FINE TUNING IN THE MARKETS?
AN EVENT STUDY OF RADIO STATION TRANSACTIONS, 1995-2009.

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I. INTRODUCTION

This paper investigates the stock market's changing reaction to station transactions in the U.S. broadcast radio industry. The high fixed costs of broadcasting allow considerable efficiencies from consolidation, but regulation historically prevented broadcasters from taking advantage of these effects. The industry's significant deregulations in the 1990s sparked a frenzy of transactions, as pent-up interest in consolidation drove station sales to reach unprecedented volumes. Within five years, more than a thousand owners had cashed in and left the market, with the remaining players rapidly expanding.

This phenomenon provides a fascinating case to study from the securities market's perspective. Thousands of stations were traded into a smaller number of hands, with an increasing number of stations owned and operated by public companies, offering a wealth of data: each transaction added another data point to the market's understanding of how deals drive stock prices. As stations have continued to trade hands through changes in regulations, economic cycles, and consumer behavior, how does each variable impact the stock price of each player in the ecosystem? This analysis finds that while certain variables follow patterns when stratified into separate groups, the abnormal returns to sellers and buyers are generally difficult to predict from deal data.

II. BROADCAST REGULATION OVERVIEW

Ownership of broadcast properties in the U.S. has historically been limited by heavy regulation. The finite bandwidth on the AM and, later, FM dials limited the number of stations in any city or region; the interference caused by multiple broadcasts on a given frequency could render all audio unlistenable. As such, government intervention was the method chosen to limit

stations' interference. Consistent with a new government-granted franchise, Congress passed the Radio Act of 1927, which delegated authority over broadcasts to the new Federal Radio Commission, and the Communications Act of 1934, which replaced the Federal Radio Commission with the Federal Communications Commission. The federal regulators aimed to preserve competition and diversity of opinions in the burgeoning broadcast market, so broadcast owners faced strict regulations, including those limiting the number of stations that a single operator could own (See Table 1).

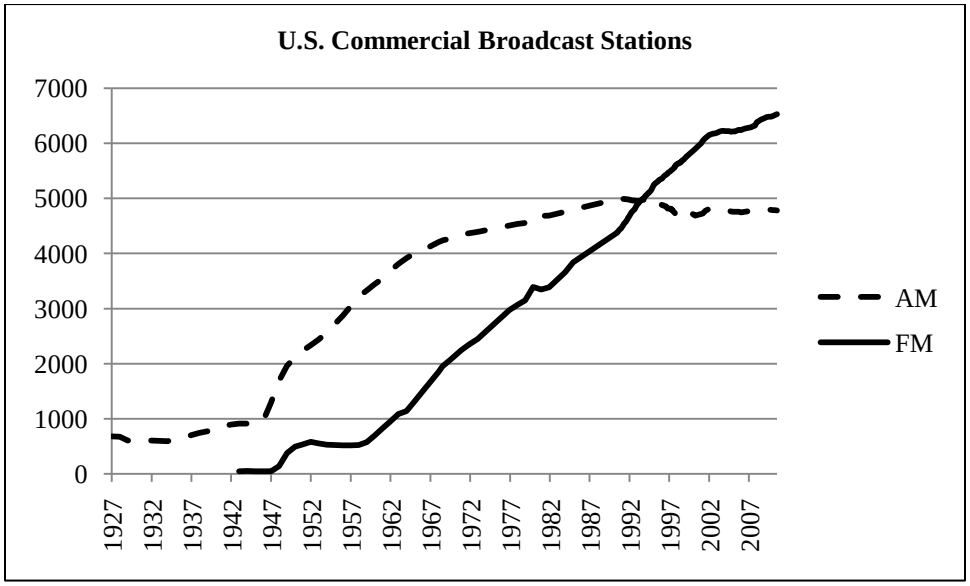
Without regulation, broadcasters would have had considerable incentives to merge operations. Much of any station's fixed costs could be split among other co-owned properties; for example, studio facilities could be expanded to accommodate multiple stations, and roles from receptionist to general manager to on-air talent could be shared among multiple stations. These efficiencies increased with technology, and by the 1990s, stations benefitted from computer technology, enabling them to develop sophisticated automated operations that increased benefits from scale. For example, an announcer could pre-record customized announcements, or "voice track," for multiple stations – even in multiple cities – in the time that it would normally take to host a live shift, with computers seamlessly integrating the voice tracks with music and commercials. In addition to cost cuts, some industry observers argued that the increased seller power could help stations raise advertising rates, which are generally the most important driver of a station's revenue.

III. REGULATORY CHANGES AND THE DEAL MARKET

Long-standing station ownership limits were relaxed in the 1980s and 1990s, with two major changes in federal regulation in the 1990s: the FCC's ruling that allowed so-called duopolies[2] in March 1992 and Congress's Telecommunications Act of 1996.

The 1990s' deregulation came in the wake of the FCC's Docket 80-90, a 1983 decision that loosened restrictions on the geographical protection that was placed between stations, thus allowing hundreds of new FM stations to start broadcasting. Exhibit 1 shows the increase in the number of U.S. stations throughout the history of broadcasting.

Exhibit 1: Growth of licensed radio stations (Source: FCC)



The increased number of stations nationwide led to decreased profitability in the industry, and by the early 1990s, an estimated 60% of U.S. radio stations were losing money (Hopfensperger 1994). In 1991, the Federal Communications Communication, citing the

[2] This paper uses "duopoly" as it is defined in broadcasting: a company that owns multiple stations of a given radio service (AM or FM) in one market. This definition contrasts with the traditional economic definition, in which a market is dominated by two sellers. Note that from the introduction of FM broadcasting, FM stations were often launched as sister operations to existing AM stations, and the resulting AM-FM combination operations are not considered duopolies.

increasing number of stations in financial trouble or even "dark," or having ceased operations, proposed rules to increase the number of stations that a single company could own (Jessell 1991). The FCC's Report and Order officially relaxed the regulations in September 1992, allowing an owner to own two AM and two FM stations in each market.

The duopoly ruling sought to rescue a large number of unprofitable stations nationwide. The rule also increased the national cap from 12 AM and 12 FM stations to 18 stations on each band, further increasing to 20 stations on each band two years later. (See Table 1.) Given these limits, the industry remained very unconcentrated nationwide, especially in smaller markets, with many "mom-and-pop" operators owning one or two stations.

Table 1: Commercial radio station ownership limits
(Source: Federal Communications Commission)

Year	National	Per local market
1934	No limit specified	1 AM
1940	No limit to AM stations, 6 FM	1 AM, 1 FM
1953	7 AM, 7 FM	1 AM, 1 FM
1985	12 AM, 12 FM	1 AM, 1 FM
1992	18 AM, 18 FM	2 AM, 2 FM
1994	20 AM, 20 FM	2 AM, 2 FM
1996	No limit, subject to antitrust concerns	Up to 8, depending on market size

Under the duopoly rule, station owners were able to exploit new economies of scale for their owned properties, and financial institutions became increasingly eager to supply capital and help broadcasters expand (*Communications Daily* 1994). One broker noted in 1994, "This is the only time I can remember this being both a buyer's and seller's market. There is a tremendous opportunity for buyers to buy, build and invest, and for sellers to realize an excellent return on their original investment" (Zier 1994).

Still, at this time, the gains from consolidation remained questionable. Trade journalist Robert Unmacht said, "I haven't seen a case where you take one plus one and you get two. It seems you take one plus one and you get one and a half" (Knopper 1994).

In some cases, owners were able to increase their control over additional stations through mechanisms like joint sales agreements (JSAs), in which a station could buy and resell all ad inventory for another station. Some agreements included options to buy the stations in the event of deregulation. Jacor executive Randy Michaels said in 1995, "We want to be as ready as possible. That means having the cash available and lining up as many deals with options as possible. We want to get ahead of the curve without getting too far ahead" (Watkins 1995). By March 1995, many of the major stations in the U.S. were part of duopolies, reaching 35% of audiences and generating 49% of advertising revenue, according to one analyst (Petrozzello 1995).

By 1995, radio stations in duopoly ownership had higher ratings and advertising market share than standalone stations, according to analyst Jim Duncan (*Broadcast & Cable* Oct. 30, 1995). Anticipating further deregulation, several companies arranged capital in order to be ready for future acquisition opportunities. In January 1995, Infinity Broadcasting set up a $700 million credit line, perhaps the largest in history for a radio group (Petrozzello 1995).

Radio was deregulated further as part of the U.S. Telecommunications Act in February 1996, which also included deregulation that impacted the telecommunications and cable television industries. The law removed the national ownership cap on stations and relaxed local ownership caps, based on each market's number of stations. The largest markets (with 45 or more radio stations) had an eight-station ownership cap, with no more than five AM or FM stations. Graduated limits ranged down to markets with the fewest stations (fourteen or fewer),

which restricted owners to own five or fewer (and no more than half) of the stations in a market, with no more than three AM or FM stations. (See Table 2.)

Table 2: Radio station local ownership limits, 1996 Telecommunications Act

Number of commercial radio stations in market	Maximum station ownership cap	Maximum number of stations owned in AM or FM band
45 or more	8	5
30-44	7	4
15-29	6	4
14 or fewer	5 (or no more than half)	3

Predictably, deal-making accelerated, with deal value nearly tripling in 1996 and increasing further in 1997, as broadcasters and the public markets recognized the limited opportunity to gain scale by buying independent operators and their radio properties. (See Table 3.) "There's a once-in-a-lifetime chance," one banker said at the time. "You either do it now, or the door shuts forever. ... In about two years, there won't be any. So you have to buy them now." (*Reuters News*, 1997). Six years after the Telecommunications Act was passed in 1996, more than 1,700 station owners had exited the industry. (See Table 4.)

Table 3: Total U.S. radio station deals
Source: BIA/Kelsey

Year	Deal value ($, billions)	Stations traded
1994	3.0	1255
1995	5.0	1259
1996	14.3	2157
1997	18.0	2250
1998	9.0	1740
1999	28.5	1705
2000	24.9	1794
2001	3.8	1000
2002	5.4	769
2003	2.4	925
2004	1.9	859
2005	2.8	877
2006	22.9	2100
2007	2.8	1488
2008	0.7	769
2009	0.4	682
2010	0.4	869

Table 4: Total U.S. stations and owners
Source: BIA/Kelsey, sourced by FCC

Date	Number of stations	Number of owners
March 1996	10,257	5,133
November 1998	10,661	4,512
March 2001	10,776	3,723
March 2002	10,807	3,408
Change (March 1996-March 2002)	5.36%	-33.61%

Amidst this deal activity, the Department of Justice made it clear that deals were still subject to antitrust regulations. By August 1996, just six months after the Telecommunications Act, the Justice Department had blocked a deal by which Jacor would have controlled more than 50 percent of the radio advertising revenues in Cincinnati; later that year, it prevented American Radio Systems from purchasing two stations in Rochester, NY, a deal that would have given the company 64% of the advertising revenues in the market (Fabrikant 1996).

Despite this check from the judicial system, through the turn of the century, deal volume was massive, resulting in greatly enlarged companies. By 2001, Clear Channel had emerged

with the largest number of stations in history, with 1240 stations, holding nearly 12% of the commercial stations in the country. Exhibits 2 and 3 illustrate how Clear Channel rolled up other companies, some themselves the product of multiple rounds of acquisitions, to reach its ultimate exponential scale.

Exhibit 2: Number of radio stations owned by Clear Channel

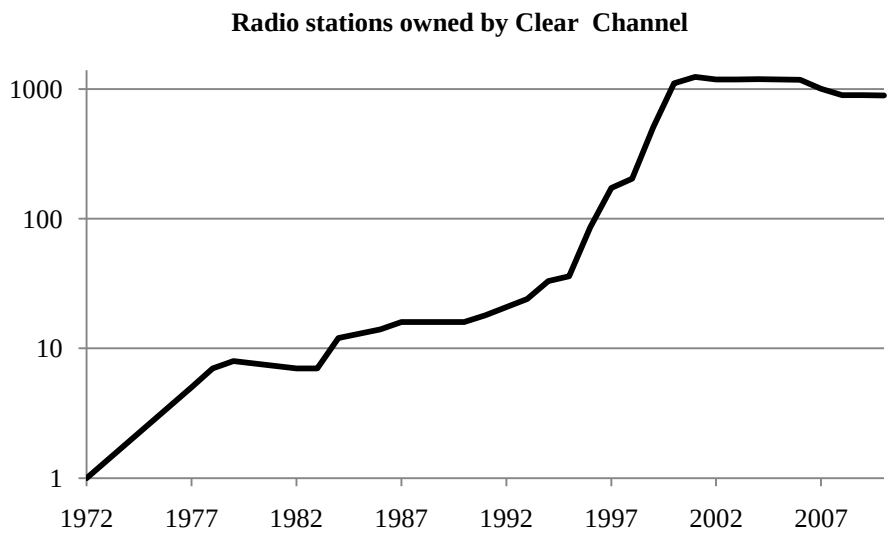
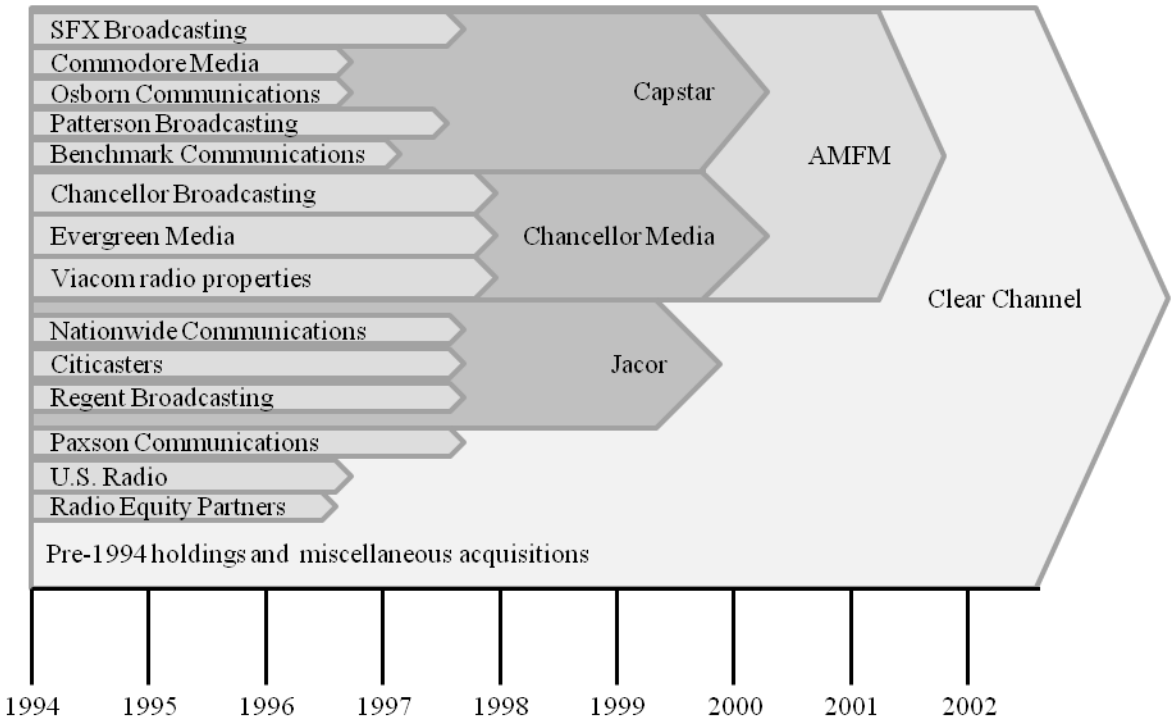


Exhibit 3: Major acquisitions leading into Clear Channel
Note: diagram is illustrative and not intended to be exhaustive or to scale.



While Clear Channel held the largest number of stations, it was not alone. Competitors including Viacom's Infinity Broadcasting, Citadel Communications, Cumulus Broadcasting, and Entercom Communications each owned more than 100 stations nationwide by 2002. (See Table 5.)

Table 5: Leading radio owners, by revenue
Source: BIA, as sourced by FCC

	March 1996			March 2002		
Rank	**Company**	**Radio stations owned**	**Radio revenue ($m)**	**Company**	**Radio stations owned**	**Radio revenue ($m)**
1	CBS	39	496.7	Clear Channel	1156	3,174.6
2	Infinity Broadcasting	47	469.2	Infinity Broadcasting	184	2,091.8
3	Evergreen Media	37	282.8	Cox Radio	82	428.0
4	Walt Disney/ABC	22	278.8	ABC Radio	55	401.7
5	Jacor	53	247.3	Entercom	100	377.1
6	Clear Channel	62	190.8	Citadel	206	313.4
7	Chancellor	32	160.3	Radio One	64	287.0
8	SFX Broadcasting	49	155.7	Emmis	24	272.9
9	Cox Enterprises	18	142.6	Hispanic Broadcasting	54	247.1
10	American Radio Systems	33	133.2	Cumulus Broadcasting	251	234.0

After several years of consolidation, the deal volume slowed considerably, notably during the advertising recession of 2001. Some heavyweights, like Clear Channel, even began to reverse course, divesting stations. Some divestitures reflected companies' need for cash, but others raised strategic questions. After years of aggressive growth, why sell? Was there a maximum level of the benefits of consolidation? Or perhaps, is there any benefit at all? As the U.S. capital markets thaw from the 2007-2009 recession and deal-making resumes, how is the benefit of consolidation viewed in the public markets?

IV. RADIO AND THE 21st CENTURY

IV.1 Radio and the Recession

The great recession of 2007-2009 impacted media advertising severely. (See Table 6.) Radio companies are particularly sensitive to economic cycles, since materially all of their revenues come from advertising. (In comparison, cable networks and print media typically generate a strong revenue stream from subscriptions; even broadcast television stations have developed a second revenue stream from cable operators in recent years.) For decades, U.S. advertising spending has been closely correlated with economic growth, so a recession, either locally or nationally, can cause a major drop in revenue and profitability. For highly-leveraged owners, especially, a recession can be fatal, which was proven in the recent recession as multiple broadcasting owners filed for bankruptcy.

Table 6: U.S. advertising expenditure annual growth[3]
Source: Magna Global

Year	Radio			TV[4]	Newspaper	Magazine	Outdoor	Direct Media	Digital/ Online	Total
	Broadcast station	Network/ satellite	Total							
2004	1.9%	5.1%	2.1%	8.7%	3.9%	5.0%	6.0%	10.1%	16.4%	6.7%
2005	0.5%	-1.2%	0.4%	2.6%	1.5%	4.1%	8.0%	8.3%	20.9%	4.0%
2006	0.1%	1.5%	0.1%	3.2%	-1.7%	5.2%	8.0%	9.4%	31.8%	4.3%
2007	-2.9%	4.1%	-2.5%	1.1%	-9.4%	-4.0%	7.0%	7.3%	22.1%	0.1%
2008	-10.5%	-0.5%	-9.9%	-1.7%	-17.7%	-10.7%	-4.0%	-0.7%	2.7%	-6.4%
2009	-20.2%	-9.8%	-19.4%	-10.5%	-28.6%	-18.0%	-15.6%	-8.8%	-9.3%	-15.1%

IV.2 Radio and Changing Consumption

Recent consumer trends have created new challenges for the radio industry. Radio has survived numerous technological changes, as far back as the 1950s, with the advent of television. Radio, however, managed to redefine itself and thrive for decades, even as newer options like cassettes and compact discs came to the car and clock radios. The radio remains a fixture in American lives; ratings firm Arbitron reported that in 2009, 93% of persons aged 12+ listened to a radio for at least five minutes per week in 2009. However, the average time spent listening and corresponding ratings at any given time have slipped by one quarter-hour to 15 hours per month in 2009 (Arbitron 2009).

The emergence of digital media is a major driver of this trend, as audiences are increasingly fragmented among an increasingly large number of entertainment options. In 2010, more than 44% of persons aged 12+ had at least one digital media player, such as an iPod, and 54% of those owners had listened to digital media in the car (Edison Research and Arbitron 2010). Radio's niche for office listening may be displaced by online radio services, such as Pandora; 17% of the U.S. population listen to online radio each week. Another challenger,

[3] For a deeper view of U.S. advertising trends, see Appendix 2.
[4] Television includes local broadcast, network, cable, and syndication, including political and Olympic spending.

satellite radio provider SiriusXM, ended 2010 with more than 20 million U.S. subscribers (company filing).

The radio industry has made its own innovation in the form of HD Radio, which is a digital service that runs parallel to traditional analog signals. HD Radio offers improved sound quality and adds additional channels to the traditional broadcast bands. By late 2005, nearly 600 stations had undertaken the considerable expense of updating their transmission and studio equipment, but consumer uptake was negligible, due both to consumer confusion and the expense of new radio receivers. To promote the new technology, several leading broadcasters, including Clear Channel, Infinity Broadcasting, Cumulus Media, formed the HD Digital Radio Alliance, which coordinated HD programming efforts, to avoid format duplication, and committed $200 million to market HD Radio in 2006 (Bachman and Heine, 2005). But more than five years later, although brand name HD Radio tuners are available for under $30, consumers are indifferent to and largely unaware of HD Radio. Edison Research and Arbitron found that customer awareness of HD Radio has flattened at about 30%, and interest has stalled at 7% (see Table 7).

Table 7: Customer attitudes toward HD Radio *(Exhibits are percent of population aged 12+)*
Source: Edison Research/Arbitron

Year	Have heard or read anything recently about HD Radio	"Very interested" in HD Radio, based on description
2006	14%	8%
2007	26%	6%
2008	24%	6%
2009	29%	7%
2010	31%	7%

Edison and Arbitron's 2010 study on the future of radio found that 78% of Americans are likely to continue listening to as much AM/FM radio as they do now, regardless of increasing technological advancements. Still, since digital media use is especially prevalent among younger demographics, as technology spreads to older demographics, the future is likely to pose increasing challenges to radio.

V. DATA

This analysis examines 533 deals involving 3,803 U.S. radio broadcast stations in which the buyer or seller was a public company traded on a major U.S. exchange.

U.S. station transfers are approved and reported publicly by the Federal Communications Commission, but public data are limited in detail and timeliness. BIA Financial Network, a private company, compiles public data on station transactions, and the firm's proprietary research adds estimates of station and market revenue. For each station transfer, BIA has recorded information including the buyer, seller, sale price, other sales considerations, station revenue, market share, programming format, and the size of each company's presence in the market. To limit data expenses, data were analyzed for several multiyear windows (see Table 8),

which will each show the impact of key events. Juxtaposed together, the windows show a broader trend of station sales from the mid-1990s until 2009.

Additionally, deal announcement dates were compiled from press releases and news stories. While announcement dates are clear, data confirming the time of day in which the deal was announced (that is, prior to, during, or after the trading day) are generally not available. These figures exclude approximately 300 deals, representing 540 stations, for which a specific deal announcement date was not available via an archived press release or news story. On average, these missing dates represent less newsworthy deals, either for small transactions or transactions with a small party. In deals between two public parties, press releases were almost always available. As a result, the absence of these 300 deals may bias this analysis toward larger deals, and may even obscure the effect from the analyzed deals.

Table 8: Key event windows

Era	Key events	Deals Announced	Total Stations Included
1995-1997	Industry deregulation in the 1996 Telecommunications Act	287	1275
2000-2003	The aftermath of the aggressive deal activity, and the 2001 ad recession	179	1101
2006-2009	U.S. recession	67	1427

To understand deal impact on stock prices, stock market data have been collected for all companies listed on the major U.S. exchanges (New York Stock Exchange, American Stock Exchange, and NASDAQ). Appendix 1 lists the included companies and their trading data availability. Daily closing stock prices have been used for each stock from the Center for Research in Security Prices (CRSP), accessed via Wharton Research Data Services. Company names and tickers evolve over time, particularly in response to merger activity, so this analysis

utilizes CRSP's PERMNO company identifiers to preserve the continuity of each company's stock performance over time.

VI. METHODOLOGY

The first phase of this analysis utilizes event studies to determine the abnormal stock returns that were realized by each public player involved in a transaction. The second phase of this project uses regression analysis to explain each party's abnormal return.

VI.1 Event study

The event study method measures the impact of an event upon a firm's value. The method has evolved from simple beginnings in the 1930s, with developments increasing in sophistication over time, such as the market model. As described in A. Craig MacKinlay's survey (1997), the market model compares a specific stock's return to the market portfolio's return, calculating the security's abnormal return over a given window. The market model

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

$$E(\varepsilon_{it}) = 0$$

$$var(\varepsilon_{it}) = \sigma_{\varepsilon_i}^2$$

compares the returns R_{it} and R_{mt} of a specific security i and the market portfolio, during time period *t*, with disturbance term ε_{it}. This model measures normal returns, creating the base for measuring abnormal returns during the event window τ. The sample abnormal return, then, is equivalent to the disturbance term from the market model.

$$\widehat{AR_{i\tau}} = R_{i\tau} - \hat{\alpha}_i + \hat{\beta}_i R_{mt}$$

To draw meaningful conclusions, the abnormal return observations are aggregated, first over time for an individual stock, and aggregated across stocks and over time. The cumulative abnormal return is the sum of the abnormal returns from times τ_1 to τ_2:

$$\widehat{CAB_i}(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} \widehat{AR}_{i\tau}$$

The event date (called τ_i) is defined as the earliest day in which a company issued a press release reporting the deal. While the data pinpoint the public announcement dates, the dates suffer from inherent imprecision due to three sources: first, announcement dates have been collected from press releases or other news reports, but these sources do not consistently provide the time of day that the announcement was made. Without knowing whether the announcement came before, during, or after trading hours, the news could primarily impact the returns on the same day or the subsequent trading day. Second, information leakage is typically seen prior to mergers and acquisitions, as insider trading affects stock prices before the official announcement is made. In some cases, deal rumors were strong and credible enough to be covered by the mainstream press without an official announcement. Finally, in rare cases, acquiring companies announced bids days before an agreement was announced.

Despite this possible imprecision, the official announcement date is the most consistent data point across the hundreds of deals, so it is defined as the event date. To minimize the impact of these forces of imprecision, the analysis uses a three-day event window, comparing the closing price from two trading days earlier to the closing price for the day after.

For an example, if an announcement was made on a Wednesday, the abnormal returns would be calculated between the closing prices on Monday and Thursday afternoon. For weekend and holiday announcements, τ_i is set as the next public trading day.

This analysis calculates, for each station deal, the abnormal return of the stock of all publicly-traded parties involved: the buyer, the seller, or both. The paper will examine how abnormal returns differ for various subgroups (such as buyers and sellers), deals of various character (mergers, acquisitions, stock trades), and trended over time.

The event study includes data on 533 deals between one or two publicly-traded companies, in the announcement windows of 1995-1997, 2000-2003, and 2007-2009. For each deal, the trailing beta of 60 days was calculated prior to the start of the event window (that is, the window ending two days prior to the press release date), by regressing the daily stock returns against a CRSP value-weighted index return of U.S. stocks traded on the New York Stock Exchange, American Stock Exchange, and NASDAQ, excluding American Depositary Receipts. Both daily returns are calculated excluding all distributions. In cases where a stock had fewer than 60 days of trading history, the beta was calculated with as little as 30 days of history; observations involving stocks with fewer than 30 days of trading history were omitted from the study. To adjust for stocks with low trading volume, days with zero trading volume were omitted from the analysis, resulting in beta calculations using the previous 60 (or at least 30) days in which the stock had nonzero trading volume.

CRSP's PERMNO company identifier was used to provide continuity for company histories through changes to company names, tickers, or primary exchanges. In cases of

companies with two or more classes of common stock, the analysis uses the most commonly traded stock: typically the nonvoting class.

VI.2 Regression

Simple summaries, of course, fail to capture much of the variability in the deals, which will often impact the abnormal returns considerably. As such, the second phase of this analysis will add a regression analysis to explain the abnormal returns found in the first phase. Explanatory variables will include the station's revenue, market size, and market share; deal activity for buyer, seller, and nationally; the size of the deal, in dollars and stations; the size of each company's presence in the market and nationwide; national and local economic conditions; station format and audience size; and each player's status as either a pure broadcast player or diversified company. The findings of the regression analysis will identify the most important determinants in the abnormal return of broadcast stocks.

Together, the event study and regression analysis will help illustrate how the market has valued radio station consolidation in the post-1996 deregulated environment.

VII. EVENT STUDY SUMMARY FINDINGS

VII.1 Buyers and sellers

Merger and acquisition deals are commonly understood to transfer value from buyers to sellers. Of the 533 deals under consideration, 218 had public sellers and 421 had public buyers.

(This skewed proportion is no surprise, considering the general trend of small private companies rolling up into larger public ones.)

As typical in transactions, on average, sellers have a larger abnormal return (+4.06%) than do buyers (+0.94%), but these means are less extreme than might be expected, particularly for the sellers. (See Table 9.) While some deals involve target companies being acquired outright, it should be remembered that many deals involved a seller that sold one or several stations but remained an ongoing business.

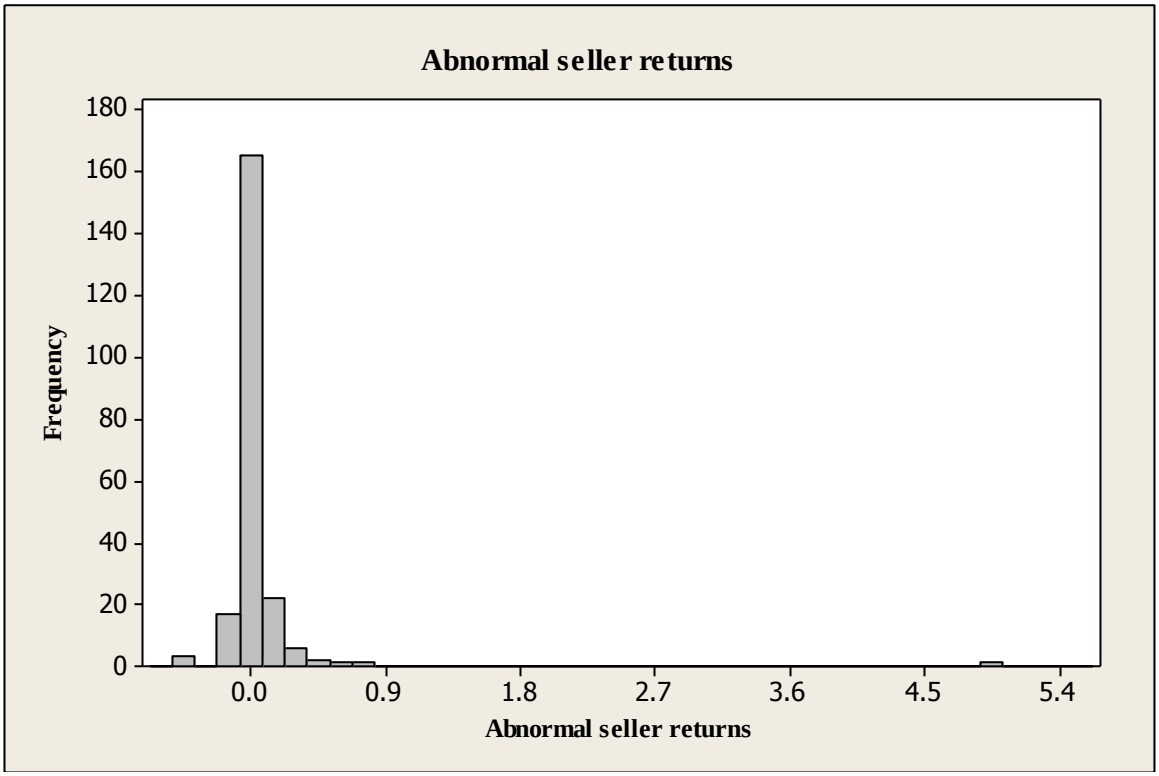
Abnormal returns for both seller and buyer, however, have large ranges, suggesting that the means may not be significant. In any case, both metrics have wide ranges, so additional investigation will help determine the actual relationships. (See Exhibit 4.)

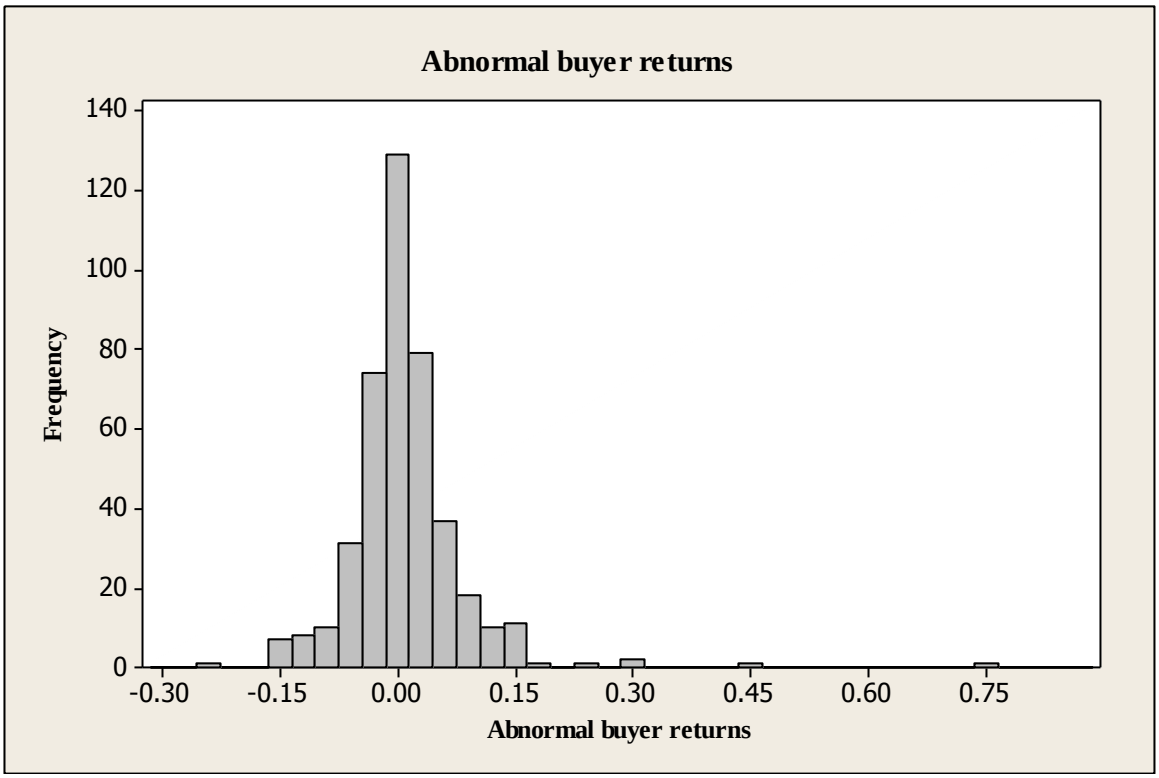
Table 9: Abnormal returns summary

	Abnormal seller returns	**Abnormal buyer returns**
Observations	218	421
Mean	4.06%	0.94%
Standard Deviation	35.6%	7.4%
Standard Deviation/$\sqrt{n}$	2.4%	0.4%
Median	0.56%	0.31%
Minimum	-51.3%	-25.1%
Maximum	496.3%[5]	75.6%

[5] This very large cumulative abnormal return was for Big City Radio's December 2002 deal to sell station properties to Entravision Communications in December 2002.

Exhibit 4: Abnormal returns distribution





VII.2 **Time period**

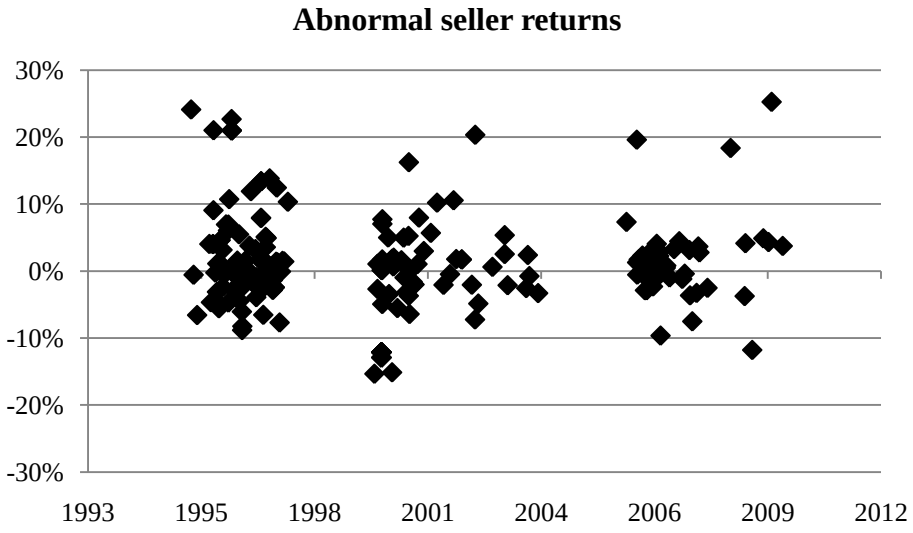
Considering the deals in three key windows, as described earlier, the abnormal returns are somewhat more pronounced. (See Table 10.) As before, abnormal seller returns are consistently higher than abnormal buyer returns. For buyers, the first window offered a larger return than the subsequent two windows, suggesting that the market reacted positively to buyers who successfully made offers during this rush of deal activity.

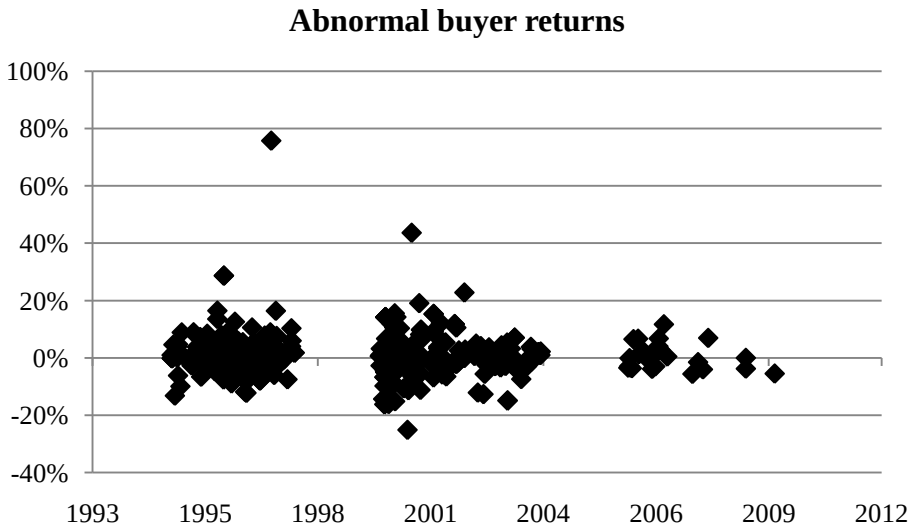
Table 10: Mean Abnormal Returns by Era

	Sellers		Buyers	
	Observations	**Mean abnormal returns**	**Observations**	**Mean abnormal returns**
1995-1997	100	3.21%	239	1.17%
2000-2003	67	5.42%	157	0.65%
2007-2009	51	3.95%	25	0.60%

Another approach (see Exhibit 5) for looking at returns over time is the plotting each deal's abnormal return against the date of the deal. (Some extreme observations have been removed from the abnormal seller return, in order to present the plot at a reasonable scale.) The plots do not show any clear trends over time.

Exhibit 5: Abnormal returns over time





VII.3 **Deal character**

Deals can generally fit into one of three broad categories:

1. Company buyouts, in which one company acquires another company or all of its radio stations. This scenario is essentially a classic merger and acquisition case.
2. Swaps, in which two or more companies trade stations, with or without cash involvement. Swaps suggest strategic gains from consolidation, typically strengthening one or both players' presence in their existing markets. The data is coded such that a swap typically counts as both a sale and an acquisition for each player; in other words, each party plays each role once in a separate deal, so the abnormal return statistics should be identical for buyers and sellers. However, due to data inconsistencies, 22 of the 82 swap deals do not have a respective counterpart swap deal listed, so the buyer and seller statistics are, in fact, unequal.

3. Property acquisitions, comprising deals that do not fit into other categories. In these cases, one company buys one or more stations from a second company. In this situation, both companies' radio broadcasting operations survive.

While this categorization is relatively straightforward, the data are not available consistently. Certain deals in BIA data are coded for certain deal swaps, but neither BIA data nor press releases consistently distinguish company buyouts from property acquisitions. However, for all deals in which the target company is public, its character has been identified; abnormal returns to private sellers are outside the scope of this analysis.

As Table 11 details, sellers received the highest abnormal return from company buyouts, with a mean abnormal return of 11.41%, far exceeding that for property-acquisitions or swaps. This is consistent with the common wisdom: that in acquisition activity, most of the value created goes to the seller. Interestingly, for buyouts, the acquirers also generated positive abnormal return, 2.35%.

Property acquisition returns, on average, have a positive abnormal return of 3.92% for the seller but a negligible return for the buyer.

The impact of swaps is harder to quantify, due to the data issues discussed earlier.

Table 11: Mean Abnormal Returns by Deal Character

	Sellers		**Buyers**	
	Observations	**Mean abnormal returns**	**Observations**	**Mean abnormal returns**
Swap	57	1.04%	58	-0.58%
Property acquisition	135	3.92%	63	0.12%
Buyout	26	11.41%	46	2.35%
Unknown	0	n/a	254	1.24%

To explore the impact of deal character over time, a matrix can dissect the data into smaller groups. (See Table 12.) While the small number of observations for many of the character-era combinations casts some doubt about the precision of these comparisons, the buyouts had the highest mean abnormal returns for sellers in the 2000-2003 window, due largely to the impact of the 2001 acquisition of Citadel Communications by the leveraged buyout firm Forstmann Little, whose offer led to a 54% abnormal return for Citadel.

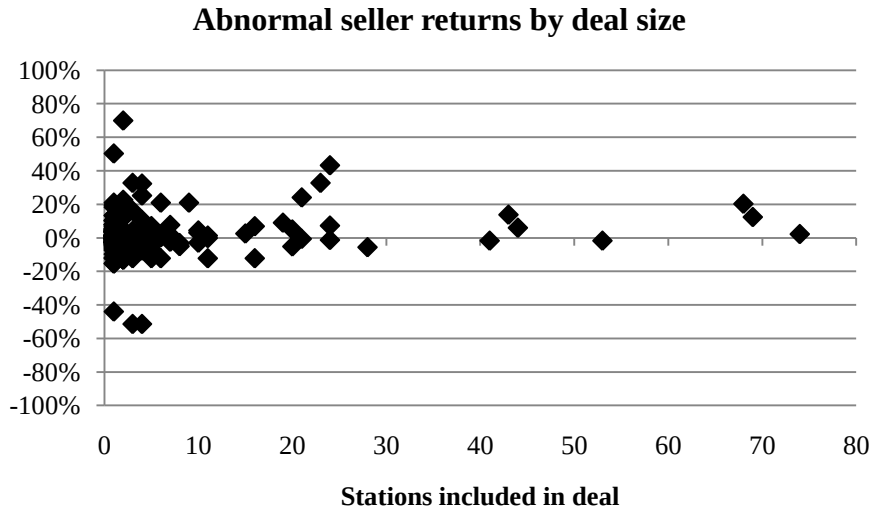
Table 12: Mean Abnormal Returns by Deal Character

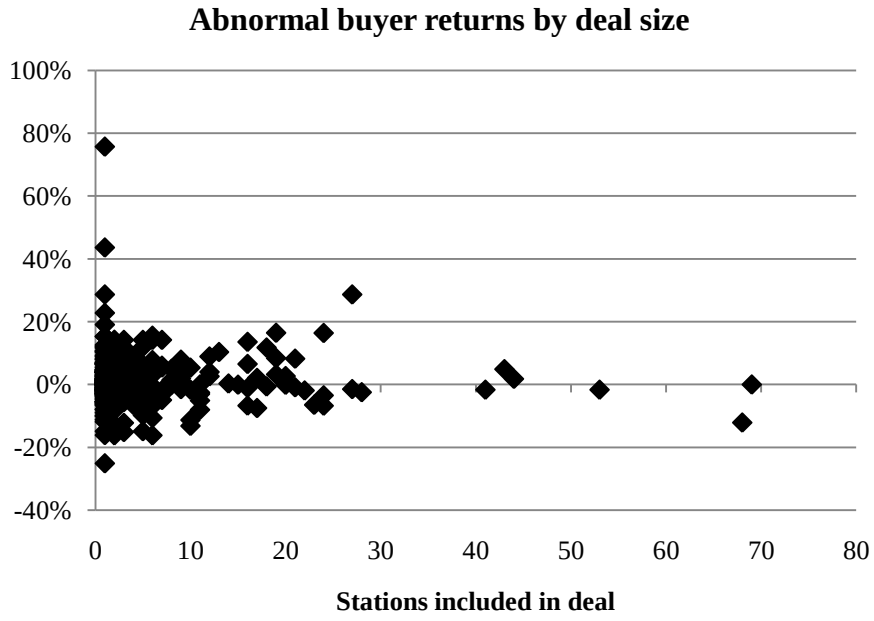
			Era		
			1995-1997	2000-2003	2007-2009
Deal character	Swap	*Seller observations*	38	15	4
		Seller mean abnormal returns	2.14%	-1.64%	0.61%
		Buyer observations	37	18	3
		Buyer mean abnormal returns	-0.20%	-1.50%	0.25%
	Property acquisition	*Seller observations*	45	48	42
		Seller mean abnormal returns	1.62%	5.75%	4.30%
		Buyer observations	25	32	6
		Buyer mean abnormal returns	0.40%	-0.13%	0.28%
	Buyout	*Seller observations*	17	4	5
		Seller mean abnormal returns	9.78%	27.98%	3.67%
		Buyer observations	27	16	3
		Buyer mean abnormal returns	2.44%	2.52%	0.68%
	Unknown	*Seller observations*	0	0	0
		Seller mean abnormal returns	--	--	--
		Buyer observations	150	91	13
		Buyer mean abnormal returns	1.41%	1.02%	0.82%

VII.4 **Deal size**

Analyzing the size of the deal, either as the number of stations or value, can give additional insight into the market response to the transactions. (For easy of visibility, the plots omit the four deals that involved more than 80 stations, and one outlier in the seller plot, demonstrating a 496% abnormal return to one seller.) Based on the visual presentation (see Exhibit 6), the excess returns do not appear to have a clear relationship with the number of stations in the deal.

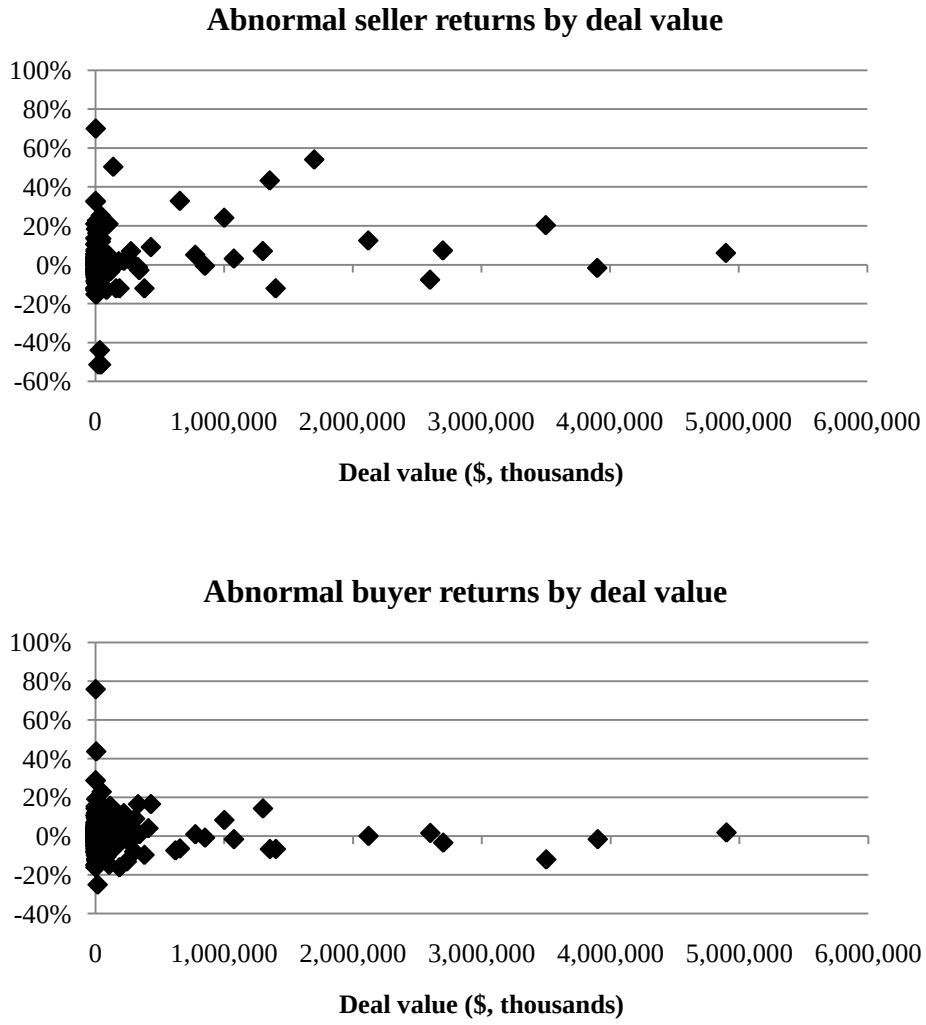
Exhibit 6: Abnormal returns by number of stations in deal





For another approach, the abnormal returns can be plotted against the value of the deal. (See Exhibit 7.) Again, for visibility, the plot omits the two largest-value deals (for $15.5 billion and $16.7 billion) and the aforementioned observation associated with the 496% excess seller return. As before, there are no obvious relationships between these observations.

Exhibit 7: Abnormal returns by deal value



VII.5 **Market size**

The radio industry considers radio stations to fall in 282 U.S. markets, led by New York, Los Angeles, and Chicago (see Table 13). The value of a given station is largely influenced by the size of the market. Deals typically included stations in multiple markets, often in markets of widely varying sizes. This analysis offers a simplifying proxy, assuming that the station in the largest market within a deal is the most important.

If a deal included a station within the top 10 markets, the impact is considerable for the sellers, who received a premium (abnormal return of 8.34%) compared to sellers in deals without a Top 10 station (see Table 14). For buyers, the abnormal return had a smaller range.

Table 13: U.S. Radio Market Profiles, Spring 2011

Source: Arbitron

Note: Markets include greater metropolitan areas. Outside the largest markets, market populations are fairly close, so rankings may change as populations fluctuate.

Rank	Market	Population (Age 12+)
1	New York, NY	15,730,000
2	Los Angeles, CA	11,028,000
3	Chicago, IL	7,875,800
4	San Francisco, CA	6,186,900
5	Dallas-Fort Worth, TX	5,326,000
…	…	…
280	Mason City, IA	66,500
281	Brunswick, GA	64,900
282	Casper, WY	63,500

Table 14: Mean Excess Returns by Deal's Largest Market

Largest market rank in deal	Sellers		Buyers	
	Observations	Mean abnormal returns	Observations	Mean abnormal returns
1-10	70	8.34%	93	0.92%
11-50	75	1.57%	155	1.39%
51-100	46	2.93%	82	0.22%
101+	27	1.83%	91	0.85%

VII.6 **Major players**

Positive abnormal returns signal the market's approval of a deal, so consistently positive abnormal returns could indicate that one company is especially skilled at selecting or negotiating major deals. The companies have been categorized using the PERMNO field from CRSP, which is generally the best tracker for company continuity through corporate changes, such as those to the company name, ticker, exchange, and even some mergers. Since smart deals are not always evident to the market within a three-day event window, a company's historical reputation may be

an effective signal to the market. This analysis is not perfect, of course; top management plays a major role in the skill of deal making, but these data do not account for departing executives over time. But some skills and assets, such as a strong balance sheet, the ability to arrange financing, or strategically-located assets, can stay with a company through such transitions; over time, the market may come to trust management's ability to close positive deals even if their merits are not immediately obvious.

As seen in Table 15, companies' returns have had a wide range of responses in reaction to station divestitures. In many cases, sellers had only one observed deal, in which the entire company became a target. As discussed earlier, such buyouts are associated with a large, positive abnormal return, so it is not a surprise to see Ackerley Communications, Capital Cities-ABC, and Citicasters among the top-ranked players. In contrast, going concerns such as Journal Communications and Radio One, whose data do not include the spike of a buyout, suggest considerable longer-term savvy in determining what and when to sell.

Table 15: Mean abnormal returns by seller

Company	Deals observed	Mean abnormal returns
Big City Radio	6	57.5%
Ackerley Communications	1	32.4%
Capital Cities-ABC	1	24.1%
Journal Communications	3	24.0%
EZ Communications	3	20.5%
Heritage Media	3	15.9%
Paxson Communications	1	13.8%
Osborn Communications	8	13.5%
Citadel Communications (1998-2001)	4	13.2%
Heftel Broadcasting (through 1999) Hispanic Broadcasting (1999-2003)	3	12.5%
Citicasters	1	9.1%
Radio One	8	7.4%
Emmis Broadcasting	4	6.0%
Walt Disney	2	5.5%
Harte Hanks Communications	1	5.1%
New York Times	1	4.3%
Cumulus Media	3	3.2%
Viacom	11	2.8%
SFX Broadcasting	11	2.8%

Lincoln National	1	2.8%
Regent Communications	9	2.6%
Univision Communications	1	2.3%
Beasley Broadcasting Group	2	2.2%
Tribune Company	3	2.1%
Sinclair Broadcast Group	2	1.6%
Infinity Broadcasting (1998-2001)	3	1.4%
Citadel Broadcasting (2003-2009)	2	1.4%
Infinity Broadcasting (through 1996)	5	1.4%
Scripps Howard	1	1.2%
American Radio Systems	15	-0.2%
Entercom Communications	5	-0.4%
Multi Market Radio	5	-0.5%
Evergreen Media (1994-1997) Chancellor Media (1997-1999) AMFM (1999-2000)	28	-0.5%
CBS Inc. (Through 1995)	1	-0.6%
Gaylord Entertainment	2	-0.8%
Westinghouse (through 1997) CBS Corporation (1997-2000)	7	-1.1%
News Corp.	1	-1.2%
Gannett	2	-1.2%
Entravision Communications	2	-1.7%
Spanish Broadcasting System	3	-1.9%
Clear Channel Communications	14	-2.2%
Cox Radio	5	-2.2%
Salem Communications	14	-2.5%
Jacor Communications	8	-2.6%
Fisher Communications	1	-3.3%
Triathlon Broadcasting	1	-6.6%

Perhaps more interesting, in this era of expanding companies, was the skilled buyer, whose deal announcements had the maximum impact on stock prices.

Table 16: Mean abnormal returns by buyer

Company	Deals observed	Mean abnormal return
Childrens Broadcasting	3	18.3%
Sinclair Broadcast Group	5	16.4%
Entravision Communications	5	5.1%
Radio One	14	4.7%
Beasley Broadcasting Group	5	4.6%
Spanish Broadcasting System	3	4.1%
Ackerley Communications	1	4.0%
Citadel Broadcasting (2003-2009)	3	2.4%
Cumulus Media	13	2.1%
Regent Communications	14	2.1%
SFX Broadcasting	21	2.0%
Pulitzer Publishing	1	1.9%
Walt Disney	5	1.9%
Citicasters	4	1.9%
Gannett	1	1.5%

Paxson Communications	9	1.2%
Heritage Media	8	1.2%
American Radio Systems	35	1.1%
Scripps Howard	1	0.9%
Heftel Broadcasting (Through 1999) Hispanic Broadcasting (1999-2003)	15	0.8%
Clear Channel Communications	56	0.7%
Infinity Broadcasting (Through 1996)	3	0.7%
Jacor Communications	46	0.4%
Multi Market Radio	4	0.3%
Jefferson Pilot	3	0.3%
Osborn Communications	6	0.2%
A.H. Belo	2	0.2%
Harte Hanks	22	0.1%
Evergreen Media (1994-1997) Chancellor Media (1997-1999) AMFM (1999-2000)	22	0.1%
EZ Communications	7	0.1%
Cox Radio	4	-0.2%
Tribune Company	1	-0.2%
Salem Communications	21	-0.7%
Entercom Communications	11	-0.9%
Triathlon Broadcasting	9	-1.0%
Emmis Broadcasting	10	-1.0%
Westinghouse (Through 1997) CBS Corporation (1997-2000)	9	-1.2%
Viacom	4	-2.4%
Granite Broadcasting	1	-2.9%
Citadel Communications (1998-2001)	3	-3.1%
Univision Communications	4	-4.1%
Infinity Broadcasting (1998-2001)	3	-5.4%
News Corp.	1	-6.8%
Radio Unica	3	-7.8%

VIII. **REGRESSION FINDINGS**[6]

For the regression analysis, key variables were analyzed for a predictive relationship. Several categorical variables, such as the window of time and the deal character, have been converted to dummy variables. Note that some fields, including the dependent variables, do not have complete data so any regressions including them will utilize fewer datapoints. Table 17 outlines and summarizes the variables.

[6] Preliminary examination found one extreme outlier of 496.3%: the cumulative abnormal return for Big City Radio in its December 2002 deal with Entravision Communications. To avoid undue distortion, all regressions will exclude this observation.

Table 17: Data fields for regression and statistical summary

Field	n	Mean	Std Error of Mean	Std Dev	Min	Median	Max	Description
Era1	532	.540	.022	.499	0	1	1	Dummy variables, in which 1 signals that the deal announcement date fell within the given eras: Era1: 1995-1997 Era2: 2000-2003 Era3: 2006-2009
Era2	532	.335	.021	.472	0	0	1	
Era3	532	.126	.014	.332	0	0	1	
Buyout	532	.102	.013	.302	0	0	1	Dummy variables, representing the deal character. For each deal, the proper deal character is set to 1, while the others equal 0
Swap	532	.154	.016	.361	0	0	1	
Property	532	.261	.019	.440	0	0	1	
Unknown	532	.483	.022	.500	0	0	1	
StasInDeal	532	7.14	2.23	51.42	1	2	1142	The number of stations included in the deal
DealValue	487	160,912	49,928	1,101,819	0	10,500	16,653,000	The total sales price, in thousands of dollars
AnnDate	532	1421.1	41.2	949	253	914	3999	The number of trading days between the announcement date and the beginning of 2004, in which Jan. 3, 2004 equals 1
Top10	532	.229	.018	.421	0	0	1	Dummy variables, representing the size of the largest radio market represented in the deal. For each deal, the variable equals 1 for only the largest applicable category. For example, if the largest market represented in a deal was #67, Top50 would equal 0, Top100 would equal 1, and Top100+ would equal 0
Top50	532	.361	.021	.481	0	0	1	
Top10	532	.196	.017	.397	0	0	1	
Top100+	532	.214	.018	.411	0	0	1	
StasOwned-Seller	472	46.7	7.0	151.0	0	2	1213	The number of stations owned by the seller or buyer at the end of the year
StasOwned-Buyer	525	139.3	12.6	289.4	0	45	1213	
SellerCAR	217	.018	.008	.122	-0.513	.005	.699	The buyer's or seller's cumulative abnormal return for the deal
BuyerCAR	420	.009	.004	.074	-0.251	.003	.758	

Note that for each set of the dummy variables, all except one of the variables are tested; since the possibilities sum to 1 for each observation, resulting in high correlation, regression software omits the final variable from each set. Thus, the expected value can be calculated as a base case with all other dummies set to 0. For example, for the 3 eras, if Era1 and Era2 are both untrue (set as zero), Era3 is true; this logic is implicit from the regression equation.

Tables 18 and 19 display the correlations between the variables for deals with public sellers and public buyers, respectively. The sellers' cumulative abnormal returns are moderately correlated with several variables:

- The variable has a moderate correlation (.291) with Buyout and a weaker negative correlation (-.161) with Property. This suggests that the market values selling the entire company over selling individual stations.
- The variable is correlated with the Eras, with a moderate negative correlation with Era2 (-.206) and weaker positive correlations with Era1 (.107) and Era3 (.098). This suggests that holding all else equal, sellers' abnormal returns were higher in the 1995-1997 and 2006-2009 windows than in the 2000-2003 window.
- The variable has a .164 correlation with the logged value of the number of stations in the deal, suggesting that sellers' stock prices benefitted more from deals with more stations than from smaller deals. Similarly, SellerCAR has a .127 correlation with the logged value of the deal value.

The buyers' cumulative abnormal returns show weaker correlations in general, with nothing exceeding 0.1. Surprisingly, the highest correlation is with the sellers' cumulative abnormal returns, at 0.099, suggesting that the market had a weak tendency to reward the seller's and

buyer's stocks in the same direction, either positively or negatively. Predictably, the buyers' returns are negatively correlated (-.087) with deal value; more expensive deals, on average, are associated with lower abnormal returns.

Table 18: Correlations for deals with public sellers

Note: (*) indicates that all values for variable are identical.

	Era1	Era2	Era3	Buyout	Swap	Property	Unknown	StasIn Deal	LogStats inDeal	Deal Value ($000)	LogD V	Ann Date	Top10	Top50	Top 100	Top100 +	Stas Owned -Seller	Stas Owned -Buyer	LogSO -Seller	LogSO -Buyer	Seller CAR
Era2	-0.611																				
Era3	-0.512	-0.366																			
Buyout	0.143	-0.121	-0.037																		
Swap	0.246	-0.053	-0.232	-0.22																	
Property	-0.319	0.129	0.235	-0.469	-0.758																
Unknown	*	*	*	*	*	*															
StasIn Deal	-0.066	-0.022	0.101	0.328	-0.07	-0.156	*														
LogStatsin Deal	-0.003	-0.024	0.03	0.606	-0.085	-0.328	*	0.508													
Deal Value ($000)	-0.057	0.034	0.029	0.558	-0.118	-0.213	*	0.803	0.613												
LogDV	0.112	0.071	-0.192	0.648	0.055	-0.593	*	0.364	0.747	0.532											
AnnDate	-0.827	0.092	0.873	-0.109	-0.283	0.329	*	0.086	-0.009	0.034	-0.214										
Top10	0.143	0.022	-0.192	0.297	0.02	-0.216	*	0.165	0.176	0.253	0.465	-0.186									
Top50	0.028	-0.059	0.031	-0.179	0.073	0.054	*	-0.08	-0.11	-0.111	0.037	0.03	-0.496								
Top100	-0.072	0.025	0.058	-0.087	-0.002	0.06	*	-0.062	-0.086	-0.1	-0.267	0.043	-0.354	-0.377							
Top100+	-0.152	0.024	0.153	-0.053	-0.13	0.153	*	-0.041	0.017	-0.072	-0.344	0.166	-0.257	-0.274	-0.196						
Stas Owned-Seller	-0.225	0.296	-0.056	-0.104	0.016	0.056	*	0.064	0.02	0.06	-0.013	0.053	0.05	-0.034	-0.054	0.049					
Stas Owned-Buyer	-0.217	0.258	-0.024	0.145	0.084	-0.172	*	0.286	0.212	0.196	0.165	0.091	-0.041	-0.091	0.088	0.079	0.036				
LogSO-Seller	-0.138	0.117	0.024	-0.076	0.181	-0.121	*	0.12	0.074	0.131	0.02	0.015	0.138	-0.091	-0.076	0.045	0.69	0.08			
LogSO-Buyer	-0.12	0.252	-0.13	0.214	0.096	-0.228	*	0.21	0.339	0.222	0.425	-0.04	0.06	-0.061	0.084	-0.096	0.119	0.691	0.071		
SellerCAR	0.107	-0.206	0.098	0.291	-0.037	-0.161	*	0.073	0.164	0.08	0.127	0.013	-0.029	-0.014	0.048	0.001	-0.075	0.022	0.01	-0.036	
BuyerCAR	0.103	-0.115	0.02	0.023	-0.059	0.037	*	0.033	0.01	-0.009	-0.05	-0.033	-0.094	0.09	-0.024	0.055	0.053	0.036	-0.063	0.041	0.099

Table 19: Correlations for deals with public buyers

	Era1	Era2	Era3	Buyout	Swap	Property	Unknown	StasIn Deal	LogStats inDeal	Deal Value ($000)	LogD V	Ann Date	Top10	Top50	Top 100	Top100 +	Stas Owned -Seller	Stas Owned -Buyer	LogSO -Seller	LogSO -Buyer	Seller CAR
Era2	-0.883																				
Era3	-0.289	-0.193																			
Buyout	0.012	-0.016	0.009																		
Swap	0.055	-0.05	-0.013	-0.14																	
Property	-0.14	0.111	0.066	-0.146	-0.166																
Unknown	0.055	-0.035	-0.044	-0.434	-0.495	-0.515															
StasIn Deal	-0.059	-0.029	0.183	0.229	-0.031	-0.027	-0.105														
LogStatsin Deal	-0.029	0.031	-0.003	0.501	-0.053	-0.029	-0.261	0.428													
Deal Value ($000)	-0.068	0.001	0.14	0.357	-0.053	-0.025	-0.161	0.806	0.52												
LogDV	-0.065	0.035	0.065	0.393	0.088	0.125	-0.402	0.305	0.688	0.458											
AnnDate	-0.875	0.591	0.626	-0.024	-0.041	0.132	-0.052	0.116	0.001	0.1	0.051										
Top10	0.041	-0.037	-0.011	0.183	0.156	0.04	-0.256	0.138	0.177	0.225	0.456	-0.062									
Top50	0.066	-0.055	-0.025	-0.031	-0.005	0.072	-0.029	-0.056	-0.134	-0.076	0.102	-0.05	-0.404								
Top100	0.015	-0.042	0.054	-0.076	-0.005	0.049	0.016	-0.04	-0.077	-0.067	-0.204	-0.01	-0.26	-0.375							
Top100+	-0.133	0.142	-0.011	-0.075	-0.145	-0.171	0.274	-0.034	0.054	-0.076	-0.349	0.13	-0.28	-0.404	-0.26						
Stas Owned-Seller	-0.177	0.14	0.078	-0.042	0.152	0.255	-0.268	0.094	0.071	0.117	0.066	0.14	0.105	-0.039	-0.016	-0.041					
Stas Owned-Buyer	-0.384	0.388	0.011	0.115	-0.013	-0.052	-0.026	0.156	0.2	0.081	0.008	0.272	-0.109	-0.177	0.01	0.305	-0.009				
LogSO-Seller	-0.116	0.013	0.167	0.064	0.3	0.455	-0.631	0.155	0.2	0.195	0.135	0.116	0.202	-0.165	0.076	-0.083	0.634	0.045			
LogSO-Buyer	-0.342	0.323	0.043	0.119	0.016	-0.038	-0.058	0.125	0.225	0.091	0.091	0.302	-0.117	-0.123	0.031	0.213	-0.01	0.809	0.041		
SellerCAR	0.234	-0.246	0.016	0.303	0.066	-0.287	*	0.039	0.189	0.098	0.205	-0.18	-0.099	0.078	0.053	-0.054	-0.078	0.052	-0.028	-0.098	
BuyerCAR	0.035	-0.031	-0.012	0.067	-0.083	-0.047	0.05	0.01	0.001	-0.02	-0.087	-0.029	-0.002	0.047	-0.048	-0.006	-0.02	-0.019	-0.091	-0.011	0.099

VIII.1 **Seller CAR regression analysis**

The first regression analysis involved virtually all the inputs. The software removed the Property dummy due to its high correlation with other variables. As Exhibit 8 shows, this regression explains 12.4% of the variation in the sellers' abnormal returns. As the raw data suggested earlier, Buyouts are statistically significant at the 99% level in predicting abnormal returns.

Exhibit 8: Regression analysis of sellers' abnormal returns

```
SellerCAR = - 0.048 + 0.056 Era1 - 0.0155 Era2 + 0.164 Buyout + 0.0200 Swap
            + 0.000100 StasInDeal - 0.000000 DealValue ($000) + 0.000028 AnnDate
            - 0.0402 Top10 - 0.0186 Top50 + 0.0044 Top100
            + 0.000018 StasOwned-Seller - 0.000033 StasOwned-Buyer


175 cases used, 42 cases contain missing values


Predictor                Coef     SE Coef      T      P
Constant              -0.0484      0.1436  -0.34  0.737
Era1                   0.0558      0.1132   0.49  0.622
Era2                  -0.01547     0.06838  -0.23  0.821
Buyout                 0.16418     0.04654   3.53  0.001
Swap                   0.01998     0.02342   0.85  0.395
StasInDeal          0.0001002   0.0001910   0.52  0.601
DealValue ($000)  -0.00000001  0.00000001  -0.89  0.373
AnnDate            0.00002761  0.00004155   0.66  0.507
Top10                -0.04015     0.03542  -1.13  0.259
Top50                -0.01860     0.03212  -0.58  0.563
Top100                0.00437     0.03337   0.13  0.896
StasOwned-Seller   0.00001803  0.00005559   0.32  0.746
StasOwned-Buyer   -0.00003338  0.00004728  -0.71  0.481


S = 0.123415   R-Sq = 12.4%   R-Sq(adj) = 5.9%


Analysis of Variance

Source           DF       SS       MS     F      P
Regression       12  0.34919  0.02910  1.91  0.036
Residual Error  162  2.46744  0.01523
Total           174  2.81664
```

Running the analysis again, as seen in Exhibit 9, using the logarithm of the deal value, the fit is improved to an R^2 value of 0.137, and the Buyout dummy variable remains statistically significant. (Using logarithms removes any observations coded with $0 deal values.)

Exhibit 9: Regression analysis of sellers' abnormal returns

```
The regression equation is
SellerCAR = - 0.112 + 0.089 Era1 - 0.0105 Era2 + 0.141 Buyout + 0.0628 Swap
            - 0.000022 StasInDeal + 0.0058 LogDV + 0.000040 AnnDate
            - 0.0472 Top10 - 0.0070 Top50 + 0.0015 Top100
            + 0.000024 StasOwned-Seller - 0.000041 StasOwned-Buyer


133 cases used, 84 cases contain missing values


Predictor               Coef     SE Coef      T      P
Constant             -0.1121      0.2133  -0.53  0.600
Era1                  0.0893      0.1443   0.62  0.537
Era2                -0.01050     0.08356  -0.13  0.900
Buyout                0.14082     0.05837   2.41  0.017
Swap                  0.06283     0.05600   1.12  0.264
StasInDeal         -0.0000218   0.0001583  -0.14  0.891
LogDV                 0.00579     0.01985   0.29  0.771
AnnDate            0.00003969  0.00005257   0.76  0.452
Top10                -0.04721     0.04602  -1.03  0.307
Top50                -0.00695     0.04160  -0.17  0.868
Top100                0.00154     0.04045   0.04  0.970
StasOwned-Seller   0.00002388  0.00007187   0.33  0.740
StasOwned-Buyer   -0.00004147  0.00008445  -0.49  0.624


S = 0.137806   R-Sq = 13.7%   R-Sq(adj) = 5.1%


Analysis of Variance

Source           DF       SS       MS     F      P
Regression       12  0.36313  0.03026  1.59  0.102
Residual Error  120  2.27885  0.01899
Total           132  2.64198
```

The analysis includes two other sets of metrics whose scales might be better suited as logarithms: the number of stations in the deal and the number of stations held by each party. By replacing these figures with logs, the R^2 value improves to 0.204, as seen in Exhibit 10. The Buyout dummy remains statistically significant, and now the Era1 and Era2 dummies gain significance, which is also modeled by the Announcement Date (AnnDate) field, which predicts a 0.015% increase in abnormal returns associated with each trading day after the beginning of 1994. The logged value of stations owned by the seller has also gained significance, predicting that each station held by the seller associates with a 5.7% increase in sellers' abnormal returns.

Note that additional observations have been removed due to using logarithms, so now only 93 of the 218 deals with public sellers are still under consideration.

Exhibit 10: Regression analysis of sellers' abnormal returns

```
The regression equation is
SellerCAR = - 0.654 + 0.394 Era1 + 0.182 Era2 + 0.240 Buyout - 0.080 Swap
            - 0.0572 LogStatsinDeal + 0.0309 LogDV + 0.000155 AnnDate
            - 0.0671 Top10 - 0.0432 Top50 - 0.0231 Top100 + 0.0570 LogSO-Seller
            - 0.0109 LogSO-Buyer


93 cases used, 124 cases contain missing values


Predictor             Coef     SE Coef      T      P
Constant           -0.6537      0.2951  -2.21  0.030
Era1                0.3939      0.1793   2.20  0.031
Era2               0.18200     0.09824   1.85  0.068
Buyout             0.24022     0.08118   2.96  0.004
Swap               -0.0799      0.1015  -0.79  0.434
LogStatsinDeal    -0.05721     0.04771  -1.20  0.234
LogDV              0.03087     0.03139   0.98  0.328
AnnDate         0.00015485  0.00006474   2.39  0.019
Top10             -0.06714     0.06037  -1.11  0.269
Top50             -0.04317     0.04995  -0.86  0.390
Top100            -0.02307     0.04543  -0.51  0.613
LogSO-Seller       0.05699     0.02960   1.93  0.058
LogSO-Buyer       -0.01090     0.02605  -0.42  0.677


S = 0.130237   R-Sq = 20.4%   R-Sq(adj) = 8.4%


Analysis of Variance

Source          DF       SS       MS     F      P
Regression      12  0.34721  0.02893  1.71  0.081
Residual Error  80  1.35693  0.01696
Total           92  1.70414
```

The large difference in the sellers' abnormal returns based on the deal character suggests that separate regressions within the three key groups (buyouts, swaps, and properties acquisitions) might also be informative. Within buyouts, especially, the larger average abnormal return suggests that a separate model may be appropriate, in order to consider only the Buyout deals. (See Exhibit 11.) There are only 26 observations, so statistical software cannot use as many explanatory variables, but the simplified model (which uses only 14 observations)

increases R^2 to 0.840. The deal value appears to play a significant but potentially deceptive role in predicting abnormal returns; the coefficient implies a decrease in abnormal returns by 5% for every million dollars added to the deal value. This either suggests that the stock market favors smaller deals, or the variable may be compensating for another variable in the model, likely the number of stations in the deal. Stations owned by each player also play a large role in explaining the seller's abnormal returns.

Exhibit 11: Regression analysis of sellers' abnormal returns

```
The regression equation is
SellerCAR = 0.222 + 0.00154 StasInDeal - 0.000000 DealValue ($000)
            - 0.000039 AnnDate + 0.037 Top10 - 0.103 Top50
            + 0.00185 StasOwned-Seller - 0.00145 StasOwned-Buyer


14 cases used, 40 cases contain missing values


Predictor                Coef     SE Coef      T      P
Constant              0.22232     0.09676   2.30  0.061
StasInDeal          0.0015386   0.0007868   1.96  0.098
DealValue ($000)  -0.00000005  0.00000001  -4.17  0.006
AnnDate           -0.00003875  0.00004166  -0.93  0.388
Top10                  0.0373      0.1028   0.36  0.729
Top50                 -0.1034      0.1321  -0.78  0.464
StasOwned-Seller    0.0018539   0.0006136   3.02  0.023
StasOwned-Buyer    -0.0014528   0.0006168  -2.36  0.057


S = 0.0923223   R-Sq = 84.0%   R-Sq(adj) = 65.3%


Analysis of Variance

Source          DF        SS        MS     F      P
Regression       7  0.268074  0.038296  4.49  0.043
Residual Error   6  0.051140  0.008523
Total           13  0.319215
```

Unlike the group of deals in the Buyout category, running separate regressions for the Swap and Property Acquisition groups do not appear to significantly increase the predictive power of the model.

VIII.2 **Buyer CAR regression analysis**

Running through a similar analysis with the buyer abnormal returns, using a large number of explanatory variables, this regression achieves an R^2 value of only 0.036. (See Exhibit 12.) In comparison to the seller abnormal returns, these residuals are more normally distributed.

Exhibit 12: Regression analysis of buyers' abnormal returns

```
The regression equation is
BuyerCAR = 0.0404 - 0.0203 Era1 - 0.0107 Era2 + 0.0241 Buyout - 0.0203 Swap
           - 0.0105 Property + 0.000096 StasInDeal - 0.000000 DealValue ($000)
           - 0.000008 AnnDate - 0.0062 Top10 - 0.0023 Top50 - 0.0124 Top100
           + 0.000033 StasOwned-Seller - 0.000009 StasOwned-Buyer


329 cases used, 92 cases contain missing values


Predictor                Coef     SE Coef      T      P
Constant              0.04039     0.05414   0.75  0.456
Era1                 -0.02034     0.04271  -0.48  0.634
Era2                 -0.01073     0.02547  -0.42  0.674
Buyout                0.02405     0.01403   1.71  0.088
Swap                 -0.02031     0.01098  -1.85  0.065
Property             -0.01046     0.01094  -0.96  0.340
StasInDeal         0.00009571  0.00009731   0.98  0.326
DealValue ($000)  -0.00000001  0.00000000  -1.48  0.141
AnnDate           -0.00000761  0.00001559  -0.49  0.626
Top10                -0.00618     0.01231  -0.50  0.616
Top50                -0.00229     0.01032  -0.22  0.825
Top100               -0.01239     0.01140  -1.09  0.278
StasOwned-Seller   0.00003350  0.00003032   1.10  0.270
StasOwned-Buyer   -0.00000859  0.00001344  -0.64  0.523


S = 0.0639233   R-Sq = 3.6%   R-Sq(adj) = 0.0%


Analysis of Variance

Source           DF        SS        MS     F      P
Regression       13  0.048527  0.003733  0.91  0.539
Residual Error  315  1.287151  0.004086
Total           328  1.335678
```

This variation substitutes logged values for the Deal Value, number of stations in the deal, and the number of stations held by each party. This reduces the number of observations to 287, and increases the R^2 value to 0.044. (See Exhibit 13.)

Exhibit 13: Regression analysis of buyers' abnormal returns

```
The regression equation is
BuyerCAR = 0.105 - 0.0356 Era1 - 0.0170 Era2 + 0.0250 Buyout - 0.0223 Swap
           - 0.0113 Property + 0.000003 StasInDeal - 0.0128 LogDV
           - 0.000013 AnnDate + 0.0091 Top10 + 0.0064 Top50 - 0.0104 Top100
           + 0.000069 StasOwned-Seller - 0.000011 StasOwned-Buyer


287 cases used, 134 cases contain missing values


Predictor               Coef     SE Coef      T      P
Constant             0.10516     0.06548   1.61  0.109
Era1                -0.03556     0.04644  -0.77  0.444
Era2                -0.01696     0.02739  -0.62  0.536
Buyout               0.02503     0.01459   1.72  0.087
Swap                -0.02227     0.02684  -0.83  0.407
Property            -0.01131     0.01168  -0.97  0.334
StasInDeal         0.00000317  0.00006541   0.05  0.961
LogDV               -0.012846    0.006569  -1.96  0.052
AnnDate            -0.00001290  0.00001702  -0.76  0.449
Top10                0.00914     0.01484   0.62  0.539
Top50                0.00638     0.01143   0.56  0.577
Top100              -0.01035     0.01231  -0.84  0.401
StasOwned-Seller   0.00006863  0.00004106   1.67  0.096
StasOwned-Buyer   -0.00001052  0.00001502  -0.70  0.484


S = 0.0660871   R-Sq = 4.4%   R-Sq(adj) = 0.0%


Analysis of Variance

Source           DF        SS        MS     F      P
Regression       13  0.055254  0.004250  0.97  0.478
Residual Error  273  1.192330  0.004368
Total           286  1.247584
```

By replacing the number of stations in the deal and held by each player with their respective logged values, the model loses predictive power, with R^2 falling to 0.028. The number of observations falls further as well, to 129. See Exhibit 14.

Exhibit 14: Regression analysis of buyers' abnormal returns

```
The regression equation is
BuyerCAR = 0.084 - 0.0346 Era1 - 0.0147 Era2 - 0.0124 Buyout + 0.0359 Swap
           + 0.0063 Property + 0.0058 LogStatsinDeal - 0.0111 LogDV
           - 0.000014 AnnDate + 0.0112 Top10 - 0.0023 Top50 - 0.0054 Top100
           + 0.0004 LogSO-Seller + 0.0063 LogSO-Buyer


129 cases used, 292 cases contain missing values


Predictor              Coef     SE Coef      T      P
Constant             0.0842      0.1032   0.82  0.416
Era1                -0.03459     0.06567  -0.53  0.599
Era2                -0.01468     0.03660  -0.40  0.689
Buyout              -0.01240     0.02891  -0.43  0.669
Swap                 0.03593     0.03911   0.92  0.360
Property             0.00626     0.01762   0.36  0.723
LogStatsinDeal       0.00578     0.02057   0.28  0.779
LogDV               -0.01105     0.01450  -0.76  0.447
AnnDate         -0.00001432  0.00002414  -0.59  0.554
Top10                0.01118     0.02404   0.46  0.643
Top50               -0.00230     0.01824  -0.13  0.900
Top100              -0.00542     0.01781  -0.30  0.762
LogSO-Seller         0.00042     0.01043   0.04  0.968
LogSO-Buyer          0.00631     0.01328   0.47  0.636


S = 0.0619121   R-Sq = 2.8%   R-Sq(adj) = 0.0%


Analysis of Variance

Source           DF        SS        MS     F      P
Regression       13  0.012914  0.000993  0.26  0.996
Residual Error  115  0.440808  0.003833
Total           128  0.453722
```

IX. CONCLUSION AND FURTHER CONSIDERATIONS

This analysis determines that radio companies' abnormal returns related to certain variables between 1995 and 2009. On average, for example, sellers' abnormal returns are larger than buyers', and abnormal returns for sellers and buyers are highest in buyouts than in other types of deals. Additionally, in the 2000-2003 era, especially before the recession, sellers commanded a much higher premium than before, when more properties were still available to be

acquired. Large market sellers have received a higher abnormal return than smaller market sellers, as well.

Aside from these trends, it is difficult to predict abnormal returns from the variables considered here. The regression analysis determined that sellers' abnormal returns between 1995 and 2009 could be predicted by the number of stations owned by the seller and thus, perhaps, the seller's bargaining position. The relationship between the sellers' abnormal returns and elapsing time showed that sellers increased their bargaining power over time, at least through the early 2000s. When looking only at buyouts, a model may have much more predictive power, based on the value of the deal, the number of stations in the deal, and the size of the two parties' portfolios.

Since few of the explanatory variables studied here offered much prediction power, additional data might be the missing ingredient. Further work might look deeper into each stock's trading history and ownership; this analysis corrected for stocks that were not traded in a given day, but not for those that were traded very thinly. Additional research could also focus on the deals' connections to the radio stations' fundamental value and financial performance. On the assumption that market responses to deals are based primarily upon the fairness or favorability of the deal terms, that favorability hinges upon how that price compares to the expected cash flows from the station, or the current price-to-earnings ratios for comparable companies. Unfortunately, earnings data at a station level are rarely available, so more assumptions would be necessary, stretching the credibility of the analysis. Full-company buyouts, especially of public targets, offer the most transparency of any targets, so the impact of a deal can be calculated with fewer surprises than buying individual properties. This fact, along

with the control premium, helps to explain the premium for takeovers, not to mention their increasing rarity.

The radio deal market is warming up again after years of constricted capital and uneasy predictions. In March 2011, Cumulus Media agreed to buy rival Citadel Broadcasting in a $2.5 billion deal. Whether this will be an isolated story or the beginning of more megadeals is still to be determined, but it will remain a challenge to predict the market responses to these deals.

Appendix 1: Radio broadcasting company stock trading

NOTE: These dates are limited to trading on the New York Stock Exchange, American Stock Exchange, and NASDAQ; some companies have additional trading activity aside from these exchanges.

Source: Center for Research in Security Prices

Company	Dates Available
A M F M Inc	7/14/1999-8/30/2000
A.H. Belo Corp.	1/3/1994-12/29/2000
Ackerley Communications/Ackerley Group	1/3/1994-6/14/2002
American Radio Systems Corp	6/9/1995-6/4/1998
Beasley Broadcast Group Inc.	2/11/2000-12/31/2009
Big City Radio Co.	12/19/1997-12/23/2003
CBS Corp (after Viacom split)	1/3/2006-12/31/2009
CBS Corp (after Westinghouse merger)	12/1/1997-5/3/2000
CBS Inc.	1/3/1994-11/24/1995
Capital Cities ABC Inc.	1/3/1994-2/9/1996
Capstar Broadcasting Corp	5/27/1998-7/13/1999
Chancellor Media Corp	9/8/1997-7/13/1999
Childrens Broadcasting Corp (1994-1999) Intelefilm Corp. (1999-2001)	1/3/1994-8/17/2001
Citadel Broadcasting Corp.	8/1/2003-3/5/2009
Citadel Communications Corp	7/1/1998-6/26/2001
Clear Channel Communications Inc.	1/3/1994-7/30/2008
Cox Radio Inc.	9/27/1996-5/29/2009
Cumulus Media Inc.	6/26/1998-12/31/2009
Emmis Broadcasting Corp (1994-1998) Emmis Communications (1998-2009)	2/23/1994-12/31/2009
Entercom Communications Corp	1/29/1999-12/31/2009
Entravision Communications Corp.	8/2/2000-12/31/2009
Evergreen Media Corp	1/3/1994-9/5/1997
EZ Communications Inc.	1/3/1994-4/4/1997
Fisher Communications Inc.	5/18/2001-12/31/2009
Gannett Inc.	1/3/1994-12/31/2009
Gaylord Entertainment Co.	1/2/2001-12/31/2009
Granite Broadcasting Corp.	1/3/1994-8/4/2004
Great American Communications Co (1994) Citicasters Inc. (1994-1996)	2/3/1994-9/18/1996
Harte Hanks Communications Inc	1/3/1994-12/31/2009
Heftel Broadcasting Corp (1994-1999) Hispanic Broadcasting Corp (1999-2003)	7/27/1994-9/22/2003
Heritage Media Corp	1/3/1994-8/20/1997
Infinity Broadcasting Corp	1/3/1994-12/31/1996
Infinity Broadcasting Corp (CBS subsidiary)	12/10/1998-2/21/2001
Jacor Communications Inc.	1/3/1994-5/4/1999
Jefferson Pilot Corp.	1/3/1994-3/31/2006
Journal Communications Inc.	9/24/2003-12/31/2009
Lincoln National Corp.	1/3/1994-12/31/2009
Multi Market Radio Inc.	1/3/1994-11/22/1996

New York Times Co	1/3/1994-12/31/2009
News Corp Ltd.	1/3/1994-11/2/2004
Osborn Communications Corp	1/3/1994-2/20/1997
Paxson Communications Corp (1994-2006) Ion Media Networks (2006-2008)	11/29/1994-2/15/2008
Pulitzer Publishing Co	1/3/1994-3/18/1999
Radio One Inc.	5/6/1999-12/31/2009
Radio Unica Communications Corp.	10/19/1999-9/13/2002
Regent Communications Inc.	1/25/2000-12/31/2009
Saga Communications Inc.	1/3/1994-12/31/2009
Salem Communications Corp.	7/1/1999-12/31/2009
Scripps-Howard Inc./E.W. Scripps Co.	11/14/1996-12/31/2009
SFX Broadcasting Inc	1/3/1994-5/29/1998
Sinclair Broadcast Group Inc.	6/7/1995-12/31/2009
Spanish Broadcasting System Inc.	10/28/1999-12/31/2009
Triathlon Broadcasting Co	9/8/1995-4/30/1999
Tribune Company	1/3/1994-12/20/2007
Univision Communications Inc.	9/27/1996-3/28/2007
Viacom Inc. (Old)	1/3/1994-12/30/2005
Walt Disney Co.	1/3/1994-12/31/2009
Westinghouse Electric Corp.	1/3/1994-11/28/1997

Appendix 2: U.S. advertising expenditures ($, billions)

Source: Magna Global

Year	Radio				Television					Newspaper	Magazine	Outdoor	Direct Media	Digital and Online Media	Total	Radio's share of total US ad spending
	Local broadcast stations		Network and satellite	Total Radio	Broadcast			Cable network	Total TV							
	Local adv.	National adv.			Local[7]	Network[8]	Syndication									
1980	2.6	0.7	0.2	3.6	4.4	4.1	0.0	0.1	8.6	14.8	6.1	1.0	5.0	0.0	39.1	9.3%
1981	3.0	0.9	0.3	4.1	5.0	4.4	0.1	0.1	9.7	16.5	6.8	1.1	5.6	0.0	43.9	9.4%
1982	3.4	0.9	0.3	4.6	5.8	4.9	0.1	0.3	11.1	17.2	7.0	1.2	6.8	0.0	47.8	9.6%
1983	3.7	1.0	0.4	5.1	6.5	5.6	0.3	0.4	12.7	21.1	7.8	1.4	7.7	0.0	55.9	9.2%
1984	4.4	1.2	0.6	6.1	7.5	6.7	0.4	0.6	15.2	23.5	9.1	1.5	8.7	0.0	64.1	9.6%
1985	4.9	1.3	0.5	6.7	8.4	6.5	0.5	0.8	16.2	25.2	9.5	1.6	10.2	0.0	69.3	9.7%
1986	5.3	1.3	0.5	7.2	9.4	6.7	0.6	0.9	17.6	27.0	9.7	1.8	11.5	0.0	74.8	9.6%
1987	5.6	1.3	0.5	7.4	9.9	6.8	0.8	1.1	18.5	29.4	10.2	2.0	12.8	0.0	80.3	9.3%
1988	6.1	1.4	0.5	8.1	10.4	7.3	0.9	1.3	20.0	31.2	10.9	2.3	14.4	0.0	86.8	9.3%
1989	6.5	1.5	0.6	8.6	10.9	7.5	1.3	1.7	21.3	32.4	11.9	2.5	15.5	0.0	92.2	9.3%
1990	6.6	1.6	0.5	8.8	10.3	8.1	1.2	2.1	21.7	32.3	12.2	2.6	16.3	0.0	93.9	9.4%
1991	6.6	1.6	0.6	8.8	9.8	7.7	1.1	2.4	21.0	30.3	12.0	2.7	17.8	0.0	92.7	9.5%
1992	6.9	1.5	0.5	8.9	10.4	8.4	1.0	2.8	22.6	30.6	12.7	2.6	18.4	0.0	95.9	9.3%
1993	7.5	1.6	0.6	9.7	10.7	8.4	1.1	3.2	23.3	31.1	13.4	2.9	19.0	0.0	99.4	9.8%
1994	8.4	1.9	0.6	10.8	12.0	9.1	1.2	3.9	26.2	34.1	14.2	3.2	20.2	0.0	108.6	10.0%
1995	9.1	1.9	0.6	11.6	13.4	9.5	1.3	4.8	29.1	36.1	15.3	3.5	22.0	0.0	117.7	9.9%
1996	9.9	2.1	0.7	12.6	14.3	10.9	1.4	5.4	32.1	38.1	16.1	3.8	22.6	0.3	125.6	10.0%
1997	10.7	2.4	0.7	13.9	14.9	10.9	1.7	6.1	33.6	41.3	17.5	4.0	23.9	0.9	135.2	10.2%
1998	11.9	2.8	0.8	15.5	16.3	12.0	2.1	7.2	37.5	43.9	18.6	4.4	26.0	1.9	147.9	10.5%
1999	13.6	3.2	0.9	17.7	17.6	12.4	2.1	8.8	40.9	46.3	20.0	4.8	27.6	4.6	161.9	11.0%
2000	15.2	3.6	1.1	19.9	19.5	14.4	2.2	9.7	45.7	48.7	21.6	5.2	29.5	7.5	178.2	11.2%
2001	14.6	2.9	1.0	18.4	17.9	13.3	2.1	9.9	43.2	44.3	20.2	5.2	30.1	6.5	168.0	11.0%
2002	15.1	3.3	1.1	19.5	19.8	14.7	1.6	11.2	47.4	44.1	19.6	5.2	31.5	4.8	172.1	11.3%
2003	15.1	3.5	1.1	19.7	19.8	14.4	2.0	12.5	48.6	44.9	19.5	5.5	34.0	4.3	176.6	11.2%
2004	15.5	3.5	1.2	20.1	20.9	15.8	2.2	13.8	52.9	46.7	20.4	5.8	37.5	5.0	188.4	10.7%
2005	15.6	3.4	1.2	20.2	21.3	15.5	2.2	15.3	54.3	47.4	21.3	6.3	40.6	6.1	196.0	10.3%
2006	15.5	3.6	1.2	20.2	21.9	16.2	2.0	16.0	56.0	46.6	22.4	6.8	44.4	8.0	204.4	9.9%
2007	15.1	3.3	1.2	19.7	22.1	15.5	2.0	17.1	56.6	42.2	21.5	7.3	47.6	9.8	204.7	9.6%
2008	13.6	2.9	1.2	17.8	20.5	15.3	1.9	17.9	55.6	34.7	19.2	7.0	47.3	10.0	191.7	9.3%
2009	10.8	2.4	1.1	14.3	16.6	13.8	1.8	17.7	49.8	24.8	15.7	5.9	43.2	9.1	162.8	8.8%

[7] Local television includes political advertising spending.

[8] Network television spending includes Olympic advertising spending.

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