An Economics Perspective Ten Years After the
NAB Case

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Abstract

The U.S. Justice Department brought suit against the National
Association of Broadcasters in 1979, charging that the NAB Television
Code restricted the supply of advertising. This paper examines
implications of a collusive code, concluding that the code did not
successfully serve this purpose. Television station sale prices were
no higher in markets with a high proportion of code subscriber
stations. Stations in single station markets were no less likely to
subscribe to the code. Finally, rates of return on broadcast firm and
network stocks did not change when the antitrust case was settled.

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INTRODUCTION

The U.S. Justice Department filed suit against the National Association of Broadcasters (NAB) in 1979, charging that the NAB Television Code restricted the supply of television advertising. Federal District Court Judge Harold Greene issued a consent decree in 1982, under which provisions the NAB eliminated Television Code sections regulating television commercials.

The intervening years allow more than just a historical perspective on the case. Congress presently is considering restricting the amount of commercial material during children's programs ("Children's Television," 1988). These restrictions, supported by organizations like Action for Children's Television, are exactly the same as those eliminated from the NAB code (NAB, 1981, XIV, 2, c). The effect of such regulation on stations and viewers can be evaluated fairly only after analyzing the effects of the NAB's television code.

The National Association of Broadcasters is the primary industry trade association. The NAB provides technical assistance, managerial consulting, and industry lobbying. Before Judge Greene's decision, the NAB issued voluntary radio and television "codes".

The Television Code, administered by the NAB Code Authority, contained both ethical provisions and advertising restrictions. The ethical provisions included prohibitions on advertising hard liquor, guns, and some other products, and provided standards for a variety of activities including payments by advertisers for displaying products within programs.

The code's advertising rules set maximum limits for minutes of commercials, number of commercials, and number of commercial interruptions. Separate limits applied to prime-time programs, to children's programs, to some other types of programs, and for network affiliates (NAB, 1981). The Code Authority monitored and encouraged subscriber compliance and had the power to expel from the code stations violating its standards.

The stated purpose of the code was "to maintain the highest possible programming and advertising standards" (NAB, Code Authority, 1980). This is a reasonable goal for an industry hoping to maintain the goodwill of a vast viewing and voting audience. The code might also have forestalled more restrictive regulations imposed by the FCC and countered lobbying efforts by consumer groups seeking stricter FCC regulation of advertising.

Another possible (and unstated) purpose of the code was to restrict output of advertising in the same way colluding firms restrict output in an effort to increase joint industry profit. Media researchers like Owen, Beebe, and Manning (1974, pp. 101-111)

acknowledge this potential purpose of the code and this possibility motivated the Justice department suit.

Reflecting trade association case law, Judge Greene ruled that code restrictions on multiple product announcements were illegal per se.[1] Greene chose to employ a rule of reason and evaluate the actual harm caused by the other provisions of the code. Fearing an adverse decision, the NAB eventually accepted a consent decree and left unanswered the question of the effect of the code's commercial limits.

Data limitations prevent us from directly determining the code's impact on television advertisers. Also unavailable are data on any changes in the actual number of commercials shown. However, even if these data were available and showed that the code reduced the output of commercials, the code may not have served as a collusive device. The code might simply have been an important public service provided by a trade association concerned with its members' public image and the quality of its members' product.

Critical evidence of the NAB's motivation for creating and enforcing the code is whether the code increased broadcaster profit. The remainder of this paper evaluates implications derived if the code was indeed a successful collusive device.

METHODS AND RESULTS

If the primary purpose of the television code was to enforce collusive restrictions on the number of commercials and so increase member station and network profit, the effects of such restrictions should be observable. These effects should be evident even when most programs for a given station are provided by a network. Local stations can show more commercials than are included with network programming and can control the number of commercials during times when networks are not providing programs. Several of these effects are considered below, each in the form of an implication and a statistical test.

Implication 1: The selling price of television stations should be higher in markets with a larger share of audience viewing code subscriber stations.

Like any other valuable asset, the price of a television station is the present value of current and anticipated net revenue. The price reflects true economic profit, rather than accounting profit, and incorporates risk.[2] The price may be an inaccurate measure if markets for capital assets are inefficient and biased in one direction.

For a collusive code to increase station profit in a given market, a sufficient proportion of stations must subscribe. The higher

the proportion of code subscribers, the higher will be profit for all stations in the market.

Table 1 summarizes OLS regression results, the dependent variable being the prices of ninety-six U.S. commercial television stations sold between January 1976 and the code's suspension in March 1982. Prices are adjusted for different months of sale by the geometric mean annual Moody Aaa corporate bond yield.

The variable AUDIENCE is the number of households in the A. C. Nielsen designated market area viewing the station 9:00 am to midnight. CPI is the Bureau of Labor Statistics Consumer Price Index. CABLE is the percent of households subscribing to cable in each designated market area. SINGLE is a dummy variable set to one for stations in single station markets. CODE is the proportion of television households viewing code subscriber station programs.[3] Code membership is recorded six months after the sale to account for buyer expectations.

Table 1 about here

The significant and positive coefficient on the AUDIENCE variable shows the importance of viewer households to station's profitability. Likewise, the CPI variable shows that station price is sensitive to inflation. The CABLE variable is not significant. This

result simply confirms that the audience size variable is accurately incorporating the effect of cable on a station's audience. Possessing a monopoly television station gives no special advantage. The CABLE and SINGLE variables are omitted from the second equation without effect. Importantly, the extent of television code subscription has no significant impact on station profit.

Implication 2: A smaller proportion of stations in single station markets should be code subscribers than in markets with two or more stations.

If it enforces collusive behavior, the code is unnecessary in single stations markets. Stations in single station markets are already monopolies and do not need the code to enforce appropriate monopoly behavior. In November 1980, seventy-two percent of stations in multi-station markets were code subscribers. By contrast, only thirty-nine percent of stations in single station markets subscribed (Standard Rate and Data Service, 1980).

Although it appears consistent with a collusive code, the difference in code subscription between single and multiple station markets is caused by differences in audience size. Let code membership be a dummy dependent variable. The independent variables are AUDIENCE and SINGLE (both defined above). Probit analysis yields a coefficient on AUDIENCE asymptotically significant at one percent but an insignificant coefficient on SINGLE. The model predicts fifty-eight

percent of the CODE outcomes. Stations in single station markets have
fewer viewers than stations in multi-station markets and stations with
fewer viewers are less likely to subscribe to the code.[4] The positive
relationship between code subscription and audience size probably shows
how smaller stations have less reason to support any public service or
lobbying characteristics of the code.

Implication 3: The rates of return on television broadcast industry
stocks should fall when code enforcement ends.

Returns on common stock in part reflect expectations about firm
performance. If the television code significantly increased station
profits, important events in the antitrust case should reduce
broadcasting company stock returns. Importantly, this measure should
detect successful code-enforced collusion among the networks and in
regional advertising markets in addition to the local markets analyzed
in the previous implications.

Of course, stock returns are influenced by any number of
factors other than anticipated firm profits. To deal with these
complications and test the significance of changes in stock returns,
researchers in the finance and economics disciplines have developed a
number of statistical techniques based on capital asset pricing models.
Schwert (1981) reviews and updates these models. Binder (1985) also
reviews the literature and make some sophisticated additions.

The basic model assumes that returns on a given stock $\tilde{R}_{jt}$ are a linear function of returns on the market $\tilde{R}_{mt}$ and some random error:

$$\tilde{R}_{jt} = \alpha_j + \beta_j \tilde{R}_{mt} + e_{jt}.$$

Market returns also contain a random element. The expected value of errors for a given firm is assumed to be zero. For each firm, errors are assumed to be uncorrelated and have constant variance.

If an important event like an antitrust case is expected to change the returns on particular stocks, actual returns will deviate from those generated by the previous underlying function. The statistical technique involves estimating the underlying function over a base period well before the important event and using these parameters to estimate returns during a test period including the event. If the event affects firm profitability, actual returns minus estimated returns (abnormal returns) during the test period will differ significantly from zero.

The daily returns including dividends on the common stocks of nine major broadcasting corporations are compiled from files maintained by the Center for Research in Securities Prices. The market return is the value weighted stock return including dividends of all stocks on the New York Stock Exchange and is taken from the same source. Chosen companies are broadcasting firms or networks which own more than one television station, which are traded on the New York Stock Exchange, and for which complete data are available for the relevant periods.[5] Firms are excluded if they are a subsidiary of a non-broadcasting firm. NBC, for example is owned by the RCA Corporation.

Although the included firms often own other communications assets like cable television systems, the television broadcasting assets represent a substantial enough share of earnings that the model should detect the impact of the antitrust case. As an aside, several of the firms now own more non-television assets than during the period of interest here. The companies own television stations in the largest markets and stations representing smaller markets in all regions of the United States.

The particular statistical test employed here is derived in the appendix and follows Linn and McConnell (1983). Daily stock returns and market returns for the period 3 January 1977 to 3 January 1978 are used to calculate nine sets of OLS parameters. These parameters in turn are used to estimate nine sets of daily returns for the test period. The test period starts on 10 March 1982 when the NAB suspended enforcement of the code and ends on 30 July 1982, two weeks after the proposed consent decree was filed.

Actual returns for the test period are subtracted from estimated returns to determine abnormal returns. If the code enforced collusive restrictions, the antitrust case will generate negative abnormal returns. Average abnormal returns are calculated for each stock and added to average abnormal returns for the other stocks. The result is divided by the expected standard deviation of abnormal returns. The resulting statistic is normally distributed with mean zero for large samples.

The cumulative abnormal average return (CAR) for the portfolio
of nine broadcasting stocks is 0.457. The expected standard deviation
S(AR) for the portfolio is 0.335. The resulting test statistic, Z =
CAR/S(AR) = 1.37, is not significantly different from zero and shows
positive rather than negative excess returns. The returns on a
portfolio of broadcasting stocks were not significantly adversely
affected by important events in the antitrust case against the
television code.

DISCUSSION

The evidence presented here cannot prove that the code failed
as a collusive device. Each of the techniques employed above has
flaws. However, the weight of evidence suggests that the code failed
to increase station and network profit in a manner consistent with a
successful collusive code. In addition, code membership in single
versus multiple station markets appears to have been motivated by
factors other than collusive restrictions on commercials.

These results are not surprising. Even if the code's intent
was to enforce collusive commercial restrictions, code subscription was
voluntary and violation of code provisions was at worst (and rarely)
punished by prohibiting a station from displaying its code membership
medallion on station advertising or on the air. Commonly, the Code
Authority used only verbal persuasion to discourage misbehavior. That

the code was widely ignored is confirmed by a 1963 FCC staff study that showed forty percent of stations exceeding code standards (Barnouw, 1970, pp. 250-51). Code enforcement and compliance were problematic.

The ability of the television code to increase station profit was also being eroded by changes in the broadcast industry. Television viewers were (and are) purchasing an increasing number of videocassette recorders. VCRs reduce potential collusive profits to the extent viewers watch commercial free movies or "zip" past commercials (Levy, 1983). Code restrictions on commercials at certain times of day are ineffective when individuals use VCRs to rearrange viewing schedules. VCR penetration has reached fifty-three percent of television homes ("VCR Usage," 1988).

Cable television penetration was also growing dramatically during the period of the antitrust case. Despite dissenting predictions by Noll, Peck, and McGowan (1973, pp. 151-182), the benefit to a major local station due to better signal reception is usually more than offset by the loss of viewers to the additional programs offered on cable (Webster, 1983). An increase in the number of viewing options, some of which carry no commercials, erodes the potential effectiveness of a collusive code by reducing the audience size for local broadcast stations and increasing competition for viewers and for advertising. Nationwide cable penetration increased from nineteen percent to forty-six percent in the years the NAB case was being argued and is now fifty-one percent ("By the Numbers," 1988).

As an additional issue, even a successful collusive code might have beneficial effects on other market participants. Some code provisions make advertisers worse off, but some arguably benefit advertisers. Code provisions which limit the number of commercials during a program help assure advertisers that subscriber stations avoid the sort of overcommercialization that might dilute a given advertiser's message.

Information about number of station commercials is valuable to an advertiser, but costly for each advertiser to obtain independently for each station. The most important advertising industry publications, like Spot Television Rates and Data, included code subscription for each station. Apparently advertisers and stations both gained by communicating this information. Interestingly, advertisers did not bring suit against the television code (or the radio code), during the entire period before the Justice Department brought its case.

Not only advertisers might indirectly benefit from an effective code. An effective code reduces the number of commercials. Although television commercials may contain valuable information, and some number of program interruptions certainly are desired by consumers, the typical consumer prefers fewer commercials on television. As mentioned above, advertisers worry that VCR viewers will delete commercials from recorded programs, suggesting that viewers find them undesirable. Research by Barnett (1966) and surveys by Steiner (1963) also supports this consumer attitude. Television viewer lobbying groups like Action

for Children's Television recognized the potential disadvantages of the
consent decree and even filed briefs opposing it.

Although a less important consideration, an effective collusive
code would also improve television program quality. The code only
restricted the number of commercials. Other dimensions of programs
were not controlled by the NAB and are in any case nearly impossible to
measure meaningfully. In particular, stations have incentive to
attract more viewers by increasing all of the dimensions of program
quality, dimensions like signal strength, signal clarity, and hours of
operation (Fournier, 1985; Besen 1976; Owen, et al., 1974, pp. 101-
111). Stations and networks can even alter the nature of programming
itself to attract more viewers.

The effects of such a decision are obvious. Cost increases
eventually outweigh increases in audience size and potential monopoly
profit is dissipated in whole or in part. The difficulty faced by all
cartels in monitoring and controlling output is exacerbated in the
television industry by the multidimensional nature of television
programming.

Economic theory generally favors competitive markets but also
recognizes that competitive markets may fail, especially in the case of
products characterized by joint consumption. Television signals have
this characteristic, and encouraging their optimal production may imply
allowing some monopoly power. Judge Greene's consent decree seems to
have made the not uncommon error of considering damage to some industry
participants and ignoring damage to consumers.

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Appendix

The equations deriving the Z statistic testing the significance of cumulative average excess returns to broadcasting stocks follow Linn and McConnell (1983) in turn applying techniques in Fama (1976), Brown and Warner (1980), and DeGroot (1975). The statistic tests the null hypothesis that the cumulative average excess returns are significantly different from zero. The statistic has an asymptotically normal distribution with mean zero and standard deviation one.

The Z statistic is calculated as the following:

$$Z = CAR / S(AR),$$

$$CAR = (1/N) \sum_{j=1}^{N} CAR_j, \qquad CAR_j = (1/Q^{\frac{1}{2}}) \sum_{t=1}^{Q} [AR_{jt}/S_t(AR_j)],$$

$$AR_{jt} = R_{jt} - \hat{R}_{jt} = R_{jt} - (\hat{\alpha}_j + \hat{\beta}_j R_{mt}),$$

$$S_t(AR_j) = \{ S_j^2 [1 + 1/T + (R_{mt}-R_m)^2 / \sum_{k=1}^{T} (R_{mk}-R_m)^2] \}^{\frac{1}{2}},$$

$$S(AR) = [T-2 / N(T-4)]^{\frac{1}{2}},$$

where

N = number of firms, in this case nine,

Q = number of trading days in the test period, in this case 100,

j = a firm,

R_{jt} = observed daily return on firm j's stock,

R_{mt} = observed daily return on the market,

$\wedge$ = estimated parameter,

S_j^2 = variance of residuals from OLS regression for the base period

for firm j,

R_m = average daily return on the market during the base period, and

T = number of trading days in the base period, in this case 253.

Table 1

Regression Results with Station Sale Price

	CONSTANT	AUDIENCE	CPI	CABLE	CODE	SINGLE	R-BAR^2
equation 1	-19.7	0.19**	10.1	-0.04	-0.03	-1.11	0.72
equation 2	-18.4**	0.19**	8.89**		-1.27		0.72

** indicates significant at one percent.   n = 96.

Footnotes

1. For a discussion of trade association antitrust law see Wilcox and Shepherd (1975, p. 160) and Asch (1983, pp. 214-17).

2. In studying the television industry, Levin (1964, 1975) uses station sale price. Fournier and Martin (1983), Boyer and Wirth (1981), and Park, Johnson, and Fishman (1976) use station accounting data. FCC Network Inquiry Special Staff (1980) uses both accounting data and station sale price. Besen (1976) and Wirth and Wollert (1984) use commercial time prices. None of these authors include the NAB or its code in their models.

3. Sources for the data include Broadcasting-Cablecasting Yearbook, various years; Code News, various issues; A. C. Nielsen, and Co., Market Daypart Summaries, various issues; and Spot Television Rates and Data, various issues. Unless otherwise stated, data are recorded at time of sale. Appropriate variables are adjusted to November 1979.

4. If code subscription increases profit but stations with larger audiences are more likely to subscribe, a problem arises. The code causes and is a result of higher profit. Foster and Hull (1986) address this problem by employing a dummy endogenous variable model. The model yields results consistent with those reported here.

5. The firms are the American Broadcasting Companies, C B S Inc., Capital Cities Communications, Cox Communication, Gannett, Liberty Corp., Metromedia, Storer, and Taft Broadcasting.