

# **An Empirical Investigation of the Scope of Competition Among Newspaper, Radio, Television and Other Advertising Media**

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## *Introduction and Summary*

An important issue raised by the Commission in this Notice of Inquiry<sup>1</sup> is the effect of a change in cross-ownership policies on competition. Such a change could permit joint ownership of newspapers and radio stations where such ownership is now prohibited. The best way to assess the competitive effects of any proposed joint ownership is to examine the facts specific to the market or markets in which the acquired and acquiring parties operate. As a general model, the Commission can use the fact-specific, case-by-case investigations undertaken by the Department of Justice and Federal Trade Commission when reviewing proposed mergers. The *Horizontal Merger Guidelines*<sup>2</sup> which guide these agencies in such investigations is a suitable framework for considering questions of market definition and competitive impact in advertising markets.

Due to the importance of local facts and conditions, this paper does not attempt to provide a competitive analysis for each “relevant” media market. Even if time and resources permitted such an endeavor, it would be impossible because there are at least as many “relevant markets” as there are potential cross-ownership transactions. Nevertheless, some generalizations can be made. This paper uses information from a number of market areas to offer guidance on the direction that analyses undertaken in specific markets are likely to lead. This paper presents empirical findings which support a presumption that should serve as the starting point for the FCC when it investigates individual transactions on a case-by-case basis. This presumption with respect to product markets is that a properly-defined local advertising market generally will include not only newspaper, radio and television media but other sellers of advertising as well.

As explained in the *Merger Guidelines*, an important step in evaluating the competitive effect of a merger is determining the relevant product market. Starting from the point of view of

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<sup>1</sup> Notice of Inquiry (NOI), In the Matter of Newspaper/Radio Cross-Ownership Waiver Policy, MM Docket No. 96-197, released October 1, 1996.

<sup>2</sup> Department of Justice and Federal Trade Commission Horizontal Merger Guidelines, Federal Register, Vol. 57, No. 176, September 10, 1992.

customers for whom the merging media are good substitutes, the relevant product market should include all the products which a hypothetical monopolist must control in order to profitably raise price to those customers.<sup>3</sup> Economists are in general agreement that the higher the concentration of ownership in a relevant market, the greater the likelihood that anticompetitive behavior will occur. Anticompetitive behavior can be manifest in higher advertising prices. Persistently higher prices due to reduced competition should also lead to higher profits for sellers in the market, other things equal, which can be expected to translate into higher sale prices when such firms are sold. Whether or not advertising prices are above competitive levels at the time a station is sold, a buyer should be willing to pay more for a station in a more concentrated market, other things equal.

The geographic scope of the market in which local newspapers and radio stations compete depends upon the extent to which advertisers that utilize the two media seek to reach a common area. As a general matter there are strong reasons to respect the areas drawn by audience ratings services, which reflect the commonly accepted geographic structure of broadcast markets. Arbitron Metro Markets generally reflect the area of overlap between radio stations and the corresponding circulation measures for many central city newspapers. Thus, in many cases—for example, where cross-ownership is proposed for a central-city daily newspaper and a central-city radio station—the Arbitron Metro Market area would seem an appropriate geographic market definition. Even where the cross-ownership would link a central-city station with a suburban newspaper, the larger Metro Area may remain appropriate. Although suburban newspapers cannot by themselves deliver the same audience as a central-city broadcast station, they can form part of a package or group buy that does constitute such a substitute. In other—presumably rare—cases (e.g., a merger between a daily newspaper that is published and circulates in a small outlying (non-metro) community and a station licensed to the same community, a market limited to that city (or its county) might be appropriate.

The analysis in this paper takes as given the existence of a relationship between increased concentration in a relevant market and higher product prices, firm profits and firm valuations. (If this assumption is not valid then much of U.S. merger law lacks economic foundation.) Given this assumption, if one finds in any particular candidate “market” that there is no relationship between concentration and the value of the media concerns, one must conclude that the “relevant market” has not been properly defined. Thus, concentration and value-of-firm information can be

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<sup>3</sup> Horizontal Merger Guidelines, § 1.11.

used to help define the scope of the relevant market. The core analysis in this paper uses econometric analysis to test whether, over a number of sample media markets, various geographic and product market definitions “make sense” in terms of the relationship between concentration and market performance.

Radio station sales prices are examined first in a candidate market defined to include radio stations and daily newspapers. Narrower markets, comprising only radio stations or only newspapers, are not analyzed because if the relevant product market for radio/newspaper combinations does not include both media, there can be no competitive effect from eliminating the cross-ownership restrictions. The empirical analysis shows that concentration (measured by the HHI) in a radio-newspaper market is not statistically related to radio station sale prices.<sup>4</sup> This finding suggests strongly that the proper relevant product market is broader than this pair of media.

The next step in the analysis is to examine a broader candidate market consisting of radio, newspapers, and TV. Even in this broader market, however, concentration is not related to the prices at which radio stations are sold. The absence of any statistically significant relationship is evidence that a market restricted to these three media is too narrow, and that the proper relevant product market includes other competing sellers of advertising such as direct mail and outdoor advertising.

The analysis of radio station sale prices is reinforced by an analysis of TV station sale prices. TV station sale prices are examined first in a candidate market defined to include TV stations and newspapers, then in a market including TV stations, newspapers and radio stations. As in the radio station analysis, TV station sale prices are not statistically related to concentration in either candidate market. This supports the finding that other media significantly compete with radio, newspaper, and TV.

Competitive analysis also requires the definition of a relevant geographic market. This paper does not focus on identifying a single correct definition of the geographic market. Instead, it examines the product market question in the context of three alternative geographic markets which the Commission might consider. For obvious reasons, public data on audiences are based on certain industry-standard geographic definitions. It is difficult to find data for geographic areas

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<sup>4</sup> The Herfindahl-Hirschman Index (HHI) is often used to measure market concentration. It is calculated as the sum of the squares of market shares of individual participants.

defined in other ways. Industry-standard geographic markets are far from arbitrary. Indeed, they should serve as an obvious focal point for competitive analysis because they are areas that the rating services have found most valuable to their customers—advertisers and broadcasters. Since what broadcast media are measurably selling, and advertisers are measurably buying, from a geographic perspective is a DMA or some other industry-standard area, it makes sense to focus on such areas when considering the effects of media combinations.

The first of the three geographic markets considered here is the DMA (Designated Market Area), commonly used as a proxy for the area reached by TV stations and the principal geographic area for which Nielsen produces TV audience information. The second geographic market, the Arbitron Metro Market, is the principal geographic area used by Arbitron in producing radio audience information. The third geographic market is based on the current cross-ownership rule, which focuses on the community in which a newspaper is published and the radio and TV stations with contours that encompass it. Each of the product markets described above was tested with each of these alternative geographic market definitions. Regardless of the geographic market, the statistical analysis supports the inference of a product market broader than radio, newspaper, and TV.

Figure 1 summarizes the combinations of candidate product markets and geographic markets investigated.

Figure 1: Summary of Candidate Product and Geographic Markets

	DMA	Arbitron	Community
Radio-Newspaper	<b>X</b>	<b>X</b>	<b>X</b>
TV-Newspaper	<b>X</b>	<b>X</b>	<b>X</b>
Radio-Newspaper-TV	<b>X</b>	<b>X</b>	<b>X</b>

*Data and Procedures*

The key indicator of the competitiveness of individual markets used in this analysis is radio and TV station sale price. This indicator should vary with concentration in a properly defined relevant market. Station sale prices were obtained from BIA’s MasterAccess databases. To avoid complications arising from partial ownership, valuation of debt and multiple station sales, only

station sales completed in 1995 for which cash was paid for the entire assets of an individual station were included.

The most data-intensive part of the analysis was calculating HHIs for all the different candidate market combinations considered. In order to economize on this effort, the sample was drawn to minimize the number of HHIs to be calculated. Accordingly, the initial sample included 13 market areas in which both one or more radio stations and one or more TV stations were sold during 1995. Additional market areas in which either a radio or TV station was sold were added to the sample to make a total of 38 radio station sales and 31 TV station sales in 35 distinct market areas.<sup>5</sup>

For each product market and geographic market considered, the HHI was calculated based on 1995 revenues attributable to each station or newspaper owner in the market. BIA was the source for radio and TV station revenues. Revenue estimates were not available for some radio and TV stations. These were not incorporated in the HHI calculation, but they are thought to be chiefly small stations whose omission would not affect the HHI substantially. Newspaper advertising revenues were estimated in *Duncan's Radio Market Guide* for the principal metropolitan daily newspapers.<sup>6</sup> Revenue estimates for other daily and weekly newspapers, including suburban newspapers, were not available and so were not incorporated in the HHI calculation; the effect is to overstate HHIs.

To account for this possible measurement error in the HHI calculations, each of the regressions discussed below was estimated using two methods. The first method was the standard OLS approach. In the second method, an instrumental variables (IV) approach was used. The essence of the IV approach is to find variables which can help to predict the variable which is suspected of measurement error. Although the exact revenues for these other media outlets are unknown, the *number* of each type for each of our three geographic markets is known. These counts are clearly correlated with the HHIs, and thus are a natural choice to serve as instruments. For example, the total number of radio stations, TV stations, and newspapers in the DMA were used in a “first-stage” regression to predict the value of the HHI when the HHI is calculated for a

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<sup>5</sup> The analysis of smaller markets can be complicated in individual cases by stations in large neighboring markets. To avoid this complication, radio station sales in markets smaller than the top 100 Arbitron and TV station sales in markets smaller than the top 100 DMAs were not included in the sample.

<sup>6</sup> This estimate includes retail, insert and “retail classified” (e.g., auto and real estate) advertising but excludes advertising typically placed by individuals (e.g., personals).

candidate geographic market defined as the DMA and product market defined to include all three media (the lower left corner of Figure 1). There were no qualitative differences in the results between the standard OLS and IV approaches. The results presented below and in the Appendix are based on the IV approach.

Within a given market area, the identity of the firms included in the HHI calculation could change according to the product or geographic market being considered. Obviously, radio, TV and newspaper revenues were included or excluded according to whether the HHI was for a candidate product market that included or excluded those media. With respect to geographic market, the following procedures were used:

- DMA: All TV stations, radio stations, and newspapers located or published in the DMA were included.
- Arbitron Metro Market: All radio stations in the Metro Market, all TV stations located in the DMA that includes the Metro Market, and all newspapers published in the Metro Market were included.
- Newspaper Community: All TV stations with a Grade A contour that encompasses the newspaper community were included. All radio stations with a 1 mV/m (for FM stations) and 2 mV/m (for AM stations) contour that encompasses the community were included. All newspapers located in the newspaper community were included. The community is defined by its constituent zip codes.

The weight placed on the revenues of each market participant when calculating the HHI also differs across alternative geographic market definitions. Where appropriate, total 1995 revenues of a newspaper or a TV or radio station were reduced to approximate the portion of their total audience that lay inside each geographic market being considered. This adjustment was made to reflect the relative significance of each firm in reaching the audience in the geographic market under consideration. Total audience was defined to be the DMA for TV stations, the Arbitron Metro Market for radio stations, and the City Zone (CZ) or Newspaper Designated Market (NDM) for newspapers.<sup>7</sup> The following specific revenue adjustments were made in the geographic markets indicated:

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<sup>7</sup> Circulation for these areas, which are believed to include core geographic areas of interest to advertisers, is reported in *SRDS Circulation 97*.

- DMA: Total TV and radio station revenue and newspaper revenue were used without adjustment.
- Arbitron Metro Market: TV station revenue was multiplied by the ratio (households located in the Arbitron Metro Market / households located in the DMA). Radio station revenue and newspaper revenue were used without adjustment.
- Newspaper Community: TV station revenue was multiplied by the ratio (households located in the newspaper community / households located in the DMA). Radio station revenue was multiplied by the ratio (households located in the newspaper community / households located in the Arbitron Metro Market). Newspaper revenue was multiplied by the ratio (circulation in the newspaper community / CZ or NDM circulation).

Other explanatory variables used in the regression analysis were drawn from the BIA radio and TV databases. Individual variables are explained below.

### *Findings*

In each analysis, a regression model was first formulated using the available independent variables that provided the best explanatory fit. Separate regressions were then run adding to the basic model each of the HHI variables under examination.

To explain variations in the prices of radio station sales, a basic model was formulated expressing the sale price of a radio station (measured in constant 1996 dollars) as a function of the following explanatory variables:

Variable	Definition
EBI	Effective Buying Income in the market
RATE	Fall 1994 all-dayparts station ratings
REVGROW	Percentage growth in station revenues, 1994-95
FM	Equals 1 if the station is FM, 0 if AM
NETWORK	Equals 1 if the station is network affiliated, 0 otherwise

If the properly defined product market includes only radio and newspaper, or only radio, newspaper and TV, then an HHI that includes these media should appear as a significant variable

in a regression equation. This was tested using each of the alternative geographic markets explained above. The results are summarized in Table 1. Each regression equation explained a large proportion of the variation in radio station sales prices, with  $R^2$  values ranging from 0.444 to 0.508. These are strong results, especially in light of the small number of observations (38). In addition, the signs and magnitudes of the coefficients on each of the independent variables are plausible (see Appendix for the full results). However, in none of these regressions was the HHI variable significant. The highest t-statistic estimated was 1.1, well short of the value of 1.69 required for statistical significance.<sup>8</sup>

Table 1: HHIs' Significance in Explaining Radio Station Sale Prices

		DMA	Arbitron	Community
Radio-Newspaper	$R^2$	.508	.489	.444
	t-statistic	-.041	.366	1.101
Radio-Newspaper-TV	$R^2$	.506	.506	.506
	t-statistic	-.080	.303	.743

A separate analysis was performed using a sample of TV station sale prices. The basic model was formulated using the following variables:

Variable	Definition
RETGROW	Percentage growth in retail sales, 1994-95
VHF	Equals 1 if the station is VHF, 0 if UHF
EBI	Effective Buying Income in the market
CABLE	Percentage of households receiving cable TV as a percentage of all households
HISPANIC	Hispanic households as a percentage of all households

Table 2 shows the results obtained when each candidate HHI was added to this basic model. Overall, the fit of the model was excellent, with all  $R^2$ s greater than 0.5. In addition, the

<sup>8</sup> Based on a one-tailed test at 95 percent significance level.

estimated coefficients on the explanatory variables were plausible (see Appendix for full results). Neither HHIs calculated for a TV-newspaper candidate market nor HHIs calculated for a TV-newspaper-radio candidate market had any significant explanatory power. Values for t-statistics ranged from negative to approximately 1.2.

Table 2: HHIs' Significance in Explaining TV Station Sale Prices

		DMA	Arbitron	Community
TV-Newspaper	R <sup>2</sup>	.504	.506	.517
	t-statistic	-.321	.352	.202
TV-Newspaper-Radio	R <sup>2</sup>	.515	.518	.515
	t-statistic	-.454	-.457	1.234

A separate, parallel analysis was attempted using radio and TV advertising prices, rather than station sale prices, as the indicator of competitiveness in individual markets. The dependent variable in these regressions was the cost per thousand (CPM) in the fourth quarter of 1995.<sup>9</sup> Like the HHI measures of concentration, these CPMs were derived separately for each geographic market. They were constructed by adjusting estimated cost per point (CPP) figures for the market as a whole by the size of the audience in each geographic market. Thus three separate equations, one for each geographic market, were estimated for both radio and television.

The overall results from these regressions were inconclusive for both radio and television. It was not possible to develop a consistent base model for all three geographic markets. Moreover, it was difficult to develop a reasonable base model even within a particular geographic market. The estimated coefficients on variables which should in theory help predict advertising prices were in many cases found not to be statistically significant. In other cases, the estimated coefficients had implausible signs and/or magnitudes.

Several factors may help explain why the station sale price regression analysis performed well while the advertising price regression analysis did not. First, station sale prices should capture long-run profit streams that can be explained by observable station and market characteristics. By contrast, advertising prices in a single quarter are subject to many temporary influences that were

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<sup>9</sup> Normally defined as the cost per thousand *households* for television, or the cost per thousand *listeners* for radio.

not accurately captured by the available explanatory variables. Second, the price data themselves are estimated, rather than actual, spot rates in individual dayparts based on interviews with advertisers in each local market. As estimates, they are subject to greater measurement error than station sales prices. Third, we are using proxies for the correct denominators when deriving the CPMs. For example, the figure needed to construct the CPM for the community market is the number of radio listeners in that market. We have only the number of households for the community market, which is then scaled up by a national persons-per-household figure rather than a market-specific figure.

### *Conclusion*

Loosening restrictions on the joint ownership of radio stations and newspapers, as the Commission is considering, could have an effect on competition in the sale of advertising within local markets. The effect of any individual proposed joint ownership is best analyzed in the context of the conditions prevailing in that local market. That analysis should include a determination of the proper relevant product market and relevant geographic market. If radio stations and newspapers do not compete for advertising, there can be no competitive effect from joint ownership. This paper provides evidence that a market consisting of radio and newspaper, or of radio, newspaper and TV, does not include all the relevant competing media. In its fact-specific investigations of local markets, the Commission should begin with the presumption that these media compete significantly with direct mail, outdoor, and other advertising as well.

### *Appendix*

#### Sources

The following basic information sources were used:

BIA MasterAccess Radio Analyzer, Version 1.7, November 1996; Version 1.5, November 1995 (BIA Publications). Source for radio station sales prices and terms, ownership, 1995 revenue, DMA market, Arbitron Metro Market, community and number of radio stations in each market area as well as each of the regressors listed in Table A-1.

BIA Map Viewer, Version 1.5, 1996 Edition (BIA Publications). Source for estimated 1 mV/m (for FM stations) and 2 mV/m (for AM stations) contours.

BIA MasterAccess Television Analyzer, September 1996 (BIA Publications). Source for TV sales prices and terms, ownership, 1995 revenue, DMA market, community, number of television stations in each market area as well as each of the regressors listed in Table A-2.

Duncan's Radio Market Guide, 1996 Edition (Duncan's American Radio, Inc.). Source for revenues for selected newspapers.

SRDS Circulation 97 (SRDS). Source for newspaper circulation in City Zone or Newspaper Designated Market, number of households in DMA and counties in Arbitron markets and number of daily newspapers in each market area.

Editor & Publisher International Yearbook, 1994 (Editor & Publisher). Source for ownership and location of newspapers.

Access ABC: Newspapers, November 1994 to August 1996 (Audit Bureau of Circulation). Source for newspaper circulation in zip codes located within selected communities. This was supplemented with information from selected individual newspapers.

1996 Commercial Atlas & Marketing Guide, 127th Edition (Rand-McNally). Source for zip codes within selected communities.

Broadcast & Cable Yearbook 1996, Volume 1 (R.R. Bowker). Source for identification of public television stations (excluded from analysis).

Arbitron Radio Metro Market Guide, 1995-1996 (The Arbitron Co.). Source for identification of counties in DMA and Arbitron metro markets.

Television & Cable Factbook: TV Stations, 1996 (Warren Publishing, Inc.). Source for estimated Grade A contour lines and TV station ownership.

Market Media Guide, 1995 (Media Market Resources, Inc.). Source for estimated spot prices of radio and TV, by daypart, by Arbitron market or DMA.

Table A-1: Variables used in radio station sale and radio advertising price regressions

CLASS	Class of Facility - FM: A, B, B1, B2, C, C1, C2, C3; AM: I, II, III, IV.
FORMAT	Station's format.
FM	Equals 1 if the station is FM, 0 if AM.
GROUP	Code for whether the station owner also owns other stations.
HAAT	Height Above Average Terrain (antenna height in ft.).
RANK	Arbitron Market Rank.
NUMSTAS	Number of other stations owned by owner of this station.
DAYPOWER	Station power in watts. Daytime-only power for AM, full-time power for FM.
LOCAL	Percentage of total market revenues derived from local advertising.
NATIONAL	Percentage of total market revenues derived from national advertising.
ASIAN	Percentage of market population which is Asian.
BLACK	Percentage of market population which is Black.
WHITE	Percentage of market population which is White.
HHINC	Average household income (\$).
CABLE	Percentage of households receiving cable TV as a percentage of all households.
EBI	Effective Buying Income (per capita, \$).
EBIGROW	Percentage growth in Effective Buying Income, 1994-5.
PRET	Retail sales in the market, per capita.
RETGROW	Percentage growth in retail sales in the market, 1994-5.
MEDIAN	Median income in the market (\$).
NETWORK	Indicates whether station is network-affiliated.
REVGROW	Percentage growth in station revenues, 1994-95.
RATE	Fall 1994 all-dayparts station ratings.
RPRICE	The sale price of the station, in 1996 dollars (\$000; dependent variable)
DHH	Number of households in the DMA market (000s).
AHH	Number of households in the Arbitron Metro Market (000s).
CHH	Number of households in the community market (000s).
CPMD	Cost per 1000 listeners in the DMA market (\$).
CPMA	Cost per 1000 listeners in the Arbitron Metro Market (\$).
CPMC	Cost per 1000 listeners in the community market (\$).

Table A-2: Variables used in TV station sale and TV advertising price regressions

TYPE	Type of facility - primary, satellite, public, low power.
ANTENNA	Indicates whether antenna polarization is horizontal, circular, or elliptical.
VHF	Equals 1 if the station is VHF, 0 if UHF.
GROUP	Code for whether the station owner also owns other stations.
HAAT	Height Above Average Terrain (antenna height in ft.).
RANK	DMA Market Rank.
NUMSTAS	Number of other stations owned by owner of this station.
POWER	Transmitter power in kilowatts.
LOCAL	Percentage of total market revenues derived from local advertising.
NATIONAL	Percentage of total market revenues derived from national advertising.
ASIAN	Percentage of market population which is Asian.
BLACK	Percentage of market population which is Black.
WHITE	Percentage of market population which is White.
HHINC	Average household income (\$).
CABLE	Percentage of households receiving cable TV as a percentage of all households.
VCR	Percentage of households owning VCRs.
EBI	Effective Buying Income (per capita, \$).
EBIGROW	Percentage growth in Effective Buying Income, 1994-5.
PRET	Retail sales in the market, per capita.
RETGROW	Percentage growth in retail sales in the market, 1994-5.
MEDIAN	Median income in the market (\$).
NETWORK	Indicates whether station is network-affiliated.
REVGROW	Percentage growth in station revenues, 1994-95.
RATE	Fall 1994 all-dayparts station ratings.
RPRICE	The sale price of the station, in 1996 dollars (\$000; dependent variable)
DHH	Number of households in the DMA market (000s).
AHH	Number of households in the Arbitron Metro Market (000s).
CHH	Number of households in the community market (000s).
CPMD	Cost per 1000 households in the DMA market (\$).
CPMA	Cost per 1000 households in the Arbitron Metro Market (\$).
CPMC	Cost per 1000 households in the community market (\$).

## Regression Results - Radio Station Sales

DMA market

Newspaper, Radio included

(2SLS)

F-statistic for regression  $F(6,31) = 5.32$

R-square = 0.5078

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rprice	Coef.	Std. Err.	T-statistic
HHI	-0.08848	2.184616	-0.041
fm	5490.645	3063.219	1.792
ebi	0.126504	0.058821	2.151
network	8935.907	3088.318	2.893
rate	1326.141	724.1657	1.831
revgrow	1109.616	622.6602	1.782
constant	-11328.9	10393.38	-1.090

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Newspaper, Radio, and TV included

(2SLS)

F-statistic for regression  $F(6,31) = 5.30$

R-square = 0.5059

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rprice	Coef.	Std. Err.	T-statistic
HHI	-0.41412	5.200739	-0.080
fm	5473.089	3071.435	1.782
ebi	0.126386	0.049574	2.549
network	8924.132	3020.911	2.954
rate	1330.816	725.4066	1.835
revgrow	1103.013	623.8472	1.768
constant	-10900.3	10952.81	-0.995

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## Regression Results - Radio Station Sales

Arbitron market

Newspaper, Radio included

(2SLS)

F-statistic for regression  $F(6,31) = 5.15$

R-square = 0.4889

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rprice	Coef.	Std. Err.	T-statistic
HHI	0.834018	2.281793	0.366
fm	5731.536	3152.738	1.818
ebi	0.142725	0.060885	2.344
network	9222.664	3086.411	2.988
rate	1347.153	738.6321	1.824
revgrow	1043.231	655.9085	1.591
constant	-15543.1	11076.31	-1.40

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Newspaper, Radio, and TV included

(2SLS)

F-statistic for regression  $F(6,31) = 5.31$

R-square = 0.5056

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rprice	Coef.	Std. Err.	T-statistic
HHI	1.817174	6.000181	0.303
fm	5818.707	3210.601	1.812
ebi	0.139682	0.059179	2.360
network	9023.713	2964.875	3.044
rate	1333.543	724.8618	1.840
revgrow	1083.723	626.4851	1.730
constant	-15940.54	14384.50	-1.108

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## Regression Results - Radio Station Sales

Community market

Newspaper, Radio included

(2SLS)

F-statistic for regression  $F(6,31) = 4.91$

R-square = 0.4441

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rprice	Coef.	Std. Err.	T-statistic
HHI	2.909518	2.641904	1.101
fm	6239.649	3293.267	1.895
ebi	0.119429	0.048358	2.470
network	7899.388	3286.636	2.403
rate	1450.127	776.3776	1.868
revgrow	1227.515	668.1173	1.837
constant	-27803.11	15094.58	-1.842

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Newspaper, Radio, and TV included

(2SLS)

F-statistic for regression  $F(6,31) = 5.39$

R-square = 0.5058

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rprice	Coef.	Std. Err.	T-statistic
HHI	2.960664	3.986046	0.743
fm	5774.145	3062.229	1.886
ebi	0.102204	0.056874	1.797
network	7934.915	3272.586	2.425
rate	1441.016	740.3326	1.946
revgrow	1371.185	715.8092	1.916
constant	-20685.9	12595.03	-1.642

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Regression Results - TV Station Sales

DMA market

Newspaper, TV included

(2SLS)

F-statistic for regression  $F(6,24) = 4.17$

R-square = 0.5040

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rprice	Coef.	Std. Err.	T-statistic
HHI	-7.71573	24.01584	-0.321
vhf	73720.76	19162.4	3.847
cable	2660.591	1380.442	1.927
ebi	0.401475	0.2243801	1.789
hispanic	-1164.78	631.0987	-1.846
retgrow	9206.415	5389.598	1.708
constant	-1917940	128352.4	-1.494

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Newspaper, TV, and Radio included

(2SLS)

F-statistic for regression  $F(6,24) = 4.29$

R-square = 0.5154

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rprice	Coef.	Std. Err.	T-statistic
HHI	-9.39752	20.69767	-0.454
vhf	73229.73	18871.13	3.881
cable	2686.585	1360.365	1.975
ebi	0.410205	0.196847	2.084
hispanic	-1183.927	621.8446	-1.904
retgrow	9173.663	5146.250	1.783
constant	-196423	115699.1	-1.698

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## Regression Results - TV Station Sales

Arbitron market

Newspaper, TV included

(2SLS)

F-statistic for regression  $F(6,24) = 4.19$

R-square = 0.5055

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rprice	Coef.	Std. Err.	T-statistic
HHI	6.818136	19.37838	0.352
vhf	73217.76	19063.13	3.841
cable	2889.768	1481.074	1.951
ebi	0.493390	.2374533	2.078
hispanic	-1057.22	719.7481	-1.469
retgrow	7907.772	5407.543	1.462
constant	-247894.6	151003.2	-1.642

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Newspaper, TV, and Radio included

(2SLS)

F-statistic for regression  $F(6,24) = 4.31$

R-square = 0.5177

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rprice	Coef.	Std. Err.	T-statistic
HHI	-7.74004	16.92736	-0.457
vhf	72699.96	18857.83	3.855
cable	2579.006	1380.655	1.868
ebi	0.407243	0.198626	2.050
hispanic	-1272.10	651.6483	-1.952
retgrow	9130.955	5110.599	1.787
constant	-186931.6	123148.3	-1.518

---

## Regression Results - TV Station Sales

Community market

Newspaper, TV included

(2SLS)

F-statistic for regression  $F(6,24) = 4.27$

R-square = 0.5167

---

rprice	Coef.	Std. Err.	T-statistic
HHI	4.63348	22.98211	0.202
vhf	75102.7	21086.37	3.562
cable	2738.763	1375.487	1.991
ebi	0.473928	0.244298	1.940
hispanic	-1035.36	952.0641	-1.087
retgrow	8493.014	5008.864	1.696
constant	-239830.7	176348.4	-1.360

---

Newspaper, TV, and Radio included

(2SLS)

F-statistic for regression  $F(6,24) = 1.97$

R-square = 0.515

---

rprice	Coef.	Std. Err.	T-statistic
HHI	54.68336	44.33169	1.234
vhf	94778.47	34449.02	2.751
cable	2965.758	2150.186	1.379
ebi	0.864409	0.448942	1.925
hispanic	-43.6964	1343.870	-0.033
retgrow	12635.26	8498.858	1.487
constant	-464774.4	268555.7	-1.731

---

Table A-3: Means for variables used in station sale price analyses

**Radio**

<u>Variable</u>	<u>Mean</u>
EBI	32856.7
RATE	1.905
REVGROW	4.371
NETWORK	0.184 <sup>10</sup>
FM	0.605 <sup>10</sup>

**Television**

<u>Variable</u>	<u>Mean</u>
EBI	58285.6
RETGROW	4.932
CABLE	67.677
HISPANIC	8.574
VHF	0.290 <sup>11</sup>

---

<sup>10</sup> FM and NETWORK are dummy variables. Of the radio stations used in this analysis, 23 of 38 were FM. 7 radio stations were network affiliated.

<sup>11</sup> VHF is a dummy variable. Of the television stations used in this analysis, 9 of 31 were VHF.