

Product Differentiation

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March 1, 2019

Product Characteristics and Competition

- ▶ So far we have mainly been concerned with the effect of market power on prices.
- ▶ But price is only one characteristic of products: maybe not even the most important.
- ▶ Think of development of new drugs or electronics: the mere existence of these products is more important than any implication on prices.
- ▶ Today we will look at three recent papers on media markets on the choice of product characteristics.
 1. Steven T. Berry and Joel Waldfogel (2001) "Do Mergers Increase Product Variety? Evidence from Radio Broadcasting?", *The Quarterly Journal of Economics*, Vol. 116, No. 3 (Aug., 2001), pp. 1009-1025.
 2. Gentzkow, Shapiro and Sinkinson (2014) "Competition and Ideological Diversity: Historical Evidence from US Newspapers?" *American Economic Review*. 104(10). October 2014.
 3. Gentzkow Matthew, and Jesse Shapiro (2010) "What Drive Media Slant? Evidence from U.S. Daily Newspapers" *Econometrica*, Vol 78(1) pp 35-71.

Mergers and Product Variety in Radio

- ▶ Berry and Waldfogel study station format in broadcast radio.
- ▶ All revenue come from advertising: the advertisers at a first approximation only care about the number of listeners.
- ▶ Price for listeners is zero.
- ▶ A monopolist may have different incentives for locating its stations than competitors would: a country and a pop station rather than two top 40 stations.

Mergers in Radio

- ▶ The FCC has regulated consolidation in broadcast radio and TV. They were worried about monopolization in the market limiting the number of voices on radio more than pricing due to market power (for ads).
- ▶ Since the 1990's, the FCC has allowed for a considerable amount of consolidation, mainly cross-market mergers, but also some within-market mergers.
- ▶ This is mainly due to the 1996 FCC Act.
- ▶ “Between 1993 and 1997 the average Herfindahl index across 243 major media markets in- creased from 1272 to 2096, or by almost 65 percent.”
- ▶ Data on 243 radio markets from 1993 to 1997. About 5,869 stations by 1997.
- ▶ Detailed data on format and listenership from Arbitron — the Nielsen ratings of Radio. These are used to sell ad time.

1996 Telecommunications Act Restrictions on Local Joint Ownership of Radio Stations

Size of market (# of stations)	Max # of jointly owned stations	Limit on # in same service (AM or FM)
45+	8	5
30-44	7	4
15-29	6	4
0-14 ¹⁷	5	3

Radio Formats

- ▶ Country: 14%.
- ▶ Adult contemporary: 9%.
- ▶ Latino.
- ▶ Jazz (smooth Jazz).
- ▶ Urban

Regression Results

TABLE II
REGRESSION RESULTS

	Δ Stations		Δ Formats/Stations		Δ Formats	
	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)
Constant	5.126* (0.226)	4.446* (0.280)	0.014 (0.010)	0.014 (0.012)	3.285* (0.192)	2.731* (0.223)
Δ Owners	0.525* (0.045)	0.318* (0.085)	-0.011* (0.001)	-0.011* (0.002)	0.018 (0.030)	-0.151* (0.050)
Δ Population (mil.)	0.230 (5.80)	-3.643 (6.986)	0.1569 (0.123)	0.1574 (0.1294)	6.518 (3.767)	3.361 (4.265)
R^2	0.4181	0.3547	0.1829	0.1829	0.0159	0.0486
N	243	243	243	243	243	243

Asterisk indicates 95 percent level of significance. First-stage regression for IV specification is

$$\Delta Owners = -0.319_{(0.469)} - 3.218*_{(0.555)} policyband\ 2 - 8.521*_{(0.770)} policyband\ 3 - 9.290*_{(2.071)} policyband\ 4 - 0.0011\Delta Pop_{93-97}.$$

Do firms differentiate their stations from each other

If I offer two country stations, I am competing with myself for listeners to a large extent.

TABLE IV
JOINT STATION LOCATION AND LOCAL AND NATIONAL JOINT OWNERSHIP

	Number of station pairs	Percent in same format	Percent in extremely similar (but not same) format (>10)	Percent in very or extremely similar (but not same) format (>5)	Percent in similar (but not same) format (>0)
1. All pairs	180,234 ^a	5.87	4.01	7.24	17.62
2. Unrelated pairs	178,667 ^a	5.84	4.00	7.22	17.58
3. Stations owned by same firm, broadcasting in different market	1,508 ^a	8.42	4.77	9.62	22.02
Difference between 2 and 3		2.58* (0.61)	0.77 (0.51)	2.40* (0.67)	4.44* (0.98)
4. Stations owned by same firm and broadcasting from the same market	4,433 ^b	4.99	7.60	12.79	27.68
Difference between 3 and 4		-3.44* (0.79)	2.83* (0.68)	3.17* (0.91)	5.66* (1.26)

Calculations of quantities 1, 2, and 3 from all possible station pairs created from a 10 percent sample of stations in the database (these samples are denoted by superscript "a"). Calculation 4 based on the full population of same-city jointly owned station pairs (denoted by superscript "b"). Standard errors are in parentheses.

Mergers and Product Variety in Radio: Conclusions

- ▶ Mergers are associated with increasing product variety.
- ▶ Monopolists differentiate their stations.

Newspapers and Political Slant

- ▶ In the United States, Newspapers have typically been local (at the city level). This is in contrast with other countries such as Germany or Italy which have more national circulation.
- ▶ This means that many newspaper markets are local, with 1, 2, or 3 papers per market, with the exception of perhaps New York City.
- ▶ U.S. Newspapers get most of their revenue from advertising rather than subscription and purchase revenue.
- ▶ Newspapers have historically been heavily subsidized in the United States: extremely low postal rates.
- ▶ Research Question: How do Newspapers choose their political orientations.
- ▶ Gentzkow Matthew, and Jesse Shapiro (2010) “What Drive Media Slant? Evidence from U.S. Daily Newspapers” *Econometrica*, Vol 78(1) pp 35-71. First paper on measurement of political ideology.

- ▶ Circulation Data from the Audit Bureau of Circulation.
- ▶ Ownership from Editor and Publisher Yearbook.
- ▶ NewsLibrary and Proquest to get full text of newspapers for 433 papers.
- ▶ Full Text of Congressional Record to evaluate the “republicaness” of a statement.
 - ▶ “Death Tax” rather than “Estate Tax” Probably a Republican.
 - ▶ “Medicare for All” Probably a Democrat.
- ▶ Election Data on national elections to obtain republicaness of a district.

Measuring Slant: Democratic Phrases

MOST PARTISAN PHRASES FROM THE 2005 CONGRESSIONAL RECORD*

Panel A: Phrases Used More Often by Democrats

Two-Word Phrases

private accounts	Rosa Parks	workers rights
trade agreement	President budget	poor people
American people	Republican party	Republican leader
tax breaks	change the rules	Arctic refuge
trade deficit	minimum wage	cut funding
oil companies	budget deficit	American workers
credit card	Republican senators	living in poverty
nuclear option	privatization plan	Senate Republicans
war in Iraq	wildlife refuge	fuel efficiency
middle class	card companies	national wildlife

Three-Word Phrases

veterans health care	corporation for public	cut health care
congressional black caucus	broadcasting	civil rights movement
VA health care	additional tax cuts	cuts to child support
billion in tax cuts	pay for tax cuts	drilling in the Arctic National
credit card companies	tax cuts for people	victims of gun violence
security trust fund	oil and gas companies	solvency of social security
social security trust	prescription drug bill	Voting Rights Act
privatize social security	caliber sniper rifles	war in Iraq and Afghanistan
American free trade	increase in the minimum wage	civil rights protections
central American free	system of checks and balances	credit card debt
	middle class families	

Measuring Slant: Republican Phrases

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

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

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

Newspaper Slant and Local Political Affiliations

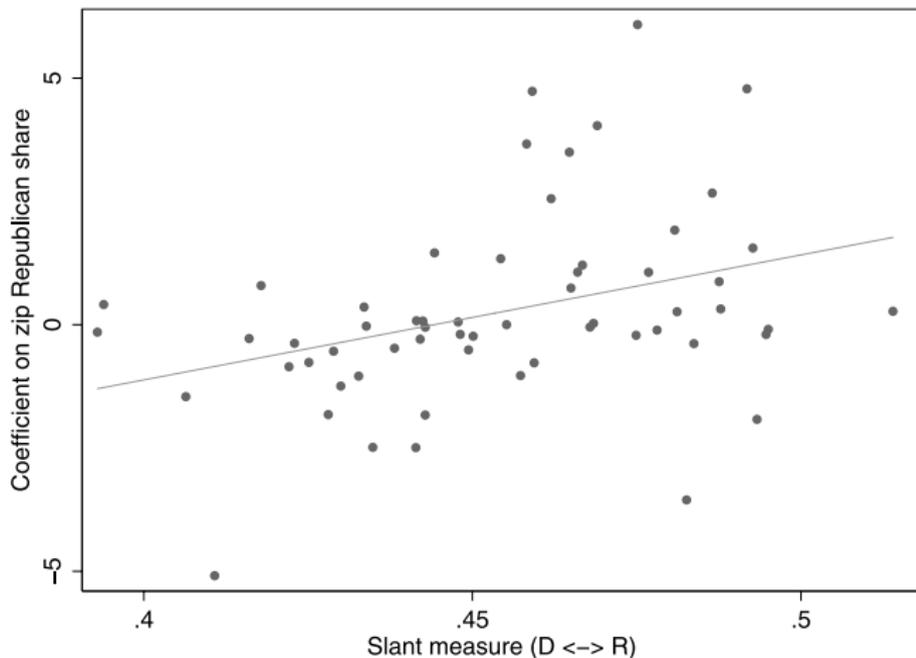


FIGURE 2.—Newspaper slant and coefficients on zip code ideology. The y axis shows the estimated coefficient in a regression of the share of households in the zip code reading each newspaper on the zip code share Republican, for newspapers circulating in more than 200 zip codes. The x axis shows slant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

Newspaper Slant and Local Political Affiliations

EVIDENCE ON THE DEMAND FOR SLANT^a

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

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

Measuring Slant

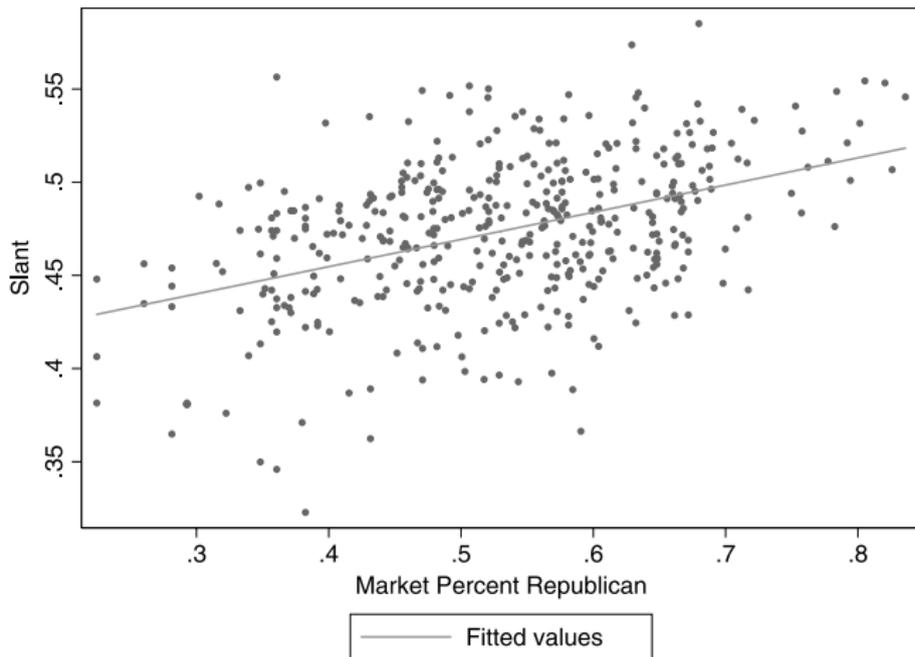


FIGURE 4.—Newspaper slant and consumer ideology. The newspaper slant index against Bush's share of the two-party vote in 2004 in the newspaper's market is shown.

Competition and Slant

- ▶ Next Paper is on competition and slant.
- ▶ Gentzkow, Shapiro and Sinkinson (2014) “Competition and Ideological Diversity: Historical Evidence from US Newspapers?” American Economic Review. 104(10). October 2014.
- ▶ Here we are looking at the slant decisions given what other competitors are doing.
- ▶ Also they are looking at a historical period where U.S. Newspapers explicitly marketed themselves as republican or democratic papers. Today, I know that the New York Times is more Democratic, and the Wall Street Journal tends more Republican, but it is not a published affiliation.
- ▶ This means that a paper can position itself as a Republican or Democratic paper.
- ▶ 1924 Circulation Data.

Newspaper Entry: Sum Stats

TABLE 2—SUMMARY STATISTICS FOR TOWNS WITH CIRCULATION DATA

Number of circulating newspapers	1	2	3+	All
Mean population	447	390	566	472
Share of newspapers that are Republican	0.52	0.54	0.57	0.55
Share of multipaper towns that are diverse		0.38	0.67	0.53
Republican vote share				
Mean	0.49	0.51	0.54	0.51
Standard deviation	0.16	0.16	0.15	0.16
Number of towns	4,144	3,737	4,307	12,188
Number of diverse towns		1,418	2,876	4,294
Number of newspaper-towns	4,144	7,474	17,161	28,779

Notes: Data are from the cross-section of news-reading towns in 1924 defined in Section IC. Diverse towns are those with at least one Republican and at least one Democratic newspaper. Republican vote share is the average Republican share of the two-party vote in presidential elections from 1868 to 1928.

Do Republican Newspapers have Greater Circulation when there are more of them?

TABLE 3—DEMAND FOR PARTISANSHIP

Dependent variable: Average log(circulation) of R papers – average log(circulation) of D papers	(1)	(2)	(3)
Republican vote share	0.8517 (0.1910)		0.9510 (0.1980)
Number of Republican papers		-0.0187 (0.0134)	-0.0360 (0.0136)
Number of Democratic papers		0.0066 (0.0152)	0.0174 (0.0154)
R^2	0.0101	0.0007	0.0127
Number of counties	1,219	1,219	1,219
Number of towns	4,294	4,294	4,294

Notes: Data are from the cross-section of news-reading towns in 1924 defined in Section IC. The dependent variable is the difference in mean log circulation of Republican and Democrat newspapers. Republican vote share is the average Republican share of the two-party vote in the county in presidential elections from 1868 to 1928. Sample is all towns with at least one paper of each affiliation. Standard errors in parentheses are clustered at the county level.

Notice that Republican newspapers cannibalize each other.

What Determines Newspaper Affiliation

TABLE 4—DETERMINANTS OF NEWSPAPER AFFILIATION

Dependent variable: Dummy for newspaper choosing R affiliation	(1)	(2)	(3)
Republican vote share	2.1824 (0.0557)		2.3356 (0.0611)
Number of Republican incumbents		-0.0168 (0.0318)	-0.1525 (0.0342)
Number of Democratic incumbents		-0.0190 (0.0377)	0.1260 (0.0297)
R^2	0.3561	0.0004	0.3819
Number of markets	950	950	950
Number of newspapers	1,338	1,338	1,338

Notes: Data are from the cross-section of daily newspaper markets in 1924 defined in Section IB. The unit of analysis is the newspaper. Republican vote share is the average Republican share of the two-party vote in presidential elections from 1868 to 1928. The number of Republican/Democratic incumbents is the number of sample newspapers of the given affiliation that entered prior to the newspaper in question. Sample is all markets with at least one paper. Standard errors in parentheses are clustered at the market level.

First and Second Entrant Choices of Affiliation

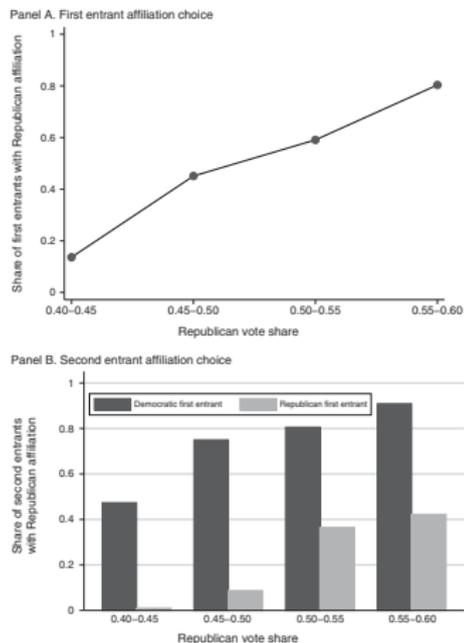


FIGURE 1. DETERMINANTS OF NEWSPAPER AFFILIATIONS

Notes: Data are from the cross-section of daily newspaper markets in 1924 defined in Section IB. Republican vote share is the average Republican share of the two-party vote in presidential elections from 1868 to 1928. The sample includes all markets with two or more newspapers in which the Republican vote share is between 0.4 and 0.6.

Political Ideology and the Market

- ▶ These papers suggest that ideology of media is driven by consumer demand.
- ▶ Nice example of whether Fox News is pro-Trump because of its viewers or owners (Murdoch).
- ▶ Does Facebook have incentives to shape sharing of news stories?
- ▶ What does this mean about political segregation in terms of our media diet.