Race and Radio: Preference Externalities, Minority Ownership, and the Provision of Programming to Minorities[1]

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Abstract

Market provision of radio programming is beset by possible inefficient underprovision of formats appealing to small audiences whose social benefit of programming—but not advertising revenue—exceeds their costs. Larger markets have more programming, so that listeners derive benefits from being in the same market as others with similar preferences, a mechanism we term "preference externalities." Yet, because white and minority content preferences are substantially different, preferences externalities are positive only within group. We expect problems of inefficient underprovision to be more likely for small minority populations. We find evidence that policies promoting minority ownership increase the amount of minority-targeted programming.

JEL codes: L13, H41, L82

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I. Introduction

Economic theory predicts that markets will do a poor job of allocating public goods. It is no surprise, therefore, that we see relatively little market provision of national defense. Curiously, however, the US relies almost exclusively on the market to provide one of the few other textbook examples of public goods, radio broadcast signals.[2]

Market provision of radio programming is beset by an important potential problem: inefficient underprovision of unpopular formats whose social benefit—but not advertising revenue—exceeds their costs.[3] Because commercial radio programming is financed through advertising, the market will provide only those stations whose advertising revenues are sufficient to cover their costs. Advertising revenues, in turn, are largely a function of the *number* of listeners a station can garner. The more people there are in a given geographic market, therefore, the greater is the number of stations that market can support, and hence the greater the variety of stations that are available to listeners. Listeners thus derive benefits from being in the same market as others with similar preferences—nearby individuals with similar tastes help defray the fixed costs of providing the programming they all prefer. We term these benefits "preference externalities." See Waldfogel (1999) for an extensive discussion of preference externalities in radio broadcasting. George and Waldfogel (2000) presents evidence on preference externalities in daily newspaper markets. These studies outline how preference externalities can be positive, negative, or zero across groups.

If preference externalities are important, it follows that small groups with distinct preferences are especially likely to be inefficiently underserved by the radio market. The focus of this paper is on one particular kind of group—racial and ethnic minorities.[4] We show that

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Black and white (and Hispanic/Anglo) preferences in radio programming are substantially different. Hence, minorities and whites in effect constitute separate radio markets. This in turn means that the problem of inefficient underprovision will be more acute for minorities, simply because their smaller populations confer smaller preference externalities on each other.

It is important to state at the outset the difficulty of identifying absolute instances of inefficient underprovision. Because radio signals are unpriced, we never observe their value to listeners; hence, we cannot conclusively demonstrate circumstances in which the social benefit of potential programming, but not the associated ad revenue alone, exceeds its cost. Instead, we advance a theoretical argument about underprovision of programming to small audiences, and then show empirically that the argument plausibly applies to minority listeners in the US today.

Although not explicitly couched in terms of preference externalities, there appears to be widespread concern about the level of programming offered to racial and ethnic minorities. For example, the FCC has employed a series of policies to promote minority *ownership* of stations, and at least one rationale for these ownership preferences is to increase the amount of minority-targeted programming on the air.[5] But empirical support for the importance of preference externalities as the mechanism responsible for underprovision of broadcasting to minorities has thus far been lacking.

The simple facts tell a somewhat contradictory story. On the one hand, the number of minority-owned radio stations remains low (3.4 percent), and the fraction of black-owned stations has declined from 3.0 percent in 1993 to 2.2 percent in 1997. At the same time, however, the number of black-*targeted* stations has increased.

The remainder of this paper attempts to assess the empirical evidence for the existence

of preference externalities that result in underprovision of broadcasting favored by racial and ethnic minorities. We proceed in four steps. First, we offer a theoretical sketch that compares the actual and efficient provision of radio broadcasting. We suggest that the market can inefficiently *under*provide programming appealing to small audiences at the same time as it inefficiently *over*provides formats popular among large audiences. Second, we briefly describe the data used in the study. In the third section, we empirically examine the influence of local radio markets' racial/ethnic composition on the types of programming that are provided. We begin with striking evidence of preference externalities, which operate only within ethnic groups. In a given geographic market, additional blacks, Hispanics, or whites confer a benefit only on members of their own group, not on other ethnicities. We then turn to explain the mechanism by which these preference externalities operate. We show that preferences for programming among minorities and whites are very different, that the amount of local minority-targeted programming depends on the size of the minority (but not the white) population, and that minority-targeted programming attracts minority audiences to radio listening.

In the final section of the paper, we discuss the use of preferences for minority ownership as a possible solution to the problem of inefficient underprovision. At a minimum, such preferences only make sense if two conditions are met: 1) minority-owned stations do actually broadcast minority-targeted programming, and 2) the additional minority-targeted programming they provide must not simply crowd-out existing programming. We find strong empirical support for both conditions.

Two strands of literature are relevant to the present inquiry. First, there are a few studies concerned specifically with justifications for minority ownership preferences in US

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broadcasting. Spitzer (1991) presents theoretical arguments and evidence justifying minority

preferences in broadcasting, as well as an excellent overview of the relevant legal doctrines and

policies (many of which have, however, changed since 1991). Dubin and Spitzer (1993)

examine the station-level relationship between minority ownership and radio station

programming formats as of 1987. Both papers document that minority-owned stations are

more likely than white-owned stations to broadcast in minority-targeted formats, leading the

authors to conclude that increased minority ownership increases the amount of minority

programming. However, because minority- and white-owned stations may compete for

minority audiences—indeed, we show that most minority-targeted stations are white-owned—

the Dubin and Spitzer evidence does not indicate whether minority ownership affects the *total*

available amount of minority-targeted programming or simply replaces an equivalent amount of

white-owned, minority-targeted programming. We build on existing work in a variety ways.

We employ more recent, longitudinal data, and examine the relationship between the amount of

minority ownership and the amount of minority programming at the market level, which allows

for an analysis of "crowding out" that is precluded by a firm-level analysis.

The other relevant strand of the theoretical literature asks whether markets for

differentiated products will generally provide the right products. For example, see Spence

(1976a,b), Dixit and Stiglitz (1977), or Mankiw and Whinston (1984). In the context of

broadcast markets in particular, these questions have been addressed by Steiner (1952),

Spence and Owen (1977), Beebe (1977), and, more recently, Anderson and Coate (2000). A

small empirical literature focuses on the adequacy of entry into radio broadcasting. Papers

include Berry and Waldfogel (1999b), which examines the possible inefficiency of excessive

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entry; Berry and Waldfogel (1999a), which asks whether public radio corrects problems of inefficient underprovision; and Rogers and Woodbury (1996), who document that audience size increases in programming variety and that programming variety increases with audience diversity.

II. Efficient and Actual Provision of Radio Broadcasting

Radio signals are pure public goods. A station should be provided to a local market if its social benefit—including benefits to listeners and advertisers—exceeds its cost.[6] Given the presence of existing stations, an additional station should be provided only if the sum of its incremental benefits across (the total benefit with the new station, less total benefit of pre-existing stations) plus *net* new ad revenue (revenue of the new station less business diverted from existing stations) exceeds its cost. Because the only part of their social benefit that commercial radio stations can capture is advertising revenue, we expect some inefficient underprovision of relatively unpopular programming.[7] This places attention on the sort of station allocation brought forth by the market. This section discusses the determinants of radio broadcast entry with an eye toward the circumstances that mitigate (or worsen) the underprovision problem; that is, the failure to provide programming with social benefit—but not advertising revenue—in excess of its cost.

Because commercial radio programming is financed through advertising, the market provides only those stations that can cover their costs with advertising revenue. Under free entry—and if station fixed costs do not vary with the size of the market—we expect the number of stations to be roughly proportional to population. We expect that listener welfare—as

reflected by the number of listeners—will increase in the number of local stations which, in turn, depends on the size of the local market. Thus, listeners derive a benefit from the size of the local market. In a larger market, more varieties of programming can garner sufficient audiences to cover operating costs with advertising revenues, so that listeners derive external benefits from being in the same market as others with similar preferences. We term these benefits *preference externalities*.

Market size is important because a larger potential audience can undo the inefficient underprovision problem. Imagine a proposed station that would attract 5 percent of the local population as its audience, each of them valuing the station at $100 per year.[8] Suppose that advertising revenue is $100 per listener/year, and that the station costs $750 per year to operate. If the local population is 100, the station is not provided, even though its social benefit exceeds its cost. If the local population is instead 200, then the station can profitably enter, since it can cover its costs with ad revenue alone.

This example illustrates another important and unusual feature of the radio market: listener valuations are irrelevant in determining whether a station will operate, because listeners do not pay for radio. In the example above, the station would not be provided in a 100-person market, even if its potential listeners valued it at $1000 each. Conversely, in the 200-person market, the station would be provided even if its listeners valued it at only $5 each (or even less).

Throughout this paper, we assume that advertisers value all listeners alike, so that only the total number of listeners matters in determining station format and revenue. There is considerable anecdotal evidence that the race of a station's listeners *does* matter to advertisers,

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however.[9] Advertisers apparently value white listeners more highly than Hispanic or black

listeners, presumably because the former have larger incomes and spend more on consumer

goods on average.[10] The analysis in the rest of this paper focuses exclusively on how their

smaller numbers affect the programming variety offered to minorities. But to the extent that racial

or ethnic minorities are less desirable advertising targets than whites, the market penalizes them

with an additional handicap that might strengthen the case for some kind of intervention.

Overall market size can undo inefficient underprovision only to the extent that all

listeners have the same preferences and comprise a single homogenous market. A natural

question to ask, then, is whether all potential listeners confer similar preference externalities on

one another. For example, do whites benefit from the presence of blacks in the same

geographic market, and vice-versa? Or do individuals only benefit only from being in the same

geographic market as others in the same "preference group?"

Large populations attract more entry and can therefore go a greater distance toward

undoing inefficient underprovision than small populations, and black and Hispanic populations

are small. Across 244 markets in 1993, blacks make up an average of only 9.9 percent, and

Hispanics only 6.4 percent of total population. Hence, if listening preferences do differ across

groups—so that each group only confers positive benefits on its own members—we expect

more severe underprovision of black- and Hispanic-targeted programming than white-targeted

programming.

All of this leads us to question the adequacy of programming for minority listeners.

Classical music fans are one sort of minority. While they are not a legally protected class,

they—along with jazz and news fans—do have state and federal subsidies designed to promote

their preferred programming.[11] As we demonstrate below, racial and ethnic minorities have distinct preferences, and in most markets are small in numbers—precisely the conditions under which theory suggests the market will underprovide their preferred programming.

III. Data

We have station-level information for commercial stations in 244 markets in 1993 and 1997. We observe total listening, call letters, AM/FM status, programming format, owner identity, owner race (whether white, black, or Hispanic), and whether the station broadcasts from inside or outside of the metropolitan area where it is received for 5219 underlying stations in 1993 and for 5990 underlying stations in 1997. We observe station-level black and Hispanic listening for a subset of the metropolitan areas.[12]

The data are derived from a variety of sources. Programming format, owner identity, and AM-FM status information are from Duncan's *American Radio*, Spring 1993 and 1997. Duncan classifies stations into 43 formats, which we report in Table 1. Listening data from are from Arbitron's *Radio USA*, Spring 1993 and 1997. We use Arbitron's average quarter hour (AQH) as our listening measure. AQH listening share is the percentage of persons in a given group listening to radio for at least five minutes during an average quarter hour period between 6AM and midnight. We obtained owner race information from the National Telecommunications Information Agency, which maintains lists of radio and television broadcast facilities owned by blacks, Hispanics, and other minorities.[13]

TABLE 1 ABOUT HERE

The organization of the station-level data merits some discussion. Each observation is not a station but rather a city-station pair. A station such as WCBS-AM in New York also has substantial numbers of listeners in other nearby markets, such as Stamford, Bridgeport, New Haven, etc. The entry for WCBS-AM in New York shows its New York listening and that it broadcasts from inside that metropolitan area. Its entry in Bridgeport, by contrast, shows its Bridgeport listening and that it broadcasts from outside of the Bridgeport metro area. We treat simulcasting stations (multiple transmitters simultaneously broadcasting the same programming on different frequencies) as single stations in each market where they are received.

Our basic sample of 244 markets (for which we have both 1993 and 1997 data, excluding minority listening data) covers areas that included 167 million persons in 1993. Table 2 reports basic summary statistics. Black radio station ownership declined substantially between 1993 and 1997: the average number of black-owned stations received in the markets in our dataset fell by 15.4 percent, from 0.65 to 0.55. By contrast, Hispanic station ownership increased over the same period, from an average of 0.18 to 0.28 stations per market. The total number of stations and programming formats received in these markets both grew: average stations per market rose from 21.4 in 1993 to 24.5 in 1997, while average available formats per market grew from 11.5 to 14.9.

<center>TABLE 2 ABOUT HERE</center>

The growth in overall variety (total number of formats) was mirrored by the rise in programming aimed at minority audiences. Despite the decline in black ownership, the average number of stations broadcasting programming targeted at black audiences increased by 27 percent, from 1.5 in 1993 to 1.9 in 1997, while Hispanic-targeted stations grew 57 percent,

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from 0.68 to 1.07 per market.[14] Despite the growth in both available stations and programming

variety, overall AQH listening declined from 16.80 percent in 1993 (meaning that 16.8 percent

of the population listened to radio for 5 minutes during an average quarter hour) to 15.78

percent in 1997. Ownership concentration increased sharply, with the HHI rising from 1297 in

1993 to 2092 in 1997.

Panel 2 of Table 2 reports the same variables for the 73 markets with black listening

data for both 1993 and 1997. The patterns in the full dataset are also observed in these

markets. Here, we report black and non-black listening separately.[15] Black AQH listening is

roughly 11 percent (1.9 percentage points) higher than non-black listening. While 16.7 percent

of non-blacks listen to radio for five minutes during an average quarter hour in 1993, 18.5

percent of blacks listen. AQH listening declines over the period for both blacks and non-

blacks, however. Panel 3 reports the same variables for the 31 markets with Hispanic listening

data in both 1993 and 1997. Patterns are similar.

IV. Determinants of Minority-Targeted Programming

1. Direct Evidence of Preference Externalities

We begin our characterization of minority-targeted programming with this paper's

central fact, which is demonstrated in Table 3: a group's AQH listening share increases in its

own population size, but is invariant with respect to the size of other groups. Column 1

demonstrates that overall AQH listening (for all groups together) increases with local population,

our measure of the size of the market. This is powerful and direct evidence of a macro-level

preference externality: a larger audience brings forth more stations and greater variety, thereby

attracting listeners who would otherwise not have tuned in to radio.

TABLE 3 ABOUT HERE

The remaining columns in the first part of Table 3 show how particular groups' AQH listening vary with own-group and other-group population. The results are striking. For each group, AQH listening grows in own-group size and is completely invariant with the size of the remaining population. That is, blacks listen more to the radio in markets where there are more blacks, but additional whites have no effect on black listening. Preference externalities in radio programming thus operate only within racial or ethnic groups. Results are similar when regressions include region dummies.

The size of the preference externality varies across groups. An additional million whites in a market increases the market's white AQH listening by 0.4 percentage points. An additional million blacks or Hispanics raises their respective AQH listening by 3 and 1 percentage points.[16] This evidence makes it clear that a group's population has an important effect on its radio listening. Below we detail the mechanism underlying this effect. The latter half of table 3 performs the exercise substituting the log odds ratio of AQH listening for AQH listening itself as the dependent variable, giving rise to a dependent variable that varies continuously and without bound, above and below zero. Substantive results are similar.[17]

2.a. Do Preferences Differ By Race?

Even given the direct evidence of preference externalities above, minority groups can only experience inadequate programming if they prefer different programming from whites. For example, it would be odd to say that the market provides insufficient programming for left-

handed persons. The reason is that despite their relatively small numbers, left-handed listeners'
preferences in radio are presumably identical to those of right-handers. If preferences do not
differ by race/ethnicity, then there is no meaningful distinction between the adequacy of
programming variety available to minorities and the adequacy of programming variety generally.

This section therefore compares white, black, and Hispanic choices in radio
programming. We find very little overlap in listenership—by and large, blacks listen to black
format stations, whites listen to white format stations, and Hispanics to Hispanic format
stations.[18] Columns 2 and 3 of Table 1 report 1997 listening data, by format and race (black
and non-black), for the 101 markets reporting black listening data. It is obvious that blacks and
non-blacks listen to very different programming. Just over half of black listening is concentrated
in only two formats, Black, and Black/Adult Contemporary, which account for less than 2.5
percent of non-black listening. Blacks make up the majority of listeners to stations in seven
formats: Black, Black/Adult Contemporary, Black/Gospel, Black/Oldies, Black/Talk, Gospel,
and Ethnic. (We classify these formats as "black-targeted.") Other formats attracting substantial
amounts of black listening include Contemporary Hit Radio/Urban and Jazz. Altogether, black-
targeted formats attract 61 percent of all black listeners, but only about 3 percent of white
listeners.

The Duncan index is commonly used to measure segregation—that is, the degree to
which the allocation of blacks and whites to neighborhoods or formats differs from shares that
are proportional to each group's population share. The index gives the proportion of all blacks
and whites who would have to move (change format) in order to achieve completely integrated

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listening. For radio, the average 1997 black/white Duncan index is 72.2, which is comparable to levels of black/white residential segregation.[19]

The last two columns of Table 1 report 1997 listening data, by format and Hispanic status, for the 54 markets with 1997 Hispanic listening data. Like blacks, Hispanics listen to different programming than non-Hispanics. Hispanic listeners make up the majority of listeners to the broad Spanish-language format, "Spanish," which attracts 45.7 percent of Hispanic listening. We classify Spanish stations as Hispanic-targeted. Other formats substantial numbers of Hispanic listeners include Contemporary Hit Radio (attracting 8.6 percent of Hispanic listeners) and Contemporary Hit Radio/Urban (6.3 percent). Hispanic listeners are somewhat less segregated than blacks, with an average Duncan index of 46.9.

2.b. Do Minority Listeners Value Minority-Targeted Programming?

The previous section demonstrated that whites, blacks, and Hispanics each listen to different programming. A slightly stronger test for whether groups value programming targeted towards them is to ask whether targeted programming actually attracts listeners from non-listening. If additional targeted programming reduces the number of non-listeners, the new listeners reveal that they prefer the programming to whatever outside option they forego by turning on the radio.

Table 4 reports results of regressions of black and white AQH listening percentages on the numbers of white-targeted and black-targeted radio stations for 1997. The first five columns show OLS regressions of the AQH share on numbers of stations. The remainder of the table shows OLS regressions in which the dependent variable is the log odds

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of AQH listening—that is, ln(share listening/share not listening). The results are clear. Listening increases in the number of own-race stations and is far less sensitive to the number of other stations. The first column shows that overall listening increases in the total number of stations. We then examine the relationship between a group's listening and the number of stations targeted at it, along with the number of stations targeted at other listeners. Each group's listening depends strongly on the stations targeted at it, and to a lesser extent—or not at all—on those targeted at other groups.[20]

TABLE 4 ABOUT HERE

The OLS results are likely to suffer from the endogeneity problem that entry will tend to occur in markets where there is a high (but unobservable) tendency to listen. This would bias the coefficients in Table 4 upward. To correct for this problem, we require instrumental variables that determine entry of black, Hispanic, and white-targeted stations without directly affecting AQH listening. Measures of market size, such as population, are natural candidates. We explore these instruments next.

2.c. Station Entry and Market Size

Given that blacks, Hispanics, and whites have different listening preferences, we expect the number of stations targeted to each group to vary with the size of the group in a given geographic market. Here we distinguish between stations broadcasting from inside and outside the metro area. Table 5 reports regressions of the number of inside stations targeted towards different groups on first- and second-order terms in the groups' populations, as well as the number of outside stations targeting the group.[21] The first five columns of the table include all

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markets for which we have data. As expected, the number of group-targeted stations increases as the group increases in size; but curiously, the number of group-targeted stations *decreases* in the size of the remaining population. We suspected that this was due to technological limits on the number of stations in large markets, where the broadcast spectrum is likely to be so crowded as to forestall additional entry). In the last five columns, we report the same regressions for markets with under 2.5 million persons in 1997. The curious result is diminished but does not go away. In all but the largest markets, the number of group-targeted stations increases as the group's population rises, and is less sensitive to the population of the other group. Waldfogel (1999) documents that negative cross-group effects in entry reflect minority listeners switching from white-targeted to minority-targeted stations as the latter become available. These regressions indicate that the size of a market's minority population determines the number of minority-targeted stations, while the population of whites in the market is largely irrelevant.

<div align="center">TABLE 5 ABOUT HERE</div>

In Table 6 we revisit the relationship between station entry (by target group) and group AQH listening share, using IV estimates with terms in population as instruments.[22] The IV results in Table 6 are virtually identical to the OLS results in Table 4: each group's listening depends only on the number of stations targeted at it; the number of stations targeted at the other group has no effect on its listening. These results provide strong evidence that groups value programming that targets them, and are far less sensitive to non-targeted programming.[23]

<div align="center">TABLE 6 ABOUT HERE</div>

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3. Problems with Market Provision of Minority Programming

Preference externalities are not just a theoretical curiosity: it is clear that blacks confer

benefits on other blacks, Hispanics on other Hispanics, and whites on other whites. The market

therefore provides fewer stations appealing to racial and ethnic minorities, relative to whites,

simply because these groups are less numerous. Without knowing something about the value

that listeners place on programming, it is impossible to be certain that minorities are being

underserved in an absolute sense. But it is clear that minorities are being underserved *relative*

to whites. All listeners face the problem of inefficient underprovision, but minority populations

generate smaller preference externalities for their distinct group of listeners. Consequently, less-

numerous black and Hispanic populations do less to mitigate the generic inefficient

underprovision problem.

We note, however, that despite the relative paucity of black-targeted programming,

blacks listen to radio more than whites (recall Table 2). Given this fact, it is by no means

obvious that underprovision of service to blacks is severe. On the other hand, one can interpret

greater black listening, even when facing fewer group-targeted varieties of programming, as

evidence that blacks place greater value on radio than whites, in which case their greater

listening might nevertheless be consistent with underprovision.

V. Does Minority Ownership Promote Minority Programming?

Our evidence suggesting that minority listeners face more severe underprovision

problems than whites raises the possibility that policy can affect the situation. The FCC has

pursued various policies designed to promote minority ownership of radio stations (see Spitzer,

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1991 and Appendix A). Ultimately, we would like to know whether there is an economic rationale for these policies. A threshold question is simply whether minority ownership preferences actually promote minority programming. Efficacy is a necessary, but not sufficient, condition for justifying such programs.

In a 1987 cross-section of radio stations, Dubin and Spitzer (1993) find that minority-owned stations are more likely to broadcast minority-targeted programming than are white-owned stations. In this section we build on Dubin and Spitzer's findings in four significant ways. First, we use more recent data, for both 1993 and 1997. Second, in addition to cross-sectional variation, we are also able to make use of time-series variation, examining the relationship between *changes* in minority programming and *changes* in minority ownership. Third, we have not only changes in minority ownership between 1993 and 1997 but also a policy shift generating a plausible source of exogenous variation in minority ownership. This is important in overcoming the possible endogeneity problems in a simple cross-sectional regression of format on ownership. Fourth, and most important, we use market-level, rather than station-level data, allowing us to measure the impact of minority-owned stations on minority-targeted programming, net of any crowding out.

1. Exogenous Policy Changes, 1993-97

There were at least two important changes in the regulatory regime governing minority broadcasters between 1993 and 1997. First, in January of 1995 Congress repealed the FCC's Tax Certificate policy, which granted favorable treatment of capital gains on sales of broadcast

licenses to minority owners.[24] This had provided a substantial tax subsidy for license holders

who sold their licenses to minorities.

A second important change came with the passage of the 1996 Telecommunications

Act, under which the rules limiting station ownership were substantially modified. As of 1992,

FCC rules specified that an individual or entity could not own more than 18 AM and 18 FM

stations nationally (with up to 3 more if they were controlled by minorities or small businesses).

The limits were raise to 20 of each type of station in Sept. 1994. The Telecommunications Act

of 1996 completely eliminated national limits, and relaxed local limits as summarized in Table 7.

TABLE 7 ABOUT HERE

Relaxed ownership limits may have raised the value of stations to incumbent owners

who are able to hold multiple stations. To the extent that non-minority owners are probably

more able than black owners to hold multiple stations, we would expect that relaxing ownership

limits would prompt black owners to sell stations to whites.

These policy shifts unleashed a torrent of radio station merger activity. The FCC

approved transfers of almost 4,000 stations in 1996.[25] Between 1993 and 1997 the market

level HHI's for the 244 markets with valid data in both years nearly doubled, from an average of

1270 in 1993 to an average of 2092 in 1997, as Table 2 documents.[26]

Many in the minority broadcasting community watched with concern as minority station

owners sold their stations to white owners of large numbers of stations (Irving, et al, 1998). We

view the 1996 Telecommunications Act and the elimination of the favorable capital gains

treatment as exogenous increases in the demand for minority-owned stations by white owners

because they occurred for reasons unrelated to the underlying demand for minority

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programming. The drop in minority ownership that followed on these measures is therefore

plausibly exogenous, since it did not depend on changes in either minority listening or advertising

revenues from minority-targeted programming. This in turn means that changes in minority-

targeted programming this period are a measure of the efficacy of minority ownership

preferences: if minority programming changes as the result of an exogenous shock to minority

ownership, we can be confident that the causation runs from ownership to programming, and

hence that preferences which increase ownership thereby promote minority-targeted

programming.

Moreover, since ownership restrictions under the Telecommunications Act were relaxed

differentially according to market size, we can use market size measures as instruments for

changes in station ownership by race.

In this section we examine the relationship between minority ownership and

programming using three separate approaches. First, we present data on the distribution of

stations by programming format and owner race. We then present cross section evidence for

1993 and 1997 and longitudinal evidence, with and without instrumenting for changes in

ownership.

2. Who Broadcasts Minority-Targeted Programming?

Table 8 shows the distribution of stations by format and owner race for 1997. A

surprising fact emerging from this table is that, while almost all minority-owned stations

broadcast minority-targeted content, most stations broadcasting minority-targeted programming

are actually white-owned. Of 139 black-owned city-stations in 1997, all but 23 (16 percent)

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were in the six black-targeted formats. Of these 23 stations, moreover, 8 were in formats that attract substantial numbers of black listeners—Jazz and Contemporary Hit Radio/Urban—meaning that nearly 90 percent of black-owned stations broadcast to a substantially black target audience.

TABLE 8 ABOUT HERE

Yet, most black-targeted stations are white-owned. For example, whites own 169 (72 percent) of the 236 stations broadcasting in the Black format. Whites own 90 of 107 stations broadcasting in the Black/Adult Contemporary format, 22 of 32 Black/Gospel stations, 20 of 26 Black/Oldies stations, 54 of 62 Gospel stations, and 12 of 14 Ethnic stations. (An interesting exception with potential significance for an analysis of viewpoint diversity is that whites own only 1 of 6 Black/Talk stations.) These results clearly indicate that black ownership is not necessary for the provision of black programming. A question that they do not answer is whether black ownership increases the number of stations broadcasting black-targeted programming. Given that white owners frequently provide black-targeted programming, it is entirely possible that additional black-owned and targeted stations simply reduce the number of black-targeted stations provided by white owners, a "crowding out" effect. We turn to this question next.

3. Cross Section Evidence on Owner Race and Targeted Programming

To measure the impact of black and Hispanic ownership on the volume of programming targeted at these two groups, Table 9 presents regressions of the number of group-targeted stations in a market on the number of group-owned stations in the market, first without, then with additional controls. Controls include group population and its square, as well as the total

number of stations and the total number of formats. Using either the 1993 or 1997 cross

section, the coefficients on the number of minority-owned stations tend to be quite large

(between 0.69 and 1.31 for blacks, between 1.12 and 2.56 for Hispanics). These results imply

that each additional minority-owned station begets roughly one additional net source of

minority-targeted programming, suggesting that minority-owned stations do not simply replace

white-owned, minority targeted stations. Results are virtually identical when we use inside

stations as the dependent variable and treat outside stations as an additional explanatory

variable.

TABLE 9 ABOUT HERE

While interesting, these estimates are vulnerable to a concern that the positive estimated

coefficient may arise because both the number of minority-owned stations and the number of

minority-oriented formats depend on some third unobserved factor. To address this concern,

we make use of the panel feature of the data.

4. Longitudinal Evidence

Table 10 reports regressions of the change in the number of black- and Hispanic-

targeted stations on the change in the number black- and Hispanic-owned stations. The OLS

coefficient estimate is 0.248 for blacks (with a standard error of 0.092).   The OLS Hispanic

coefficient is 0.784 (0.165). These results suggest substantial but not complete crowding out:

they imply that the net effect of an additional minority owned station is to increase minority

targeted formats by only one-quarter to three-quarters of a station.

TABLE 10 ABOUT HERE

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Although running regressions in changes eliminates the problem of fixed unobservable factors affecting both ownership and format, other potential problems remain. First, changes in a group's ownership may be endogenous. Second, changes in ownership may be measured with error. One important source of measurement error is the fact that minority ownership is self-reported on a survey sent to all radio stations, not all of which are completed or are legible.[27]

The structure of changes in regulatory ownership limits described above suggests that market size measures related to the number of stations can serve as instruments for the change in minority ownership.[28] Fortunately, instrumental variables (IV) addresses measurement error as well as endogeneity concerns. Columns 2 and 5 of Table 10 show the associated first-stage regressions. While the instrument does not work especially well for either group, population has higher significance for blacks than for Hispanics. The estimated IV coefficients on the change in group ownership are 0.987 (0.442) for blacks and 1.136 (0.688) for Hispanics. In other words, after controlling for the possible endogeneity of changes in minority ownership, adding a minority owned station increases the number of minority-format stations by roughly 1.0, implying no crowding-out of white-owned, minority-targeted stations. We obtain virtually identical results when we disaggregate inside and outside stations, treating the change in inside stations as the dependent variable and the change in outside stations as an additional exogenous variable.

VII. Explanations

The absence of crowding-out documented above implies that, even though white owners commonly provide black-targeted programming, black owners enter in situations that

white owners avoid. Otherwise, exogenously adding new black-owned stations to a market should have no effect on the total number of black-targeted stations. Two possible explanations come to mind, both discussed in Spitzer (1991). First, black owners may have informational advantages that allow them to profitably enter markets that whites cannot. This seems highly implausible, given that the majority of black-targeted stations are white-owned. If true, however, this hypothesis would imply that black *ownership* would have an effect on listening, over and above the effect of black programming. We can examine this hypothesis by comparing listening to black- and white-owned black-targeted stations located in the same markets.

Under a strong version of the informational advantage hypothesis, black-owned black-targeted stations should attract more listeners per station than white-owned black-targeted stations. But this is not true. In markets with both white and black-owned black-targeted stations, the average black-owned black-targeted station had an average of 4,970 listeners while the average white-owned black-targeted station had 6,840, nearly 38 percent more. This difference also arises—and is significant—in a regression that includes format and market fixed effects.[29]

We can do a second test for black informational advantage by regressing black AQH listening for a metro area on the total number of number of stations, the number of black-targeted stations, and the number of black-owned stations (virtually all of which are black-targeted). If black owners have an advantage over white owners, we would expect to find that black listening is a positive function of the number of black-owned stations, over and above any effect arising from the number of black-targeted stations. When we run this test, however, the

coefficient on the number of black-owned stations is small and insignificant. The evidence does not support the informational advantage hypothesis for black owners.

For Hispanics the evidence is slightly different. In markets with both Hispanic and non-Hispanic-owned Hispanic-targeted stations, Hispanic-owned stations have an average of 5,850 listeners while non-Hispanic-owned stations have an average of 6,030, only 3 percent more. In a regression of Hispanic listeners on market dummies and a Hispanic ownership dummy (there is only one Hispanic format, so there are no format dummies), the coefficient on Hispanic ownership is 1,790. This indicates that for Hispanics, there is a positive owner-race effect on listening (controlling for other factors), although the effect is not statistically significant (t-stat=1.12). In regressions of Hispanic AQH listening on the total number of number of stations, the number of Hispanic-targeted stations, and the number of Hispanic-owned stations, the coefficient on the number of Hispanic-owned stations is small and never significant. On balance, then, there is no convincing evidence of an informational advantage for black or Hispanic owners. This seems economically plausible, since as Spitzer notes, even if minority programmers have special insights into the minority market, there is little reason to think that white owners could not simply buy this expertise, obviating the need for minority ownership.

A second possibility is that black owners enter for "ideological" reasons, which means that they are willing to forego some profits in order to a provide a particular sort of programming.[30] This hypothesis would rationalize the observation that black-owned and targeted stations have fewer listeners, on average, that their white-owned counterparts (in markets with both white and black-owned black-targeted stations). Black owners' willingness to accept smaller returns could explain why greater black ownership increases black-targeted

programming: additional black owners are willing to enter low-profitability market niches (programming to small black audiences) that whites would not enter. The "ideological" theory predicts lower returns for black-owned stations. Unfortunately, we lack profit data that would support an adequate test of this prediction.

VIII. Conclusion

This paper has demonstrated three important facts about the market for commercial radio. First, we document the existence of *preference externalities*: individuals are better off when they are located in markets with others who share their preferences in radio programming. Second, we find that these externalities operate only within-group, which should not be surprising, given the disparate tastes of whites, blacks, and Hispanics. Our third empirical finding is that minority ownership increases the net amount of minority-targeted programming. Even though most minority-targeted stations are white-owned, markets with more minority-owned stations also have more minority-*targeted* stations, which means that minority-owned stations add to the total programming available to minority listeners.

While these facts are clear, their normative implications are not as obvious. Given that preferences externalities can overcome inefficient underprovision for large audiences, the small size of local black and Hispanic audiences in most markets means that the preference externality mechanism is not available to correct this problem. An efficiency-minded regulator might thus want to consider other ways of promoting minority-targeted programming.[31] In this vein, policies promoting minority ownership seem like a plausible method for increasing welfare by correcting inefficient underprovision.

An important caveat is in order, however. Although we can make a theoretical case for the possibility that markets will underprovide programming of interest to small audiences, we cannot isolate particular instances of inefficient underprovision. Because listeners get radio programming without paying, we cannot determine its value to listeners, and hence we cannot ascertain whether the market fails to provide programming whose social value is greater than its cost.

Given that it is impossible to measure listener valuation directly, there are two indirect methods that might be used to shed some light on the efficiency questions involved. One alternative is to deduce the listener valuation implicit in current regulatory policies. The argument works like this. While the marginal entrant may attract many listeners, in a market with many stations, she attracts a small number of *new* listeners to radio, even though her station has substantial operating costs. In general, it must be the case that the *net* increase in total (market) ad revenue associated with the marginal station falls short of its cost.

For example, suppose the marginal station costs $1 million to operate and generates $1.2 million in advertising revenues. Suppose that only $0.3 million of this $1.2 million constitutes a net addition to total market advertising revenues; the remaining $0.9 million represents revenues (listeners) diverted from pre-existing stations. If the marginal station costs $1 million and generates only $0.3 million in net new revenue, then in order for its entry to be optimal there must be at least $0.7 million in benefits going to someone else—in this case, listeners. Berry and Waldfogel (1999b) calculate empirically that in order for the existing pattern of entry to be optimal, regulators must believe that the value of the marginal station to listeners is roughly three times its value to advertisers.[32]

The larger the listener valuation of programming, the greater the problem of inefficient underprovision, since listener valuation is the portion of social benefit that program providers cannot capture as revenue. The Berry and Waldfogel result thus suggests that if we assume current entry patterns are optimal, inefficient underprovision is likely to be a serious problem, since implicit listener valuations are large relative advertising revenues.

A second normative benchmark comes from other areas of radio regulation. While the unpriced nature of radio makes it difficult, if not impossible, to identify inefficient underprovision, US broadcasting policy does directly subsidize programming in some formats, namely classical music, jazz, and news. Other research (Berry and Waldfogel, 1999a) suggests that roughly a third of government support for "public" classical stations supports stations that either have local commercial competition in the format or would, in the absence of the public station.

Efficiency—benefits in excess of costs—is an ideal benchmark against which to judge the market for minority-targeted programming. But given that existing policy already subsidizes some formats that would otherwise attract relatively few listeners, the economic case for intervention to increase the amount minority-targeted programming is strengthened.[33]

Much work remains. First, it would be useful to characterize the sort of minority-targeted programming available in more detail. Existing format designations are very coarse. Most black-targeted stations are uninformatively labeled simply "Black." Are these talk stations, urban top 40 stations, religious stations? The Hispanic-targeted designations are even less helpful. Virtually all are simply "Hispanic." It would be useful, therefore, simply to characterize the availability of various sorts of minority-targeted stations. Some markets have multiple black-targeted stations. With finer format information, it would be possible to know

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whether these stations duplicate one another, as opposed to offering substantially distinct programming.

Second, the forces operating in the provision of radio broadcasting to blacks and Hispanics also operate, to varying extents, in the provision of local television, as well as other media (such as newspapers). Relatively few markets have black or Hispanic news outlets. If minority preferences in news are different, it is possible that the current local TV news configuration - three virtually identical news shows - is inferior to, say, two virtually identical white-oriented shows along with, say, one minority oriented program. In the absence of viewership data, this is no more than speculation. It would be interesting, however, to study viewing data, by race and Hispanic status, by market. Do minorities watch in greater proportions in markets where they are more numerous (and where, one can assume, there is programming closer to their tastes and interests)?

Third, to what extent can emerging technologies correct the possible inefficient underprovision that we describe? The FCC has licensed two companies to broadcast satellite radio in the US. Do these companies plan to include minority-targeted programming? Because they are charging for their service, they avoid the theoretical problem of underprovision because they can capture listener valuation as revenue. However, will their pricing make the service appealing for minority listeners to adopt? Should satellite providers with capacity for, say, 100 channels be encouraged to "sublet" some of their channels to minority providers? Emerging technologies that effectively increase the size of the relevant market may make it possible to harness preference externalities to solve this problem through the market. Such solutions may require regulatory foresight.

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Table 1: Stations and Listening, by Race and Format, 1997

	101 Markets with Black Listening			54 Markets with Hisp. Listening		
	Percent of Stations	Percent of Listening		Percent of Stations	Percent of Listening	
Format		Non-Black	Black		Non-Hisp.	Hispanic
Adult Contemp. (AC)	5.9	6.7	2.0	5.0	5.4	3.4
AC/Contemp. Hit Radio	2.1	2.9	0.8	2.3	2.9	1.5
Adult Contemp./New Rock	0.6	1.1	0.3	1.1	1.5	0.6
AC/Soft Adult Contemp.	0.1	0.1	0.1	0.1	0.1	0.0
Album Oriented Rock (AOR)	5.3	6.0	0.7	4.5	4.9	2.4
AOR/Adult Contemp.	0.1	0.1	0.0	0.1	0.1	0.0
AOR/Classic Rock	0.2	0.1	0.0	0.1	0.0	0.0
Album Oriented Rock/New Rock	3.0	3.7	0.5	3.1	3.3	1.9
Album Oriented Rock/Progressive	1.0	1.3	0.1	1.8	1.6	0.6
Black	7.5	1.7	32.5	1.6	4.0	1.6
Black/Adult Contemp.	3.2	0.8	18.3	1.4	4.6	1.7
Black/Gospel	1.2	0.0	1.8	0.1	0.0	0.0
Black/Oldies	1.0	0.1	2.4	0.3	0.5	0.0
Black/Talk	0.2	0.0	1.4	0.3	0.4	0.0
Big Band/Nostalgia	4.7	4.2	0.5	4.2	4.1	1.2
Big Band/Nostalgia/Religious	0.0	0.0	0.0	0.1	0.0	0.0
Country	13.0	11.9	1.5	10.6	8.7	4.0
Country/Full Service	0.1	0.2	0.0	5.2	6.0	8.6
Contemporary Hit Radio (CHR)	5.6	6.7	2.5	0.4	0.8	0.4
CHR/Adult Contemp.	0.8	0.9	0.3	0.1	0.0	0.0
CHR/New Rock	0.2	0.3	0.1	0.1	0.2	0.0
Contemporary Hit Radio/Urban	1.1	2.7	7.7	1.5	4.2	6.3
Classical	1.2	2.4	0.5	1.8	3.0	0.9
Classic Album Oriented Rock	3.3	4.0	0.5	4.1	3.8	2.3
Classic Hits	1.5	1.5	0.2	1.1	1.1	0.3
Ethnic	0.2	0.1	0.6	0.4	0.3	0.2
Easy Listening	0.2	0.0	0.0	0.2	0.0	0.0
Full Service/Variety	0.9	0.7	0.2	0.5	0.3	0.1
Full Service/Variety/Talk	1.2	2.4	0.8	0.6	1.7	0.2
Gospel	2.0	0.1	3.8	0.4	0.3	0.0
Jazz	2.0	2.3	6.5	3.0	4.2	2.0
News	1.4	3.0	2.9	1.9	4.6	1.1
News/Talk	2.5	3.2	1.0	3.3	3.4	1.1
Oldies	5.6	6.7	1.7	5.2	6.1	4.4
Religious	5.4	1.2	2.5	3.5	1.2	0.9
Soft Adult Contemp.	3.4	5.2	2.3	3.8	4.7	3.2
Spanish	2.9	7.4	0.2	16.1	0.5	45.7
Sports	2.9	2.1	1.0	3.0	2.7	1.0
Talk	6.0	6.1	1.7	7.0	8.0	2.2
Talk/Classic AOR	0.2	0.4	0.1	0.1	0.5	0.0
Talk/Full Service	0.0	0.0	0.0	0.1	0.0	0.0
Talk/Jazz	0.1	0.2	0.1	0.1	0.2	0.0
Unknown	0.1	0.0	0.0	0.0	0.0	0.0

Table 2
Per-Market Averages

1. All 244 Markets

	1993	1997
Stations	21.39	24.55
Black-Targeted	1.52	1.93
Black-Owned	0.65	0.55
Hispanic-Targeted	0.68	1.07
Hispanic-Owned	0.19	0.28
AQH Listening	16.80	15.78
Formats	11.48	14.88
Owners	18.65	14.92
HHI	1269.83	2091.66
Population (000)	685.18	707.74
Black Population	84.32	
Hispanic Population	69.54	

2. 73 Markets with Black Listening Data in both Years

	1993	1997
Stations	25.33	28.01
Black-Targeted	3.53	4.26
Black-Owned	1.60	1.36
Non-Black AQH Listening	16.71	15.67
Black AQH Listening	18.51	18.14
Formats	13.48	17.25
Owners	21.60	16.45
HHI	1040.87	1995.44
Non-Black Population	1235.61	1262.79
Black Population	236.33	245.34

3. 31 Markets with Hispanic Listening Data in both Years

	1993	1997
Stations	31.65	33.90
Black-Targeted	4.39	6.16
Black-Owned	0.97	1.39
Non-Hispanic AQH Listening	16.83	15.96
Hispanic AQH Listening	18.18	17.71
Formats	14.94	18.65
Owners	26.65	20.52
HHI	806.38	1578.67

Non-Hispanic Population	1824.05	1827.58
Hispanic Population	443.26	503.75

Table 3: Direct Evidence of Preference Externalities, 1997

	All Listening	Non-Black Listening	Black Listening	Non-Hisp. Listening	Hispanic Listening	All Listening	Non-Black Listening	Black Listening	Non-Hisp. Listening	Hispanic Listening
	Dep. Var. = AQH*100					Dep. Var.= ln(AQH/(1-AQH))				
Constant	15.569*	15.150*	17.401*	15.467*	17.161*	-1.693*	-1.726*	-1.564*	-1.700*	-1.580*
	(0.082)	(0.145)	(0.229)	(0.103)	(0.309)	(0.006)	(0.011)	(0.0167	(0.012)	(0.022)
Population	0.3030*					0.022*				
	(0.053)					(0.004)				
Non-Black Population		0.403*	-0.090				0.031*	0.006		
		(0.162)	(0.256)				(0.013)	(0.018)		
Black Population		-0.436	3.002*				-0.034	0.202*		
		(0.846)	(1.335)				(0.065)	(0.096)		
Non-Hisp. Population				0.390*	-0.011				0.029*	0.0002
				(0.103)	(0.193)				(0.008)	(0.014)
Hispanic Population				-0.489	1.067**				-0.035	0.071
				(0.345)	(0.649)				(0.026)	(0.046)
R-sq	0.1184	0.1735	0.1591	0.2887	0.1121	0.1134	0.1674	0.1438	0.2776	0.1077
N	244	99	99	51	51	244	99	99	51	51

Notes: All population figures are in millions. The left side of the table reports OLS regressions using the listening share*100 as the dependent variable, allowing easy interpretation of coefficients. The right side of the table reports regressions using the log-odds ratio of the share as the dependent variable.

Table 4: 1997 Listening and Stations, by Type of Stations and Listening

	All Listening	Non-Black Listening	Black Listening	Non-Hisp. Listening	Hispanic Listening	All Listening	Non-Black Listening	Black Listening	Non-Hisp. Listening	Hispanic Listening
	Dep. Var. = AQH*100					Dep. Var.= ln(AQH/(1-AQH))				
Constant	14.142*	12.586*	15.067*	14.829*	17.474*	-1.801*	-1.923*	-1.728*	-1.748*	-1.566*
	(0.215)	(0.436)	(0.813)	(0.522)	(0.882)	(0.016)	(0.034)	(0.058)	(0.039)	(0.062)
All Stations	0.067*					0.005*				
	(0.008)					(0.0006)				
Non-Black-Targeted Stations		0.120*	0.068*				0.009*	0.005*		
		(0.015)	(0.028)				(0.001)	(0.002)		
Black-Targeted Stations		0.038	0.313*				0.003	0.022*		
		(0.051)	(0.096)				(0.004)	(0.007)		
Non-Hispanic-Targeted Stations				0.044*	-0.027				0.003*	-0.002
				(0.019)	(0.032)				(0.001)	(0.002)
Hispanic-Targeted Stations				-0.023	0.152*				-0.001	0.011*
				(0.042)	(0.072)				(0.003)	(0.005)
R-sq	0.2120	0.3921	0.1347	0.1049	0.0958	0.2106	0.3912	0.1304	0.0997	0.1005
N	244	99	99	51	51	244	99	99	51	51

Notes: Standard errors in parentheses. Listening is measured as the log-odds ratio of AQH listening. Asterisk indicates 95 percent significance level. Double asterisk indicates 90 percent significance level.

Table 5: 1997 Inside Station Entry and Population, by Race and Hispanic Status

	All Stations	Non-Black	Black	Non-Hispanic	Hispanic	All Stations	Non-Black	Black	Non-Hispanic	Hispanic
	All Markets					Markets with Population < 2.5 million				
Constant	15.220*	14.562*	2.556*	14.490*	1.881*	11.750*	10.746*	1.429*	12.475*	0.820*
	(0.450)	(0.643)	(0.285)	(0.944)	(0.392)	(0.496)	(0.893)	(0.403)	(1.154)	(0.402)
Population (millions)	6.614*					21.519*				
	(0.436)					(1.515)				
Pop. Squared	-0.347*					-7.255*				
	(0.040)					(0.767)				
Non-Black Pop		7.316*	-2.280*				19.427*	-5.442*		
		(1.009)	(0.454)				(2.786)	(1.314)		
Non-Black Pop. Sq.		-0.396*	0.178*				-7.024*	1.285*		
		(0.108)	(0.049)				(1.323)	(0.628)		
Black Pop.		-9.936*	15.699*				-2.490	47.000*		
		(4.798)	(2.104)				(13.097)	(5.637)		
Black Pop. Sq.		2.537	-5.587*				-5.147	-62.311*		
		(2.347)	(1.039)				(26.008)	(11.442)		
Non-Hisp. Pop.				5.501*	-1.297*				14.162*	-6.024*
				(0.702)	(0.353)				(4.312)	(1.638)
Non-Hisp. Pop. Sq.				-0.281*	-0.018				-4.308*	1.134
				(0.062)	(0.030)				(2.089)	(0.787)
Hisp. Pop				-1.648	14.571*				11.503	53.143*
				(3.331)	(1.645)				(14.848)	(5.854)
Hisp. Pop. Sq.				-0.652	-2.597*				-25.945	-64.660*
				(0.827)	(0.406)				(24.982)	(9.507)
Outside Stations Targeting this Group	-0.338*	-0.409*	-0.119	-0.352*	-0.018	-0.365*	-0.371*	-0.035	-0.390*	-0.243
	(0.031)	(0.048)	(0.139)	(0.057)	(0.167)	(0.025)	(0.043)	(0.121)	(0.054)	(0.136)
R-sq	0.6902	0.8069	0.4385	0.8382	0.7289	0.7121	0.7668	0.5924	0.7304	0.8203
N	244	99	99	51	51	231	87	87	41	41

Notes: Standard errors in parentheses.

Table 6: 1997 Group Listening and Targeted Stations (IV)

	All Listening	Non-Black Listening	Black Listening	Non-Hisp. Listening	Hispanic Listening	All Listening	Non-Black Listening	Black Listening	Non-Hisp. Listening	Hispanic Listening
	Dep. Var. = AQH*100					Dep. Var.= ln(AQH/(1-AQH))				
Constant	13.100*	11.871*	11.222*	12.817*	15.031*	-1.878*	-1.977*	-1.992*	-1.900*	-1.736*
	(0.425)	(0.805)	(1.683)	(0.956)	(1.502)	(0.032)	(0.062)	(0.119)	(0.072)	(0.106)
All Stations	0.109*					0.008*				
	(0.017)					(0.001)				
Non-Black-Targeted Stations		0.142*	0.160*				0.011*	0.011*		
		(0.025)	(0.051)				(0.002)	(0.004)		
Black-Targeted Stations		0.088	0.747*				0.007	0.051*		
		(0.103)	(0.214)				(0.008)	(0.015)		
Non-Hispanic-Targeted Stations				0.122*	0.063				0.009*	0.005
				(0.035)	(0.055)				(0.003)	(0.004)
Hispanic-Targeted Stations				-0.006	0.197*				-0.002	0.014*
				(0.061)	(0.096)				(0.005)	(0.007)
R-sq	0.1484	0.2250	0.1928	0.3128	0.1137	0.1453	0.2197	0.1793	0.3060	0.1138
N	244	99	99	51	51	244	99	99	51	51

Notes: Standard errors in parentheses. Asterisks indicate 95 percent significance level. Instruments include relevant populations and their square. We obtain similar results with other specifications. See text for details.

Table 7: Ownership Restrictions Under the 1996 Telecommunications Act

Market Size (Number of Stations)	Maximum Number of Stations That Can be Owned by a Single Entity	Maximum Number in a Single Service (AM or FM)
45 or more	8	5
30-44	7	4
15-29	6	4
14 or Fewer	Min(5, N/2) where N is total stations in the market	3

Source: 47 C.F.R. § 73.3555H(a)(1)(i)-(iv) (1998).

Note: The Telecommunications Act abolished national caps, which had previously been set at a maximum of 20 stations in each service. Local limits had been set at 4 stations in a single market.

Table 8: Station Ownership by Format and Race/Hispanic Status, 1997

Format	White	Black	Hispanic
AC	418	0	0
AC/AOR	4	0	0
AC/CHR	128	0	0
AC/NR	42	0	0
AC/SAC	8	0	0
AOR	374	1	0
AOR/AC	3	0	0
AOR/CL	19	0	0
AOR/NR	198	2	0
AOR/P	80	0	0
B	169	67	0
B/AC	90	17	0
B/G	22	10	0
B/O	20	6	0
B/T	1	5	0
BB	315	0	0
BB/EZ	3	0	0
BB/REL	1	0	0
BB/T	1	0	0
C	904	0	0
C/FS	14	0	0
CHR	409	0	1
CHR/AC	51	0	0
CHR/B	2	0	0
CHR/NR	9	0	0
CHR/U	49	5	0
CL	70	0	0
CL AOR	265	0	0
CL HITS	83	0	0
E	12	2	0
EZ	13	0	0
EZ/SAC	1	0	0
FS	96	0	0
FS/T	78	0	0
G	54	8	0
J	115	3	0
KIDS	1	0	0
N	75	0	0
N/T	170	0	0
O	393	1	0
REL	266	9	1
SAC	253	0	0
SP	223	2	71
SPRTS	169	1	2
T	407	0	1
T/CL AOR	7	0	0
T/FS	3	0	0
T/J	5	0	0
UNK	6	0	0

Table 9: Cross Sectional Evidence on Minority Ownership and Programming

	Black-Targeted Stations				Hispanic-Targeted Stations			
	1993		1997		1993		1997	
Constant	0.770*	0.225	1.215*	0.709	0.278*	0.622*	0.367*	0.730*
	(0.106)	(0.317)	(0.136)	(0.457)	(0.099)	(0.257)	(0.124)	(0.369)
Number of Black-Owned Stations	1.152*	0.685*	1.312*	0.900*				
	(0.083)	(0.101)	(0.119)	(0.130)				
Number Hisp.-Owned					2.136*	1.144*	2.537*	1.518*
					(0.163)	(0.150)	(0.166)	(0.167)
Number of Stations		-0.018		0.038		0.049*		0.092*
		(0.019)		(0.026)		(0.016)		(0.022)
Number of Formats		0.073		-0.046		-0.144*		-0.191*
		(0.047)		(0.056)		(0.038)		(0.044)
Black Pop. 1993		6.063*		7.383*				9.823*
		(1.061)		(1.329)				(1.117)
Black Pop. Sq. 1993		-2.058*		-3.032*				-2.500*
		(0.478)		(0.628)				(0.380)
Hisp. Pop. 1993						8.975*		9.520
						(0.891)		(1.115)
Hisp. Pop. Sq. 1993						-2.246*		-2.440
						(0.299)		(0.038)
R-sq.	0.4406	0.5393	0.3358	0.4340	0.4136	0.6834	0.4908	0.6753
N	244	244	244	244	244	244	244	244

Note: Standard errors in parentheses. Asterisk indicates 95 percent significance level.

Table 10: Longitudinal Evidence on Minority Ownership and Programming

	DBlack-Targeted Stations OLS	DBlack-Owned Stations OLS	DBlack-Targeted Stations IV	DHispanic-Targeted Stations OLS	DHispanic-Owned Stations OLS	DHispanic-Targeted Stations IV
Constant	0.437*	-0.003	0.515*	0.322*	0.051	0.291*
	(0.070)	(0.060)	(0.091)	(0.065)	(0.031)	(0.089)
DBlack-Owned Stations	0.249*		0.987*			
	(0.093)		(0.442)			
DHispanic-Owned Stations				0.787*		1.136**
				(0.165)		(0.688)
1993 Population		-0.163*			0.050	
		(0.077)			(0.040)	
1993 Population Squared		0.003			0.002	
		(0.007)			(0.004)	
R-sq	0.0288	0.0556	0.0252	0.0864	0.0583	0.0105
N	244	244	244	244	244	244

Notes: Standard errors in parentheses. Asterisk and double asterisks indicate significance at the 95 and 90 percent levels, respectively. Instruments for IV regressions include 1993 population and its square. First-stage regressions are reported in columns 2 and 5.

Appendix A: A Summary of the FCC's Minority Preferences

Policy	How Applied	Effective Dates
Grants of Licenses by the FCC		
"Plus-Factor"	If > 1 applicant for single license, minority ownership considered as a plus factor.[34]	1973 - 1993
Lottery Preference	Special credit for minority bidders on stations awarded by lottery.[35]	1983 - Current?
Sales of Licenses Between Private Parties		
Tax Certificates	Favorable tax treatment for capital gains realized on sale of station license to minority buyer.[36]	1978 - Jan. 1995
"Distress Sale" Provision	Relaxed procedural requirements when owner whose qualifications to hold a license have been called into question sells to minority enterprise.[37]	1978 - Current?
Station Ownership Limits	Allowed a single owner to take a non-controlling interest in up to 3 stations per service (AM or FM) nationwide beyond the national caps on total station ownership, if the additional stations were controlled by minorities; relaxed the national cap by 2 for minority owners.[38]	1978-1996
Operational Requirements or Regulations		
Training Programs	Special programs to train minority broadcasters.[39]	1978 - Current
Employee Affirmative Action	Reporting requirements for employment and recruitment of minorities, with possible consequences for license renewal if requirements were not met.[40]	1987 - 1998

[1] We thank Yun-Sug Baik and Yu Li for able research assistance, and Shelly Cagner of Arbitron for providing access to their data. Siegelman's work on this paper was completed while he was visiting at the University of Connecticut Law School.

[2] See Head (1985). With the widespread adoption of cable, television signals are no longer textbook examples of a public good, and technological change threatens radio's status as well. In October 1997, the Federal Communications Commission (FCC) granted the CD Radio company a license to broadcast 100 channels of commercial-free radio to listeners in cars. The company expects to charge $10 per month. See www.cdradio.com.

[3] The problem of potentially inefficient market underprovision of classical music, jazz, and news in the US is discussed in Berry and Waldfogel (1999a). A second potential problem is inefficient overprovision. In a sufficiently large market, entrants may divert listeners from incumbent stations, causing the private benefit of entry to exceed the social benefit. This leads to excess entry. From a social planner's perspective, excess entry can be a problem because excessive resources are devoted to station operation. But excessive entry does not pose a problem for listeners. Our approach in this paper is to examine the adequacy of programming for minority listeners. Hence we are concerned only with correction of potential underprovision, not with possible overprovision. Berry and Waldfogel (1999b) measure the social inefficiency of free entry into radio broadcasting, viewed from the standpoint of the market participants (buyers and sellers of advertising).

[4] One obvious source of distinct programming preferences is language. Another way to identify small groups with distinct preferences is by format: Classical music and jazz, both subsidized in the US, come to mind as possible candidates (see Berry and Waldfogel, 1999a). One might also examine the adequacy of provision for listeners by age or gender.

[5] A summary of the FCC's main racial preference policies is provided in Appendix A. Spitzer (1991) suggests that minority ownership preferences are rational responses to inadequate provision of minority-targeted programming, and hence do not violate the 14th Amendment's Equal Protection clause. (Note, however, that the terms of the debate have changed considerably since 1991.) Recent reductions in minority ownership have prompted the FCC to review the impact of changes in its ownership rules on diversity. See, for example, the statement of FCC Commissioner Ness (1998).

[6] See Samuelson (1954) for a discussion of efficient public goods provision.

[7] Inefficient underprovision will occur whenever ad revenue < cost of provision < total social benefit (ad revenue and listener value). The first condition gurantees that the station will not be provided; the second that it should optimally be provided. This is a standard problem in differentiated products. Unless perfect price discrimination is possible, some goods with total benefit in excess of costs will not be provided (see Spence, 1976a,b).

[8] This is their willingness to pay to listen to the station in the presence of commercials. This example describes the provision of the first station in the market. Entry in the presence of existing stations, while it makes the analysis more complicated because we must now consider net revenue, does not alter the basic intuition. This example also assumes free entry, so that a station should enter if its social benefit exceeds its operating cost. If entry is not free, a station's social benefit would need to exceed the social benefit of the marginal incumbent for its entry to be efficient.

[9] Ofori (1998) presents evidence that minority-targeted stations attract fewer advertising dollars per listener than white-targeted stations.

[10] A controversial memo written earlier this year by one advertising consultant encouraged advertisers "to minimize or eliminate advertising with black- and Hispanic-targeted radio stations, saying, 'When it comes to delivering prospects, not suspects, the urbans [Hispanic and especially black radio stations] deliver the largest amount of listeners who turn out to be the least likely to purchase.' Buying advertising on ethnic stations would mean 'losing the more important white segment of the population,' the memo said." (Billboard, 1998).

[25] See Ness (1997).

[26] See Berry and Waldfogel (forthcoming) for an analysis of the effect of increasing concentration on programming variety following the increases in concentration after the 1996 Telecommunications Act.

[27]The Commerce Department admits that it misclassified as many as 20 minority owned stations in 1996.

[28] The ownership limits established by the Telecommunications Act vary with the number of stations in a local market. But we cannot use "the number of stations" to measure market size because the relevant number of stations for regulatory purposes is an engineering concept that depends on the signal contours of the stations involved (Aronowitz, 1998). This means that there are many possible measures of "the number of stations in the market." For tractability, we use population as a simple measure of market size.

[29] While inconsistent with a strong informational advantage for black owners, these results are consistent with a black advantage in reaching small market segments otherwise unserved by white owners.

[30] Scott Morton and Podolny (1998) examine similar issues in the California wine industry.

[31] One solution to the underprovision problem, in principle, is to increase audience sizes. If all blacks lived in Atlanta, for example, then they would enjoy preference externalities large enough to undo some inefficient underprovision. While communication policy cannot, of course, induce mass-migration to create large local audiences, emerging technologies (satellite radio, Internet radio) can accomplish the same thing by making the entire country (or world) into a single market.

[32] We stress that this valuation does not come from listeners themselves. Rather, it comes from policy makers: it is the valuation that renders regulatory decisions optimal. If the true listener valuation is smaller, free entry may result in an excessive number of stations.

[33] Of course, public broadcasting is controlled by an entirely different regulatory institution, with different goals and constituencies from the FCC. And there may also be important legal differences between race-neutral subsidization of classical music and race-conscious efforts to increase the amount of minority-targeted programming. Nevertheless, the comparison is still illuminating, at least at the theoretical level.

[34] The exact mechanism by which the FCC granted licenses, and the role minority preferences played in it, is extremely complicated. For a description of the rules before 1993, see, e.g., *Miracle Strip Communications*, 4 FCC Rcd. 5064 (1989). In essence, the FCC ranked applicants for licenses according to two public interest objectives: "Best Practicable Service to the Public," and "Diversification of Control of the Mass Media." Diversification meant whether or not the applicant had any other media holdings. For the period relevant to our data (after *Miracle Strip* was decided in 1989), race was not a factor in the diversification analysis.

Racial preferences *were* taken into account in deciding which applicant offered the Best Practicable Service, as follows. First, applicants were ranked on the basis of the Intensity of Owner Participation or "Integration" of management and ownership (I), where

$$I = (100 \times (\text{hours per week}/40))^2 \times (\% \text{ ownership interest}).$$

For example, if a half-owner participates half time, $I = (100 \times 20/40)^2 \times 0.5 = 1250$. The owner=s racial background was then considered, along with other factors such as local residence, previous broadcast experience, etc., as a "plus factor" that could make up for a lower Intensity of Participation score. It is unclear how much weight the combined other factors have: but there is precedent for the qualitative factors being unable to overcome a difference of 12.5% in the quantitative measures. See *New Continental Broadcasting Co*., 88 FCC 2d 830, 850 para. 35 (Rev. Bd. 1983) (holding that a "clear" quantitative differential of 12.5 percent (1250 using Index) cannot be overcome by the qualitative attributes of the competing applicant's integrated owners).

A divided Supreme Court upheld the constitutionality of the "plus factor" and the distress sale provisions (see below) in *Metro Broadcasting v. FCC*, 497 U.S. 547 (1990). However, the Commission's entire integration policy was invalidated as arbitrary and capricious in *Bechtel v. FCC,* 10 F.3d 875 (D.C. Cir. 1993), so credit for minority

ownership could not be linked to integration after 1993.

Contested applications for licenses were frozen between 1994 and 1998, when the FCC adopted a competitive bidding process for contested applications, with a special bidding credit for >new entrants= that appears to be specifically designed to increase minority participation. See, *In the Matter of Implementation of Section 309(j) of the Communications Act, Competitive Bidding for Commercial Broadcast . . . Licenses*, 1998 FCC LEXIS 4290 at 1.

[35] Apparently this was used largely for allocating low-power TV licenses and was not a factor in the radio market.

[36] Codified in 26 USC § 1071. The tax certificate policy was used in "281 sales of AM, FM and TV stations" between 1978 and its elimination in 1995. (See Notice of Proposed Rule Making, 10 FCC Rcd 2788, 2789 (1995).

[37] Statement of Policy on Minority Ownership of Broadcasting Facilities, 68 FCC 2d 979 (1978). The distress sale provision was used 42 times between 1978 and 1995. See, Notice of Proposed Rulemaking, 10 FCC Rcd. 2788, 2789 (1995).

[38] The limits were raised to 20 AM and 20 FM stations in 1994, then essentially eliminated by the 1996 Telecommunications Act. See 47 C.F.R. § 73.3555H(a)(1)(i)-(iv) (1998).

[39] See, Statement of Policy on Minority Ownership of Broadcasting Facilities, 68 FCC 2d 979 (1978). ComTrain is a management training program run by the NTIA's MTDP (Minority Telecommunications Development Program). Other policies not on their face designed to assist minority broadcasters may nevertheless disproportionately benefit minority applicants for station licenses. For example, the Telecommunications Development Fund was established under the 1996 Telecommunications Act to provide capital to small businesses.

[40] See 47 C.F.R. ' 73.2080. These requirements were overturned by the D.C. Circuit in *Lutheran Church-Missouri Synod v. FCC*, 1998 U.S. App. LEXIS 7387 (D.C. Cir.).