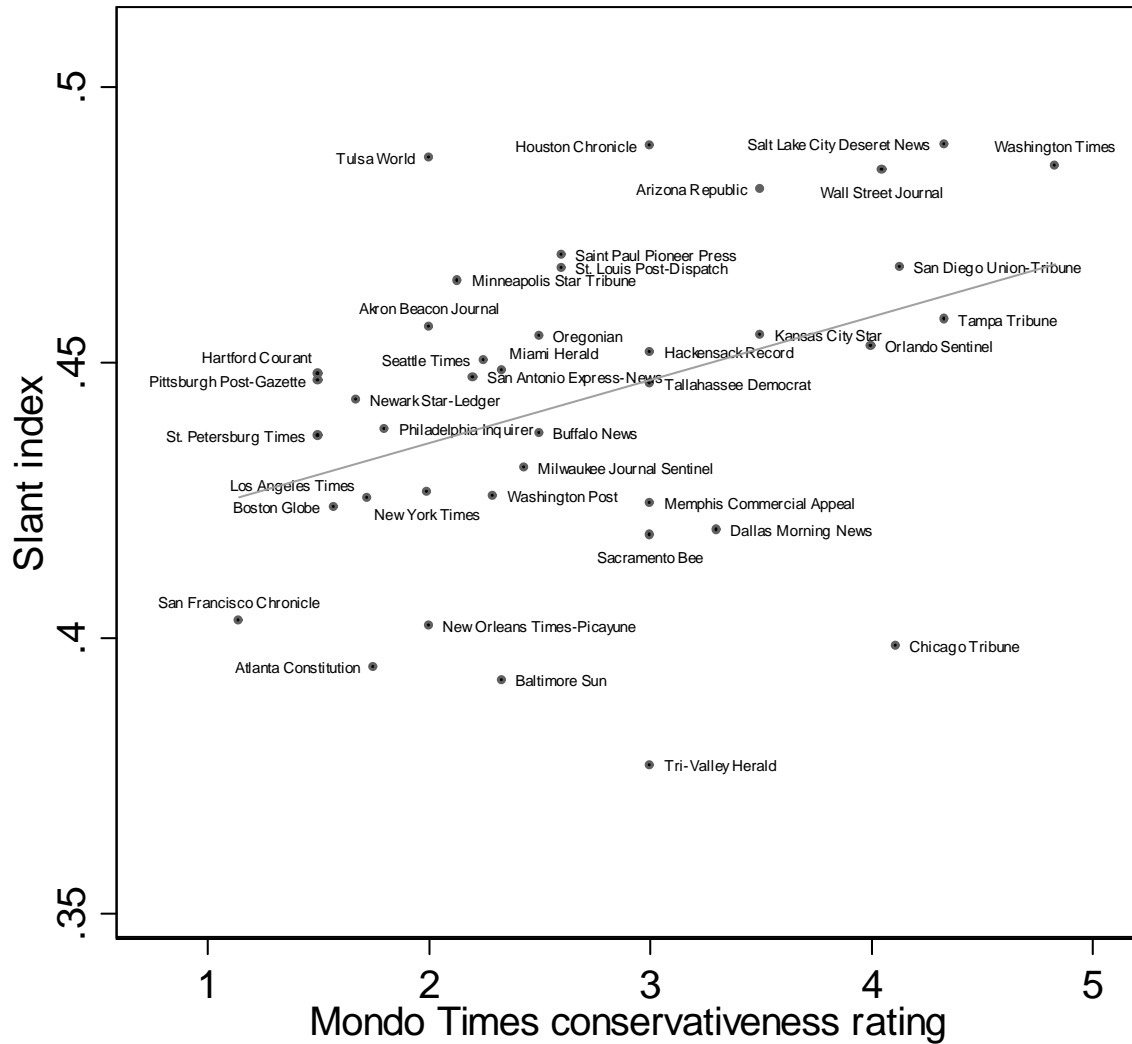
**Table 6** *The response of slant to financial incentives*Dependent variable: Slant index ( $\hat{y}_n$ )

Financial variable: Sample	Advertising rate per reader		Ownership structure	
	Below-median	Above-median	Private	Public
Profit-maximizing slant in newspaper's market	1.6311 (0.2742)	1.7487 (0.2708)	2.3161 (0.2628)	1.2858 (0.3775)
<i>Difference in coefficients</i>		<i>0.1175</i> <i>(0.3791)</i>	<i>-1.0302</i> <i>(0.4605)</i>	
Standard deviation of ownership effect	0.0095 (0.0045)	0.0152 (0.0046)	0.0119 (0.0053)	0.0174 (0.0065)
<i>Difference in standard deviations</i>		<i>0.0056</i> <i>(0.0056)</i>	<i>0.0055</i> <i>(0.0082)</i>	
Number of observations	395	395	357	357

Source: Authors' calculations based on ProQuest database and *Congressional Record* (slant index), U.S. Presidential Atlas (county-level voting), Editor and Publisher International Yearbook 2000-2005 (newspaper location, ownership, and advertising rates), various sources (ownership structure).

Notes: Standard errors in parentheses. See section 3 for derivation of slant index and section 4.4 for details on calculation of profit-maximizing slant. Models estimated via maximum likelihood, with the effect of the owner-level random component permitted to vary with the financial variable listed. A public firm is defined as a firm that is publicly traded, in which no single shareholder or family has a majority interest.

Figure 1 Language-based and reader-submitted ratings of slant

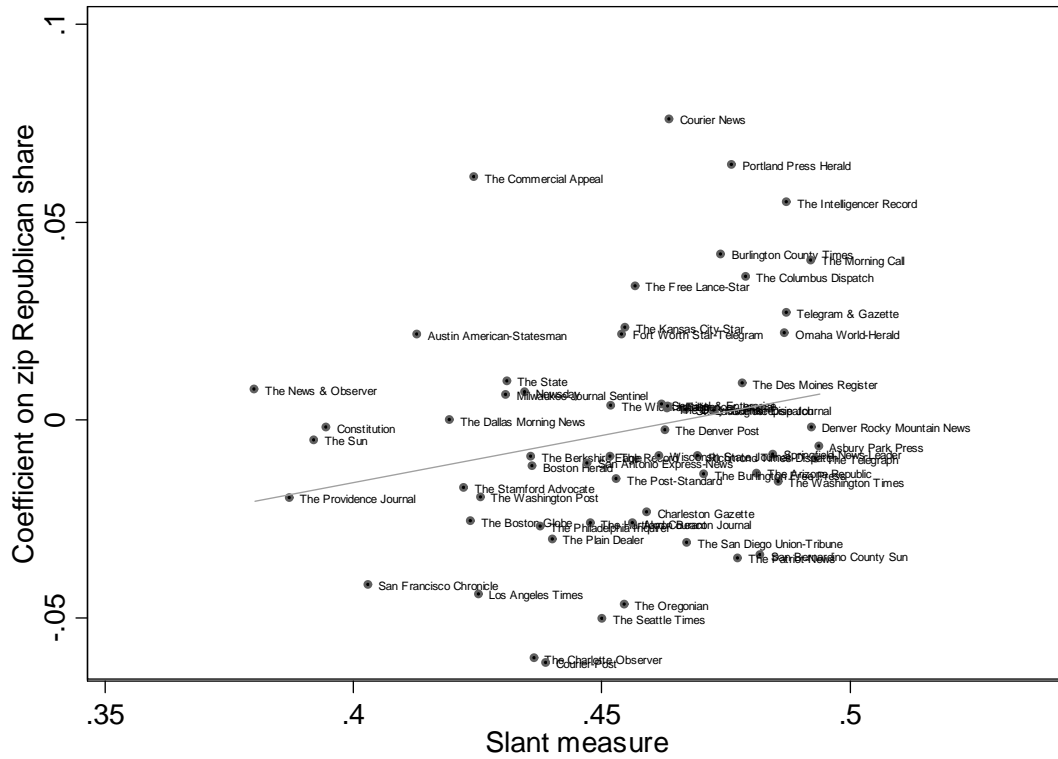


Source: Authors' calculations based on ProQuest database and *Congressional Record* (slant index), Mondo Times at <<http://www.mondotimes.com>> (bias ratings).

Notes: Figure shows slant index (y-axis) against average Mondo Times user rating of newspaper conservativeness (x-axis), which ranges from 1 (liberal) to 5 (conservative). See section 3 for derivation of slant index. Figure includes all papers rated by at least two users on Mondo Times, with at least 25,000 mentions of our 1,000 phrases in 2005.



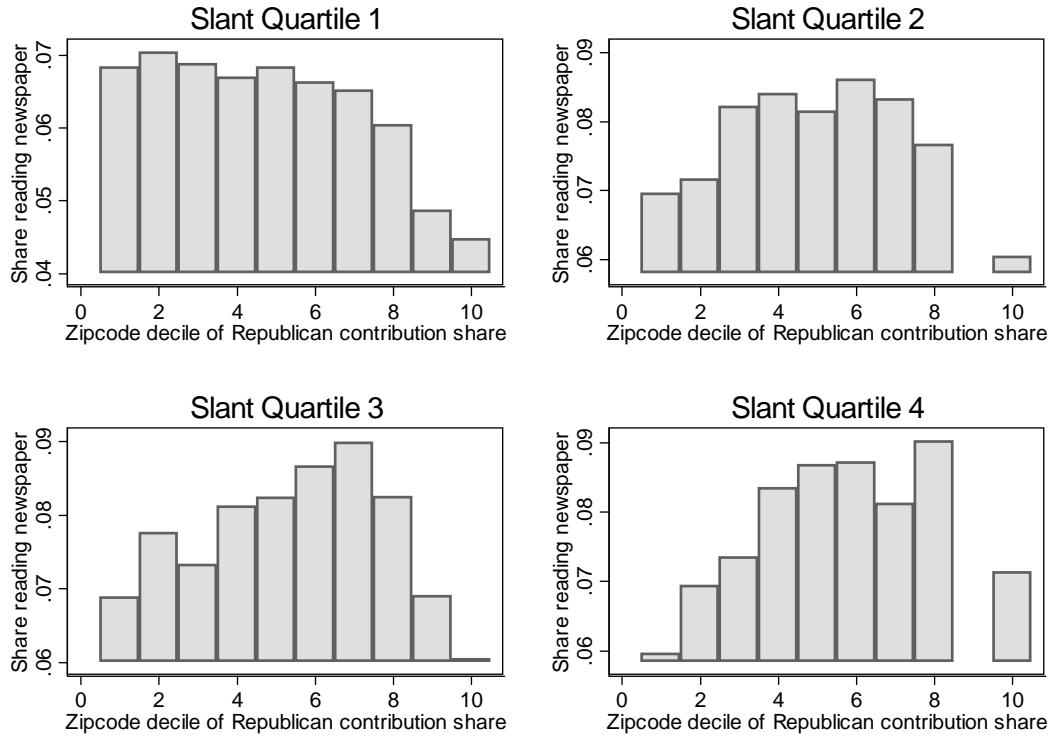
**Figure 2** Newspaper slant and consumer demand



Source: Authors' calculations based on ProQuest database and *Congressional Record* (slant index), Audit Bureau of Circulations (newspaper subscriptions), Federal Election Commission (campaign contributions)

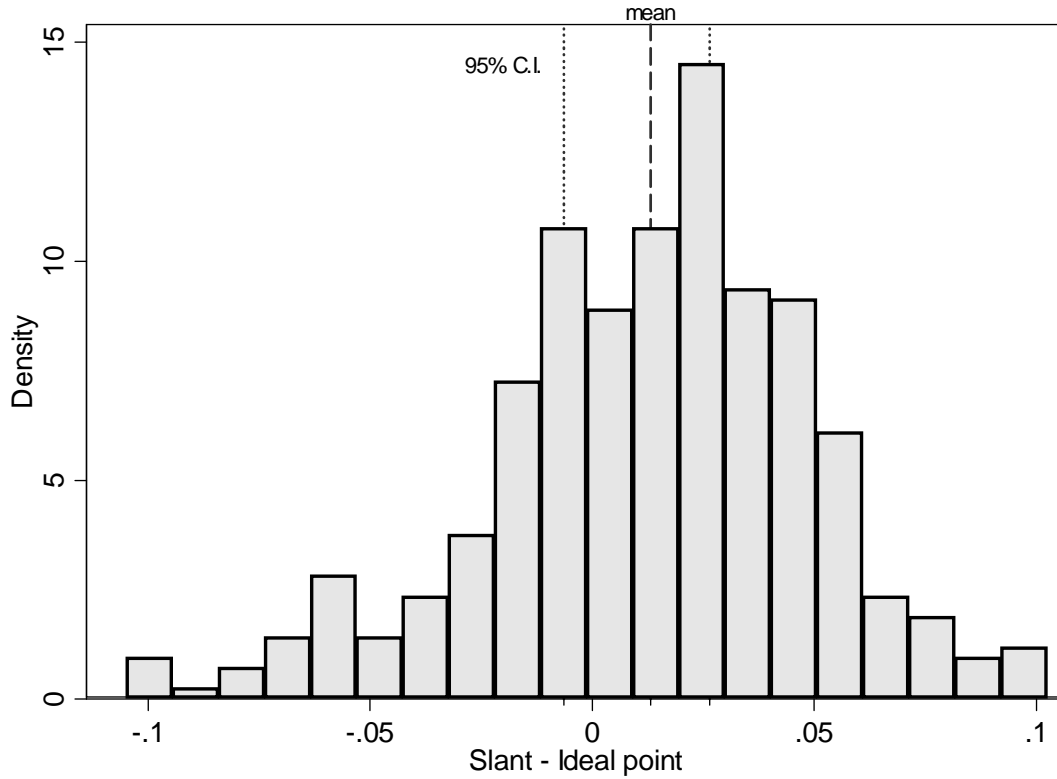
Notes: Y-axis shows the estimated effect of the share contributing to Republican candidates on the share of households in the zipcode reading each newspaper, from a model in which readership shares are regressed, separately by newspaper, on contribution shares and market fixed effects. X-axis shows slant measure. Figure excludes data for newspapers circulating in fewer than 300 zipcodes.

**Figure 3** *Newspaper slant and variation in consumer demand*



Source: Authors' calculations based on ProQuest database and *Congressional Record* (slant index), Audit Bureau of Circulations (newspaper subscriptions), Federal Election Commission (campaign contributions).  
 Notes: Figure shows coefficients on decile dummies in regressions of the share of households in a zipcode reading a newspaper on dummies for decile of share donating to Republicans in the 2000-2004 election cycle, with market-newspaper fixed effects, and weighted by zipcode population. Equation is estimated separately for newspapers in each quartile of the distribution of measured slant.

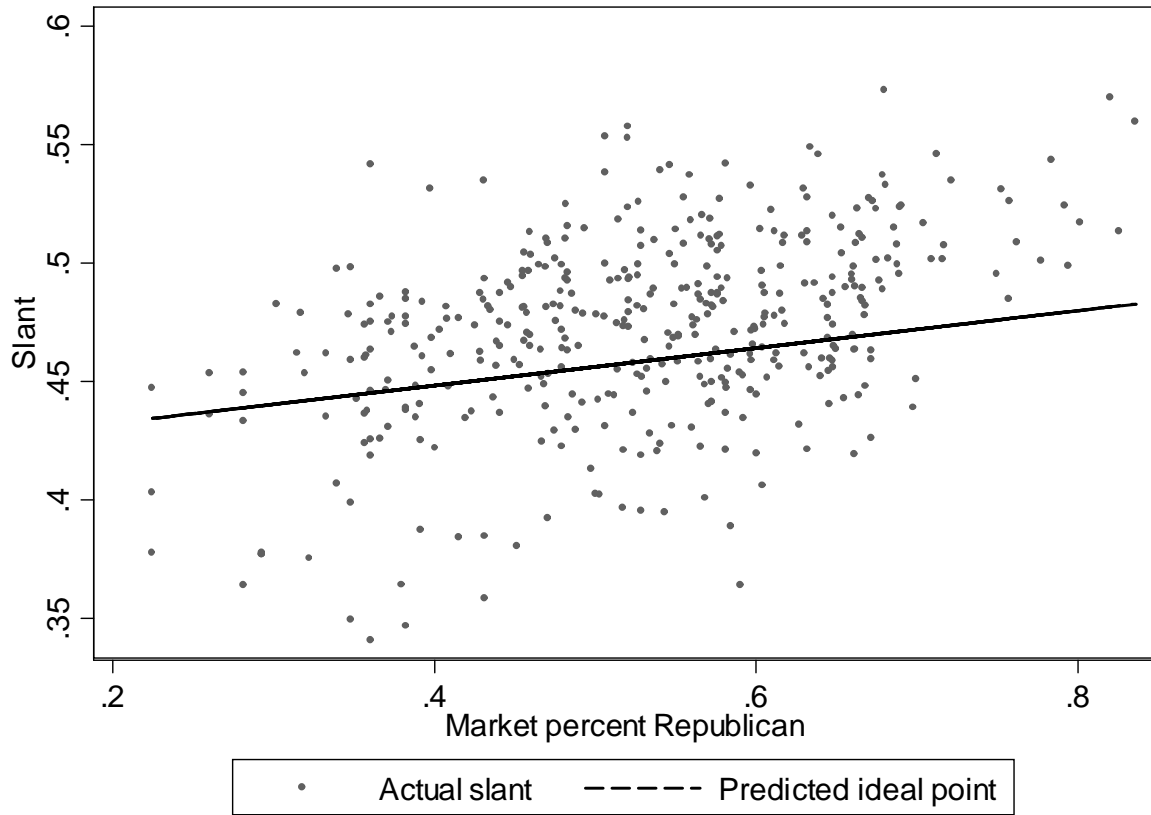
**Figure 4** *Differences between slant and predicted ideal point*



Source: Authors' calculations based on ProQuest database and *Congressional Record* (slant index), U.S. Presidential Atlas, FEC contribution data, and Audit Bureau of Circulations (ideal points).

Notes: Figure shows the distribution of the difference between newspapers' actual slant and our estimate of their profit-maximizing level of slant ( $\hat{y}_n - ideal_n$ ). See section 3 for derivation of slant index, and section 4.4 for details on the computation of profit-maximizing level of slant. The dashed line indicates the mean of the distribution and the dotted lines indicate the 95 percent confidence interval for the value of the mean (incorporating both sampling variation in slant and uncertainty in the demand estimates that are inputs to computing  $ideal_n$ ).

Figure 5 *Slant and consumer preferences*



Source: Authors' calculations based on ProQuest database and *Congressional Record* (slant index), U.S. Presidential Atlas (county-level voting), Editor and Publisher International Yearbook 2000-2005 (newspaper location).

Notes: Figure shows newspaper slant index and profit-maximizing level of slant (y-axis) against Bush's share of the two-party vote in 2004 in the newspaper's market (x-axis). See section 3 for derivation of slant index, and section 4.4 for details on the computation of profit-maximizing level of slant. Newspaper market is defined as the newspaper's primary metropolitan statistical area if available, and the newspaper's county if not.

**Figure 6** *Newspaper slant and ownership*

Figure A: Relationship between newspaper slant and average slant of co-owned papers

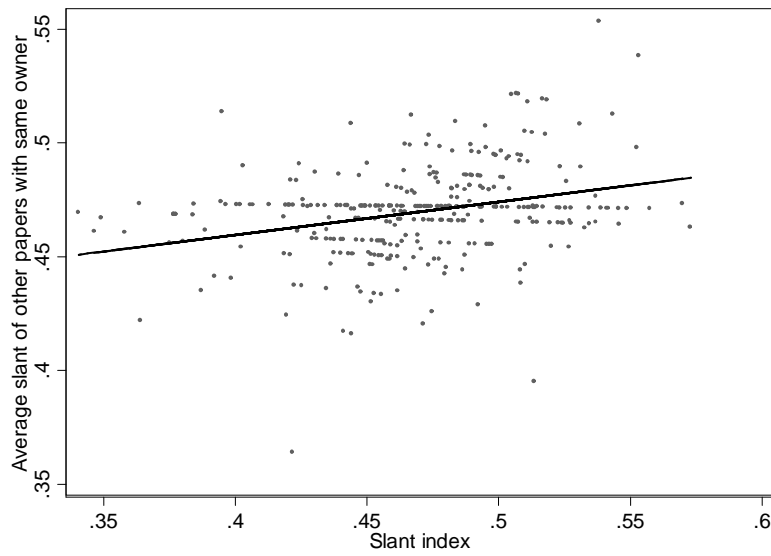
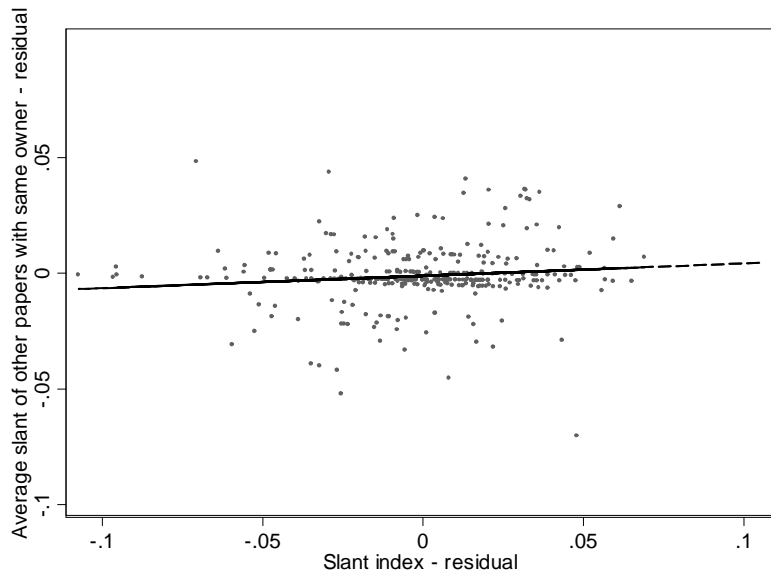


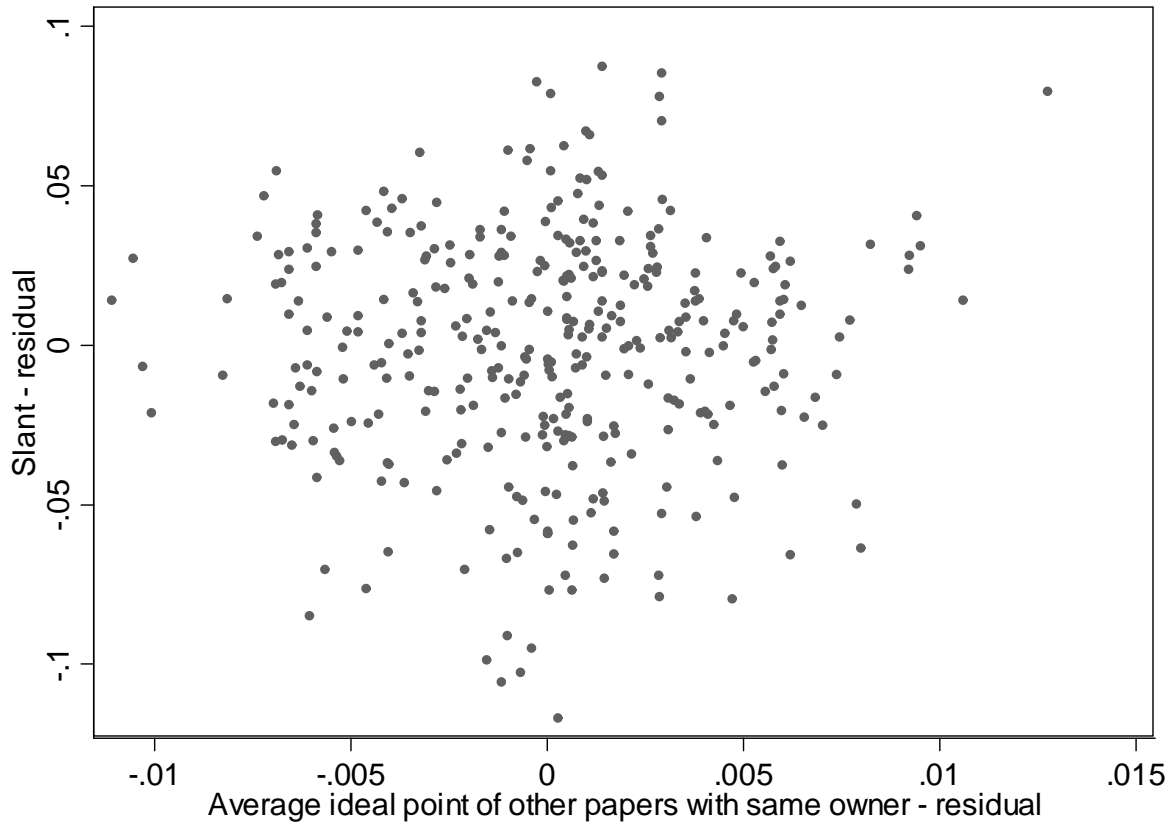
Figure B: Newspaper slant and slant of co-owned papers, controlling for consumer preferences and state



Source: Authors' calculations based on ProQuest database and *Congressional Record* (slant index), Editor and Publisher International Yearbook 2000-2005 (newspaper location and ownership).

Notes: See section 3 for derivation of slant index and section 4.4 for details on calculation of profit-maximizing slant. Figure A shows average slant of co-owned newspapers graphed against a newspaper's own slant. Figure B parallels figure A, but measures slant using residuals from a regression of slant on profit-maximizing slant and dummies for the state in which the newspaper is located.

**Figure 7** *Testing for fixed costs in the production of news content*



Source: Authors' calculations based on ProQuest database and *Congressional Record* (slant index), Editor and Publisher International Yearbook 2000-2005 (newspaper location and ownership).

Notes: Both variables partialled with respect to the profit-maximizing level of slant in the newspaper's market. See section 3 for derivation of slant index, and section 4.4 for details on the computation of profit-maximizing level of slant. Newspaper market is defined as the newspaper's primary metropolitan statistical area if available, and the newspaper's county if not.

**Figure 8** *Newspaper slant and political contributions*

Figure A: Newspaper slant and donations of top-ranking corporate executives and officers

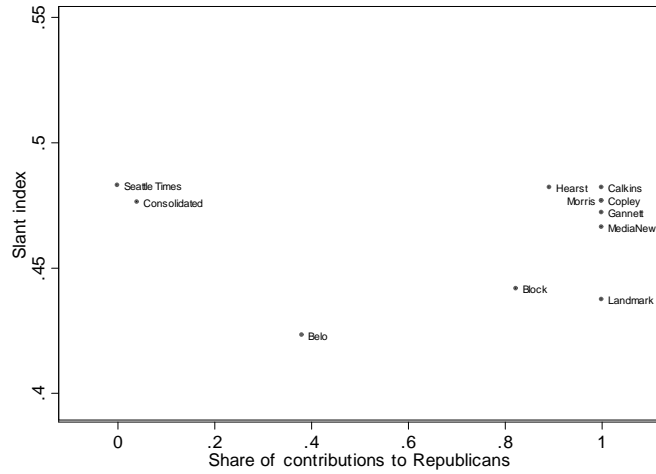
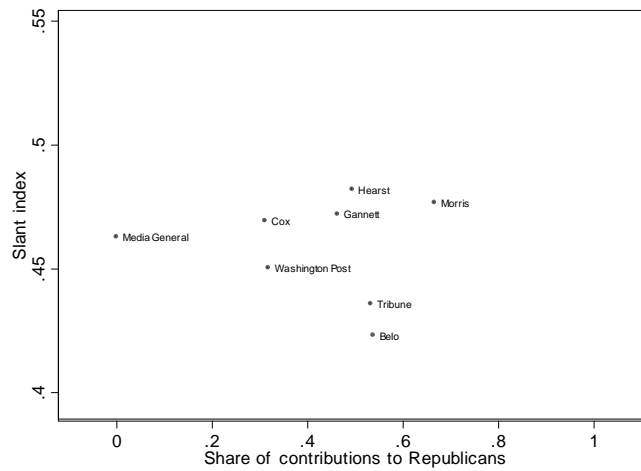


Figure B: Newspaper slant and corporate donations



Source: Authors' calculations based on ProQuest database and *Congressional Record* (slant index), Editor and Publisher International Yearbook 2000-2005 (newspaper ownership), Federal Election Commission (donations of executives), Center for Public Integrity (corporate donations).

Notes: Figure A shows average slant of newspapers owned by a firm graphed against the share of total contribution dollars going to Republicans from the CEO, President, Managing Director, or Chairman of the Board, as collected from the FEC's disclosure database. Figure B shows average slant graphed against the share of corporate contribution dollars going to Republicans, as measured by the Center for Public Integrity.

**Appendix Table 1** *Additional robustness checks*

Specification	Profit-maximizing slant in newspaper's market	Ownership share of residual variation	Consumer share of residual variation
(1) Baseline	2.2246 (0.2039)	0.0000 (0.0599)	0.2238 (0.0410)
(2) Logit demand model	2.2325 (0.2046)	0.0000 (0.0599)	0.2238 (0.0410)
(3) Logit demand model with cross-paper substitution	2.1679 (0.1987)	0.0000 (0.0599)	0.2238 (0.0410)
(4) Exclude newspapers in multi-paper cities	2.0099 (0.2150)	0.0000 (0.0336)	0.1753 (0.0375)
(5) Controlling for predicted sophistication	2.2270 (0.2056)	0.0000 (0.0598)	0.2243 (0.0414)
(6) Tightening cutoffs on phrase counts by 5%	3.5729 (0.3581)	0.0000 (0.0553)	0.1942 (0.0389)
(7) Measuring ideology with adjusted ADA score	1.8389 (0.1805)	0.0000 (0.0246)	0.2009 (0.0394)

Source: Authors' calculations based on ProQuest database and *Congressional Record* (slant index), U.S. Presidential Atlas (county-level voting), Editor and Publisher International Yearbook 2000-2005 (newspaper location and ownership).

Notes: Standard errors in parentheses. See section 3 for derivation of slant index, and section 4.4 for details on the computation of profit-maximizing level of slant. Newspaper market is defined as the newspaper's primary metropolitan statistical area if available, and the newspaper's county if not. Models include state fixed effects and owner random effects, and are estimated via maximum likelihood. Standard errors on the ownership share of the variation are obtained through a parametric bootstrap. Ownership and consumer share of residual variation are the share of variation in slant explained by ownership group random effects and profit-maximizing slant respectively; these shares are computed after partialling for state fixed effects. See appendix A for details.



# Structural Approach

- Benefits:
  - Ability to make predictions out of sample because of estimation of structural parameters
  - Potentially large sample sizes
- Costs:
  - Identification often non-existent (GS paper is better than most)
  - Usually not robust to functional form assumptions
  - Usually not easily interpretable outside of the structural framework

# Manipulability and Research Design: Specification Bias

- Designs:
  - Experiments: Clean and transparent, simple design; manipulability comes in choice of who the experiment is done on, how the experiment is done, and the topic selected for the experiment; the statistics are non-manipulable.
  - Natural Experiments: Often simple design; manipulability can come in through selection of controls and estimation technique; also sample selection leads to manipulability.
  - Structural Estimation: Not very transparent; highly manipulable through sample selection, functional form selection, and estimation technique selection.
  - Standard Estimation: Manipulable in selection of controls.

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