Reply to Peer Review for:
"Local Information Programming and the Structure of Television Markets"
FCC Media Ownership Study 4
Jack Erb
July 20, 2011

Reviewed by Ali Yurukoglu, Stanford University

We appreciate the comments and suggestions made by Ali Yurukoglu in his peer review, and we are pleased that the review was generally favorable. He had many good comments, and the implementation of his suggestions leads to additional understanding regarding the relationship between local news programming and station ownership in television markets.

There are three primary points of discussion from the review that we address at length in this reply: (1) The impact of local cable news channels on the news production of broadcast stations, (2) the impact of alternative measures of ownership concentration (such as HHI) on the news production of broadcast stations, and (3) the causal interpretation of the coefficient estimates. We also briefly discuss other (more minor) comments at the end of this letter.

Unabridged reviewer comments are provided in italics.

Local Cable News Channels

The data does not account for local cable news. Some markets have important local cable news stations, like NY1 in New York City, NECN in Boston, and Newschannel 8 in DC. The local news provided by these stations is likely similar to the local news the FCC seeks to promote at the broadcast level. The study would be strengthened by incorporating local cable news into the analysis. At the very least, whether a local cable news station exists, and perhaps its ratings, would make sense as an explanatory variable in the regressions the author studies.

We agree that the presence of local cable news stations is an important element of market structure and could potentially influence the amount of local news aired by local broadcast stations. Table A1 contains a list of local cable news stations.[1] The table also includes the markets in which the networks operate (column 2) and whether or not the network is run by an owner that also owns a local broadcast outlet in the market (column 3). The latter distinction is important because it indicates whether or not the local cable news channel represents an independent source of local news in the market (at the ownership level). The local news aired by broadcast stations may not only depend on the

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[1] This list was compiled by FCC Media Bureau staff at the request of the FCC working group writing the report "Information Needs of Communities," which was released June 9, 2011. See pages 108-109 of the report for the relevant discussion on local cable news.

amount of local news being aired by the cable news station, but also on whether the station represents an additional "competitor" in the local news market. Nationwide, there are 37 local cable news networks with at least one network in 49 of 210 markets.

To estimate the impact of the local cable news stations on the local news minutes of broadcast stations, we include a local-cable-news indicator variable (*LCNC*) in the baseline models of the original paper.[2] The regression results are reported in Table A2. Column (1) reproduces the baseline regression from column (1) of Table 3 in the original paper. Column (2) incorporates the *LCNC* indicator variable, and column (3) separates the *LCNC* indicator variable into those cable channels that are jointly controlled with local broadcast stations in the market (*LCNC – Broadcast*) and those that are not (*LCNC – Other*).

The results indicate that broadcast stations in markets that contain local cable news channels tend to air *more* local news – by about 52 minutes per day – than they do in markets without such channels. The results, however, appear to be driven by the markets where the local cable news channels are jointly owned with local broadcast stations. The broadcast stations in markets with a jointly owned local cable channel air almost 230 more minutes of local news per day – a result that is both statistically and economically large. On the other hand, the presence of an "independent" local cable news channel doesn't appear to be significantly correlated with the total local news of the broadcast stations in the market, and the coefficient is small in magnitude (+41.3).

While the *LCNC* variable is, itself, a meaningful predictor of local news in the market, its inclusion does not substantially impact the coefficient estimates of the other explanatory variables. The most meaningful difference is the precision of the *Radio XOwned Stations* estimate, which is now significant at the 5% level.

Measures of Ownership Concentration

The measures of market structure are simple counts of stations or newspapers. It is common practice in industrial organization to include some measure of concentration when thinking about market structure. There might be ten stations in a market, but if one has a share of 99% of the viewers, and the other nine split the other 1%, much theoretical analysis would predict behavior in such a market more similar to a single station market than to a market where all ten stations have equal market share.

In accordance with the reviewer's suggestion, we construct two additional measures of market concentration. The first is the HHI for television viewership in the market (*HHI – Rating*). The HHI is constructed in the usual way by summing the squared viewership shares. The HHI has a maximum value of 1 and higher values of HHI represent higher levels of market concentration. In order to accurately account for joint ownership of

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[2] The reviewer also suggested including the ratings and the number of news minutes provided by the local cable news stations. Unfortunately, these data are not readily available at this time.

stations, we construct the viewership shares (and by extension the HHI) at the ownership level rather than the station level.[3,4]

The second concentration measure is the HHI for market revenues. Once again, the shares are constructed at the ownership level. Unfortunately, revenue data are not perfect. The FCC revenue variable is only available at the ownership level and is not divided by market. That is, each owner is associated with a single value for revenue, consisting of the total revenues earned by all stations in all markets for the given year. We are able to construct an "owner revenue per station" variable by dividing the owner's total revenue by the number of stations controlled by the owner, but ideally we would like to observe the owner's revenue at each individual station. Nevertheless, our measure of revenue HHI will hopefully paint a rough picture of how concentrated the market is in terms of advertising dollars.

Columns (4) through (6) of Table A2 illustrate how local news is correlated with market concentration. In both cases, increases in market concentration (individually) lead to decreases in the amount of local news at the market level. However, neither concentration measure is statistically different from zero. The coefficient on *HHI – Rating* (in column 6) implies that a 0.1-unit increase in the HHI corresponds to an 11 minute decrease in market-level local news. Once again, the coefficients on the remaining ownership variables are largely unaffected by the inclusion of alternative measures of market concentration.

The last column of Table A2 presents the results from including both the *LCNC* and *HHI* variables in a single regression. All are of similar sign and magnitude to the coefficients in previous models, but only the *LCNC – Broadcast* variable is statistically different from zero. Regarding the other ownership variables, the most significant difference between this final regression and the baseline regression model is the coefficient on *Multi-Owned Com Stations*, which increases by almost 35% and is now significant at the 10% level. All other ownership variables are statistically similar to the coefficients in the baseline model.

Note on Station-level Impacts of Cable News and Market Concentration

Our measures of local cable news and market concentration exhibit very little variation over time and are all measured at the market level. Consequently, these variables have very little explanatory power in the station-level, local-news regressions because those regressions include fixed-effects for each market. Although we estimated the relevant

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[3] For example, if a market contains three equally-rated stations (with the first two stations being owned by a single owner and the third station being owned by a second owner) the shares of the two owners will be 0.67 and 0.33, respectively, and the Rating HHI for the market will be 0.5578.
[4] The viewership shares are constructed from Nielsen ratings data and are defined as the share of the total rating achieved by all broadcast stations in the market (specifically, cable viewership is excluded from the calculation and the shares of all the broadcast stations sums to unity). The rating used to construct the HHI is the Sunday-Saturday, 9:00am-12:00am Daypart.

station-level models, the results were indistinguishable from those of the original paper, and we do not report those results here.

Correlation vs. Causation

The main limitation is that the author conducts a purely statistical analysis, without attempting to uncover the causal effects of ownership on local news and public affairs programming…For evaluating policy, the causal effects are more useful as they isolate what changes cause what outcomes.

We wholeheartedly agree with the author on this point. Perhaps we mischaracterized our reasons for stating the results in the paper as "correlations" and not as "causal effects". This was not because we weren't interested in estimating causal effects, and perhaps we were overly cautious in qualifying our results. Our primary concern is that endogeneity of the explanatory variables may lead to bias in the coefficient estimates on the ownership variables. We discuss a few of these concerns below.

There are a number of factors that may lead to bias in the estimated coefficients. The first of these is omitted variables. The potential impact of omitted variables is seen in the extreme differences between the coefficients in the cross-section and fixed-effect models. Fixed effects is largely viewed as a "first-step" approach at controlling for omitted variable bias, as the fixed effects will absorb the impact of omitted variables that are constant over time. However, as seen in the original paper, the fixed-effect estimates are strikingly different than the cross-sectional regression estimates, even though both are supposed to be estimating the same underlying model parameters.

The difference between the two estimated models is likely due to one of two factors. On the one hand, the fixed-effect regression could be biased because there are too few changes in ownership over the analyzed time period. Consequently, the fixed-effect coefficient estimates could be driven by idiosyncratic differences among the stations/markets that do have ownership changes. On the other hand, the cross-sectional estimates could be biased because of a lack of adequate control variables that determine a station's local news decisions (for example, advertising rates for local news programming, local news viewership ratings, civic participation of the local community, etc.).

It is our professional opinion that the former is more likely to be the case, i.e., that the fixed-effect estimates are driven by the idiosyncratic differences of a handful of observations and that the cross-sectional estimation is a better approximation to reality. However, this belief cannot be statistically confirmed without more data. As pointed out by the reviewer, additional time periods would allow us to better isolate the changes in local news that are due to changes in ownership variables and give us more confidence in the causal interpretation of the coefficients.

The second (and more important) reason that the model cannot be interpreted as a structural/causal relationship is due to the likely simultaneity of local news minutes, local news ratings, and local news (advertising) revenue.[5] Ratings and advertising rates will surely impact the amount of local news a station airs. However, ratings and advertising rates will also depend on the amount (and quality) of local news available at the station and in the overall market. As a simple, illustrative example, this system could be modeled as follows:

$$AvgNewsMin = \alpha_{11}Ratings + \alpha_{12}AdRate + X_1\beta_1 + u_1$$
$$Ratings = \alpha_{21}AvgNewsMin + \alpha_{22}AdRate + X_2\beta_2 + u_2$$
$$AdRate = \alpha_{31}AvgNewsMin + \alpha_{32}Ratings + X_3\beta_3 + u_3$$

where X represents the exogenous variables (including ownership structure), and $\alpha's$ and $\beta's$ are the structural coefficients. We are primarily interested in estimating the coefficients of the first equation. However, an OLS regression of any single equation in the system will produce biased results due the correlation between the regressors and errors. This can be remedied through instrumental variables estimation, but as mentioned before, we do not currently have adequate ratings and advertising rates so this is not an option.

The best we can do at this time is estimate the "reduced-form" equations of the system. The reduced-form equations are obtained by "solving out" for the endogenous variables in the *AvgNewsMin* equation. This process is more compactly represented in matrix form:

$$AY = BX + U$$
$$\Rightarrow Y = A^{-1}BX + A^{-1}U$$

where Y is the vector of endogenous variables, X is the matrix of exogenous variables, and U is the vector of error terms. The reduced-form equation for *AvgNewsMin* is no longer a function of *Ratings* and *AdRate*. Additionally, under the appropriate conditions, each reduced-form equation can be individually estimated by ordinary least squares, and will lead to consistent estimates of the "equilibrium" effect of market structure on local news minutes. This is the approach we take in the paper. However, the parameters in the reduced form model are linear combinations of the structural parameters in the system, and likewise, the coefficient estimates from the reduced-form model are not estimates of the parameters of the structural model. Collecting more detailed ratings and advertising data – and estimating the simultaneous system – could be a fruitful direction for future FCC research.

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[5] This assumes that the ownership structure of a market is, itself, exogenous, which may not be the case. For example, if an owner looking to purchase an additional TV station explicitly targets stations based on their current news production capabilities, then ownership structure may need to be modeled as an endogenous variable.

Other Comments

The scheduling data is sampled from very specific weeks of the year as noted in footnote 20. There are seven weeks in 2007/2008 and three weeks for 2009. These weeks might not be representative of the rest of the year.

The reviewer slightly misstated the sampling period here – there are 4 weeks in 2007/2008 and three weeks for 2009/2010 – but his general point is accurate. There is a possibility that the sampled weeks may not be representative of the entire year.

The selection of the specific weeks in the sample was determined by the FCC on the basis of the competing interests of multiple studies that used the TMS data set – not simply the interests of this study. The selected weeks were largely constrained by the availability of detailed ratings data from Nielsen, which were only available during "sweeps" weeks.[6] Were the study to be optimally performed, random assignment of weeks (or even days) over the course of a year would be preferable. We do not know how stations alter their local news programming during sweeps (if at all), but we do not believe that stations alter the programming to such an extent that it would result in a significant bias in the coefficient estimates.

The definition of local news is a news program that is locally originated. This could include national news that is produced at the local level. Whether the FCC would like to count this in their ideal measure of local news depends on how one interprets the goal of localism.

The reviewer is correct that national news produced at the local level would be counted as "local" news. A similar issue was pointed out in Footnote 22 for the case of multicultural news programming. Unfortunately, there is no systematic way to account for this type of programming short of examining the list of all local news programs and manually flagging those that appear to be "national" news. This process may, itself, introduce error into the classification as the process is subjective. Also, it is often difficult to judge the content of a program by its title. A brief inspection of the data seemed to indicate that this type of programming was rare, and in the interest of reproducibility, we did not correct for "national" news produced.

<div align="center">References</div>

Waldman, S., 2011, "*Information Needs of Communities*", FCC Discussion Paper, http://www.fcc.gov/info-needs-communities.

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[6] The Nielsen data was individually purchased and licensed to the authors of other Media Ownership studies and, unfortunately, were not available for use in this study.

Table A1: Local Cable News Channels

Channel/Network Name	Television Markets Served	Controlled Jointly with Broadcast Station
Local Cable News Channels Owned Independently of Local Broadcast Stations		
Bay News 9	Tampa-St. Petersburg	No
Bay News 9 en Espanol	Tampa-St. Petersburg	No
Central Florida News 13	Orlando-Daytona Beach-Melbourne	No
Central Florida News 13 en Espanol	Orlando-Daytona Beach-Melbourne	No
ChicagoLand Television News	Chicago; Rockford; Southbend-Elkhart	No
Comcast C2	Charleston, SC	No
Comcast Hometown Network	San Francisco-Oakland-San Jose	No
New England Cable News (NECN)	Boston; Springfiled-Holyoke (MA); Burlington-Plattsburgh; Portland-Auburn (ME); Bangor (ME)	No
News 12 (Bronx)	New York	No
News 12 (Brooklyn)	New York	No
News 12 (Connecticut)	Hartford-New Haven	No
News 12 (Hudson Valley)	Albany-Schenectady-Troy	No
News 12 (Long Island)	New York	No
News 12 (New Jersey)	Philadelphia; New York	No
News 12 (Westchester)	New York	No
News 14 Carolina (Raleigh)	Raleigh-Durham	No
News 14 Carolina (Wilmington)	Wilmington	No
News 8 (Austin)	Austin	No
News Now 53 (Tulsa & Oklahoma City)	Tulsa; Oklahoma City	No
NY1 News	New York	No
NY1 Noticias	New York	No
Pittsburgh Cable News Channel	Pittsburgh	No
Six News Lawrence	Kansas City	No
SNN Local 6	Tampa-St. Petersburg	No
The Comcast Network (formerly CN8)	Baltimore; Charlottesville; Harrisburg-Lancaster-Lebanon-York; Harrisonburg; New York; Philadelphia; Pittsburgh; Roanoke-Lynchburg; Raleigh-Durham; Richmond; Salisbury; Washington DC; Wilkes Barre-Scranton	No
WCTR – TV3	Boston	No
YNN Capital Region	Albany-Schenectady-Troy	No
YNN Central Region	Syracuse; Utica	No
YNN Hudson Valley	New York	No
YNN Northern Region	Watertown	No
YNN Southern Region	Binghamton; Elmira-Corning	No
YNN Western Region	Buffalo; Rochester	No
Local Cable News Channels Jointly Controlled with Broadcast Stations in Market		
24/7 News Channel	Boise	Yes (NBC)
News Channel 8	Washington DC	Yes (ABC)
NewsChannel5+	Nashville	Yes (CBS)
NorthWest Cable News	Seattle	Yes (NBC)
Ohio News Network	Columbus; Cleveland-Akron; Cincinnatti; Dayton; Toledo	Yes (CBS) Columbus Only

Table A2: Market Structure and Local News Minutes per Day – Local Cable Networks and Market Concentration

Difference in specification from Column (1) of Tables 3 in Original Paper	(1) Original Regression from Table 3	(2) Local Cable News Channel Indicator (LCNC)	(3) LCNC Separated by Broadcast Station Ownership	(4) Market HHI for Parent Rating (within market)	(5) Market HHI for Parent Revenue (across all markets)	(6) Market HHI for Parent Rating and Revenue	(7) Local Cable News Channel & Market HHIs
Regressors	Dep. Var.: Market-level Local News Minutes per Day						
LCNC	–	52.46†	–	–	–	–	–
LCNC – Broadcast	–	–	229.95*	–	–	–	237.54*
LCNC – Other	–	–	41.29	–	–	–	38.76
HHI – Rating	–	–	–	-107.12	–	-111.29	-116.85
HHI – Revenue	–	–	–	–	-55.41	6.05	-23.39
Multi-Owned Com Stations	13.11	12.09	14.59	15.26	14.35	15.20	17.60†
News XOwned Stations	-41.18	-40.06	-42.02	-43.57	-42.67	-43.50	-45.42
Radio XOwned Stations	-58.68†	-57.87*	-50.84*	-60.39†	-60.55*	-60.25†	-53.33*
Radio/TV XOwned Ratio	16.07*	16.06*	14.15*	16.35*	16.55*	16.31*	14.57*
Com TV Stations	80.12*	80.11*	80.21*	78.30*	79.32*	78.31*	77.87*
Noncom TV Stations	37.74	43.24	31.10	38.33	38.64	38.25	31.53
Total Radio Stations	-0.36	-0.45	-0.49	-0.42	-0.43	-0.42	-0.58
Total Newspapers	-5.98	-6.37	-7.97	-7.12	-6.50	-7.11	-9.47
Mean of Dep. Var.	721.30	721.30	721.30	721.30	721.30	721.30	721.30
N	418	418	418	418	418	418	418
R-squared	0.90	0.91	0.91	0.90	0.90	0.90	0.91

Table contains OLS estimates of alternative specifications of Equation (1). Other than the noted specification change, the models are identical to those presented in Column (1) of Table 3, including all other controls and fixed effects. All standard errors are clustered at the market level. Statistical significance at the 5% and 10% levels are denoted by the symbols * and †, respectively.