

Political Economy III

Lecture IV

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Gerber, Karlan and Bergan I

- Idea: Randomize Access to Newspapers of Different Biases to See Effect of Media Bias on Voting, Knowledge Preferences:

- The problem with just looking at voting patterns on newspaper reading:

$$V_j = \varpi + \lambda N_j + \pi_j$$

- Is that both are determined by a mutual variable ideology:

$$V_j = \alpha + \beta I_j + \varepsilon_j$$

$$N_j = \mu + \gamma I_j + \varepsilon_j$$

Gerber, Karlan and Bergan II

- In the case where we run the naïve regression of voting on newspaper reading then (even if there is no direct effect of newspaper reading on voting), we get:

$$\lambda = \frac{\text{cov}(V_j, N_j)}{\text{var}(N_j)} = \frac{\beta\gamma\sigma_I^2}{\sigma_N^2}$$

- Gerber, Karlan and Bergan randomize access to newspapers to solve this problem of selection based on ideology.

Gerber, Karlan and Bergan III

- Gerber, Karlan and Bergan did a baseline survey in September, 2005 (3347 responses, 1065 in follow up)
- In Prince William County, Virginia, 25 miles from Washington, DC
- Randomly selected participants from consumer database (46%) and voter registration database (54%)
- Dropped
 - people already subscribing to one of the two newspapers (the Washington Post and the Washington Times)
 - people who did not answer at least one question on the baseline survey

Gerber, Karlan and Bergan IV

- Randomized into Washington Post, Washington Times, and Control based upon stratification by answers to question on:
 - Subscription to a magazine
 - Subscription to a non-Post and non-Times newspaper
 - Who they planned to vote for
 - Whether they said they wanted to read more news

Gerber, Karlan and Bergan IV

- Double Coverage: 75 of those who participated already were receiving the Washington Post (maybe just Sunday), 5 already received the Washington Times
- Non-delivery: 76 households did not receive the Times because they were not in the delivery area, 1 in the Post area
- Attrition: 59 (out of 965) dropped their Post subscription, 54 (out of 950) dropped their Times subscription
- Attrition: 306 Post subscribers responded to the follow, 313 Times, and 446 control (1087 out of 3347 responded)

Table 1: Treatment Group and Control Group Assignment			
	Wave 1	Wave 2	Total
Post	605	360	965
	28.8	29.0	28.9
Times	595	355	950
	28.3	28.6	28.4
Control	904	528	1,432
	43.0	42.5	42.8
Totals	2,104	1,243	3,347
	<i>100</i>	<i>100</i>	<i>100</i>

Note: Cell entries indicate number of individuals assigned to each treatment group. Numbers in italics are column percentages.

Table 2A: Summary Statistics from Baseline Survey
Mean and standard errors

Panel A: Baseline Survey Responses					
	Sample Average	Control	Post	Times	p-value
	(1)	(2)	(3)	(4)	(5)
% female	34.8 (0.8)	34.4 (1.3)	33.0 (1.5)	37.0 (1.6)	0.18
% voted in 2004	88.6 (0.8)	88.5 (1.2)	88.8 (1.4)	88.6 (1.4)	0.98
% voted in 2002	48.0 (1.2)	49.0 (1.9)	45.8 (2.3)	49.1 (2.3)	0.48
% voted in 2001	7.3 (0.6)	7.1 (1.0)	7.7 (1.2)	7.3 (1.2)	0.93
% from consumer list	50.9 (0.9)	52.6 (1.3)	50.0 (1.6)	49.3 (1.6)	0.24
% get news or political magazine	9.2 (0.5)	9.4 (0.8)	8.8 (0.9)	9.4 (0.9)	0.88
% prefers Democratic candidate for Governor in VA	14.4 (0.6)	14.5 (0.9)	14.6 (1.1)	14.1 (1.1)	0.94
% no preference in VA Gov. race	14.8 (0.6)	14.2 (0.9)	15.5 (1.2)	15.1 (1.2)	0.63
% in wave 2 of random assignment	37.1 (0.8)	36.9 (1.3)	37.3 (1.6)	37.4 (1.6)	0.96
% participating in follow-up	32.3 (0.8)	31.7 (1.2)	32.0 (1.5)	33.5 (1.5)	0.65
N	3347	1432	965	950	

Panel B: Baseline Survey Responses on the Sample of Those Who Completed the Follow-up Survey					
	Sample Average	Control	Post	Times	p-value
	(1)	(2)	(3)	(4)	(5)
% female	32.9 (1.5)	31.5 (2.2)	36.8 (2.8)	30.9 (2.6)	0.21
% voted in 2004	90.7 (1.2)	92.6 (1.7)	89.2 (2.5)	89.5 (2.3)	0.44
% voted in 2002	56.0 (2.1)	57.6 (3.3)	50.6 (4.0)	58.7 (3.8)	0.27
% voted in 2001	8.4 (1.2)	9.2 (1.8)	8.2 (2.2)	7.6 (2.0)	0.84
% from consumer list	48.3 (1.5)	49.6 (2.4)	48.9 (2.9)	45.9 (2.8)	0.59
% get news or political magazine	11.3 (1.0)	10.4 (1.4)	11.0 (1.8)	12.9 (1.9)	0.54
% prefers Democratic candidate for Governor in VA	19.4 (1.2)	19.6 (1.9)	21.0 (2.3)	17.6 (2.2)	0.55
% no preference in VA Gov. race	12.9 (1.0)	13.2 (1.6)	10.0 (1.7)	15.1 (2.0)	0.16
% in wave 2 of random assignment	35.1 (1.5)	35.0 (2.3)	38.5 (2.8)	31.8 (2.6)	0.21
N	1,065	446	306	313	

Note: Standard errors reported in parentheses. Column 5 reports the p-values for chi squared tests of independence between treatments for each baseline variable.

**Table 2B: Summary Statistics for Outcome Measures
Mean and Standard Errors**

	Sample Avg. (1)	Control (2)	Post (3)	Times (4)
Voted	.728 (.014)	.726 (.021)	.725 (.025)	.735 (.025)
Voted for Democrat	.446 (.019)	.411 (.029)	.490 (.035)	.451 (.034)
Did not Vote, But Preferred Democrat	.399 (.030)	.419 (.046)	.416 (.056)	.351 (.055)
Voted for or Preferred Democrat	.433 (.016)	.413 (.024)	.470 (.030)	.425 (.029)
Most important Problem (1=issue other than scandals, 0=scandals)	.078 (.008)	.08 (.013)	.068 (.014)	.086 (.016)
Most important issues in Iraq (1=constitution or Hussein trial)	.444 (.015)	.442 (.024)	.472 (.029)	.417 (.028)
Leak case (3=no one did anything wrong; 1=something illegal)	1.75 (.005)	1.74 (.038)	1.72 (.047)	1.79 (.045)
Alito confirmation (3=should confirm, 1=should not confirm)	2.34 (.021)	2.37 (.033)	2.27 (.040)	2.38 (.037)
Specific issue index (higher scores conservative)	.021 (.020)	.033 (.032)	-.028 (.039)	.051 (.035)
Bush Approval (4=strong approval, 1=strong disapproval)	2.43 (.043)	2.48 (.066)	2.37 (.079)	2.42 (.081)
Republican favorable (4=very favorable, 1=very unfavorable)	1.47 (.032)	1.50 (.050)	1.41 (.058)	1.48 (.059)
Conservatism (7=extreme conservative, 1=extreme liberal)	4.51 (.045)	4.56 (.069)	4.38 (.087)	4.58 (.083)
Broad policy index	.001 (.025)	.038 (.039)	-.066 (.046)	.014 (.047)
Broad and specific issue index	.010 (.021)	.033 (.032)	-.046 (.038)	.031 (.038)
Knew number dead in Iraq	.784 (.013)	.781 (.019)	.779 (.024)	.791 (.023)
Identified Libby as involved in leak	.739 (.013)	.754 (.020)	.705 (.026)	.748 (.025)
Identified Miers as Supreme Court nominee	.777 (.013)	.785 (.019)	.729 (.026)	.813 (.022)
Fact index	-.009 (.022)	.007 (.034)	-.079 (.043)	.035 (.040)
N	1065	446	306	313

**Table 4: Effect of Post or Times on Voting Behavior in Virginia Governors Race
OLS**

	Voted			Voted for Democrat			Did not vote, but Preferred Democrat			Voted for or Preferred Democrat		
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)	(3a)	(3b)	(3c)	(4a)	(4b)	(4c)
Post	-.001 (.033)	.018 (.032)	-.008 (.034)	.079* (.045)	.086** (.043)	.114** (.046)	-.003 (.072)	-.011 (.081)	-.024 (.123)	.056 (.038)	.047 (.037)	.071* (.040)
Times	.009 (.033)	.026 (.031)	.012 (.034)	.040 (.044)	.053 (.042)	.074 (.046)	-.068 (.072)	-.026 (.085)	-.132 (.120)	.011 (.038)	.016 (.036)	.039 (.039)
N	1079	1040	1040	718	700	700	271	255	255	989	955	955
Refused	2	2	2	69	69	69	25	25	25	92	92	92
Does not know	0	0	0	0	0	0	0	0	0	0	0	0
Missing Cov.	0	39	39	0	18	18	0	16	16	0	34	34
Not asked	0	0	0	294	294	294	785	785	785	0	0	0
Total Surveyed	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081
R-squared	0.00	0.34	0.40	0.00	0.45	0.53	.00	.47	.72	0.00	0.37	0.44
Covariates	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Strata indicators	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Surveyor/Date indicators	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes

Note: Standard errors in parentheses. ** 95% significance, * 90% significance. Dependent variables in the four sets of columns are as follows: self-reported voter turnout, voted for the Democratic candidate (among those who claimed to vote), preferred the Democrat (among those who did not vote), and either preferred the Democratic candidate (if they said they did not vote) or voted for the Democratic candidate (if they said they voted), respectively. In the row labeled “covariates”, we refer to data from the baseline survey: gender, reported age, three separate indicators for voting in the 2001, 2002 and 2004 general elections, an indicator for whether the respondent was drawn from a consumer list, self report of receiving any news or political magazines, and baseline survey self reports of preferring the Republican candidate in the gubernatorial election and having no preference in the gubernatorial election, and an indicator for wave of the study. In the row “strata indicators”, we include indicator variables for each strata formed prior to the randomization, which included unique combinations of the following: intention to vote, receive a paper (non-Post/non-Times), mentions ever reading a paper, gets a magazine, and asked whether they wish they read the paper more. “Surveyor/Date indicators” refers to a set of indicator variables for each unique combination of surveyor and date for the follow-up survey. All results remain qualitatively similar, and statistical significance remains as-is, using probit or ordered probit specifications instead of OLS.

Table 5: The Effect of Treatment on Attitudes Towards National Politics
OLS

<i>Panel A: Specific Issues</i>															
	Most important problem (1=issue other than scandals,0=scandals)			Most important issues in Iraq (1=constitution or Hussein trial)			Leak case (3=no one did anything wrong; 1=something illegal)			Alito confirmation (3=should confirm, 1=should not confirm)			Specific Issue Index (higher scores conservative)		
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)	(3a)	(3b)	(3c)	(4a)	(4b)	(4c)	(5a)	(5b)	(5c)
Post	-.012	-.021	-.028	.038	.020	.051	-.015	.042	.023	-.099**	-.025	-.054	-.061	-.013	-.029
	(.021)	(.023)	(.025)	(.039)	(.039)	(.042)	(.061)	(.062)	(.067)	(.051)	(.052)	(.055)	(.049)	(.049)	(.052)
Times	.005	.013	.013	-.020	-.004	.013	.050	.027	.020	.019	.059	.036	.018	.013	-.001
	(.020)	(.023)	(.024)	(.038)	(.038)	(.041)	(.059)	(.059)	(.064)	(.050)	(.051)	(.054)	(.049)	(.048)	(.051)
N	1033	996	996	982	949	949	899	870	870	971	940	940	1081	1041	1041
Refused	7	7	7	19	19	19	37	37	37	10	10	10	0	0	0
DK	41	41	41	80	80	80	145	145	145	100	100	100	0	0	0
Missing Cov.	0	37	37	0	67	67	0	29	29	0	31	31	0	40	40
Total Surveyed	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081
R-squared	.00	.14	.24	.00	.30	.37	.00	.32	.41	.01	.30	.40	.00	.33	.40
Covariates?	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Strata indicators?	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Operator / date indicators?	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
<i>Panel B: Broad National Issues</i>															
	Bush Approval Rating (4=strong approval, 1=strong disapproval)			Republican Favorable (4=very favorable, 1=very unfavorable)			Conservatism (7=extreme conservative, 1=extreme liberal)			Broad policy Index			Broad and Specific Issue Index		
	(6a)	(6b)	(6c)	(7a)	(7b)	(7c)	(8a)	(8b)	(8c)	(9a)	(9b)	(9c)	(10a)	(10b)	(10c)
Post	-.114	-.046	-.164	-.096	-.015	-.086	-.174	-.101	-.161	-.104*	-.052	-.112*	-.079	-.029	-.067
	(.103)	(.097)	(.103)	(.077)	(.078)	(.082)	(.109)	(.110)	(.117)	(.061)	(.058)	(.061)	(.050)	(.047)	(.049)
Times	-.058	-.056	-.165	-.026	-.010	-.111	.021	.025	-.016	-.023	-.025	-.095	-.002	-.006	-.048
	(.103)	(.097)	(.102)	(.076)	(.077)	(.081)	(.109)	(.108)	(.116)	(.061)	(.057)	(.061)	(.050)	(.046)	(.048)
N	955	918	918	1021	985	985	1033	1000	1000	1074	1034	1034	1081	1041	1041
Refuse/missing	17	17	17	17	17	17	16	16	16	7	7	7	0	0	0
Does not know	109	109	109	43	43	43	32	32	32	0	0	0	0	0	0
Missing Cov.	0	37	37	0	36	36	0	33	33	0	40	40	0	40	40
Total Surveyed	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081
R-squared	.00	.40	.49	.00	.30	.39	.00	.30	.37	.00	.38	.46	.00	.40	.48
Covariates?	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Strata indicators?	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Operator/date indicators?	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes

Note: Standard errors in parentheses. ** 95% significance, * 90% significance. Dependent variables in Panel A include response to closed-ended question about the most important problem facing the country, a closed ended question about the most important problems in the Iraq war, attitudes about the leak case, the Alito confirmation, and a specific issue index constructed from the most important problem, the most important issue in Iraq and attitudes about the leak case. Dependent variables in panel B include attitudes about general national issues, including Bush approval, favorability towards Republicans, Conservatism, and a policy index constructed from these previous three items. The “broad policy index” and the “specific issue index” are both constructed by summing the standard deviations from the mean for each of the three specific questions for that index. The “Broad and Specific Issue index” is constructed then by adding together the two indices. In the row labeled “covariates”, we refer to data from the baseline survey: gender, reported age, three separate indicators for voting in the 2001, 2002 and 2004 general elections, an indicator for whether the respondent was drawn from a consumer list, self report of receiving any news or political magazines, and baseline survey self reports of preferring the Republican candidate in the gubernatorial election and having no preference in the gubernatorial election, and an indicator for wave of the study. In the row “strata indicators”, we include indicator variables for each of the strata formed prior to the randomization, which included unique combinations of the following: intention to vote, receive a paper (non-Post/non-Times), mentions ever reading a paper, gets a magazine, and asked whether they wish they read the paper more. “Surveyor/Date indicators” refers to a set of indicator variables for each unique combination of surveyor and date for the follow-up survey. All results remain qualitatively similar, and statistical significance remains as-is, using probit or ordered probit specifications instead of OLS.

Table 6: Effect of Treatment on Political Knowledge
OLS

	Knew number dead in Iraq			Identified Libby as involved in leak			Identified Miers as Supreme Court nominee			Fact Index		
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)	(3a)	(3b)	(3c)	(4a)	(4b)	(4c)
Post	-.002 (.030)	.018 (.033)	.021 (.034)	-.050 (.033)	-.024 (.034)	-.022 (.036)	-.057* (.031)	-.042 (.032)	-.034 (.034)	-.086 (.054)	-.036 (.056)	-.023 (.058)
Times	.010 (.030)	-.009 (.032)	.009 (.034)	-.006 (.032)	-.011 (.034)	.008 (.036)	.028 (.030)	.011 (.031)	.018 (.033)	.028 (.054)	-.004 (.055)	.032 (.057)
N	1077	1038	1038	1067	1029	1029	1074	1036	1036	1080	1041	1041
Refuse/missing	4	4	4	14	14	14	7	7	7	1	1	1
Does not know	0	0	0	0	0	0	0	0	0	0	0	0
Missing Cov.	0	39	39	0	38	38	0	38	38	0	39	39
Total Surveyed	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081	1081
R-squared	.00	.20	.29	.00	.21	.32	.01	.23	.32	.00	.25	.36
Covariates	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Strata indicators	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Surveyor/Date indicators	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes

Note: Standard errors in parentheses. ** 95% significance, * 90% significance. Dependent variables are: ability to identify the number dead in Iraq in a closed-ended question, identified ‘Scooter’ Libby from a list of four individuals as Dick Cheney’s chief of staff who recently resigned, identified Harriett Miers from a list of four individuals as a recent supreme Court nominee, and an index created from these questions. In the row labeled “covariates”, we refer to data from the baseline survey: gender, reported age, three separate indicators for voting in the 2001, 2002 and 2004 general elections, an indicator for whether the respondent was drawn from a consumer list, self report of receiving any news or political magazines, and baseline survey self reports of preferring the Republican candidate in the gubernatorial election and having no preference in the gubernatorial election, and an indicator for wave of the study. In the row “strata indicators”, we include indicator variables for each strata formed prior to the randomization, which included unique combinations of the following: intention to vote, receive a paper (non-Post/non-Times), mentions ever reading a paper, gets a magazine, and asked whether they wish they read the paper more. “Surveyor/Date indicators” refers to a set of indicator variables for each unique combination of surveyor and date for the follow-up survey. All results remain qualitatively similar, and statistical significance remains as-is, using probit or ordered probit specifications instead of OLS.

Appendix Table 2: Stories About the Gubernatorial Race On the Front Page or the First Metro Page

	Post	Times
Kaine	4	1
Kilgore	1	1
Potts	1	0
Kaine Ahead in Polls	0	2
Bush Campaigns for Kilgore	1	0
Kilgore Does not Attend Va. Bush Speech	2	0
Kilgore Hurt by Republican party problems	0	1
Antitax Groups Do Not Support Kilgore	0	1
Other Stories	6	4

* Cell entries are number of stories dealing with the gubernatorial race on each newspaper's front page from October 17, 2005 to the day of the gubernatorial election, November 8, 2005. "Kaine" refers to stories with headlines specifically about the Democratic Candidate, and "Kilgore" to stories about the Republican candidate. "Potts" refers to stories about the third party candidate.

Appendix Table 3: Analysis of Participation in the Follow-Up Survey
Probit

Dependent variable = 1 if Survey Successfully Completed in Follow-up Phone Call		
	(1)	(2)
Post treatment group	0.003 (0.020)	-0.048 (0.046)
Times treatment group	0.018 (0.020)	0.052 (0.050)
Female	-0.026 (0.017)	-0.040 (0.026)
Voted in 2002	0.095*** (0.024)	0.103*** (0.038)
From consumer database sample frame	0.044** (0.021)	0.046 (0.032)
Subscribes to news magazine	0.069** (0.029)	0.026 (0.043)
Reported preferring democratic candidate for governor	0.126*** (0.026)	0.126*** (0.040)
Wave 2 of Experiment	-0.037** (0.017)	-0.035 (0.026)
Post * Female		0.094** (0.045)
Post * Voted in 2002		-0.037 (0.054)
Post * From consumer database sample frame		0.011 (0.050)
Post * Subscribes to news magazine		0.053 (0.071)
Post * Reported preferring democratic candidate for governor		0.032 (0.059)
Post * Wave 2 of Experiment		0.043 (0.043)
Times * Female		-0.040 (0.040)
Times * Voted in 2002		0.014 (0.057)
Times * From consumer database sample frame		-0.018 (0.049)
Times * Subscribes to news magazine		0.092 (0.072)
Times * Reported preferring democratic candidate for governor		-0.031 (0.056)
Times * Wave 2 of Experiment		-0.048 (0.039)
Number of observations	3,347	3,347
Pseudo R-squared	0.018	0.023
Mean dependent variable	0.32	0.32
P(Times interaction variables ≈ 0)		0.56
P(Post interaction variables ≈ 0)		0.23

Note: Standard errors in parentheses. *** 99 % significance ** 95% significance *90% significance. Indicator variable included (but not reported) if gender information is missing (applicable for 134 observations). All variables (except assignment to treatment and gender) are from the baseline survey.

Average Treatment Effects

- Assume:

$Y = \text{Outcome}$, $X = \text{Covariates}$, $W = \text{Treatment}$

- Definitions:

- Average Treatment Effect

$$E(Y_T - Y_{NT})$$

- Average Treatment Effect on the Treated (intention)

$$E(Y_T - Y_{NT} | W)$$

- Local Average Treatment Effect

$$E(Y_T - Y_{NT} | W, X)$$

Experimental Design

- Benefits:
 - Randomization: Identification Credible
 - Able to Control/Design Experiment
- Costs:
 - Selective response to questionnaires
 - Selective attrition
 - Field Experiments have more external validity but still Hawthorne Effects
 - Small Sample: Power Problems
 - Small Sample: External Validity as Average Treatment Effect?

Fox News Paper

- Natural Experiment Design
- Two types of natural experiments:
 - Quasi-randomization

$$V_j = \varpi + \lambda N_j + \pi_j, \text{cov}(N_j, \pi_j) = 0$$

- Conditional quasi-randomization

$$V_j = \varpi + \lambda N_j + X\beta + \pi_j, \text{cov}(N_j, \pi_j) \neq 0 \text{ but } \text{cov}(N_j, \pi_j | X) = 0$$

- Fox paper is latter

1 Introduction

- Do the media provide biased information?
- Surveys: 70 percent of people believe there is a great deal or a fair amount of "political bias in news coverage" (Pew, 2000)
- BUT: Does media bias *matter*?
- Policy: Regulation of media markets (FCC)

Which of the following statements best describes you:
A. The president is always right.
B. The president is never wrong.
C. I don't watch Fox News Channel.

ACME POLLING SERVICES



- Scenario 1:

1. Sophistication. Invert media bias (Gentzkow and Shapiro, 2005)
2. Sorting. Listen to media confirming priors
 - Media bias has no effect on behavior

- Scenario 2:

1. Credulous audience (Cain, Loewenstein, and Moore, 2005) and small investors (Malmendier and Shantikumar, 2005)
2. Persuasion bias (De Marzo et al., 2003)
 - Media bias has systematic effect on behavior

- Empirical question with very limited evidence:
 1. Surveys: *Large* effects on beliefs in surveys (PIPA, 2003; Gentzkow and Shapiro, 2004)
 2. Lab experiments: *Large* effects on stated beliefs (Ansolabehre and Iyengar, 1995)

- This paper. Fox News natural experiment
 1. Fast expansion of Fox News in cable markets
 - October 1996: Launch of 24-hour cable channel
 - June 2000: 17 percent of US population listens regularly to Fox News (Scarborough Research, 2000)

Table 11. Comparison with Persuasion Rates in Other Media Studies

Paper	Treatment	Elect. Type or Question	Variable t	Control Group t_T	Treatm. Group t_C	Exp. Rate $e_T - e_C$	Pers. Rate f
	(1)	(2)		(6)	(7)	(8)	(9)
<u>Fox News Study</u>							
DellaVigna and Kaplan (2005)	Fox News Exposure, County f.e.	Presidential Election	Republican Vote Share	0.556	0.560	0.121	0.033
	Fox News Exposure, Distr. f.e.	Election	Vote Share	0.556	0.563	0.079	0.083
<u>Turn-Out-The-Vote Experiments</u>							
Gerber and Green (2000)	Door-to-Door Canvassing	Federal Elect.	Turnout	0.422	0.463	0.270	0.263
	Canvassing + Mail + Calls	Federal Elect.	Turnout	0.422	0.448	0.270	0.167
Green, Gerber, and Nickerson (2003)	Door-to-Door Canvassing	Local Elect.	Turnout	0.286	0.310	0.293	0.118
Green and Gerber (2001)	Phone Calls By Youth Vote	General Elect.	Turnout	0.660	0.711	0.737	0.205
	Phone Calls 18-30 Year-Olds	General Elect.	Turnout	0.405	0.416	0.414	0.045
<u>Laboratory Experiments</u>							
Ansolabehere and Iyengar (1995)	Laboratory Exposure to 30-Second Political Ad	Governor Elect. Senate Elect. Mayor Elect.	Vote Share for Party Sponsoring Ad	0.530	0.568	1.000	0.082
<u>Surveys</u>							
Kull et al. (2003)	Respond. watches Fox News	Did US find WMD in Iraq?	Share of Yes Answers	0.220	0.330	1.000	0.141
Gentzkow and Shapiro (2004)	Respondent watches CNN	Did Arabs do 9/11 attack?	Share of Yes Answers	0.215	0.280	1.000	0.083
	Respond. watches Al Jazeera	9/11 attack?	Answers	0.215	0.133	1.000	0.105

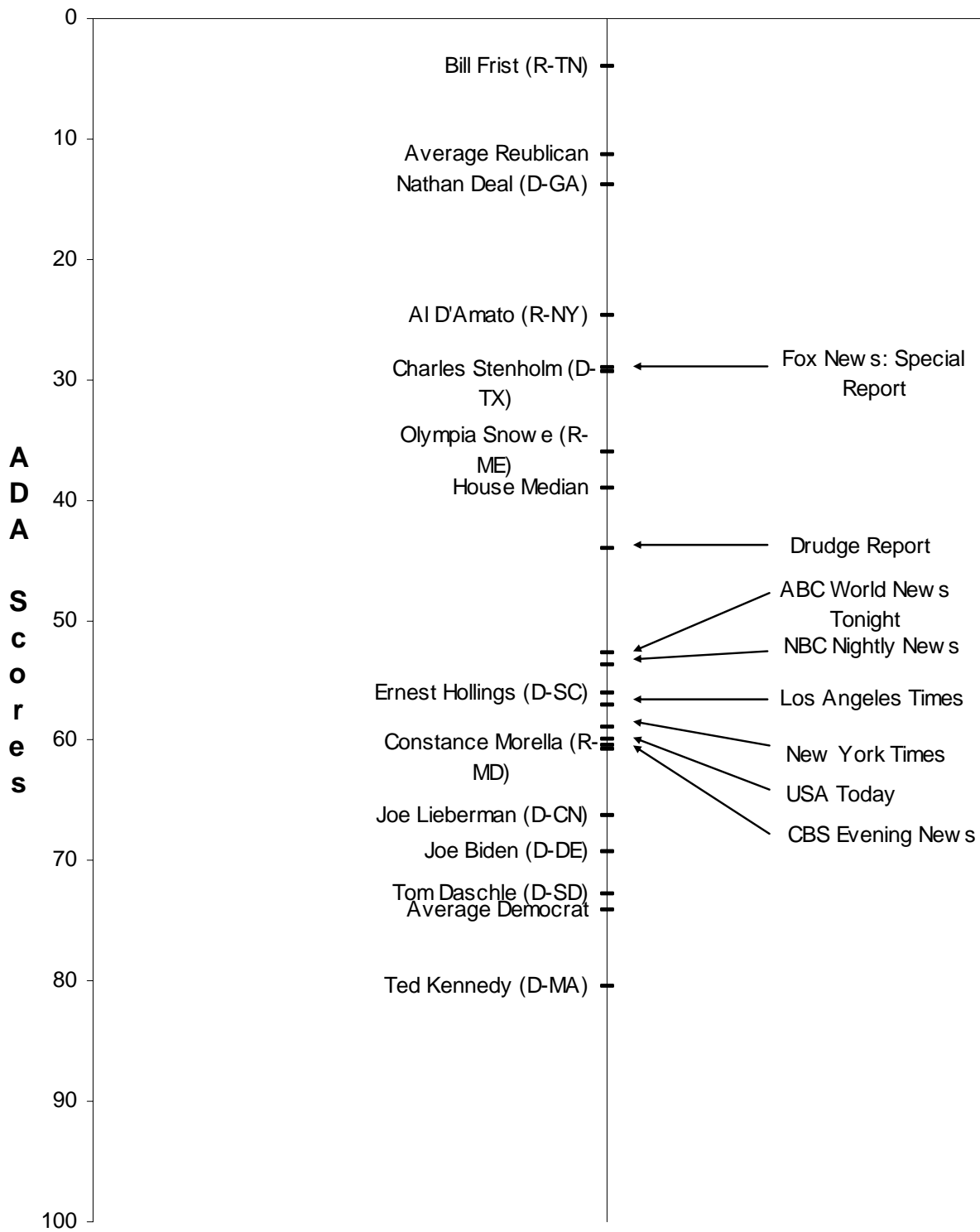
2. Geographical differentiation in expansion

- Cable markets: Local monopolies with capacity constraints
- Town-level variation in exposure to Fox News
- 9,256 towns with variation even within a county

3. Conservative content

- Unique right-wing TV channel (Groseclose and Milyo, 2004)
- Clear differentiation of content
- Substantial effect on average information exposure

Figure 2. Adjusted ADA Scores of Politicians and Media Outlets, Sentences as Observations



- Strategy:
 - Compare towns that offer Fox News in 2000 to towns that do not
 - Analyze effect on changes in town-level voting
- Results:
 - .4-.7 percentage point effect on Republican vote share in Pres. elections
 - Similar effect on Senate elections (and mostly on turnout)
- Significant impact of media bias: Fox News convinced 3-8% of audience
- Interpretation. Persuasion

3 Data

- **Cable data**

- Source: *Television and Cable Factbook, 2001*
- For each local cable, hand-collected information on:
 - * communities served
 - * number of channels provided
 - * channels: CNN and Fox News
- 28 US states covered

- **Election data**

- Sources: Federal Elections Project (2000), Record of American Democracy (1988), Atlas Election data (1992-96, 2004), State Election Offices (1992-96)
- Three types of town-level election data:
 1. New England, Ca: Town-level data available
 2. Mn, Mi, Pa: Precinct-level data with conversion to town
 3. Al, Ar, Ia,...: Precinct-level data. Extract town name from precinct name

- Match election and cable data (10,479 towns). Drop if:
 - Missing Census data from 1996 or 2000 (353 towns)
 - No CNN channel (324 towns)
 - Multiple cables with both Fox and no Fox (289 towns)
 - Voting data problems (257 towns)
- Sample: 9,256 towns, 28 US States, 1,166 counties
- Fox News audience data (Scarborough Research): Somewhat more Republican (selection or persuasion?), similar education (Table 1)

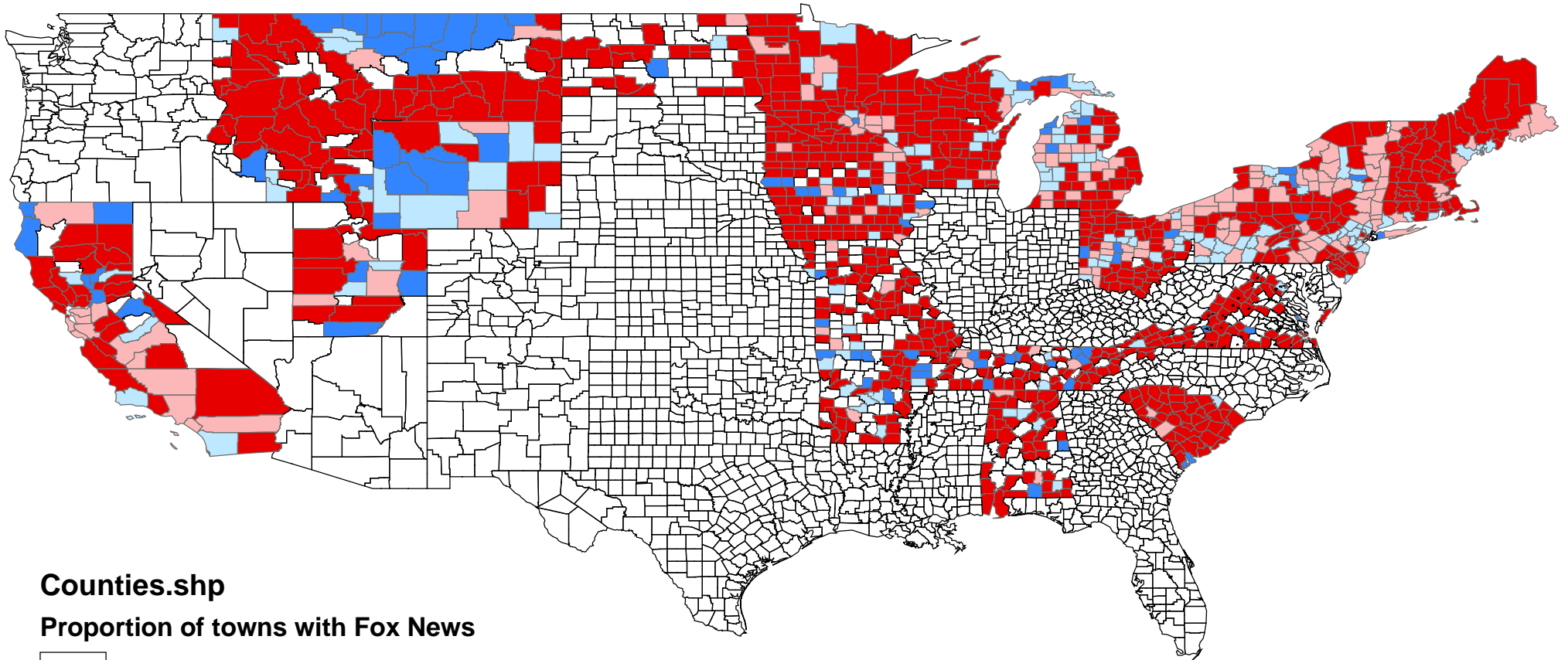
Table 1. Determinants of Fox News Audience (Scarborough Data)

Sample:	Summary Statistics					
	All Survey Respondents			Matched Zip-Coded		
	All	Fox News Regular Audience	Fox News Non-Reg. Audience	All	Fox News Diary Audience	Fox News Non-Diary Audience
(1)	(2)	(3)	(4)	(5)	(6)	
Cable Variables:						
Fox News (Reg. Audience)	0.173 (0.379)	1 .	0 .	0.166 (0.372)	0.591 (0.493)	0.146 (0.353)
Fox News (Diary Audience)				0.035 (0.185)	1 .	0 .
CNN (Reg. Audience)	0.341 (0.474)	0.619 (0.486)	0.283 (0.451)	0.353 (0.478)	0.603 (0.490)	0.341 (0.474)
CNN (Diary Audience)				0.103 (0.304)	0.350 (0.478)	0.094 (0.292)
Demogr. Variables:						
College Grad.	0.344 (0.475)	0.356 (0.479)	0.341 (0.474)	0.386 (0.487)	0.452 (0.498)	0.384 (0.486)
African Amer.	0.097 (0.296)	0.111 (0.314)	0.094 (0.292)	0.084 (0.277)	0.020 (0.140)	0.086 (0.281)
Age	45.679 (16.633)	49.744 (16.995)	44.827 (16.429)	44.506 (16.443)	51.727 (16.362)	44.241 (16.386)
Male	0.424 (0.494)	0.481 (0.500)	0.412 (0.492)	0.427 (0.495)	0.526 (0.500)	0.423 (0.494)
Political Variables:						
Republican	0.282 (0.450)	0.375 (0.484)	0.262 (0.440)	0.267 (0.442)	0.536 (0.499)	0.257 (0.437)
Democrat	0.319 (0.466)	0.294 (0.455)	0.324 (0.468)	0.335 (0.472)	0.159 (0.366)	0.342 (0.474)
Voter Turnout	0.693 (0.461)	0.769 (0.421)	0.677 (0.468)	0.677 (0.468)	0.819 (0.386)	0.672 (0.470)
Subscriptions:						
Cable	0.687 (0.464)	0.784 (0.411)	0.666 (0.471)	0.754 (0.431)	0.886 (0.318)	0.749 (0.434)
Satellite	0.147 (0.354)	0.138 (0.344)	0.149 (0.356)	0.104 (0.305)	0.122 (0.327)	0.103 (0.304)
No. Observations:	N = 10520	N = 18223	N = 86968	N = 11388	N = 403	N = 10985

Table 2. Summary Statistics






	All Sample		
	All Towns (1)	Fox News in 2000 (2)	No Fox in 2000 (3)
Cable Variables:			
Number of Channels	28.60 (14.64)	44.52 (15.98)	24.73 (11.31)
Potential Subscribers	78124 (149015)	163622 (246661)	57384 (103131)
Voting Variables:			
Vote Share in 1996	0.470 -(0.125)	0.479 -(0.125)	0.467 -(0.125)
Vote Share in 2000	0.538 -(0.130)	0.538 -(0.129)	0.538 -(0.130)
Turnout in 1996	0.551 -(0.154)	0.552 -(0.147)	0.551 -(0.155)
Turnout in 2000	0.583 -(0.159)	0.581 -(0.153)	0.584 -(0.160)
Demogr. Variables for 2000:			
Population (10,000s)	9612 (32661)	11516 (32427)	9150 (32703)
Some college	0.257 -(0.064)	0.259 -(0.063)	0.257 -(0.064)
College	0.195 -(0.133)	0.220 -(0.147)	0.189 -(0.129)
African American	0.033 -(0.095)	0.031 -(0.082)	0.034 -(0.098)
Hispanic	0.031 -(0.073)	0.035 -(0.072)	0.030 -(0.073)
Unemployed	0.051 -(0.035)	0.051 -(0.035)	0.052 -(0.035)
Urban	0.406 -(0.438)	0.537 -(0.447)	0.374 -(0.429)
No. of observations	N = 9256	N = 1807	N = 7449

Figure 1. Fox News Availability by County, 2000.



Counties.shp

Proportion of towns with Fox News

-  No Data
-  proportion = 0
-  $0 < \text{proportion} < 0.5$
-  $0.5 \leq \text{proportion} < 1$
-  proportion = 1

Note: Proportion for each county is calculated as the ratio of number of towns with Fox News available via cable to total number of towns in the county. Alaska and Hawaii are also in the data set, but are not included on the map due to space constraints.

4 Empirical Results

- **Selection.** In which towns does Fox News select? (Table 3):

$$d_{k,2000}^{FOX} = \alpha + \beta v_{k,1996}^{R,Pres} + \Gamma_{2000} X_{k,2000} + \Gamma_{00-90} X_{k,00-90} + \Gamma_C C_{k,2000} + \varepsilon_k.$$

- Controls:
 - Census controls
 - Cable controls: Number of channels and potential subscribers
 - US House district or county fixed effects
- Conditional on X , Fox News availability is orthogonal to political variables

Table 3. Selective Penetration of Fox News in 2000, Linear Probability Model

	Dep. Var.: Fox News Availability in 2000 in Cable System						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pres. Republican Vote Share in 1996	0.6562 (0.2127)***	0.3987 (0.1574)**	-0.0324 (0.0948)	-0.0397 (0.1020)	-0.073 (0.0991)	0.0849 (0.1324)	0.0603 (0.1320)
Pres. Turnout in 1996					0.0273 (0.0531)		
Pres. Rep. Vote Share Change 1988-1992						0.2287 (0.2480)	-0.2348 (0.2335)
Population 2000	-0.0019 (0.0008)**	-0.0029 (0.0008)***	-0.0003 (0.0014)	-0.0009 (0.0010)	0.0006 (0.0014)	-0.0017 (0.0014)	-0.0011 (0.0012)
Some College 2000	-0.1444 (0.4096)	0.2452 (0.3133)	-0.0004 (0.1963)	-0.3139 (0.2218)	0.037 (0.2094)	0.1507 (0.2709)	0.2599 (0.2967)
College Grad. 2000	0.9454 (0.3237)***	0.7312 (0.3171)**	0.0855 (0.1619)	-0.0482 (0.1820)	0.0611 (0.1739)	-0.0966 (0.2092)	0.1113 (0.2061)
African American 2000	0.5802 (0.2169)***	0.3937 (0.2020)*	-0.0098 (0.1090)	0.077 (0.1112)	0.007 (0.1160)	-0.2132 (0.1718)	-0.2511 (0.1587)
Latino 2000	0.1795 (0.2980)	0.2929 (0.2945)	-0.1197 (0.1972)	-0.2768 (0.2074)	-0.2149 (0.2062)	0.0788 (0.3334)	-0.3902 (0.4148)
Unemployment Rate 2000	0.2446 (0.8408)	0.2749 (0.6388)	0.3494 (0.3811)	0.2531 (0.3542)	0.4087 (0.4207)	0.4625 (0.4309)	0.3597 (0.3707)
Urban 2000	0.1453 (0.0474)***	0.0072 (0.0349)	-0.0277 (0.0250)	-0.0113 (0.0208)	-0.01 (0.0256)	-0.0497 (0.0315)	-0.0425 (0.0316)
Other Census Controls	X	X	X	X	X	X	X
Census Controls 2000-1990	X	X	X	X	X	X	X
Control for Cable Features		X	X	X	X	X	X
US House District Fixed Effects			X		X	X	
County Fixed Effects				X			X
R²	0.0772	0.4032	0.669	0.7673	0.6595	0.6317	0.7612
N	N = 9256	N = 9256	N = 9256	N = 9256	N = 8538	N = 3722	N = 3722

	Fox Town	No-Fox Town
1996	0	0
2000	FOX	0

- **Difference-in-Difference Estimation**

1. Simplest comparison (Single Difference): $v_{2000}^{FOX} - v_{2000}^{NO}$

2. Control for previous voting (Difference-in-Difference):

$$\left(v_{2000}^{FOX} - v_{2000}^{NO} \right) - \left(v_{1996}^{FOX} - v_{1996}^{NO} \right) \text{ or}$$

$$v_{2000} - v_{1996} = \alpha + \beta_F d_{2000}^{FOX} + \varepsilon$$

3. Control for previous voting and other controls:

$$v_{2000} - v_{1996} = \alpha + \beta_F d_{2000}^{FOX} + \Gamma X + \varepsilon$$

- **Baseline effect – Presidential races**

- *Effect on Presidential Republican vote share (Table 4):*

$$v_{k,2000}^{R,Pres} - v_{k,1996}^{R,Pres} = \alpha + \beta_F d_{k,2000}^{FOX} + \Gamma_{2000} X_{k,2000} + \Gamma_{00-90} X_{k,00-90} + \Gamma_C C_{k,2000} + \varepsilon_k.$$

- **Results:**

- Significant effect of Fox News with district (Column 3) and county fixed effects (Column 4)
- Robustness (Table 5 and Appendix Table 2)
- Timing of effects (Table 7)

Table 4. Fox News and 2000-1996 Presidential Vote Share Change

Dep. Var.: Rep. Vote Share Change between 2000 & 1996 Pres. Elect.							
Two-Party Vote Share							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	0.0347 (0.0017)***						
Fox News 2000	-0.0026 (0.0037)	0.0027 (0.0024)	0.0078 (0.0026)***	0.004 (0.0016)**	0.0069 (0.0014)***	0.0036 (0.0021)*	0.0049 (0.0019)**
Pres. Vote Chg. (92-88)						0.0216 (0.0217)	0.0509 (0.0221)**
Control Variables:							
Census 2000 and 1990		X	X	X	X	X	X
Control for Cable Features			X	X	X	X	X
US House District Fixed Effects				X		X	
County Fixed Effects					X		X
R²	0.0008	0.5199	0.5557	0.7531	0.8114	0.7517	0.8228
N	N = 9256	N = 9256	N = 9256	N = 9256	N = 9256	N = 3722	N = 3722

Table 5a. Fox News and 2000-1996 Pres. Vote Share Change. Robustness

Dependent Variable:	Presidential Rep. Vote Share 2000	Log (Vote Sh.) Change 2000-1996	Pres. Rep. Vote Share Change 00-96	
	(1)	(3)	All-Party Vote Share (4)	Right-Wing Vote Share (5)
Fox News 2000	0.0039 (0.0016)**	0.0085 (0.0035)**	0.0039 (0.0016)**	0.0048 (0.0017)***
Republican Vote Share in 1996	0.9359 (0.0079)***			
Control Variables:				
Census 2000 and 1990	X	X	X	X
Cable System Controls	X	X	X	X
US House District Fixed Effects	X	X	X	X
R²	0.9825	0.7093	0.8273	0.6926
N	N = 9256	N = 9256	N = 9256	N = 9256

Notes: The observations are 2000-1996 differences in differences for towns which the data is available. For column (1), the dependent variable is the two-party republican vote share for the 2000 presidential election. For columns (2)-(3), the dependent variable is the republican vote share for the 2000 presidential election minus the same variables for the 1996 elections. In Column (2) the Republican vote share is compute using the all-party vote share, in Column (3), it is computed including the Reform Party votes together with the Republican votes. Fox News 2000 is a binary variable that equals one if Fox News was part of the town's local cable package in 2000. Robust standard errors clustered by cable affiliate in parentheses. The observation are weighted by total votes cast in the 1996 presidential elections.

Table 5b. Fox News and 2000-1996 Pres. Vote Share Change. Robustness

Dependent Variable:	Two-Party Republican Pres. Vote Share Change 2000-1996				
	(6)	(7)	(8)	(9)	(10)
Fox News 2000	0.0038 (0.0017)**		0.0047 (0.0017)***	0.0037 (0.0015)**	0.005 (0.0018)***
Fox News in Basic Package	0.0008 (0.0025)				
Share of Population Subscribing to Fox News Cable Package		0.0058 (0.0034)*			
Control Variables:					
Census 2000 and 1990	X	X	X	X	X
Cable System Controls	X	X	X	X	X
US House District Fixed Effects	X	X	X	X	X
Unweighted, Turnout>2000			X		
Outliers Dropped				X	
Optimal Trimmed Sample					X
R²	0.7531	0.7529	0.7361	0.7702	0.7833
N	N = 9256	N = 9214	N = 3115	N = 9071	N = 4177

Notes: The observations are 2000-1996 differences in differences for towns which the data is available. For columns (4)-(7), the dependent variable is the republican vote share for the 2000 presidential election minus the same variables for the 1996 elections. In Columns (4) through (8) the vote share refers to the two-party vote share. Fox News 2000 is a binary variable that equals one if Fox News was part of the town's local cable package in 2000. Robust standard errors clustered by cable affiliate in parentheses. The observation are weighted by total votes cast in the 1996 presidential elections.

Appendix Table 2b. Fox News Robustness 2b

Dep. Var.: Presid. Rep. Vote Share Change 2000 - 1996				
	(7)	(8)	(9)	(10)
Fox News 2000	0.0022 (0.0015)	0.0048 (0.0014) ^{***}	-0.0003 (0.0016)	0.0017 (0.0014)
Control Variables:				
Census 2000 and 1990	X	X	X	X
Cable System Controls	X	X	X	X
District Fixed Effects	X		X	
County Fixed Effects		X		X
Specifications:				
Unweighted			X	X
Include questionable obs.	X	X	X	X
Exclude Hi, Nd, Nj, Wy			X	X
R²	0.7539	0.8154	0.5371	0.6641
N	N = 9802	N = 9802	N = 9131	N = 9131

Table 7. Timing of Fox News Effect on Presidential Vote Share Change

Dep. Var.:	Pres. Rep. Vote Share '00-'96				Pres. Rep. Vote Share '04-'00		Pres. Rep. Vote Share '96-'92	
	(1)	(2)	(5)	(6)	(7)	(8)	(9)	(10)
Fox News 2000	0.0034 (0.0021)*	0.0072 (0.0018)***	0.0034 (0.0021)	0.0061 (0.0018)***	0.0021 (0.0020)	0.0015 (0.0023)	-0.0022 (0.0031)	-0.0005 (0.0035)
Fox News 1998	-0.0008 (0.0023)	-0.0032 (0.0020)						
Control Variables:								
Census 2000 and 1990	X	X	X	X	X	X	X	X
Cable System Controls	X	X	X	X	X	X	X	X
House Distr. Fixed Effects	X		X		X	X	X	X
County Fixed Effects		X		X				
Fox News 2004 = 1			X	X		X		X
Optimally Trimmed Sample						X		X
R²	0.76	0.8099	0.7792	0.8395	0.6289	0.6703	0.6187	0.688
N	N = 6672	N = 6672	N = 4844	N = 4844	N = 8605	N = 3886	N = 4006	N = 1706

Notes: : An observation in the OLS regression is a town in one of the 28 US States in the sample. In columns (1)-(6), the dependent variable is the Republican vote share for the 2000 presidential election minus the same variables for the 1996 elections. In columns (7)-(8), the dependent variable is the Republican vote share for the 2004 presidential election minus the same variables for the 2000 elections. In columns (9)-(10), the dependent variable is the Republican vote share for the 1996 presidential election minus the same variables for the 1992 elections. Fox News 2000 is a binary variable that equals one if Fox News was part of the town's local cable package in 2000. Fox News 1998 is similarly defined. In Columns (5) and (6) the sample is restricted to towns which have Fox News available by 2004. Robust standard errors clustered by local cable company in parentheses. The observation are weighted by total votes cast in the 1996 presidential elections.

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

- **Interaction effects** (Table 6):

- *Geography*. Effect largest in Northeast and West
- *Political affiliation*. Effect comparable for Republican, swing, and Democratic States (or US House Districts)
 - > (Unobserved) campaign spending not key

Table 6. Fox News and the 2000-1996 Presidential Vote Share. Interactions

Dep. Var.: Republican Vote Share Change between 2000 & 1996 Presidential Elections								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fox News 2000	0.008 (0.0037)**	0.0095 (0.0039)**	0.0128 (0.0045)***	0.0132 (0.0046)***	0.0074 (0.0021)***	0.0082 (0.0019)***	0.0088 (0.0024)***	0.006 (0.0018)***
Fox News * (No. Channels / 10)	-0.002 (0.0008)**	-0.0014 (0.0009)	-0.0025 (0.0009)***	-0.0024 (0.0009)**				
Fox News * (Urban in 2000)	0.0052 (0.0022)**	0.0039 (0.0019)**	0.0039 (0.0026)	0.0027 (0.0023)				
Fox News * South					-0.0081 (0.0040)**	-0.0146 (0.0067)**	-0.0027 (0.0060)	0.0184 (0.0219)
Fox News * Midwest					-0.0089 (0.0028)***	-0.0047 (0.0026)*	-0.0103 (0.0034)***	-0.0053 (0.0032)*
Fox News * West					0.002 (0.0039)	0.0046 (0.0034)	-0.0021 (0.0048)	0.0057 (0.0036)
Fox * (.46 < Average 2000 Rep. Vote Share In District < .54)					-0.0002 (0.0027)	-0.0007 (0.0021)	0.001 (0.0030)	-0.0009 (0.0023)
Fox * (Average 2000 Rep. Vote Share In District > .54)					-0.0017 (0.0031)	-0.0065 (0.0027)**	-0.0049 (0.0036)	-0.0109 (0.0034)***
Control Variables:								
Census 2000 and 1990	X	X	X	X	X	X	X	X
Cable System Controls	X	X	X	X	X	X	X	X
US House District Fixed Effects	X		X		X		X	
County Fixed Effects		X		X		X		X
Optimally Trimmed Sample			X	X			X	X
R²	0.7536	0.8116	0.7843	0.8434	0.7544	0.8123	0.785	0.8439
N	N = 9256	N = 9256	N = 4177	N = 4177	N = 9256	N = 9256	N = 4177	N = 4177

- **Magnitude of effects**

- Estimates for $\hat{\beta}_F$: .40 percentage points (within congressional district), .69 percentage points (within county)
- Compare to standard deviation vote share change '96-'00: 5.40 pctg. pts.
- Overall effect on 2000 elections
 - Fox News available for 34 percent of population
 - Total effect: $.34 * .0054 * (105m) \approx 200,000$ votes.
- In Florida: $.33 * .0054 * (5,963,110) = 10,626$ votes ($> 537!$)

- **Senate Races**

- Does Fox News affect political beliefs or just attitudes to a candidate?

- *O'Reilly Factor* and *Hannity & Colmes*: 172 mentions of 2000 US Senate candidates, 99 of Clinton-Lazio

- Effect on Senate? Differential effect for New York race? (Table 8)

$$v_{k,2000}^{R,Sen} - v_{k,1996}^{R,Pres} = \alpha + \beta_F d_{k,2000}^{FOX} + \phi_F d_{k,2000}^{FOX} * d_{NY,2000} + \varepsilon_k.$$

- Results: Positive, significant effect for all races ($\hat{\phi}_F$ insignificant)

Table 8. The Effect of Fox News on the 2000 Senatorial Races

	Dep. Var.: Rep. Vote Share 2000 Senate - 1996 Pres. Elect.						Rep. Vote Share Change Senate 2000 minus 1994	
	Two-Party Vote Share						(8)	(9)
	(1)	(2)	(3)	(4)	(5)	(6)		
Fox News 2000	0.0079 (0.0026)***	0.0082 (0.0030)***	0.0033 (0.0029)	0.0045 (0.0038)		0.0105 (0.0038)***	0.0112 (0.0049)**	0.0138 (0.0056)**
Fox News * (New York Race)	0.0011 (0.0063)	-0.0054 (0.0074)	0.014 (0.0071)**	0.0029 (0.0060)		-0.0009 (0.0063)	.	.
Subscription Ratio to Fox News					0.0195 (0.0054)***			
(Subscription Ratio to Fox News) * (New York Race)					0.0108 (0.0141)			
Fox * (.453 < Average 1996 Rep. Vote Share In District < .513)						-0.0014 (0.0046)		
Fox * (Average 1996 Rep. Vote Share In District > .513)						-0.0114 (0.0065)*		
Control Variables:								
Census 2000 and 1990	X	X	X	X	X	X	X	X
Cable System Controls	X	X	X	X	X	X	X	X
US House District Fixed Effects	X		X		X	X	X	
County Fixed Effects		X		X				X
Optimally Trimmed Sample			X	X				
R²	0.9288	0.948	0.9275	0.9468	0.9289	0.9289	0.7484	0.8361
N	N = 8192	N = 8192	N = 3877	N = 3877	N = 8150	N = 8192	N = 2037	N = 2037

- **Voter turnout**

- Did Fox News steal votes or mobilize new voters?

- Test: Increase in turnout

- *Effect on Turnout in Presidential races (Table 9):*

$$t_{k,2000}^{\text{Pres}} - t_{k,1996}^{\text{Pres}} = \alpha + \beta_F d_{k,2000}^{\text{FOX}} + \varepsilon_k,$$

- Results: Effect of Fox News on turnout (depends on measure, though)

Table 9. The Effect of Fox News on the 2000-1996 Turnout Change

Dep. Var.:	Turnout Change between the 2000 & 1996 Presidential Elections					
	Log Total Votes Cast					
	(1)	(2)	(3)	(4)	(5)	(6)
Fox News 2000	0.0048 (0.0039)	0.018 (0.0051)***	0.0081 (0.0042)*	0.0154 (0.0060)**		0.0165 (0.0065)**
Change in Log (Voting-Age Population) bw. 2000 & 1996	0.384 (0.0442)***	0.3851 (0.0448)***	0.3065 (0.0535)***	0.3159 (0.0545)***	0.3837 (0.0438)***	0.3825 (0.0441)***
Share of Pop. Subscribing to Fox News Cable					0.0148 (0.0090)	
Fox * (.453 < Av. 1996 Rep. Vote Share In District <						-0.0237 (0.0083)***
Fox * (Average 1996 Rep. Vote Share In District >						-0.0143 (0.0100)
Control Variables:						
Census 2000 and 1990	X	X	X	X	X	X
Cable System Controls	X	X	X	X	X	X
House District Fixed Effects	X		X		X	X
County Fixed Effects		X		X		
Optimally Trimmed Sample			X	X		
R²	0.6291	0.6979	0.6762	0.7341	0.6298	0.63
N	N = 9256	N = 9256	N = 4177	N = 4177	N = 9214	N = 9256

5 Interpretation

- Simple model of Fox News effect. Variables:
 - $r = P$ (Republican and turn out to poll)
 - $d = P$ (Democratic and turn out to poll)
 - $e = P$ (exposure to Fox News)
 - $f = P$ (Non-Republican FN-listener convinced)
- Towns T (Treatment Fox News) and C (Control), with $e_T > e_C \geq 0$

- Vote share v_j ($j = T, C$):

$$v_j = \frac{r + (1 - r) e_j f}{r + d + (1 - r - d) e_j f}.$$

- Difference in vote shares $v_T - v_C$:

$$v_T - v_C = (e_T - e_C) f \frac{d}{t_C t_T}$$

with $t_j \equiv (r + d + (1 - r) e_j f)$ turnout in town j

- Solve for f :

$$f = \frac{v_T - v_C t_C t_T}{e_T - e_C d}.$$

- Persuasion rate f :

$$f = \frac{v_T - v_C}{e_T - e_C} \frac{t_C t_T}{d}.$$

- Persuasion rate f higher if:
 - Effect on vote share ($v_T - v_C$) higher
 - Differential Exposure to Fox News ($e_T - e_C$) lower
 - Turnout t_T and t_C higher
 - Democratic share d lower

- Political variables t_T , t_C , d :
 - $t_T = t_C = .555$
 - $d = .555 * (1 - .444) = .308$
- Estimate differential exposure $e_T - e_C$ from micro data on audiences
- Scarborough data with Zip code of respondent. Audience measures:
 1. *Regular audience* measure. "Do you regularly listen to" (35.3 CNN, 16.6 Fox News)
 2. *Diary* measure. Record all 30 minutes of TV for a week (10.3 CNN, 3.5 Fox News)

- Sample: 11,388 respondents in 568 towns

- Fox News audience e_k in town k

$$e_k = \alpha + \beta_F d_{k,2000}^{FOX} + \Gamma_{2000} X_{k,2000} + \Gamma_{00-90} X_{k,00-90} + \Gamma_C C_{k,2000} + \varepsilon_k$$

- Results:

- $\hat{\alpha} = .0262$: Audience 2.62 percent (Table 1) without Fox News via cable \rightarrow Satellite or measurement error
- $\hat{\beta}_F = .027$ (.371 and .251): Cable Fox News increase audience by 2.72 pctg points (3.76 and 2.32 with controls)
- Translate into Regular measure with CNN conversion rate: $35.3/10.3 = 3.42$

Table 10. The Effect of Fox News Exposure on Fox News Audience, Scarborough Data

Dep. Var.: Share Of Town Population Watching a Channel in Past Week								
	Watched Fox News					Watched CNN		
	(1)	(2)	(3)	(4)	(6)	(7)	(8)	(9)
Constant	0.0262 (0.0036)***	0.0947 (0.0054)***	.	.
Availability of Fox News Via Cable in 2000	0.027 (0.0058)***	0.0371 (0.0105)***	0.0251 (0.0082)***	0.0256 (0.0102)**	0.0346 (0.0116)***	0.0251 (0.0121)**	0.0042 (0.0114)	0.0045 (0.0104)
Availability of Fox News Via Cable in 2004					0.0016 (0.0090)			
Control Variables:								
Census 2000 and 1990		X	X	X	X		X	X
Cable System Controls		X	X	X	X		X	X
District Fixed Effects		X		X	X		X	
County Fixed Effects			X					X
Optimally Trimmed Sample				X				
R²	0.0655	0.3105	0.3507	0.3358	0.3148	0.0217	0.3872	0.4262
N	N = 568	N = 568	N = 568	N = 392	N = 545	N = 568	N = 568	N = 568

Notes: An observation in the OLS regression is a town for which both Scarborough data on diary audience, as well as cable and election data are available. Fox News 2000 is a binary variable that equals one if Fox News was part of the town's local cable package in 2000, and similarly for Fox News 2004. Robust standard errors clustered by cable affiliate in parentheses. The observations are weighted by the number of individuals resident in the town interviewed in the survey.

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

- Overall effect:

$$\begin{aligned}\hat{f} &= \frac{\hat{t}_C \hat{t}_T}{\hat{d}} (v_T - v_C) / (e_T - e_C) = \\ &= .998 * (v_T - v_C) / (e_T - e_C)\end{aligned}$$

- Estimate with district fixed effects:

$$\hat{f} = .998 * (.0040 / .0371 * 3.42) = .0331$$

- Estimate with county fixed effects:

$$\hat{f} = .998 * (.0069 / .027 * 3.42) = .0831$$

- Convincing rate of Fox News \hat{f} : 3 to 8 percent

- Robustness:

- Unweighted t_C, t_T, d :

$$t_C t_T / d = .583 / .462 = 1.261 (> .998).$$

- Differential exposure rate:

- * Use Diary measure – multiply effects by 3.42: $\hat{f} = .1132$ (district fixed effects) and $\hat{f} = .2842$ (county fixed effects)

- Interpretations:

1. **Endogeneity Bias**

- Fox News enters towns that were becoming more Republican (Profit Max!)
- BUT: No differences in Republican vote share in 1996

2. **Rational Learning**

- Learning about bias of Fox News
- Possible short-term effect of Fox News on beliefs
- BUT: Political orientation quite clear

Table 7. Timing of Fox News Effect on Presidential Vote Share Change

Dep. Var.:	Pres. Rep. Vote Share '00-'96				Pres. Rep. Vote Share '04-'00		Pres. Rep. Vote Share '96-'92	
	(1)	(2)	(5)	(6)	(7)	(8)	(9)	(10)
Fox News 2000	0.0034 (0.0021)*	0.0072 (0.0018)***	0.0034 (0.0021)	0.0061 (0.0018)***	0.0021 (0.0020)	0.0015 (0.0023)	-0.0022 (0.0031)	-0.0005 (0.0035)
Fox News 1998	-0.0008 (0.0023)	-0.0032 (0.0020)						
Control Variables:								
Census 2000 and 1990	X	X	X	X	X	X	X	X
Cable System Controls	X	X	X	X	X	X	X	X
House Distr. Fixed Effects	X		X		X	X	X	X
County Fixed Effects		X		X				
Fox News 2004 = 1			X	X		X		X
Optimally Trimmed Sample						X		X
R²	0.76	0.8099	0.7792	0.8395	0.6289	0.6703	0.6187	0.688
N	N = 6672	N = 6672	N = 4844	N = 4844	N = 8605	N = 3886	N = 4006	N = 1706

Notes: : An observation in the OLS regression is a town in one of the 28 US States in the sample. In columns (1)-(6), the dependent variable is the Republican vote share for the 2000 presidential election minus the same variables for the 1996 elections. In columns (7)-(8), the dependent variable is the Republican vote share for the 2004 presidential election minus the same variables for the 2000 elections. In columns (9)-(10), the dependent variable is the Republican vote share for the 1996 presidential election minus the same variables for the 1992 elections. Fox News 2000 is a binary variable that equals one if Fox News was part of the town's local cable package in 2000. Fox News 1998 is similarly defined. In Columns (5) and (6) the sample is restricted to towns which have Fox News available by 2004. Robust standard errors clustered by local cable company in parentheses. The observation are weighted by total votes cast in the 1996 presidential elections.

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

3. Persuasion

- Underestimate incentives of media (Cain, Loewenstein, Moore, 2005)
 - Voters double-count information (De Marzo, Vayanos, Zwiebel, 2004)
 - Effect of exposure to new media
-
- Different policy implications:
 - Rational voters: Effect is temporary, media ownership not key
 - Persuasion-prone voters: Permanent effect , media ownership counts

- Compare to other political advertisement effects

1. **Turn-out-the-vote experiments**

- Field experiments (Gerber and Green, 2000; Imai, forthcoming)
- Canvassing and phone calling (5-20 percent)

2. **Advertisements – lab experiments**

- News clips with ads (Ansolabehre and Iyengar, 1995)
- Significant short-term effects (10 percent)

3. **Surveys**

- significant effects (PIPA, 2003; Gentzkow and Shapiro, 2004)

Table 11. Comparison with Persuasion Rates in Other Media Studies

Paper	Treatment	Elect. Type or Question	Variable t	Control Group t_T	Treatm. Group t_C	Exp. Rate $e_T - e_C$	Pers. Rate f
	(1)	(2)		(6)	(7)	(8)	(9)
<u>Fox News Study</u>							
DellaVigna and Kaplan (2005)	Fox News Exposure, County f.e.	Presidential Election	Republican Vote Share	0.556	0.560	0.121	0.033
	Fox News Exposure, Distr. f.e.			0.556	0.563	0.079	0.083
<u>Turn-Out-The-Vote Experiments</u>							
Gerber and Green (2000)	Door-to-Door Canvassing	Federal Elect.	Turnout	0.422	0.463	0.270	0.263
	Canvassing + Mail + Calls	Federal Elect.	Turnout	0.422	0.448	0.270	0.167
Green, Gerber, and Nickerson (2003)	Door-to-Door Canvassing	Local Elect.	Turnout	0.286	0.310	0.293	0.118
Green and Gerber (2001)	Phone Calls By Youth Vote	General Elect.	Turnout	0.660	0.711	0.737	0.205
	Phone Calls 18-30 Year-Olds	General Elect.	Turnout	0.405	0.416	0.414	0.045
<u>Laboratory Experiments</u>							
Ansolabehere and Iyengar (1995)	Laboratory Exposure to 30-Second Political Ad	Governor Elect. Senate Elect. Mayor Elect.	Vote Share for Party Sponsoring Ad	0.530	0.568	1.000	0.082
<u>Surveys</u>							
Kull et al. (2003)	Respond. watches Fox News	Did US find WMD in Iraq?	Share of Yes Answers	0.220	0.330	1.000	0.141
Gentzkow and Shapiro (2004)	Respondent watches CNN	Did Arabs do 9/11 attack?	Share of Yes Answers	0.215	0.280	1.000	0.083
	Respond. watches Al Jazeera			0.215	0.133	1.000	0.105

6 Conclusion

- Does media bias affect political behavior?
- Impact of Fox News on Presid., Senate vote share, and turnout
- Persuasion rate of the media: 3 to 8 percent.
- Leading explanation: Unsophisticated, credulous audience
- Work in progress: “Convincing the Convinced: Campaign contributions and Military Recruitment” (with D. Acland)

Appendix Table 2. The Fox News Effect: Comparison with Earlier Results

Dep. Var.:	Presid. Republican Vote Share Change between 2000 & 1996					
	(1)	(2)	(3)	(4)	(5)	(6)
Availability of Fox News Via Cable in 2000	0.0014 (0.0016)	0.004 (0.0015)***	0.0002 (0.0015)	0.0022 (0.0014)	-0.0003 (0.0016)	0.0017 (0.0014)
Control Variables:						
Census Controls: 1990 and 2000	X	X	X	X	X	X
Cable System Controls	X	X	X	X	X	X
US House District Fixed Effects	X		X		X	
County Fixed Effects		X		X		X
Specifications:						
Unweighted	X	X	X	X	X	X
Include high-measurement-error obs.			X	X	X	X
Exclude Hi, Nd, Nj, Wy					X	X
R²	0.5666	0.6796	0.5574	0.6765	0.5371	0.6641
N	N = 9256	N = 9256	N = 9802	N = 9802	N = 9131	N = 9131

Notes: An observation in the OLS regression is a town in one of the 28 US States in the sample. The dependent variable is the two-party Republican vote share for the 2000 presidential election minus the same variable for the 1996 elections. The variable "Availability of Fox News via Cable in 2000" is a binary variable that equals one if Fox News was part of the town's local cable package in 2000. The Census Controls are 12 demographic variables from the Census, present both in the 2000 values and in differences between 2000 and 1990. The Controls for Cable Features are deciles in the number of channels provided and in the number of potential subscribers. All controls are listed in Appendix Table 1. The specifications in Columns (3) through (6) include 289 towns with multiple cable systems, at least one of which carries Fox News and at least one of which does not, as well as 257 towns with likely voting data problems. The specifications in Columns (5) and (6) exclude observations from the states of Hawaii, North Dakota, New Jersey, and Wyoming. The specifications in Columns (5) and (6) correspond to the ones in an earlier draft of this paper discussed in Krueger (2005). Robust standard errors clustered by cable affiliate in parentheses.

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

Natural Experiment Approach

- Benefits:
 - Good identification compared to non-experimental studies and structural studies
 - Larger sample sizes than experimental studies
- Costs:
 - Identification is more difficult (especially with conditional randomization)
 - Smaller sample size to obtain quasi-randomization
 - Power
 - External Validity

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 χ^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 χ^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:

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

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

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

- Multiplying this out, we get:

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

- -

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) ²	-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 α (Confidence interval)	0.0954 (-1.17,0.30)	0.3576 (0.21,0.40)	0.3942 (0.30,0.43)	0.4025 (0.25,0.44)	0.4019 (0.25,0.44)
Estimate of β (Confidence interval)	0.6900 (0.32,3.06)	0.1929 (0.11,0.47)	0.1171 (0.06,0.29)	0.0874 (0.02,0.34)	0.0894 (0.02,0.34)
Estimate of γ (Confidence interval)	0.1256 (0.004,0.45)	1.6533 (0.29,4.35)	4.6547 (0.87,13.1)	4.6206 (0.29,24.7)	4.7553 (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.

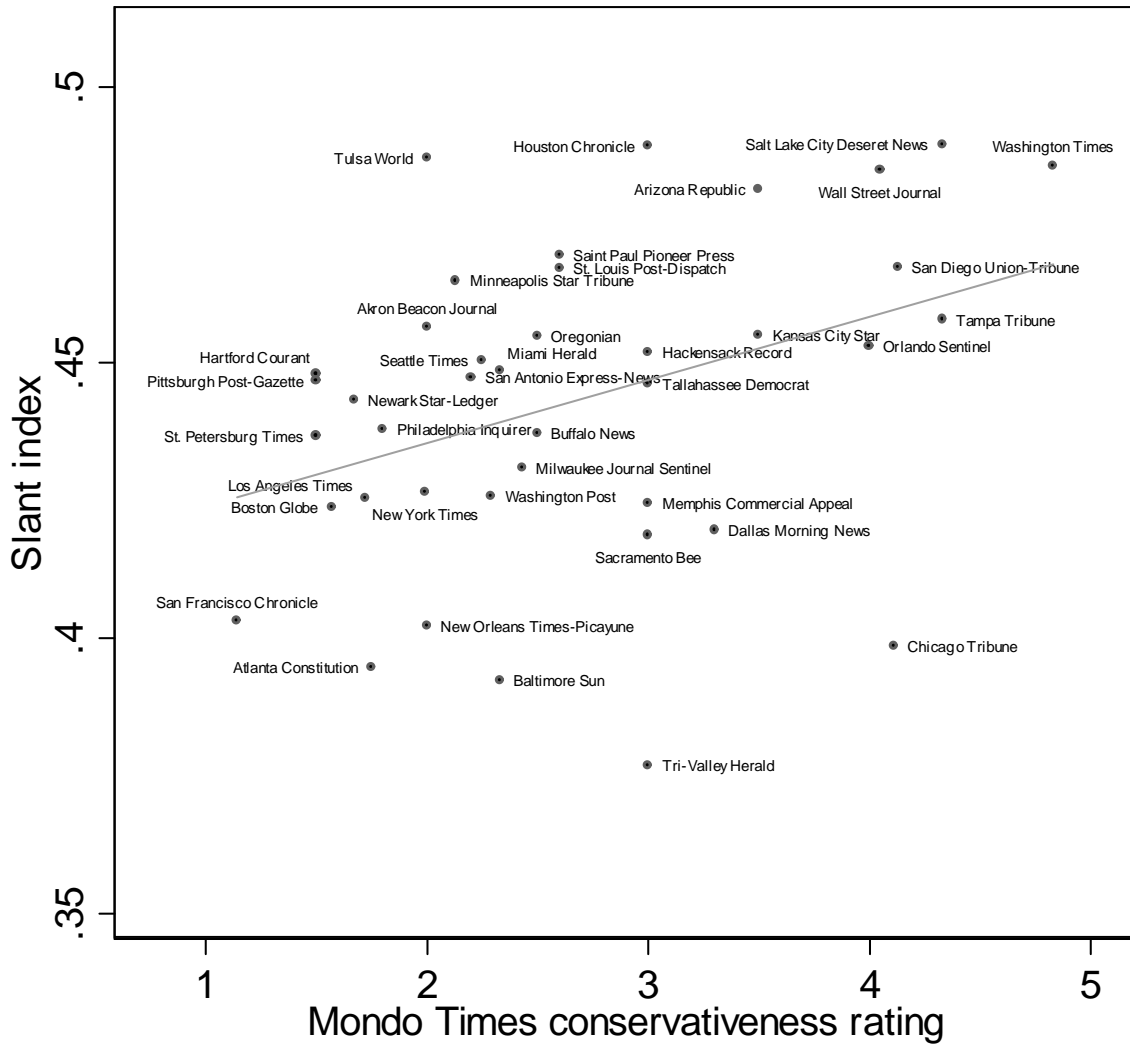
Table 6 *The response of slant to financial incentives*Dependent variable: Slant index (\hat{y}_n)

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> (0.3791)	<i>-1.0302</i> (0.4605)	
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> (0.0056)	<i>0.0055</i> (0.0082)	
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.

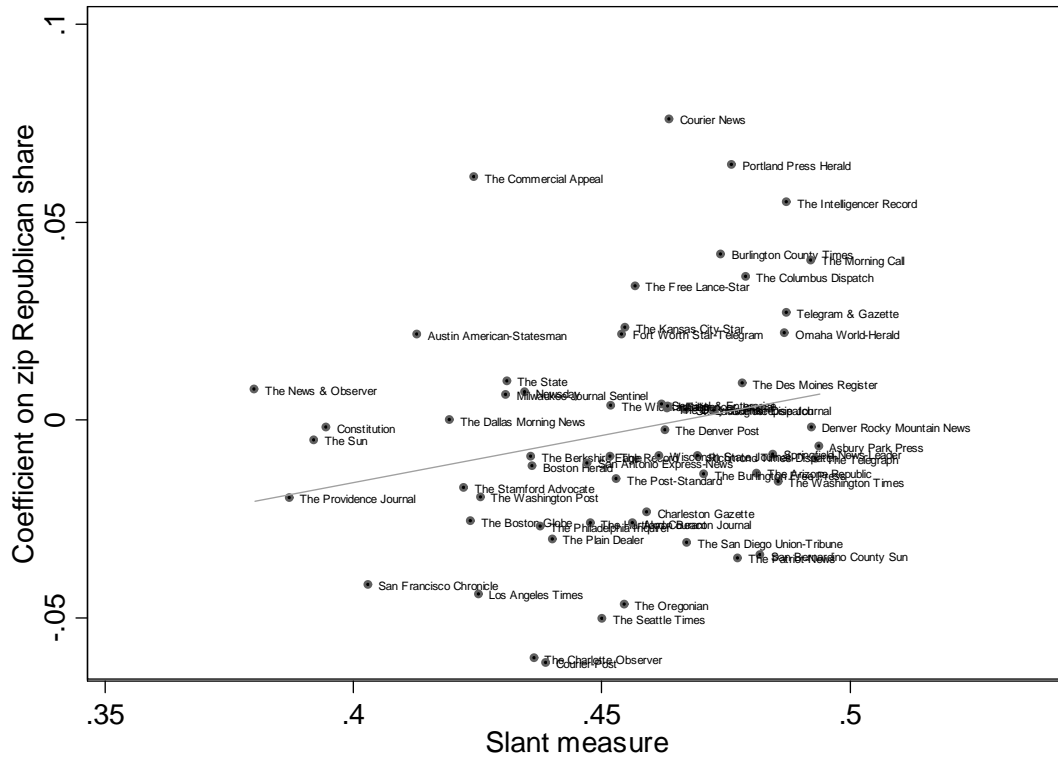
Figure 1 Language-based and reader-submitted ratings of slant



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.

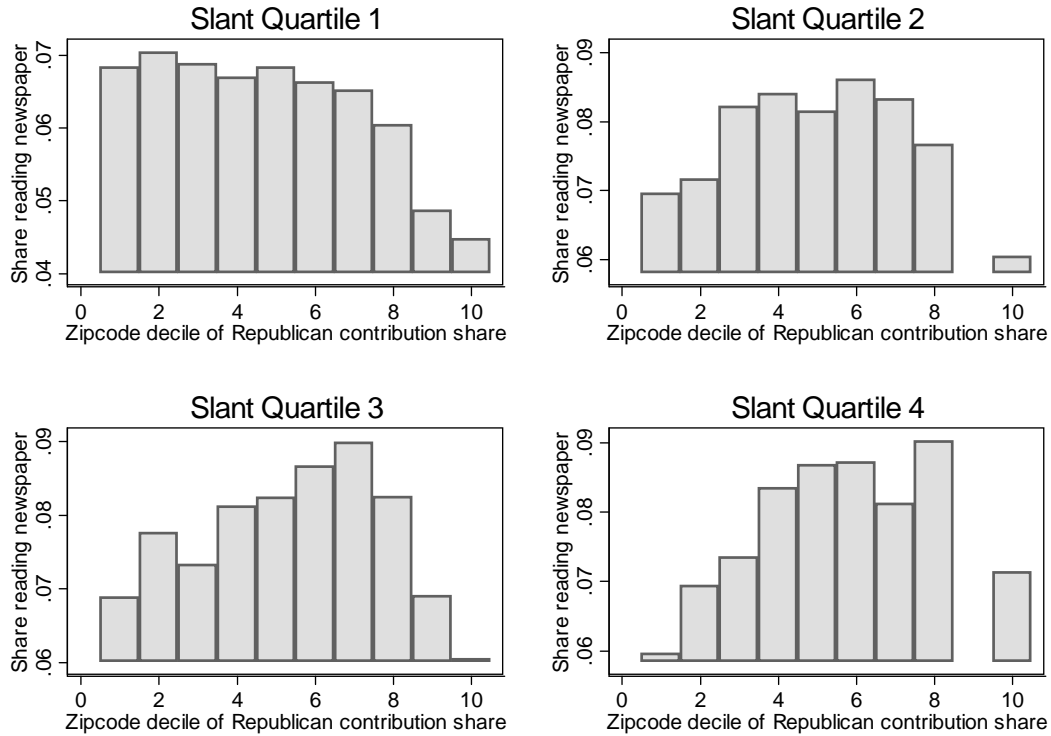
Figure 2 *Newspaper slant and consumer demand*



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

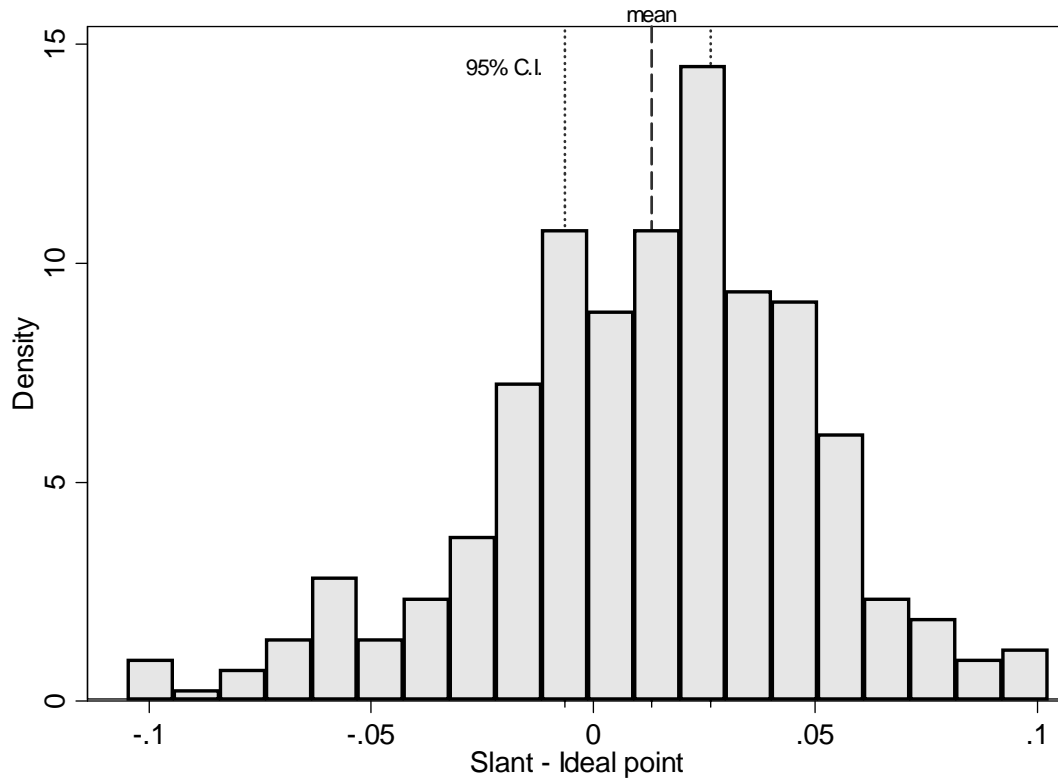
Notes: Y-axis shows the estimated effect of the share contributing to Republican candidates on the share of households in the zipcode reading each newspaper, from a model in which readership shares are regressed, separately by newspaper, on contribution shares and market fixed effects. X-axis shows slant 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.

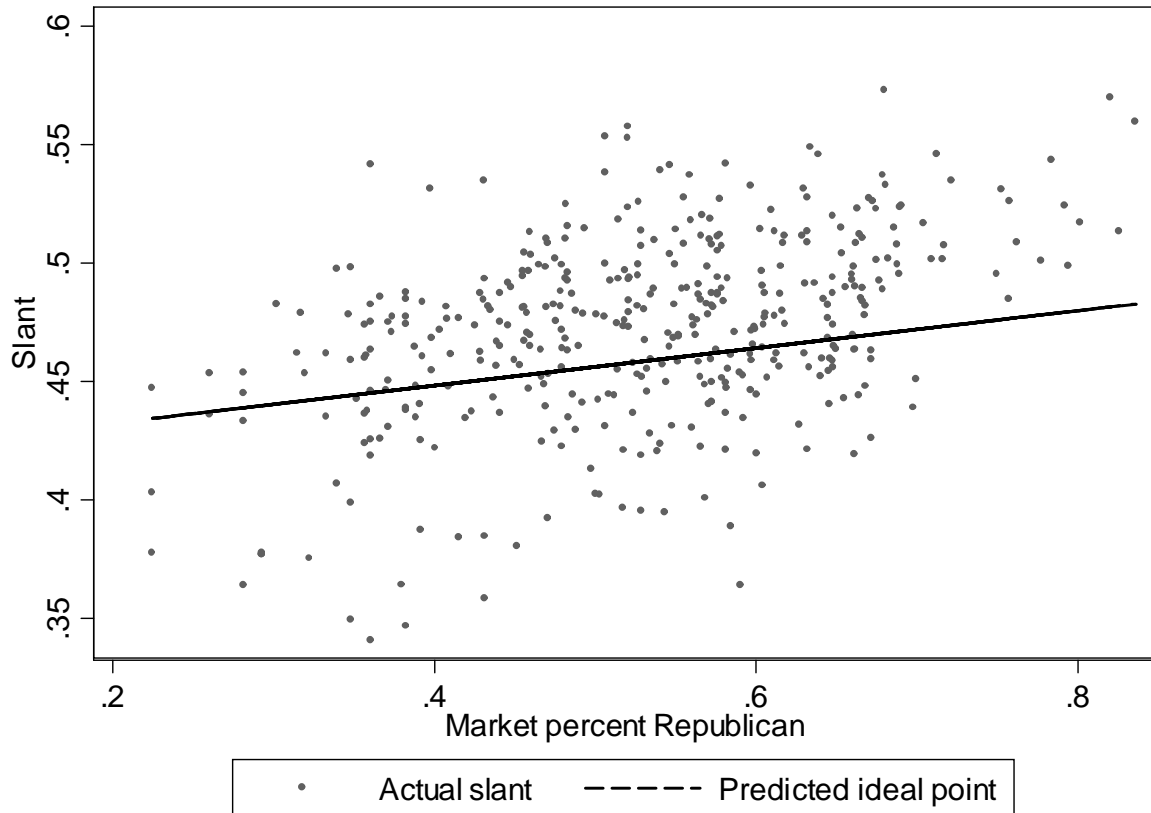
Figure 4 *Differences between slant and predicted ideal point*



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

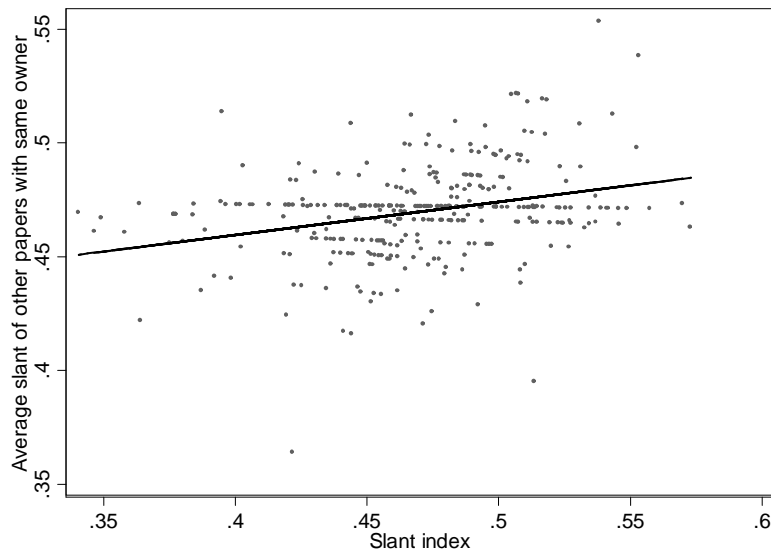
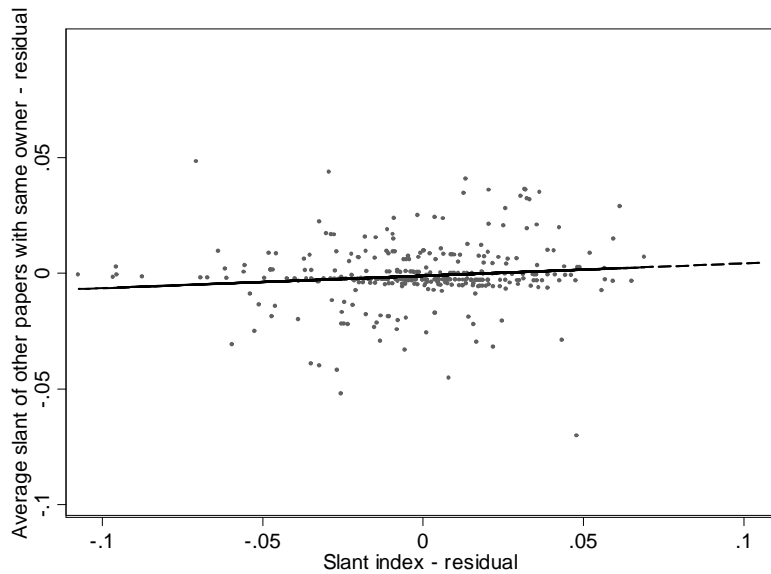


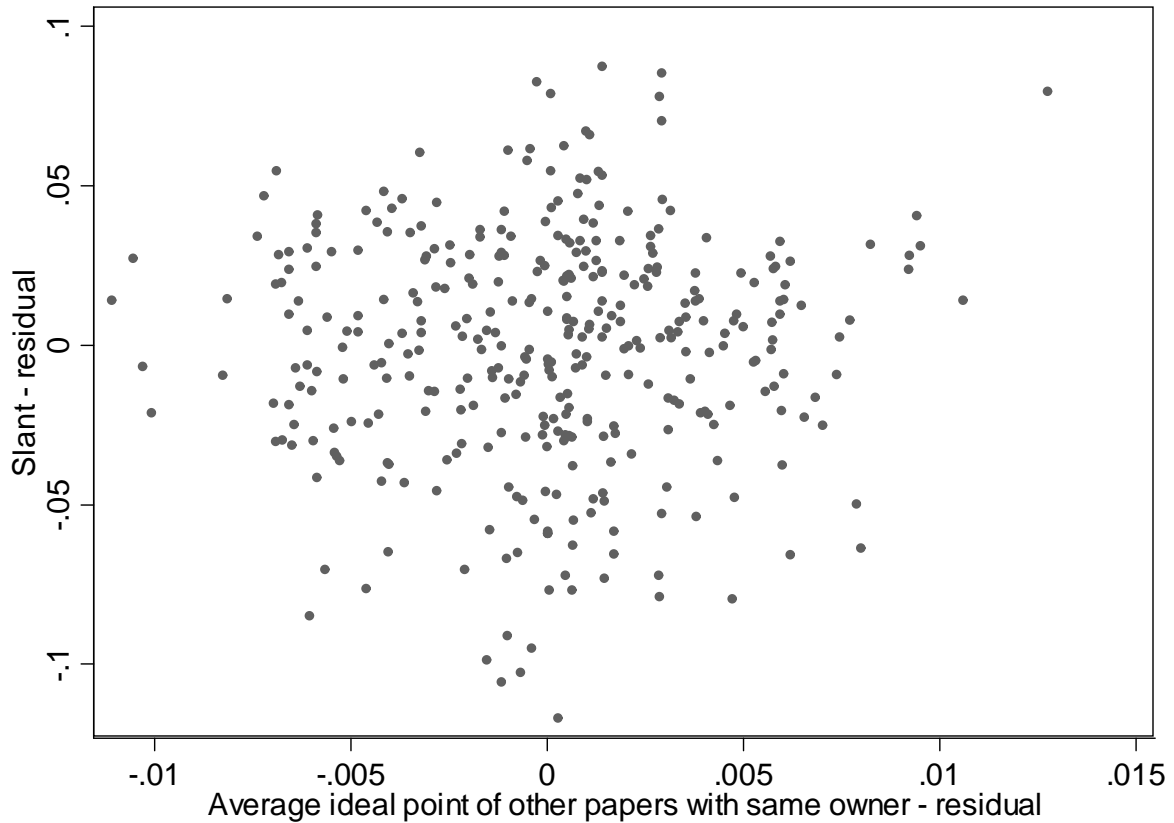
Figure B: Newspaper slant and slant of co-owned papers, controlling for consumer preferences and state



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

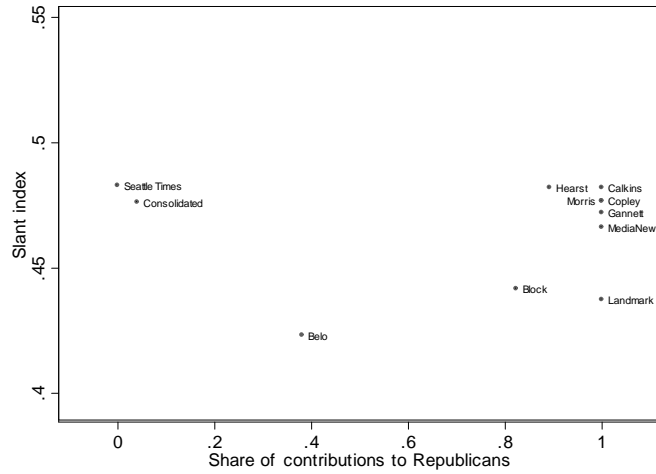
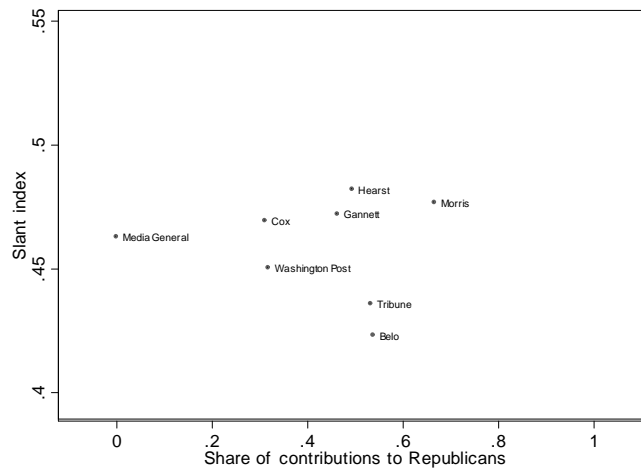


Figure B: Newspaper slant and corporate donations



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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