

Broadcasters in the Internet Age



OVERVIEW

The television industry is experiencing a tectonic shift of viewership from linear to on-demand viewing. Vertically integrated behemoths like Netflix and Amazon continue to grow with no end in sight. Despite this, we believe there is a place in the media ecosystem for traditional terrestrial broadcast companies.

SUMMARY AND OPINION

We view the broadcasters as attractive investments.

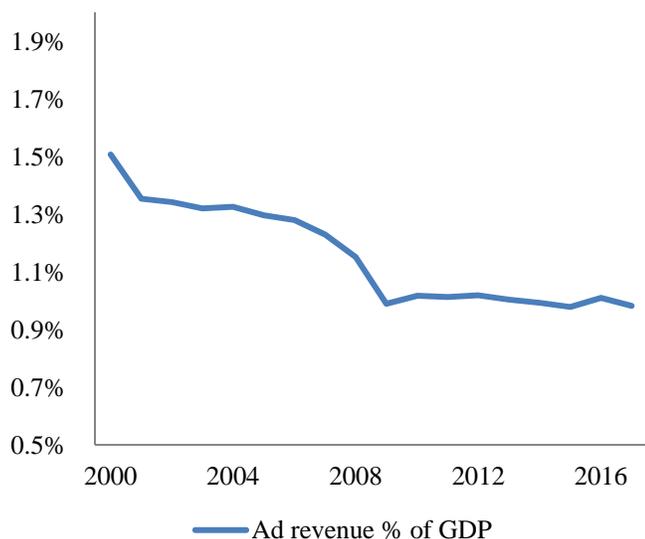
- We believe there is the potential for consolidation. On April 20, 2017, the FCC reinstated the Ultra High Frequency (UHF) discount giving broadcasters with UHF stations the ability to add stations without running afoul of the National Ownership Cap. More importantly, the current 39% ownership cap is under review at the FCC. Given the ubiquitous presence of the internet which foster an excess of video options and media voices, we believe the current ownership cap could be viewed as antiquated. Should the FCC substantially change the ownership cap, we would expect consolidation to accelerate.
- Broadcast consolidation would have the opportunity to deliver substantial synergies to the industry. We would expect both cost reductions and revenue growth, primarily in the form of increased retransmission revenue, to benefit the broadcast stations and networks.
- Contractually recurring retransmission revenue should continue to grow. Despite years of rate increases, broadcast network affiliate revenue under-earn compared to cable network peers. Today, broadcast networks will earn ~\$2.00 per subscriber per month (rates vary by network and distributor) in retransmission fees from cable, satellite and telco (multichannel video programming distributors or MVPDs) versus ESPN which generates ~\$8.00. This is despite broadcast networks carrying the most popular entertainment and sports programming as well as generating substantially higher ratings.
- The growth in retransmission has already changed the revenue profile of broadcasters. While broadcast station operators companies were once reliant on economically cyclical advertising revenue, 35-45% of revenue is now derived from contractually recurring affiliate fees, which continues to increase.
- We expect broadcast subscribers to outperform the industry. The TV ecosystem peaked in 2010 and has suffered subscriber losses (cord cutting) since. Recently, growth in virtual MVPDs, online channel bundles like Sling TV or DirecTV Now, stabilized the US pay-tv landscape. We expect total pay-tv subscribers declined 1-2% for the industry overall with broadcasters outperforming the industry. While cord shaving, consumers purchase smaller cable bundles, hurt cable some networks, broadcast networks are included in most skinny bundles or lifeline packages and therefore have been less affected.
- As demonstrated by the 2018 midterm elections, broadcast networks remain highly relevant. Political advertising reached yet another record in 2018 despite the absence of a presidential campaign; presidential years typically generate more advertising revenue than midterms. More importantly, politicians chose to spend advertising dollars at local television stations versus on digital platforms like Google and Facebook. Robust political spending demonstrates linear broadcast advertising is still highly relevant to sophisticated advertisers.
- Each television station requires 6MHz of spectrum in either the VHF or UHF frequencies. Due to attractive propagation and capacity properties, this spectrum is considered to be highly attractive. Increasing smartphone use, the coming implementation of 5G wireless technology and 5G applications could dramatically increase the demand for spectrum.
- Broadcast companies continue to generate substantial free cash flow. With 25-35% EBITDA margins and limited capex requirements, broadcasters can convert a large part of revenue into bottom line profitability. The free cash flow generation allows broadcasters to comfortably sustain debt; the group maintains leverage of 3-4x EBITDA. Industry debt levels should allow for levered equity returns.
- Broadcasters trade at attractive valuations. Public broadcasters trade at 6-8x EBITDA which represent attractive standalone multiples given the free cash flow characteristics. Recent transactions have valued broadcast networks at 8-11x EBITDA. Given this we estimate there to be a meaningful margin of safety to both private market values and standalone valuations.

US Advertising Market

US advertising now accounts for ~\$165 billion of spending or 1% of GDP.

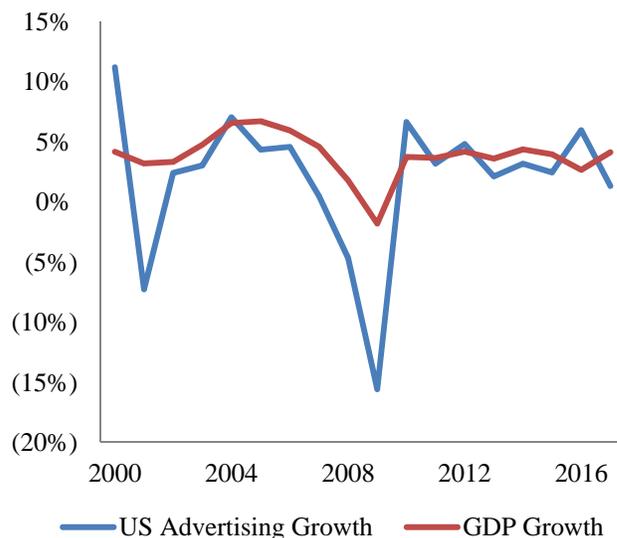
- Advertising spending is correlated to GDP and corporate profits. Historically, advertising accounted for 1.4% of GDP but has declined to 1% following the proliferation of less expensive digital forms advertising. The advent of the internet has dramatically increased the supply of impressions, units of generic advertising inventory, thus reducing price and advertising's total share of GDP.
- Advertising is highly volatile. In the 2001 recession, total advertising fell 7% with TV advertising falling 5%. In the 2008-2009 recession, total advertising fell 20% peak to trough with television down 10% in the same time period.

Exhibit 1 US Advertising Revenue as % of GDP



Source: MAGNA, Federal Reserve

Exhibit 2 Advertising v GDP Growth

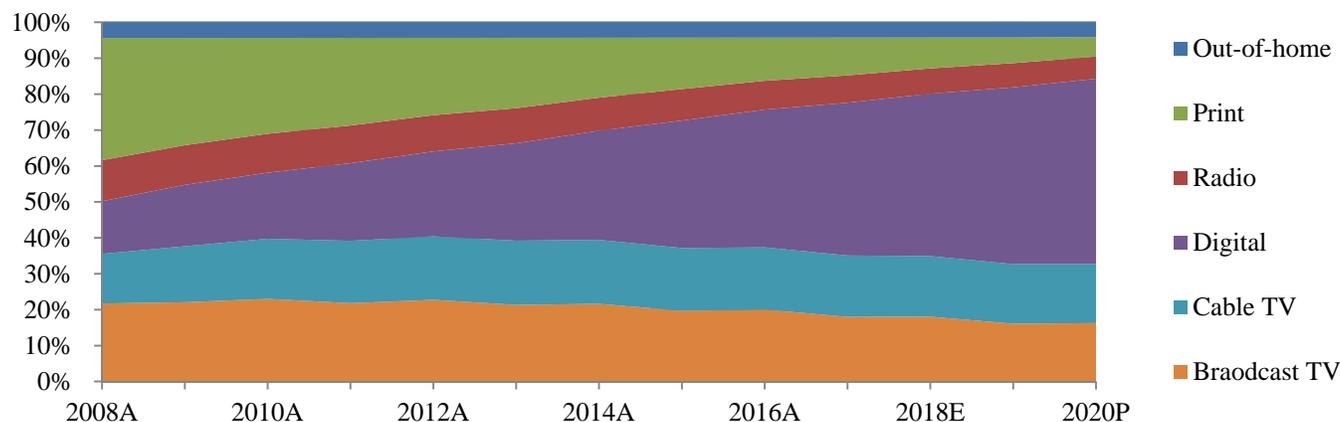


Source: MAGNA, Federal Reserve

From the trough in 2009, the US advertising market has grown overall at a 3.6% CAGR to \$200 billion.

- Digital advertising, which includes display, search and online video grew at a 15% CAGR and now accounts for \$91 billion, or 45% of the market. Online advertising is dominated by Google and Facebook which together account for \$70 billion of US digital revenue. The growth of digital has come largely at the expense of print: magazine and newspaper advertising.

Exhibit 3 US Advertising Pie



Source: MAGNA Global

US Television Advertising

From the trough in 2009, television advertising has been stable, growing 2.2% to \$70 billion with its share of the advertising spending falling from 38% to 35%. Broadcast advertising has been flat while cable TV advertising has grown at a 3.7% CAGR. Digital video advertising, driven by Google's YouTube platform, has begun to grow in earnest and now accounts for \$14.9 billion or 17.5% of the \$85 billion spent on broadcast, cable and online video.

Table 1 US Advertising Spending

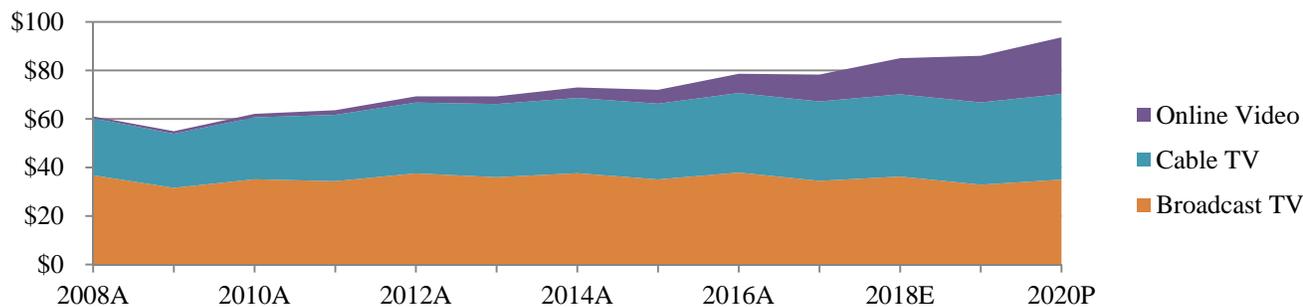
\$ in billions

	<u>2008A</u>	<u>2009A</u>	<u>2010A</u>	<u>2011A</u>	<u>2012A</u>	<u>2013A</u>	<u>2014A</u>	<u>2015A</u>	<u>2016A</u>	<u>2017A</u>	<u>2018E</u>	<u>2019P</u>	<u>2020P</u>	<u>08A-'18E</u> <u>CAGR</u>
Broadcast TV	\$37	\$32	\$35	\$34	\$38	\$36	\$38	\$35	\$38	\$34	\$36	\$33	\$35	(0.2%)
Cable TV	23	22	26	27	29	30	31	31	33	33	34	34	35	3.7
Digital	25	24	28	34	39	46	53	63	73	82	91	101	111	13.8
Print	58	43	41	38	36	33	29	25	23	20	17	15	12	(11.3)
Radio	19	16	17	17	17	17	16	16	15	15	14	14	13	(3.1)
Out-of-home	7	6	7	7	7	7	7	8	8	8	8	9	9	1.3
Total Advertising	\$170	\$143	\$153	\$158	\$165	\$169	\$174	\$178	\$189	\$192	\$201	\$204	\$215	1.7
% growth	(5%)	(16%)	7%	3%	5%	2%	3%	2%	6%	1%	5%	2%	5%	

Source: MAGNA Global

Exhibit 4 US Video Advertising

\$ in billions



Source: MAGNA Global

Broadcast Advertising

Originally, broadcasters would monetize their audiences solely through advertising. Following the rise of retransmission revenue, advertising revenue now accounts for 55-65% of revenue. Broadcasting remains a fundamentally local business.

- Given the local nature of a stations signal, local advertising typically accounts for 70-80% of a stations advertising revenue. The local auto industry is of particular importance with auto advertising, particularly from dealerships, accounting for ~25% of non-political advertising.
- Local TV is also uniquely suited for political advertising given its regional nature. The election cycle, which takes place on even calendar years, can generate 10-15% growth in advertising revenue over a non-political year. Given low variable costs of station ownership, this political advertising falls to the bottom line, creating large swings in political (even) and non-political (odd) calendar year EBITDA. As such, TV stations are evaluated on an average of an even and odd year EBITDA to account for the fluctuation.
- Digital advertising has grown dramatically since the advent of the Internet and has cannibalized much of the traditional print advertising. So far TV advertising revenue has been largely stable, but the industry is beginning to see a decline in local TV revenue which some are attributing to digital cannibalization, particularly from online video.

Network Affiliate Relationships

Television stations broadcast programming over-the-air to television antennas located on rooftops or even television sets, giving rise to the term “rabbit ears”. Given the technological legacy of over-the-air broadcast technology, TV stations are very local businesses with the addressable market limited to the original range of its broadcast signal.

- To acquire programming, stations enter into affiliate agreements with larger networks. National networks include the Big Four networks (CBS, NBC, FOX and ABC) as well as the CW network, Spanish language channels like Univision and Telemundo, as well as a host of lesser known networks broadcast on newly created digital channels.
- National networks provide high value expensive programming for peak dayparts, typically prime-time (8-11 p.m.), morning programming and some weekend sports content. Stations typically sign agreements that last from 3-7 years.
- Local stations are responsible for filling the rest of their schedule with self-produced content like local news or by purchasing content in the syndication market. Popular sitcoms like Seinfeld or the Big Band Theory can be broadcast in reruns during the day. Networks typically allocate local stations small blocks of time during peak network programming to place ads but retain the majority of the inventory for themselves. Networks also charge stations subscriptions fees called reverse compensation.
- Given their historical dominance and ratings position, CBS, NBC, ABC and FOX are termed “Big Four” networks and are treated differently by US regulatory authority for ownership purposes. Ideally, the Big Four networks would like to own and operate their own stations, and remove local broadcasters. However, the FCC limits one group from controlling stations that collectively reach more than 39% of households: the ownership cap. Due to this, Big Four networks own stations that cover ~35% of the country and then syndicate their content to affiliate station in the rest of the country.

Exhibit 5

National Broadcast Networks

Network	Owner	Notable Programming	Ratings ^(a)
CBS	CBS	Big Bang Theory, NFL & NCAA Basketball	8.98
NBC	Comcast	Law & Order, SNL, NFL, NCAA, Olympics	8.87
ABC	Disney	Roseanne, Grey's Anatomy, NBA, ESPN Sports	6.07
FOX	21st Century Fox	Empire, Simpsons, Family Guy, NFL, MLB	4.92
CW	CBS/AT&T	Supernatural, Jane the Virgin, The Flash, Arrow	1.72
Univision	Grupo Televisa & PE firms	Spanish-language, association football, Copa America	1.58
Telemundo	Comcast	Spanish-language, FIFA World Cup, Olympics	1.24

(a) Average ratings for 2017-2018 season, NBC benefited from the broadcast of the Olympics and Super Bowl in 2018

Source: Nielsen, Company reports, g.research

Exhibit 6

Major Station Groups

Households in millions

Company	Ticker	Number of Markets	Audience Reach		Audience Reach with UHF Discount	
			HH	%	HH	%
Tribune Media	TRCO	33	55.4	44%	34.0	27%
Nexstar Media	NXST	45	49.1	39	32.8	26
Sinclair Broadcast	SBGI	88	49.1	39	31.5	25
CBS Corp (CBS)	CBS	18	47.9	38	30.2	24
21st Century Fox (FOX)	FOX	17	46.6	37	31.5	25
Comcast (NBC)	CMCSA	11	45.4	36	25.2	20
Tegna	TGNA	40	39.1	31	34.0	27
Gray Television	GTN	56	30.2	24	21.4	17
Disney (ABC)	DIS	8	29.0	23	26.5	21
Hearst	Private	33	23.9	19	16.4	13
E.W.Scripps	SSP	23	22.7	18	15.1	12
Cox	Private	20	13.9	11	7.6	6
Meredith	MDP	12	13.9	11	8.8	7
Graham Holdings	GHC	6	8.8	7	5.0	4

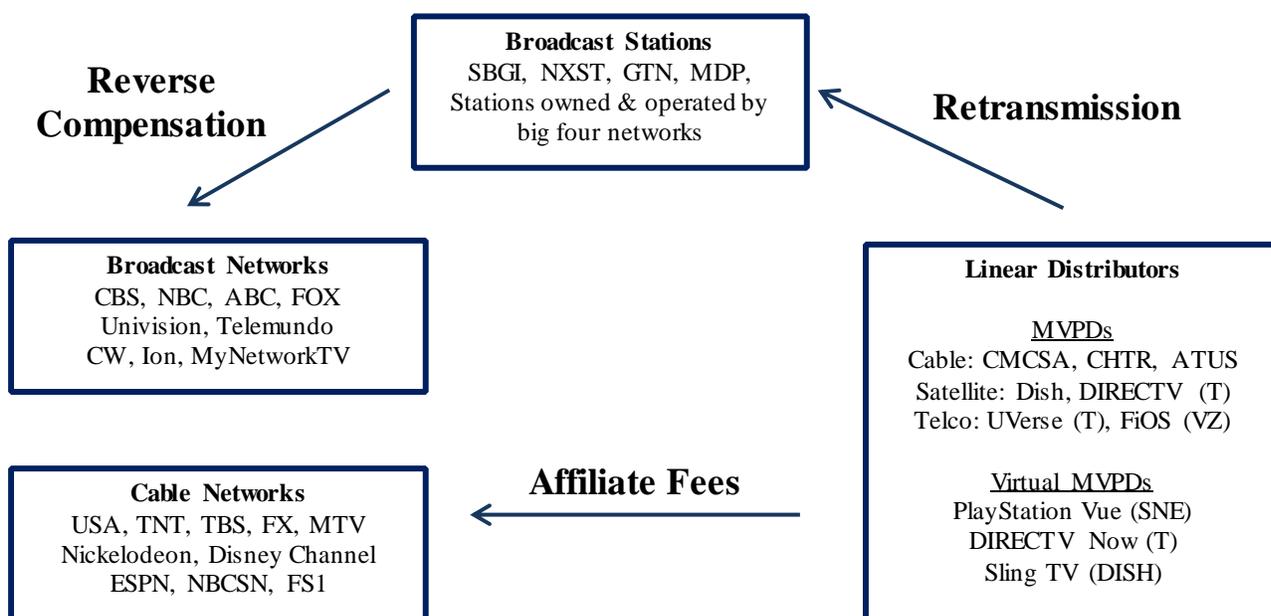
Source: Nielsen, Company reports, g.research

Retransmission & Reverse compensation

Cable, satellite and telecom distributors (also described as traditional pay-TV, Multichannel Video Programming Distributors or MVPDs) now command an 80% market share of US TV households and retransmit broadcasters' signals over their own infrastructure. Before the advent of the cable network, the business of cable TV providers rose to prominence by retransmitting signals into areas without television coverage.

- Beginning in the 2000s, Networks began charging MVPDs a per subscriber fee for the right to retransmit local broadcast signal. Much like affiliate fees charged by cable networks, retransmission fees are negotiated between stations and distributors. Retransmission fees now account for 35-45% of broadcast stations revenue and provide contractually recurring revenue. As a result, broadcast station revenues are now substantially more predictable given the lower reliance on volatile advertising revenue, which fell by 15-20% in 2009.
- Retransmission agreements last for 3-7 years and typically include mid-single-digit annual escalators and large step-ups upon contract renewal. Negotiations are often contentious and can end in “blackouts” in which a station group pulls its signal from a distributor and “goes dark”. In a blackout the station faces the potential for lost advertising and retransmission revenue while the distributor faces the risk of subscriber losses.
- Given the quality of Big Four network programming, which includes the most popular TV shows and marquee sports events like the NFL, NBA and MLB, retransmission revenue has grown dramatically for both the broadcast networks and stations. The broadcast networks now receive industry leading subscription fees; excluding ESPN which generates ~\$8/sub/month in affiliate fees, the most popular cable channels receive only \$1-2/sub/month.
- CBS, the most popular network, expects to generate \$2.5 billion in retransmission revenue and reverse compensation by 2020. This will be generated by receiving \$3/sub/month for the 30 million homes covered by CBS' wholly owned stations that cover ~30 million homes and \$2/sub/month in reverse compensation from affiliate stations that cover ~60 million homes.

Exhibit 7 Broadcast & Cable Network Subscription Landscape



Source: g.research

REGULATORY OVERVIEW

The Federal Communications Commission, or FCC, is an independent agency created to regulate interstate communication by radio, television, wire, satellite and cable. The FCC is directed by five commissioners appointed by the President while only three can be from the same political party. Ajit Pai is currently the chairman of the FCC.

Ownership Rules

In order to maintain a plurality of voices in media, the FCC enforces ownership restrictions on various forms of local media.

- The national TV Ownership rule limits a single entity from reaching more than 39% of U.S. TV households. For the purposes of calculating the “national audience reach”, TV stations on UHF channels (channels 14 and above) are assumed to cover only 50% of the households that a similar Very High Frequency (VHF) station would cover in the same Designated Market Area (DMA). The UHF discount was reinstated by the FCC on April 20, 2017 and should facilitate consolidation as station owners.
- Given the advent of the Internet, many view the ownership cap as antiquated. In December of 2017, the FCC issued a notice of public rule asking for comments on the whether to modify, retain or eliminate the 39% national audience reach cap and UHF discount. The Republican majority of FCC commissioners under the Trump administration created the expectation that the FCC could substantially increase the ownership cap. While we do not expect the FCC to make a decision in 2018, there is a meaningful chance the ownership cap is raised above 50% sometime in 2019.

Spectrum Considerations

Over-the-air television channels are divided into VHF and UHF bands. Channels 2-13 are broadcast between 54 and 216 MHz or VHF, while channels 14-83 are broadcast between 470 and 890 MHz or UHF.

Growing cell-phone and wireless broadband usage requires spectrum. Given the finite amount of spectrum imposed by the laws of physics, the FCC reallocated TV spectrum for wireless purposes in the 2017 spectrum auction. Bidding closed on March 30, 2017. In all, 84 MHz of spectrum was repurposed for wireless use. Selling TV stations received \$10 billion in aggregate proceeds.

While not a near-term opportunity, there could be hidden value in broadcaster spectrum. 5G, a broad term for next generation of mobile network technology, is expected to provide super-fast data speeds in excess of 1 Gbps (with peak rates above 10 Gbps) and low latency (targeting network responsiveness as low as 1 millisecond) as well as the ability to connect 10-100x more devices than today’s networks in order to support rapidly growing Internet of Things (IoT). The roll-out of this technology will dramatically increase the demand for spectrum, increasing the value of Broadcaster’s spectrum and perhaps promoting the FCC to execute on another broadcast spectrum auction.

Exhibit 8

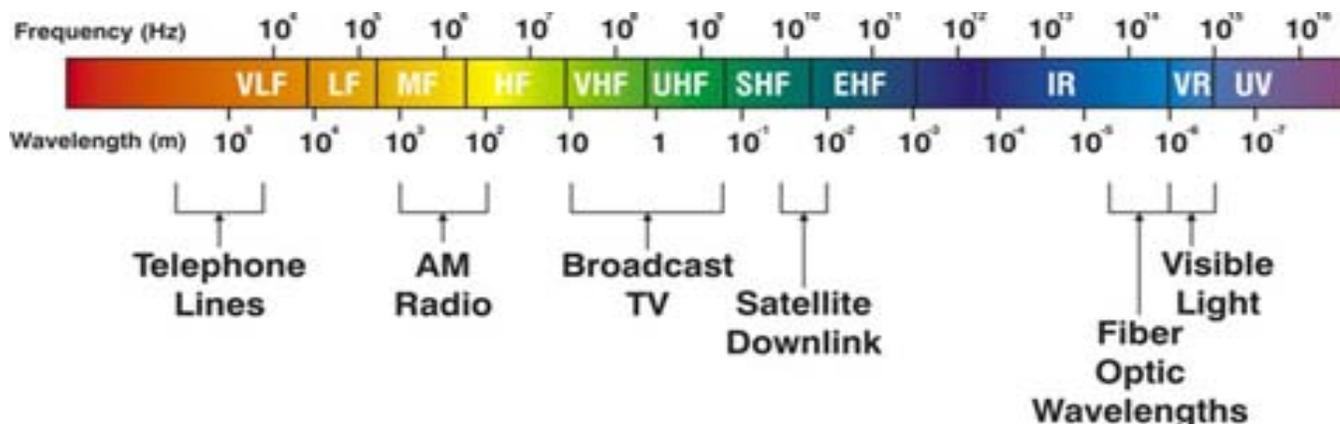


Table 7 Broadcast Precedent Transactions

<u>Buyer</u>	<u>Seller</u>	<u>Announced</u>	<u>EV</u>	<u>2 yr. trailing</u>	
				<u>EBITDA</u>	<u>EV/EBITDA</u>
The E.W. Scripps Company	Cordillera Communications	1Q '19	\$521	\$55	9.5x
Sinclair Broadcast Group	Tribune Media Company	May-17	3,200	495	6.5
Nexstar Media Group, Inc.	Media General, Inc.	January-18	4,480	472	9.5
Media General, Inc.	LIN Media, LLC	August-14	2,513	226	11.1
Gannett Co., Inc.	A.H. Belo Corporation	June-13	2,185	243	9.0
Tribune Media Company	Local TV Holdings	July-13	2,800	300	9.3
Media General, Inc.	Young Broadcasting, Inc.	June-13	585	300	7.4
Sinclair Broadcast Group, Inc.	Fisher Communications, Inc.	April-13	355	300	13.8
Sinclair Broadcast Group, Inc.	Barrington Broadcasting Group LLC	November-11	370	300	7.8

Source: company reports, g.research estimates

Table 8 Cable Network Precedent Transactions

<u>Buyer</u>	<u>Property</u>	<u>Seller</u>	<u>Date</u>	<u>EV</u>	<u>Trailing</u>	
					<u>EBITDA</u>	<u>EV/EBITDA</u>
Disney	Various assets	21st Century Fox	TBD	\$72,000	\$4,700	15.3x
AT&T	TWX	Time Warner	Jun-18	108,000	8,176	13.2x
Discovery	Scripps	Scripps Interactive	Mar-18	15,700	1,413	11.1x
Lionsgate	Starz	Starz	4Q16	4,050	462	8.8x
Hallmark Cards	Hallmark Channel	CRWN	May-16	2,140	194	11.0x
Sinclair Broadcast Group	Tennis Channel	Apollo, Bain	Jan-16	350	20	17.5x
AMC Networks	BBC America	BBC	Oct-15	500	45	11.1x
Discovery	Eurosport	TF1 Group	Oct-15	€1,002	€80	12.5x
Scripps Networks	TVN	TF1 Group	Mar-15	€1,548	€134	11.6x
Discovery	The Hub	Hasbro	Sep-14	\$640	-	-
FOX	Time Warner	TWX	Aug-14	\$89,000	7,380	12.1x
Liberty Global	ITV	BSkyB	Jul-14	£7,549	£620	12.2x
Viacom	Channel 5	Richard Desmond	May-14	\$757	84	9.0x
SiTV (NUVOtv)	fuse	Madison Squar Garden	Sep-14	266	5	nm
FOX	YES Network	Yankees, Goldman, Providence	Jun-14	3,797	300	12.7x
Discovery	Eurosport	TF1 Group	Jun-14	€900	€82	11.0x
AMC Networks	Chellomedia	Liberty Global	May-13	1,035	95	10.9x
Kroenke Sport & ent	Outdoor Channel	OUTD	May-13	205	10	21.4x
CBS	TVGuide	One Equity Partners	May-13	200	20	10.0x
Discovery	SBS Nordic	ProSiebenSat.1	Apr-13	1,736	176	9.9x
Al Jazeera	Current TV	Current TV	Jan-13	500	-	-
Comcast	NBCU JV	GE	Feb-13	34,082	3,588	9.5x
Discovery	Eurosport	TF1 Group	Dec-12	1,105	96	11.6x
News Corp	YES Network	Goldman, Providence	Nov-12	3,000	200	15.0x
Disney/Hearst	A&E	Comcast	Jul-12	19,146	1,500	12.8x
Scripps	UK TV	Virgin Media	Aug-11	1,106	98	11.3x
Sony	GSN	DirecTV	May-11	1,200	-	-
Scripps	Travel Channel	Travel Channel	Nov-09	975	89	11.0x
Comcast	NBCU JV	NBCU JV (post-RSN)	Dec-09	34,743	3,380	10.3x
Comcast	NBCU JV	NBCU JV (post-RSN)	Dec-09	34,743	3,380	10.3x
NBCU JV	RSNs	Comcast	Dec-09	8,946	572	15.6x
A&E networks	Lifetime	Hearst & Disney	Aug-09	-	-	-
Hasbro	Discovery Kids	Discovery	May-09	600	-	-

Source: company reports, g.research estimates

Appendix 1

Trading Multiples

		Sinclair (SBGI-NASDAQ)		Nexstar (NXST-NASDAQ)		TEGNA (TGNA-NYSE)		Gray Television (GTN-NYSE)		Meredith Corp. (MDP-NYSE)		E.W. Scripps (SSP-NYSE)		Tribune Co. (TRCO-NYSE)	
<i>(in millions, except per share data)</i>															
52-week High/Low		\$40.15	\$25.13	\$89.75	\$60.30	\$15.60	\$10.00	\$20.24	\$10.70	\$72.25	\$47.30	\$18.44	\$10.69	\$43.71	\$31.61
Capitalization		FYE 12/31		FYE 12/31		FYE 12/31		FYE 12/31		FYE 12/31		FYE 12/31		FYE 12/31	
Balance Sheet as of:		9/30/18		9/30/18		9/30/18		9/30/18		9/30/18		9/30/18		9/30/18	
A Shares		100.6		45.6		216.3		82.0		39.9		70.0		87.7	
B Shares								6.7		5.1		11.9			
Options/Converts		0.0		1.4		0.5								0.3	
Fully Diluted Shares Outstanding		100.6		47.0		216.7		88.8		45.0		82.0		87.9	
Price		\$30.88		\$80.34		\$12.72		\$18.95		\$58.69		\$17.15		\$39.07	
Equity Market Capitalization		\$3,108		\$3,776		\$2,757		\$1,682		\$2,342		\$1,406		\$3,436	
Total Debt and Preferred Stock		3,902		4,148		3,000		1,800		3,047		697		2,924	
Minority Interest and Other		36		-		-		-		-		-		-	
Cash and Equivalents		(1,024)		(118)		(24)		(551)		(144)		(130)		(888)	
Hidden Assets		(150)		-		-		(20)		(495)		(83)		(2,718)	
Total Enterprise Value (TEV)		\$5,872		\$7,806		\$5,733		\$2,911		\$4,750		\$1,890		\$2,755	
Net Revenues	2020P	\$3,259	9.4%	\$2,864	8.4%	\$2,408	12.8%	\$1,180	19.2%	\$3,133	(1.1%)	\$1,614	19.3%	\$2,212	10.9%
% growth	2019P	2,978	0.3%	2,642	(2.6%)	2,135	(2.4%)	989	(7.6%)	3,166	40.9%	1,353	15.0%	1,995	(1.1%)
	2018E	2,971	8.6%	2,713	11.6%	2,187	14.9%	1,071	21.3%	2,247	31.2%	1,176	36.0%	2,018	9.1%
	2017A	2,735	(0.1%)	2,432	120.4%	1,903	(5.0%)	883	8.6%	1,713	3.9%	865	(0.5%)	1,849	(5.1%)
EBITDA	2020P	\$981	30.1%	\$1,080	37.7%	\$819	34.0%	\$454	38.5%	\$916	29.3%	\$463	28.7%	\$602	27.2%
% margin	2019P	827	27.8%	878	33.2%	683	32.0%	313	31.6%	765	24.2%	313	23.1%	474	23.8%
	2018E	881	29.7%	991	36.5%	718	32.8%	426	39.7%	421	18.7%	211	18.0%	613	30.4%
	2017A	735	26.9%	939	38.6%	623	32.7%	294	33.3%	362	21.1%	95	11.0%	331	17.9%
TEV/EBITDA	2020P	6.0x		7.2x		7.0x		6.4x		5.2x		4.1x		4.6x	
	2019P	7.1		8.9		8.4		9.3		6.2		6.0		5.8	
	2018E	6.7		7.9		8.0		6.8		11.3		8.9		4.5	
	2017A	8.0		8.3		9.2		9.9		13.1		19.9		8.3	
Private Market Value	2020P	\$57	45.9%	\$122	34.0%	\$18	28.3%	\$26	26.6%	\$92	36.1%	\$47	63.4%	\$64	38.6%
	2019P	46	33.2%	104	23.1%	14	8.6%	22	13.2%	63	6.3%	32	45.8%	64	38.8%
	2018E	47	33.9%	105	23.2%	11	(11.2%)	20	4.1%	55	(6.8%)	20	15.4%	58	32.3%
Total Debt (incl. Preferred)/2017 EBITDA		4.7x		4.7x		4.4x		5.8x		4.0x		2.2x		6.2x	
Net Debt/TEV		49%		52%		52%		43%		61%		30%		74%	
Dividend/Current Return		\$0.80	2.6%	\$1.50	1.9%	\$0.28	2.2%	\$0.00	0.0%	\$2.18	3.7%	\$0.20	1.2%	\$1.00	2.6%
Household Reach without/with UHF Discount		38%	24%	39%	26%	33%	28%	11%	8%	11%	7%	18%	12%	42%	26%

Source: Company reports, g.research estimates

Appendix 1

Trading Multiples

(in millions, except per share data)

	Disney NYSE:DIS		21st Cent. Fox NASDAQ:FOXA		Netflix NASDAQ:NFLX		Viacom NYSE:VIA		CBS NYSE:CBS		Discovery NASDAQ:DISCA		AMC Networks NYSE:AMCX		MSG Networks NYSE:MSGN		
12-Month High/Low	\$ 120.20	\$ 97.68	\$ 50.15	\$ 27.53	\$423.21	\$178.38	\$ 40.64	\$ 28.75	\$ 61.59	\$ 47.54	\$ 34.89	\$ 15.99	\$ 69.02	\$ 46.89	\$ 28.13	\$ 16.15	
Capitalization	FYE 9/30	FYE 6/30	FYE 12/31	FYE 9/30	FYE 12/31	FYE 9/30	FYE 12/31	FYE 12/31	FYE 12/31	FYE 12/31	FYE 12/31	FYE 12/31	FYE 12/31	FYE 12/31	FYE 6/30	FYE 6/30	
Balance Sheet as of:	6/30/18	9/30/18	3/31/18	6/30/18	9/30/18	6/30/18	9/30/18	12/31/17	12/31/17	12/31/17	12/31/17	12/31/17	9/30/18	9/30/18	6/30/16	6/30/16	
A Shares	1,487	1,056	436	47.93	436	49	\$35.12	38	\$57.26	165	\$31.92	48	48	48	61	61	
B Shares	-	799	0	47.43	0	353	31.79	339	56.96	7	31.38	11	11	11	14	14	
Options/Converts	14	0	17	(1.0%)	17		10.5%		0.5%	530	28.95	-	-	-	1	1	
Fully Diluted Shares	1,502	1,855	452.8		452.8	402		377		702		59	59	59	76	76	
Price	\$117.12	\$47.93	\$286.73		\$286.73	\$31.79		\$56.96		\$31.92		\$60.23	\$60.23	\$60.23	\$25.97	\$25.97	
Equity Market Cap	\$175,237	\$88,764	\$129,837		\$129,837	\$13,282		\$21,585		20,802		\$3,583	\$3,583	\$3,583	\$1,972	\$1,972	
Net Debt	20,505	\$12,168	5,269		5,269	9,161		\$9,671		\$16,951	C disc	\$2,585	\$2,585	\$2,585	927	927	
Minority Interest	7,854	-	-	per share	-	-		-		2,452	(9.3%)	200	200	200			
Hidden Assets	(2,540)	(19,099)	\$10.30		\$10.30	(980)		(343)		(1,254)							
Total Enterprise Value (TEV)	\$201,057	\$81,832	\$135,106		\$135,106	\$21,463		\$30,913		\$38,952		\$6,368	\$6,368	\$6,368	\$2,899	\$2,899	
Consolidated:																	
Net Revenues	2019P	\$60,379	3.2%	\$31,375	3.2%	\$20,334	27.4%	\$13,607	6.4%	\$15,686	5.9%	\$11,088	0.8%	\$2,988	-0.9%	\$708	1.7%
(growth)	2018E	58,511	6.1	30,400	6.7	15,955	36.5	12,785	(3.6)	14,805	8.1	11,002	2.0	3,015	7.5	697	0.0
	2017A	55,137	(0.9)	28,500	4.3	11,692	32.4	13,263	6.2	13,692	4.0	10,790		2,806	1.8	697	3.2
EBITDA	2019P	\$17,870	29.6%	\$7,884	25.1%	\$2,344	11.5%	\$3,106	22.8%	\$3,466	22.1%	\$4,598	41.5%	\$854	28.6%	\$332	46.8%
(margin)	2018E	17,473	29.9	7,032	23.1	1,678	10.5	3,079	24.1	3,333	22.5	4,302	39.1	837	27.8	332	47.7
	2017A	16,779	30.4	7,173	25.2	838	7.2	2,966	22.4	3,042	22.2	4,055	37.6	851	30.3	332	47.7
EPS	2019P	\$7.15	4.4%	\$2.35	-4.1%	\$3.83	36.9%	\$4.40	4.8%	\$5.75	13.9%			\$8.45	1.8%		
(growth)	2018E	6.85	20.2	2.45	53.1	2.80	117.0	4.20	11.1	5.05	14.8			8.30	15.6		
	2017A	5.70		1.60		1.29		3.78		4.40				7.18			
TEV/EBITDA	2019P	11.3x		10.4x		57.6x		6.9x		8.9x		8.5x		7.5x		8.7x	
	2018E	11.5		11.6		80.5		7.0		9.3		9.1		7.6		8.7	
	2017A	12.0		11.4		161.1		7.2		10.2		9.6		7.5		8.7	
P/E	2019P	16.4x		20.4x		nm		7.2x		9.9x				7.1x			
	2018E	17.1		19.6		"		7.6		11.3				7.3			
	2017A	20.5		30.0		"		8.4		12.9				8.4			
PMV	2019P	\$108	(8.3%)	\$61	22.1%	\$358	20%	\$55	42.4%	\$83	31.4%	\$52	38.2%	\$100	39.8%	\$35	25.4%
(discount to PMV)	2018E	99	(17.9)	55	13.2	350	18.	51	38.2	69	17.9	44	26.9	90	33.0	31	15.6
	2017A	90	(30.2)	50	3.7	332	14.	51	37.3	62	8.6	-	#DIV/0!	79	23.6	29	9.1
Net Debt/EBITDA		1.2x		1.7x		6.3x		3.1x		3.2x		4.2x		3.0x		2.8x	
Net Debt/TEV		10.2%		14.9%		"		42.7%		31.3%		43.5%		40.6%		32.0%	
Additional Information:																	
Dividend		\$1.56	1.3%	\$0.36	0.8%	\$0.00	0.0%	\$0.00	0.0%	\$200.00	351.1%	\$0.00	0.0%	\$0.00	0.0%	\$0.10	0.4%

Source: Company reports, g.research estimates

Companies Mentioned:

21st Century Fox	(FOXA - NYSE)	Grupo Televisa	(TV - NYSE)
Alphabet	(GOOG - NASDAQ)	Liberty Global	(LBTYA - NASDAQ)
Amazon	(AMZN - NASDAQ)	Meredith Corporation	(MDP - NYSE)
AMC Networks	(AMCX - NASDAQ)	MSG Networks	(MSGN - NYSE)
AT&T	(T - NYSE)	Netflix	(NFLX - NASDAQ)
CBS Corporation	(CBS - NYSE)	News Corp.	(NWSA - NASDAQ)
Comcast Corporation	(CMCSA - NASDAQ)	Nexstar Media Group	(NXST - NASDAQ)
Discovery Communications	(DISCA - NASDAQ)	Nielsen	(NLSN - NYSE)
E.W. Scripps	(SSP - NASDAQ)	Sony	(SNE - NYSE)
Facebook	(FB - NASDAQ)	TEGNA	(TGNA - NYSE)
Gannett	(GCI - NYSE)	Tribune	(TRCO - NYSE)
Graham Corporation	(GHM - NYSE)	Viacom	(VIA - NYSE)
Gray Television	(GTN - NYSE)	The Walt Disney Company	(DIS - NYSE)

I, **Brett Harriss**, the Research Analyst who prepared this report, hereby certify that the views expressed in this report accurately reflect the analyst's personal views about the subject companies and their securities. The Research Analyst has not been, is not and will not be receiving direct or indirect compensation for expressing the specific recommendation or view in this report.

Brett Harriss (914) 921-8335

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Ratings

Analysts' ratings are largely (but not always) determined by our "private market value," or PMV methodology. Our basic goal is to understand in absolute terms what a rational, strategic buyer would pay for an asset in an open, arms-length transaction. At the same time, analysts also look for underlying catalysts that could encourage those private market values to surface.

A **Buy** rated stock is one that in our view is trading at a meaningful discount to our estimated PMV. We could expect a more modest private market value to increase at an accelerated pace, the discount of the public stock price to PMV to narrow through the emergence of a catalyst, or some combination of the two to occur.

A **Hold** is a stock that may be trading at or near our estimated private market value. We may not anticipate a large increase in the PMV, or see some other factors at work.

A **Sell** is a stock that may be trading at or above our estimated PMV. There may be little upside to the value, or limited opportunity to realize the value. Economic or sector risk could also be increasing.

We prepared this report as a matter of general information. We do not intend for this report to be a complete description of any security or company and it is not an offer or solicitation to buy or sell any security. All facts and statistics are from sources we believe to be reliable, but we do not guarantee their accuracy. We do not undertake to advise you of changes in our opinion or information. Unless otherwise noted, all stock prices reflect the closing price on the business day immediately prior to the date of this report. We do not use "price targets" predicting future stock performance. We do refer to "private market value" or PMV, which is the price that we believe an informed buyer would pay to acquire 100% of a company. There is no assurance that there are any willing buyers of a company at this price and we do not intend to suggest that any acquisition is likely. Additional information is available on request.

As of October 31, 2018 our affiliates beneficially own on behalf of their investment advisory clients or otherwise approximately 15.82% of E.W. Scripps, 9.36% of Viacom Class A and less than Class B, 8.28% of CBS Class A and less than 1% of Class B, 5.64% of Tribune Company, 1.49% of Meredith, 1.24% of Discovery Communications and less than 1% of all other companies mentioned. Because the portfolio managers at our affiliates make individual investment decisions with respect to the client accounts they manage, these accounts may have transactions inconsistent with the recommendations in this report. One of our affiliates serves as an investment adviser to CBS Corp. or an affiliated entity and has received compensation within the past 12 months for these non-investment banking securities-related services. These portfolio managers may know the substance of our research reports prior to their publication as a result of joint participation in research meetings or otherwise. No part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed in this research report. In addition, the undersigned lead analyst(s) has not and will not receive any compensation for providing a specific recommendation or view in this report. The analyst, who wrote this report, or members of his household, owns 3,400 shares of TEGNA, 1,500 shares of Comcast, 124 shares of Nexstar and 50 shares of Alphabet.

CBS Corp. (CBS - \$53.72- NYSE)

The OTT Network - Buy

<u>Year</u>	<u>EBITDA</u>	<u>EV/EBITDA</u>	<u>PMV</u>		
2020P	\$3,880 M	7.6x	\$101	Dividend: \$0.72	Current Return: 1.3%
2019P	3,520	8.4	85	A Shares O/S: 38 million (1 vote)	(a)
2018E	3,380	8.7	70	B " " : 339 " (no votes)	
2017A	3,040	9.7	62	52-Week Range: \$61.59 - \$47.54	

(a) Sumner Redstone owns 34.5 million A shares

COMPANY OVERVIEW

CBS, located in New York, NY, operates the CBS television network, the premium cable network Showtime, owns thirty local television stations and 130 radio stations. In 2018, we estimate CBS will generate \$14.8 billion of revenue, \$3.4 billion of EBITDA and earn \$5.15 per share.

Reason for Comment

We recommend investors Buy shares of CBS:

- CBS should generate \$1 billion of revenue growth from retransmission and reverse compensation revenue through 2020. In addition to further shifting the company's revenue away from more volatile advertising towards contractually recurring affiliate fees, subscription revenue will generate high incremental free cash flow. As a broadcast network, CBS is included in all major skinny bundles which insulate the company from cord shaving.
- CBS All Access and Showtime Anytime, the company's OTT products, are growing faster than expected and give the company a natural hedge should cord cutting accelerate. CBS increased its OTT subscriber guidance to 8 million by the end of 2019. Assuming an \$8 ARPU for both products, the company should add \$250-300 million of highly incremental OTT subscription revenue in 2019 alone exiting the year with close to \$1 billion of run-rate revenue. CBS All Access in particular gives the company inventory of digital, target and addressable advertising to sell to clients.
- CBS's station group covers 48% of households in the US, but only 30% including the UHF discount. CBS will be well positioned to make strategic acquisitions should the FCC change the National Ownership Cap. We expect the acquisition of either CBS affiliate stations or independents would be highly accretive to the company and help accelerate retransmission growth.
- We expect the company to continue to repurchase shares which we view to be highly accretive to value. At 10x EPS, share repurchases will lever 7% EBITDA growth into 17% EPS growth through 2022.
- CBS could be an attractive acquisition target to a number of strategic acquirers. CBS is the last stand alone broadcast network; Disney owns ABC, 21st Century Fox owns FOX, Comcast owns NBC. We expect CBS's industry leading content creation assets, station group and emerging OTT services.

Table 1

**CBS Earnings Model
2016-2022P**

(in millions, except per share data)

<u>FYE 12/31</u>	<u>2016</u>	<u>2017</u>	<u>2018P</u>	<u>2019P</u>	<u>2020P</u>	<u>2021P</u>	<u>2022P</u>	<u>'17A-'22P</u> <u>CAGR</u>
Revenue	\$13,166	\$13,692	\$14,772	\$15,654	\$16,229	\$16,672	\$17,597	5.1%
EBITDA	3,090	3,040	3,380	3,520	3,880	4,030	4,400	7.7
EPS, continuing ops.	\$3.74	\$4.40	\$5.15	\$5.95	\$7.35	\$8.40	\$10.15	18.2
TEV / EBITDA	9.6x	9.7x	8.7x	8.4x	7.6x	7.3x	6.7x	
P/E	14.4	12.2	10.4	9.0	7.3	6.4	5.3	

Capex	\$171	\$160	\$162	\$163	\$165	\$166	\$168
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Source: Company reports, g.research estimates.

Table 2

CBS PMV Analysis
2016-2022P

(in millions, except per share data)

FYE 12/31	2016	2017	2018P	2019P	2020P	2021P	2022P	'17A-'22P CAGR
Network & Studio								
Syndication	2,746	2,884	2,913	2,942	2,971	3,001	3,031	2%
Retrans	818	1,009	1,232	1,581	2,031	2,409	2,862	24
Advertising	<u>5,312</u>	<u>5,271</u>	<u>6,102</u>	<u>6,531</u>	<u>6,222</u>	<u>6,185</u>	<u>6,346</u>	3
Revenue	\$8,877	\$9,164	\$10,247	\$11,054	\$11,225	\$11,594	\$12,238	5
EBITDA	1,636	1,669	1,893	2,031	2,090	2,186	2,335	6
Valuation Multiple	<u>11.0x</u>	<u>11.0x</u>	<u>11.0x</u>	<u>11.0x</u>	<u>11.0x</u>	<u>11.0x</u>	<u>11.0x</u>	
Segment Value	\$17,996	\$18,359	\$20,824	\$22,342	\$22,985	\$24,044	\$25,690	6
Showtime								
Revenue	\$2,160	\$2,501	\$2,360	\$2,547	\$2,751	\$3,012	\$3,297	7
EBITDA	982	1,019	984	1,109	1,248	1,442	1,656	8
Valuation Multiple	<u>10.0x</u>	<u>10.0x</u>	<u>10.0x</u>	<u>10.0x</u>	<u>10.0x</u>	<u>10.0x</u>	<u>10.0x</u>	
Segment Value	\$9,820	\$10,190	\$9,838	\$11,095	\$12,480	\$14,422	\$16,558	8
Memo: Value / sub	\$427	\$408	\$369	\$398	\$428	\$467	\$507	2
Publishing								
Segment Value	\$1,000	\$1,104	\$1,187	\$1,222	\$1,259	\$1,297	\$1,336	5
Stations								
Segment Value	\$4,772	\$4,796	\$4,754	\$4,878	\$5,151	\$5,193	\$4,626	2
Radio								
Segment Value (a)	\$1,481	2016 segment value net of \$1.46 billion debt						(100)
Total PMV	\$35,069	\$34,449	\$36,602	\$39,537	\$41,875	\$44,956	\$48,209	5
Less: Net Debt / (Cash)	8,777	9,198	9,303	9,506	9,425	9,213	8,710	
Less: Options Payments	479	473	569	745	928	1,159	1,427	
Plus: Hidden Assets	(397)	(409)	(421)	(434)	(447)	(460)	(474)	
Equity PMV	\$25,416	\$24,370	\$26,309	\$28,852	\$31,075	\$34,123	\$37,598	6
Basic Shares Outstanding	404	391	373	338	308	283	262	(7)
PMV per share	\$63	\$62	\$70	\$85	\$101	\$121	\$143	14
Discount to PMV	14.4%	13.7%	23.7%	37.1%	46.7%	55.4%	62.5%	

Note: Net Debt excludes \$1,460 million held at Radio subsidiary. Radio debt reflected in reduced 2016 radio segment equity value.

Source: Company reports, g.research estimates.

Other Companies Mentioned:

21st Century Fox (FOXA – NASDAQ)
Comcast Corporation (CMCSA – NASDAQ)
The Walt Disney Company (DIS – NYSE)

CBS Corp. – Price Performance

Source: Public data. As of November 27, 2015 CBS was rated BUY.

I, **Brett Harriss**, the Research Analyst who prepared this report, hereby certify that the views expressed in this report accurately reflect the analyst's personal views about the subject companies and their securities. The Research Analyst has not been, is not and will not be receiving direct or indirect compensation for expressing the specific recommendation or view in this report.

Brett Harriss (914) 921-8335

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We prepared this report as a matter of general information. We do not intend for this report to be a complete description of any security or company and it is not an offer or solicitation to buy or sell any security. All facts and statistics are from sources we believe to be reliable, but we do not guarantee their accuracy. We do not undertake to advise you of changes in our opinion or information. Unless otherwise noted, all stock prices reflect the closing price on the business day immediately prior to the date of this report. We do not use "price targets" predicting future stock performance. We do refer to "private market value" or PMV, which is the price that we believe an informed buyer would pay to acquire 100% of a company. There is no assurance that there are any willing buyers of a company at this price and we do not intend to suggest that any acquisition is likely. Additional information is available on request.

As of October 31, 2018 our affiliates beneficially own on behalf of their investment advisory clients or otherwise approximately 8.28% of CBS Class A and less than 1 of Class B and less than 1% of all other companies mentioned. Because the portfolio managers at our affiliates make individual investment decisions with respect to the client accounts they manage, these accounts may have transactions inconsistent with the recommendations in this report. One of our affiliates serves as an investment adviser to CBS Corp. or an affiliated entity and has received compensation within the past 12 months for these non-investment banking securities-related services. These portfolio managers may know the substance of our research reports prior to their publication as a result of joint participation in research meetings or otherwise. No part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed in this research report. In addition, the undersigned lead analyst(s) has not and will not receive any compensation for providing a specific recommendation or view in this report. The analyst, who wrote this report, or members of his household, owns no shares of the above mentioned companies.

E.W. Scripps Co. (SSP - \$17.01 - NYSE)

Margin Expansion – Buy

Year	2Yr EBITDA	EV/EBITDA	PMV	Dividend:	\$0.20	Current Return:	1.2%
2020P	\$249	10.6x	\$24	Class A Common O/S:	70 million		
2019P	195	13.5	20	Common Voting " :	12 " (a)		
2018E	153	12.8	22	Total shares:	82 million		
2017A	140	14.1	--	52-Week Range:	\$18.44 - \$10.69		

(a) 11.1 million or 93% of common voting shares owned by Scripps family members; common voting shares elect two-thirds of Board of Directors
 Note: 2Yr EBITDA represents trailing 24 month average EBITDA to adjust for a political and non-political year

COMPANY OVERVIEW

The E.W. Scripps Company, located in Cincinnati, OH, is the sixth-largest independent owner of TV stations in the U.S and reaches approximately 20.5% of US households, pro forma the acquisition of Cordillera. Scripps reports in three segments: local media operates the company's 51 stations (PF Cordillera) and associated digital operations; National Media, which includes the Katz networks, the podcasting service Stitcher (formerly Midroll), Triton, a measurement and streaming infrastructure service company for digital audio, and the national news network Newsy. In 2018, we estimate that the company will generate \$211 million of EBITDA on around \$1.2 billion of revenues.

Reason For Comment

We are initiating coverage with a buy recommendation:

- We expect restructuring initiatives to benefit margins through 2020. The company completed a restructuring in 2017 and is targeting annual cost savings of \$30 million by 2020, with \$20 million achieved in 2018 and another \$10 million in 2019.
- We believe the renewal of the company's carriage agreement with Comcast could generate additional upside from an improved revenue mix. Scripps will benefit step-ups in retrans rates as almost 2.5 million of the company's 17.9 million cable households which are served by Comcast, which currently pay extremely low rates. This contract expires in 2019, and we expect higher rates beginning on January 1, 2020 to generate an increase in retransmission revenues of more than \$60 million, directly flowing to the bottom line.
- Scripps could benefit from consolidation. The April 20, 2017 reinstatement of the UHF discount should allow for continued consolidation in the broadcast industry. We expect the acquisition of Triton, a measurement and streaming infrastructure service company, and Cordillera's 15 stations will be accretive to free cash flow. (close end of Q1).
- National Media segment profitability is growing. The demographic-specific Katz networks reach more than 90% of U.S. TV households and are Nielsen rated. Monthly podcast listeners, Midroll's target market, are expected to reach 90 million in 2020. Newsy is now available on cable networks and continues to leverage OTT subscriber trends to increase its national scale, we expect 40 million subscribers by FYE 2018.

Investment Case

We estimate a 2020 PMV of \$26 per share for SSP. Secular growth of retransmission revenue and management's announced cost reduction initiative should generate margin expansion through 2020. We also expect the renegotiation of SSP's carriage agreement with Comcast in 2020 could add more than \$60 million of high-margin revenue.

Table 1 **E.W Scripps Projections**
2016-2022P

FYE 12/31	2016A	2017A	2018E	2019P	2020P	2021P	2022P	CAGR
<i>(in millions, except per share data)</i>								'17 - '22P
Revenue	\$869	\$865	\$1,176	\$1,362	\$1,617	\$1,582	\$1,802	15.8%
EBITDA	184	95	211	178	320	233	380	
2yr avg. EBITDA	130	140	153	195	249	276	306	17.0
EPS	\$0.72	(\$0.13)	\$1.02	\$0.31	\$2.07	\$1.30	\$2.65	
TEV / EBITDA	15.1x	14.1x	12.8x	13.5x	10.6x	9.5x	8.6x	
PE (excluding minorities)	23.7	(132.9)	16.7	54.3	8.2	13.1	6.4	
PMV			\$22	\$20	\$24	\$28	\$34	

Source: Company reports, g.research estimates

Note: 2Yr EBITDA represents trailing 24 month average EBITDA to adjust for a political and non-political year

Table 2

E.W. Scripps PMV Analysis

2016-2022P

FYE 12/31 (in millions, except per share data)	<u>2016A</u>	<u>2017A</u>	<u>2018E</u>	<u>2019P</u>	<u>2020P</u>	<u>2021P</u>	<u>2022P</u>	<u>CAGR</u> '17 - '22P
<u>Local Media</u>								
Revenue	\$836	\$779	\$901	\$993	\$1,191	\$1,088	\$1,229	9.5%
EBITDA	243	157	258	190	317	209	331	16.1
2yr avg. EBITDA	200	200	207	224	253	263	270	
Valuation Multiple	<u>9.0x</u>	<u>9.0x</u>	<u>9.0x</u>	<u>9.0x</u>	<u>8.0x</u>	<u>8.0x</u>	<u>8.0x</u>	
Segment Value	\$1,801	\$1,801	\$1,866	\$2,012	\$2,025	\$2,100	\$2,157	
<u>National Media</u>								
Revenue	\$28	\$80	\$310	\$409	\$472	\$547	\$633	51.2
EBITDA	(\$10)	(\$9)	\$26	\$57	\$74	\$98	\$127	(268.9)
Valuation Multiple	<u>nm</u>	<u>nm</u>	<u>24.3x</u>	<u>13.1x</u>	<u>12.0x</u>	<u>10.0x</u>	<u>10.0x</u>	
Segment Value	\$430	\$516	\$620	\$743	\$892	\$985	\$1,272	
Total Private Market Value	\$2,231	\$2,317	\$2,485	\$2,756	\$2,917	\$3,085	\$3,429	8.2
Less: Net (Debt) Cash			(651)	(1,130)	(943)	(821)	(590)	
Less: Option Payments (d)			<u>(5)</u>	<u>0</u>	<u>(4)</u>	<u>(7)</u>	<u>(13)</u>	
Equity Private Market Value			\$1,829	\$1,626	\$1,970	\$2,258	\$2,826	
Shares (year-end)			82	82	82	82	82	
PMV per share			\$22	\$20	\$24	\$28	\$34	
<i>Current Discount to PMV</i>			24%	14%	29%	38%	51%	

Source: Company reports, g.research estimates

Other Companies Mentioned:

Nielsen (NLSN – NYSE)

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21st Century Fox (FOXA - \$48.87 - NASDAQ)

News & Sports - Buy

<u>FYE 6/30</u>	<u>EBITDA</u>	<u>EV/EBITDA</u>	<u>PMV</u>	Dividend:	\$0.36	Current Return:	0.7%
2020P	\$8,260	10.1x	\$70	A shares O/S:	1,056 million (non-voting)		
2019P	7,880	10.6	61	B " " :	<u>799</u> " (voting)		
2018E	7,030	11.9	55	Total shares:	1,855 million (a)		
2017A	7,170	11.7	--	52-Week Range:	\$50.15 - \$30.32		

(a) Rupert Murdoch & family own 4 and 317 million Class A & B shares, respectively, representing 12% economic and 40% voting interest

COMPANY OVERVIEW

21st Century Fox, located in New York, NY, is a diversified media company with operations in cable network television, television broadcasting, filmed entertainment, and direct broadcast satellite (DBS) television. We estimate FOX will generate revenue for the fiscal year ending June 30, 2018 of \$30.4 billion and EBITDA of \$7.0 billion.

Reason For Comment

We recommend investors Buy shares:

- We expect FOX to complete the transaction with Disney early in 2019. On November 19, 2018, Disney received approval from Chinese regulators to acquire FOX's assets. Given ongoing trade tensions with the United States, some investors were concerned the deal could be held up for political reasons. With DOJ and European approval obtained, Brazil is left as the final jurisdiction remaining to make a decision. Even prior to obtaining Chinese approval, Disney felt confident the deal would close "meaningfully earlier" than the original target of June 2019.
- New Fox, the collection of assets not sold to Disney, will consist of: 1) Fox News, the most watched cable news channel in the US, 2) The Fox Broadcast Network, one of the Big Four broadcast networks with substantial portfolio of sports rights including the NFL and MLB, 3) FS1, the national sports network launched in 2013 to compete with ESPN, 4) other cable networks such as the Big Ten Network. The company will be highly reliant on news and sports programming which is watched live and not subject to the kind of ratings pressure seen in general entertainment networks. Given the must carry nature of both the Fox Broadcast Network and Fox News, we expect the company will be able to grow affiliate fees from distributors substantially faster than its peers.
- At current prices, FOX shareholders will receive \$38 (\$19 in cash and \$19 in stock) per share in value implying the remaining company is trading at \$10.50 versus our 2020 PMV of \$16 per share. New Fox will also benefit from a substantial tax asset, the stepped-up basis in the company's assets resulting from the taxable nature of the spin-off, which should shield \$1.5 billion per year in operating income. We estimate this tax asset could be worth \$2.7 billion assuming a 10% discount rate.

Table 1

21st Century Fox Projections 2016-2022P

FYE 6/30	2016	2017	2018E	2019P	2020P	2021P	2022P	CAGR '17 - '22P
<i>(in millions, except per share data)</i>								
Revenue	\$27,300	\$28,500	\$30,400	\$31,400	\$33,300	\$35,900	\$38,000	5.9%
EBITDA	6,600	7,170	7,030	7,880	8,260	9,240	9,360	5.5
Adjusted EPS	\$1.42	\$1.60	\$2.45	\$2.35	\$2.55	\$2.95	\$3.00	13.4
TEV / EBITDA	12.7x	11.7x	11.9x	10.6x	10.1x	9.0x	8.9x	
PE (excluding minorities)	23.8	20.0	20.8	16.7	14.8	12.9	12.7	
PMV	\$45	\$50	\$55	\$61	\$70	\$78	\$84	

Source: Company reports, g.research estimates

Table 2

FOXA Pro Forma Valuations

*(in millions, except per share data)***Capitalization**

	FOX <u>9/30/18</u>	Sold to DIS <u>21CF</u>	<u>Tax</u>	Implied <u>New FOX</u>	PMV <u>New FOX</u>
Balance Sheet as of:					
A Shares - non voting	1,056	1,056		1,056	1,056
B Shares - voting	799	799		799	799
Fully Diluted Shares	1,855	1,855		1,855	1,855
FOXA	\$48.87	\$38.00		\$10.87	\$16.00
FOX	48.55	38.00		10.55	16.00
Equity Market Capitalization	\$90,375	\$70,472		\$19,903	\$29,672
Plus: Debt	19,251	20,000	8,500	7,751	7,751
Less: Cash and Equivalents	(7,083)	(5,700)	(2,000)	(1,383)	(1,383)
Net Debt	\$12,168	\$14,300	\$6,500	\$6,368	\$6,368
Less: Sky @ Bid	(14,890)	(14,890)		0	0
Less: Other Assets	(4,031)	(3,283)		(3,486)	(3,486)
Total Capitalization	<u>\$83,622</u>	<u>\$66,599</u>		<u>\$22,785</u>	<u>\$32,554</u>
C2018 EBITDA	\$7,458	\$4,600		\$2,858	\$2,858
EBITDA Multiple	11.2x	14.5x		8.0x	11.4x
Net Debt	1.6x	3.1x		2.2x	2.2x

Source: Company reports, g.research estimates

Other Companies Mentioned:

The Walt Disney Company (DIS – NYSE)

Twenty-First Century Fox Price Performance

Source: Public data. As of November 27, 2015 FOXA was rated a BUY

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Nexstar Media Group (NXST - \$77.57 - NASDAQ)

Consolidator - Buy

Year	2Yr EBITDA	EV/EBITDA	PMV			
2020P	\$997	7.7x	\$122	Dividend:	\$1.50	Current Return: 1.9%
2019P	945	8.1	103	Class A Common Stock	45.6 million	
2018E	970	7.9	104	52-Week Range:	\$89.75 - \$60.30	
2017A	685	11.2	--			

Note: 2Yr EBITDA represents trailing 24 month average EBITDA to adjust for a political and non-political year

COMPANY OVERVIEW

Irving, TX-based Nexstar Media Group owns, operates or programs 174 television stations in 40 states and 100 markets, reaching about 39% of US households (~26% after applying the UHF discount). The company completed its \$4.5 billion acquisition of Media General on January 17, 2017, paying \$10.55 per share in cash and issuing 0.1249 shares of NXST stock for each share of Media General. In 2018, we estimate that the company will generate about \$1.0 billion of EBITDA.

Reason For Comment

We are initiating coverage with a Buy recommendation:

- Nexstar is the largest pure-play broadcaster and benefits from: 1) industry leading scale in linear television, 2) broad reach covering 49 million households, 3) duopolies, JSAs or SSA's in more than 50% of the company's markets, and 4) an attractive station portfolio.
- The company has been aggressive in driving retransmission fees. Q3 retransmission +10.4% to \$284 million. We estimate 2019 retransmission revenue will approach \$1.2 billion and account for ~46% of total revenue. Contractually recurring affiliate fees should both continue to grow and serve to reduce the company's reliance on more volatile advertising revenue. In 2019, 70% of the company's subscriber base is up for contract renewal which should allow the company to generate a meaningful step-up in retransmission revenue.
- We estimate the company will generate \$1.23 billion or \$615 million per year in free cash flow over the 2018/2019 political cycle implying the company is trading at ~5.5x average annual free cash flow to equity. Nexstar's management team has a demonstrated record in efficiently allocating free cash flow. With only 26% coverage after taking into account the UHF discount, the company has the ability to continue to make accretive acquisitions. We also expect continued debt pay down and share repurchases to accrue value to current equity holders.
- We expect Nexstar could be an acquisition target for private equity. In August 2018, CNBC reported Apollo, Blackstone and Providence were among a number of private equity firms that expressed interest in buying local TV stations. Private equity could view an industry leader like Nexstar to be an attractive acquisition to use as a consolidator of television stations.

**Table 1 Nexstar Media Group Earnings Model
2016A-2022P**

FYE 12/31	2016A	2017A	2018E	2019P	2020P	2021P	2022P	CAGR '17 - '22P
<i>(in millions, except per share data)</i>								
Revenue	\$1,103	\$2,432	\$2,723	\$2,653	\$2,888	\$2,848	\$3,118	5.1%
EBITDA	432	939	1,001	889	1,104	959	1,118	3.6
2yr avg. EBITDA	391	685	970	945	997	1,032	1,039	8.7
EPS			\$8.40	\$7.15	\$10.55	\$8.30	\$10.90	
EV / 2yr. Avg EBITDA	19.6x	11.2x	7.9x	8.1x	7.7x	7.4x	7.4x	
PE (excluding minorities)			9.2	10.8	7.4	9.3	7.1	
PMV			\$104	\$103	\$122	\$136	\$148	

Source: Public filings and g.research estimates

Note: 2Yr EBITDA represents trailing 24 month average EBITDA to adjust for a political and non-political year

Table 2

**Nexstar Media Group
Private Market Value Analysis
2016A-2022P**

FYE 12/31 <i>(in millions, except per share data)</i>	<u>2016A</u>	<u>2017A</u>	<u>2018E</u>	<u>2019P</u>	<u>2020P</u>	<u>2021P</u>	<u>2022P</u>	<u>CAGR</u> '17 - '22P
<u>Broadcast</u>								
Local	\$388	\$914	\$813	\$772	\$734	\$719	\$705	(5.1%)
National	144	357	305	296	287	278	270	(5.4)
Political	109	32	176	32	181	32	183	42.1
Retransmission	394	996	1,123	1,224	1,334	1,441	1,556	9.3
Other	<u>6</u>	<u>9</u>	<u>151</u>	<u>160</u>	<u>169</u>	<u>180</u>	<u>191</u>	85.0
Revenue	\$1,041	\$2,306	\$2,567	\$2,483	\$2,705	\$2,650	\$2,904	4.7
EBITDA	483	1,089	1,104	991	1,198	1,044	1,193	1.8
2yr Avg. EBITDA	431	786	1,097	1,048	1,094	1,121	1,118	7.3
Valuation Multiple	<u>8.0x</u>							
Segment Value	\$3,451	\$6,288	\$8,773	\$8,380	\$8,753	\$8,965	\$8,945	
Total Private Market Value			\$8,773	\$8,380	\$8,753	\$8,965	\$8,945	
Plus: Net Cash (Debt)			(3,848)	(3,423)	(2,840)	(2,362)	(1,768)	
Less: Options (b)			<u>(103)</u>	<u>(102)</u>	<u>(125)</u>	<u>(143)</u>	<u>(158)</u>	
Equity Private Market Value			\$4,823	\$4,856	\$5,788	\$6,460	\$7,019	
Shares Outstanding (year-end)			46	47	48	48	48	
PMV per share			\$104	\$103	\$122	\$136	\$148	
<i>Current Discount to PMV</i>			25.4%	24.8%	36.3%	42.9%	47.4%	

Source: Company reports, g.research estimates

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TEGNA (TGNA - \$12.88 - NYSE)

Large Market Operator - Buy

Year	2Yr EBITDA	EV/EBITDA	PMV			
2020P	\$784	7.3x	\$19	Dividend:	\$0.28	Current Return: 2.2%
2019P	714	8.1	16	Class A Common Stock	216 million	
2018E	670	8.6	15	52-Week Range:	\$15.60 - \$10.00	
2017A	705	8.2	--			

Note: 2Yr EBITDA represents trailing 24 month average EBITDA to adjust for a political and non-political year

COMPANY OVERVIEW

TEGNA Inc., located in McLean, VA, owns and operates forty-seven television stations in thirty-nine markets. The company is the largest owner of big four affiliates in top 25 markets, covers 31% of US households and 27% when taking into account the UHF discount. We estimate that in TEGNA will generate 2018 revenue of \$2.2 billion and EBITDA of \$718 million.

Reason For Comment

We are initiating with a Buy recommendation:

- TEGNA is a pure-play large-market operator of broadcast networks. 64% or 24 million households are located in top 25 markets. Like many broadcasters, TEGNA has been aggressive in driving retransmission revenue. Retransmission should generate \$840 million of revenue, increasing ~16% versus 2017, and represent 40% of total company sales in 2018. Distribution agreements representing 65% or 24 million covered homes will be renegotiated over the next 16 months which should allow the company to continue to grow recurring retransmission revenue over the next two years at a double-digit pace. TEGNA has vMVPD distribution agreements with YouTube, Sony, AT&T and Hulu which should help protect the company's subscription revenue from cord cutting.
- In 2018 TEGNA benefitted from record political spending with 19 Governor and 16 Senate races in the company's footprint. We expect the company to generate \$200 million in political advertising in 2018 versus the company's previous record of \$160 million in 2014. We believe the 25% increase in political revenue represents not just a favorable electoral map but an underlying relevance of the company's product and footprint.
- Premion is the company's over-the-top advertising targeting platform. TEGNA's Premion allows customers to place advertising in long-form OTT streamed television shows and delivers the type of targeted audiences typical of digital platforms and unavailable on linear television. 2018 Premion advertising revenue is expected to more than double to \$75 million.
- We believe the company is well positioned to take part in broadcast consolidation as demonstrated by paying 6.6x post-synergy EBITDA for KFMB stations in 2018. With only 27% US coverage versus the 39% FCC cap, TEGNA is in position to make acquisitions. Short of attractive M&A, the company will continue to return capital to shareholders through its dividend and \$300 million buyback authorization.

Table 1 **TEGNA Earnings Model**
2016-2022P

FYE 12/31	2016A	2017A	2018E	2019P	2020P	2021P	2022P	CAGR
<i>(in millions, except per share data)</i>								'17 - '22P
Revenue	\$2,004	\$1,903	\$2,187	\$2,218	\$2,524	\$2,551	\$2,892	8.7%
EBITDA	787	623	718	710	858	816	1,012	10.2
2yr avg. EBITDA	752	705	670	714	784	837	914	5.3
EPS			\$1.75	\$1.60	\$1.95	\$1.80	\$2.50	
EV / 2yr avg. EBITDA	7.7x	8.2x	8.6x	8.1x	7.3x	6.9x	6.3x	
PE			7.4	8.1	6.6	7.2	5.2	
PMV			\$15	\$16	\$19	\$23	\$29	

Source: Public filings and g.research estimates

Note: 2Yr EBITDA represents trailing 24 month average EBITDA to adjust for a political and non-political year

Table 2

TEGNA
Private Market Value Analysis
2016-2022P

FYE 12/31	2016A	2017A	2018E	2019P	2020P	2021P	2022P	CAGR
<i>(in millions, except per share data)</i>								
<u>Broadcast</u>								
Advertising & Marketing	\$1,238	\$1,140	\$1,120	\$1,120	\$1,120	\$1,120	\$1,120	(0.3%)
Political	155	23	204	26	175	22	155	
Subscription / Retrans	582	719	838	1,048	1,205	1,386	1,594	17.3
Other	<u>20</u>	<u>21</u>	<u>25</u>	<u>24</u>	<u>24</u>	<u>23</u>	<u>23</u>	1.4
Revenue	\$2,004	\$1,903	\$2,187	\$2,218	\$2,524	\$2,551	\$2,892	8.7
EBITDA	787	623	718	710	858	816	1,012	
2yr avg. EBITDA	752	705	670	714	784	837	914	5.3
Valuation Multiple	<u>9.0x</u>	<u>9.0x</u>	<u>9.0x</u>	<u>8.5x</u>	<u>8.0x</u>	<u>8.0x</u>	<u>8.0x</u>	
Segment Value	\$6,767	\$6,342	\$6,033	\$6,069	\$6,272	\$6,698	\$7,314	2.9
Total Private Market Value			\$6,033	\$8,380	\$8,753	\$8,965	\$8,945	
Plus: Net Cash (Debt)			(2,884)	(2,570)	(2,113)	(1,689)	(1,116)	
Plus: hidden assets			10	10	10	10	10	
Less: Options (b)			(7)	(9)	(15)	(21)	(30)	
Equity Private Market Value			\$3,153	\$3,500	\$4,155	\$4,999	\$6,178	
Shares Outstanding (year-end)			216	216	216	216	216	
PMV per share			\$15	\$16	\$19	\$23	\$29	
Current Discount to PMV			11.6%	20.4%	32.9%	44.3%	54.9%	

Source: Public filings and g.research estimates

Note: 2Yr EBITDA represents trailing 24 month average EBITDA to adjust for a political and non-political year

Other Companies Mentioned:

AT&T (T – NYSE)
 Sony (SNE – NYSE)

I, **Brett Harriss** the Research Analyst who prepared this report, hereby certify that the views expressed in this report accurately reflect the analyst's personal views about the subject companies and their securities. The Research Analyst has not been, is not and will not be receiving direct or indirect compensation for expressing the specific recommendation or view in this report.

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Ratings

Analysts' ratings are largely (but not always) determined by our "private market value," or PMV methodology. Our basic goal is to understand in absolute terms what a rational, strategic buyer would pay for an asset in an open, arms-length transaction. At the same time, analysts also look for underlying catalysts that could encourage those private market values to surface.

A **Buy** rated stock is one that in our view is trading at a meaningful discount to our estimated PMV. We could expect a more modest private market value to increase at an accelerated pace, the discount of the public stock price to PMV to narrow through the emergence of a catalyst, or some combination of the two to occur.

A **Hold** is a stock that may be trading at or near our estimated private market value. We may not anticipate a large increase in the PMV, or see some other factors at work.

A **Sell** is a stock that may be trading at or above our estimated PMV. There may be little upside to the value, or limited opportunity to realize the value. Economic or sector risk could also be increasing.

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Tribune Media (TRCO - \$38.88 - NYSE)

For Sale? - Buy

<u>Year</u>	<u>2Yr EBITDA</u>	<u>EV/EBITDA</u>	<u>PMV</u>				
2020P	\$538	5.1x	\$64	Dividend:	\$1.00	Current Return:	2.6%
2019P	544	5.0	64	Shares	88 million		
2018E	472	5.8	58	52-Week Range:	\$43.71 - \$31.61		
2017A	495	5.5	--				

Note: 2Yr EBITDA represents trailing 24 month average EBITDA to adjust for a political and non-political year

COMPANY OVERVIEW

Tribune Media, located in Chicago IL, operates local broadcast stations and cable network WGN America. The company's footprint of 42 stations in 33 markets reach ~50 million or 44% of US households. TRCO's WGN America cable network is now in ~80 million homes. In 2014, the company spun out Tribune Publishing (now Tronc) to shareholders. The company owns a 31% stake in TV Food Network and is in the process of selling a portfolio of real estate assets. In 2018, we estimate that TRCO will generate \$2 billion of revenue and \$613 million adjusted EBITDA.

Reason For Comment

We are initiating coverage with a Buy recommendation:

- We expect Tribune could be an acquisition target. In 2017, Sinclair Broadcasting Group offered ~\$43.50 per share in cash (\$35) and stock to acquire TRCO, but DOJ scrutiny resulted in the acquisition being abandoned. As demonstrated by the offer from Sinclair, TRCO management is clearly open to selling the company. With the UHF discount reinstated by the FCC on April 20, 2017, the industry has seen a number of deals transactions valuing stations at 8-9x EBITDA.
- We expect any further change to the ownership cap, which is the subject of an ongoing rulemaking review, could expand the number of potential buyers for Tribune. With over more than 50% of covered households in top 10 DMAs and 40% in 11-50 ranked DMAs, Tribune over-indexes to large market, which are viewed as more attractive for larger media conglomerates.
- TRCO trades at a material discount to both public comparisons and private transactions. Adjusting for the company's real estate portfolio (\$500 million) and 31% stake in TV Food Network (\$2 billion at 11x EBITDA), and other minority assets, Tribune trades at 5.2x EBITDA, substantially below precedent transactions of 8-10x EBITDA.
- Tribune continues to monetize its real estate assets selling two properties for \$59 million in Q3 2018. The company received zoning change approval from the Chicago City Council; TRCO's Chicago property (37 acres in downtown Chicago) is now zoned for commercial or residential development which should facilitate monetization.
- We value the company's 31% stake in the TV Food Network at ~\$2 billion. The Food Network should generate ~\$600 million in 2019 which at an 11x multiple would give it an enterprise value \$6.6 billion. Given Discovery paid 13x for Scripps, which owned the 69% of TV Food Network, we believe our 11x valuation multiple could be conservative. We expect Discovery could seek to acquire TRCO's stake in TV Food Network which could be a catalyst for shares.

Table 1

**Tribune Media Projection
 2016-2022P**

FYE 12/31	2016A	2017A	2018E	2019P	2020P	2021P	'17E-22P	CAGR
<i>(in millions, except per share data)</i>								'17 - '22P
Revenue	\$1,947	\$1,849	\$2,018	\$1,995	\$2,212	\$2,130	\$2,330	4.7%
EBITDA	659	331	613	474	602	471	639	
2yr avg. EBITDA	334	495	472	544	538	536	555	2.3
EPS	\$0.96	\$2.15	\$3.55	\$2.25	\$3.15	\$2.05	\$3.35	9.3
TEV / 2yr avg. EBITDA	8.2x	5.5x	5.8x	5.0x	5.1x	5.1x	4.9x	
PE	40.3	18.1	11.0	17.3	12.3	19.0	11.6	
PMV			\$58	\$64	\$64	\$66	\$72	

Source: Company reports, g.research estimates

Note: 2Yr EBITDA represents trailing 24 month average EBITDA to adjust for a political and non-political year

Table 2

Tribune Media
Private Market Value Analysis 2016-2022P

FYE 12/31 <i>(in millions, except per share data)</i>	<u>2016A</u>	<u>2017A</u>	<u>2018E</u>	<u>2019P</u>	<u>2020P</u>	<u>2021P</u>	<u>'17E-22P</u>	<u>CAGR</u> <u>'17 - '22P</u>
<i>Television and Entertainment</i>								
Political Spending	\$137	\$22	\$171	\$22	\$170	\$25	\$162	49.1%
Core Advertising	<u>1,237</u>	<u>1,204</u>	<u>1,137</u>	<u>1,148</u>	<u>1,113</u>	<u>1,080</u>	<u>1,048</u>	(2.7)
Advertising	1,374	1,226	1,308	1,170	1,283	1,105	1,210	(0.3)
Retransmission Consent Fees	335	412	482	579	665	745	827	14.9
Carriage Fees	121	128	159	183	205	225	243	13.7
Other	<u>80</u>	<u>69</u>	<u>57</u>	<u>51</u>	<u>46</u>	<u>41</u>	<u>37</u>	(11.6)
Revenue	\$1,909	\$1,835	\$2,005	\$1,982	\$2,200	\$2,117	\$2,317	4.8
EBITDA	537	405	703	489	617	487	654	10.0
2yr avg. EBITDA	288	471	554	596	553	552	571	3.9
Valuation Multiple	<u>8.0x</u>							
Segment Value	\$2,304	\$3,768	\$4,434	\$4,769	\$4,425	\$4,414	\$4,565	
Total Private Market Value	\$2,304	\$3,768	\$4,434	\$4,769	\$4,425	\$4,414	\$4,565	3.9
Plus: Net Cash (Debt)			(2,005)	(1,866)	(1,626)	(1,489)	(1,220)	
Plus: Hidden Assets			2,718	2,799	2,883	2,970	3,059	
Less: Options (b)			<u>(54)</u>	<u>(70)</u>	<u>(69)</u>	<u>(75)</u>	<u>(89)</u>	
Equity Private Market Value			\$5,092	\$5,633	\$5,613	\$5,820	\$6,314	
Shares Outstanding (year-end)			88	88	88	88	88	
PMV per share			\$58	\$64	\$64	\$66	\$72	
<i>Current Discount to PMV</i>			32.6%	39.1%	38.9%	41.1%	45.7%	

Hidden assets: TV Food Network \$2 billion, real estate \$500 million, 5% of the Cubs \$145 million

Source: Public filings and g.research estimates

Companies Mentioned:

21st Century Fox	(FOXA - NYSE)	Grupo Televisa	(TV - NYSE)
Alphabet	(GOOG NASDAQ)	Liberty Global	(LBTYA - NASDAQ)
Amazon	(AMZN - NASDAQ)	Meredith Corporation	(MDP - NYSE)
AMC Networks	(AMCX - NASDAQ)	MSG Networks	(MSGN - NYSE)
CBS Corporation	(CBS - NYSE)	Netflix	(NFLX - NASDAQ)
Comcast Corporation	(CMCSA - NASDAQ)	News Corp.	(NWSA - NASDAQ)
Discovery Communications	(DISCA - NASDAQ)	Nexstar Media Group	(NXST - NASDAQ)
E.W. Scripps	(SSP - NASDAQ)	Sony	(SNE - NYSE)
Facebook	(FB - NASDAQ)	TEGNA	(TGNA - NYSE)
Gannett	(GCI - NYSE)	Tribune	(TRCO - NYSE)
Graham Corporation	(GHM - NYSE)	Viacom	(VIA - NYSE)
Gray Television	(GTN - NYSE)	The Walt Disney Company	(DIS - NYSE)

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As of October 31, 2018 our affiliates beneficially own on behalf of their investment advisory clients or otherwise approximately 15.82% of E.W. Scripps, 9.36% of Viacom Class A and less than Class B, 8.28% of CBS Class A and less than 1% of Class B, 5.64% of Tribune Company, 1.49% of Meredith, 1.24% of Discovery Communications and less than 1% of all other companies mentioned. Because the portfolio managers at our affiliates make individual investment decisions with respect to the client accounts they manage, these accounts may have transactions inconsistent with the recommendations in this report. One of our affiliates serves as an investment adviser to CBS Corp. or an affiliated entity and has received compensation within the past 12 months for these non-investment banking securities-related services. These portfolio managers may know the substance of our research reports prior to their publication as a result of joint participation in research meetings or otherwise. No part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed in this research report. In addition, the undersigned lead analyst(s) has not and will not receive any compensation for providing a specific recommendation or view in this report. The analyst, who wrote this report, or members of his household, owns no shares of the above mentioned companies.