Effects of Mergers in Two-sided Markets: Examination of the U.S. Radio Industry
Online Appendix

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1 Additional tables and figures

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Name	Pop. 2007	Intercept	Name	Pop. 2007	Intercept
Los Angeles, CA	13155.1	1125.69 (66.73)	Omaha-Council Bluffs, NE-IA	740.3	48.26 (10.31)
Chicago, IL	9341.4	573.13 (38.96)	Knoxville, TN	737.4	49.33 (6.60)
Dallas-Ft. Worth, TX	5846.9	342.11 (12.35)	El Paso, TX	728.2	63.81 (14.30)
Houston-Galveston, TX	5278.5	315.59 (8.21)	Harrisburg-Lebanon-Carlisle, PA	649.4	43.52 (15.05)
Atlanta, GA	4709.7	256.30 (21.19)	Little Rock, AR	618.7	44.43 (7.63)
Boston, MA	4531.8	278.83 (7.41)	Springfield, MA	618.1	34.16 (1.07)
Miami-Ft. Lauderdale-Hollywood, FL	4174.2	268.86 (11.93)	Charleston, SC	597.7	52.52 (3.69)
Seattle-Tacoma, WA	3775.5	228.33 (9.27)	Columbia, SC	576.6	42.08 (4.85)
Phoenix, AZ	3638.1	165.44 (10.50)	Des Moines, IA	576.5	29.74 (12.21)
Minneapolis-St. Paul, MN	3155	230.20 (4.51)	Spokane, WA	569.1	26.30 (6.43)
St. Louis, MO	2688.5	211.09 (2.80)	Wichita, KS	563.9	35.60 (7.65)
Tampa-St. Petersburg-Clearwater, FL	2649.1	192.18 (4.78)	Madison, WI	539.5	75.33 (5.68)
Denver-Boulder, CO	2603.5	283.61 (17.33)	Ft. Wayne, IN	520	31.79 (3.59)
Portland, OR	2352.2	284.25 (30.24)	Boise, ID	509.9	43.84 (1.12)
Cleveland, OH	2133.8	167.19 (2.20)	Lexington-Fayette, KY	509	39.58 (1.06)
Charlotte-Gastonia-Rock Hill, NC-SC	2126.7	121.59 (5.19)	Augusta, GA	498.4	27.65 (3.62)
Sacramento, CA	2099.6	246.04 (24.65)	Chattanooga, TN	494.5	43.11 (0.99)
Salt Lake City-Ogden-Provo, UT	1924.1	150.74 (7.81)	Roanoke-Lynchburg, VA	470.7	40.09 (3.37)
San Antonio, TX	1900.4	158.01 (5.58)	Jackson, MS	468.6	39.13 (2.62)
Kansas City, MO-KS	1870.8	140.34 (1.66)	Reno, NV	452.7	70.07 (0.66)
Las Vegas, NV	1752.4	118.53 (7.07)	Fayetteville, NC	438.9	28.60 (0.88)
Milwaukee-Racine, WI	1712.5	128.64 (3.79)	Shreveport, LA	399.6	25.16 (1.96)
Orlando, FL	1686.1	231.78 (12.84)	Quad Cities, IA-IL	358.8	26.70 (1.88)
Columbus, OH	1685	130.80 (5.48)	Macon, GA	337.1	24.99 (0.44)
Indianapolis, IN	1601.6	104.97 (2.28)	Eugene-Springfield, OR	336.4	23.81 (0.43)
Norfolk-Virginia Beach-Newport News, VA	1582.8	158.54 (0.80)	Portland, ME	276.1	41.42 (4.11)
Austin, TX	1466.3	337.14 (318.09)	South Bend, IN	267	28.71 (1.58)
Nashville, TN	1341.7	158.72 (163.83)	Lubbock, TX	255.3	33.59 (0.37)
Greensboro-Winston Salem-High Point, NC	1328.9	72.84 (10.86)	Binghamton, NY	247.9	21.51 (0.27)
New Orleans, LA	1293.7	82.99 (11.34)	Odessa-Midland, TX	247.8	18.37 (0.31)
Memphis, TN	1278	83.32 (31.29)	Yakima, WA	231.4	18.53 (0.23)
Jacksonville, FL	1270.5	80.84 (14.98)	Duluth-Superior, MN-WI	200.3	24.76 (0.22)
Oklahoma City, OK	1268.3	64.98 (10.06)	Medford-Ashland, OR	196.2	19.47 (0.19)
Buffalo-Niagara Falls, NY	1150	104.51 (9.26)	St. Cloud, MN	191.2	16.05 (0.88)
Louisville, KY	1099.6	91.66 (13.86)	Fargo-Moorhead, ND-MN	183.6	24.36 (0.31)
Richmond, VA	1066.4	65.93 (13.73)	Abilene, TX	159.1	15.62 (0.21)
Birmingham, AL	1030	72.34 (11.61)	Eau Claire, WI	156.5	20.40 (0.36)
Tucson, AZ	938.3	55.66 (12.37)	Monroe, LA	149.2	18.90 (1.40)
Honolulu, HI	909.4	62.81 (8.33)	Parkersburg-Marietta, WV-OH	149.2	14.74 (0.19)
Albany-Schenectady-Troy, NY	902	101.85 (8.79)	Grand Junction, CO	130	11.47 (0.88)
Tulsa, OK	870.2	62.31 (10.25)	Sioux City, IA	123.7	11.70 (0.15)
Ft. Myers-Naples-Marco Island, FL	864.1	113.01 (149.48)	Williamsport, PA	118.3	11.29 (0.15)
Grand Rapids, MI	856.4	56.45 (13.14)	San Angelo, TX	103.8	10.18 (0.06)
Albuquerque, NM	784.9	58.67 (23.95)	Bismarck, ND	99.2	12.80 (0.15)
Omaha-Council Bluffs, NE-IA	740.3	48.26 (10.31)			

Standard errors (corrected for the first stage) in parentheses

Table 1: Intercepts of an advertiser inverse demand function for each market. Units are 1996 US dollars for a 30 second ad slot listened by a 1% of the market population.

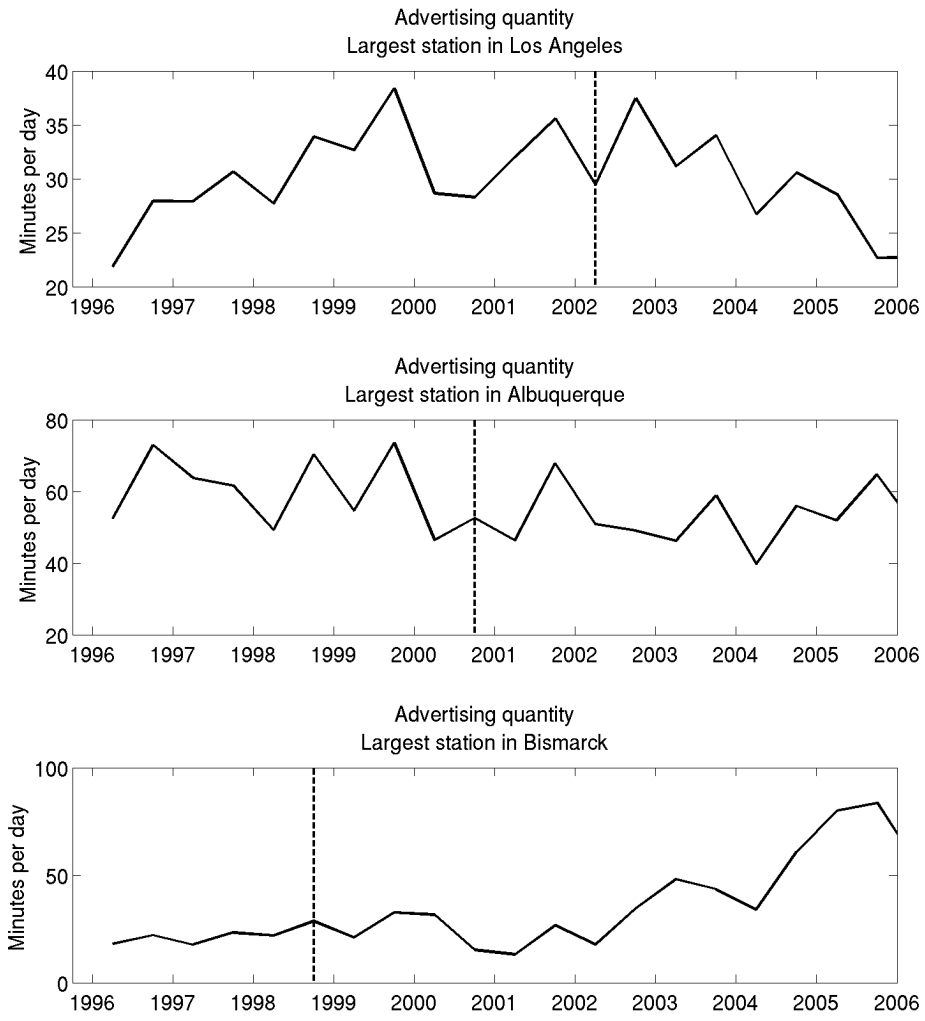

Figure 1: Number of advertising minutes per day for the largest station in the market (largest average 1996-2006 rating, among always active stations). The figures present three representative markets: the largest, Los Angeles; mid size, Albuquerque; and the smallest, Bismarck. The vertical line represents acquisition.

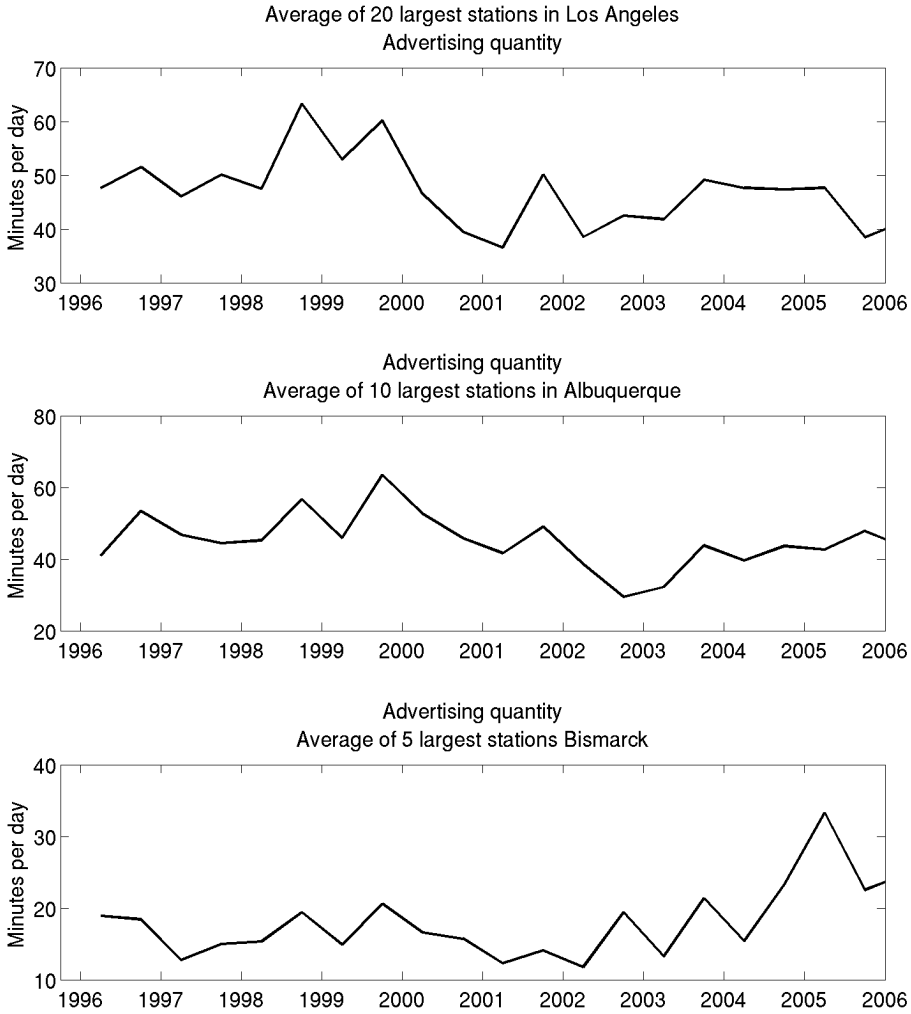

Figure 2: Market average of advertising minutes per day. The figures present 3 representative markets: the largest, Los Angeles; mid size, Albuquerque; and the smallest, Bismarck.

	Mean level			Quality intercept		
	Pop. <.5	Pop. .5M-1.5M	Pop. >1.5M	Pop. <.5	Pop. .5M-1.5M	Pop. >1.5M
OLS	2.60*** (0.09)	2.08*** (0.15)	1.05*** (0.09)	0.18*** (0.01)	0.11*** (0.01)	0.04*** (0.00)
2SLS	3.06*** (0.10)	2.08*** (0.50)	1.22*** (0.08)	0.20*** (0.01)	0.11*** (0.02)	0.05*** (0.00)

Standard errors (corrected for the first stage) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2: Edogeneity bias in estimating marginal cost per minute of advertising sold. Intercept of advertising price per rating point is set to 1. Note that these numbers might be higher than one because the final price of advertising is CPP times the station rating in per cent. Units for quality are standard deviations of quality in the sample.

		1998	1999	2000	2001	2002	2003	2004	2005	2006
OLS	<.5M	−0.12 (0.08)	−0.70*** (0.08)	−0.80*** (0.08)	−0.64*** (0.09)	−0.70*** (0.08)	−0.52*** (0.09)	−0.61*** (0.08)	−0.47*** (0.08)	−1.09*** (0.09)
	.5M-1.5M	−0.20*** (0.07)	−0.39*** (0.07)	−0.43*** (0.07)	−0.26*** (0.09)	−0.22*** (0.07)	−0.25*** (0.08)	−0.35*** (0.07)	−0.33*** (0.07)	−0.75*** (0.09)
	>1.5M	−0.21*** (0.07)	−0.51*** (0.07)	−0.45*** (0.07)	0.06 (0.07)	−0.13** (0.07)	−0.02 (0.07)	−0.23*** (0.07)	−0.16** (0.07)	−0.18** (0.07)
2SLS	<.5	−0.14 (0.08)	−0.68*** (0.09)	−0.70*** (0.09)	−0.68*** (0.09)	−0.61*** (0.09)	−0.57*** (0.09)	−0.56*** (0.09)	−0.41*** (0.09)	−1.12*** (0.09)
	.5M-1.5M	−0.20*** (0.07)	−0.39*** (0.07)	−0.43*** (0.07)	−0.26* (0.15)	−0.22*** (0.07)	−0.25** (0.12)	−0.35*** (0.07)	−0.33*** (0.07)	−0.75*** (0.12)
	>1.5M	−0.20*** (0.07)	−0.48*** (0.07)	−0.41*** (0.07)	0.03 (0.07)	−0.12* (0.07)	−0.04 (0.07)	−0.21*** (0.07)	−0.15** (0.07)	−0.21*** (0.07)

Standard errors (corrected for the first stage) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3: Edogeneity bias in estimating time effects in the marginal cost. 1996 and 1997 values are normalized to zero.

	Cost synergies		
	Pop. <.5	Pop. .5M-1.5M	Pop. >1.5M
OLS	-0.51^{***} (0.05)	-0.13^{***} (0.04)	-0.24^{***} (0.03)
2SLS	-0.43^{***} (0.05)	-0.13 (0.08)	-0.21^{***} (0.04)

Standard errors (corrected for the first stage) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4: Edogeneity bias in estimating marginal cost synergies from owning multiple stations of the same format.

	Mean level			Quality intercept		
	Pop. <.5	Pop. .5M-1.5M	Pop. >1.5M	Pop. <.5	Pop. .5M-1.5M	Pop. >1.5M
Baseline model	3.06^{***} (0.10)	2.08^{***} (0.50)	1.22^{***} (0.08)	0.20^{***} (0.01)	0.11^{***} (0.02)	0.05^{***} (0.00)
Oligopoly within format	2.97^{***} (0.10)	2.50^{***} (0.36)	1.31^{***} (0.08)	0.19^{***} (0.01)	0.12^{***} (0.02)	0.05^{***} (0.00)
Perfect substitutes	3.06^{***} (0.10)	2.26^{***} (0.55)	1.31^{***} (0.08)	0.20^{***} (0.01)	0.12^{***} (0.03)	0.05^{***} (0.00)

Standard errors (corrected for the first stage) in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Robustness of marginal cost per minute of advertising sold.