

Table 1
AT&T-MediaOne Merger
Results of MHHI Analysis
with Respect to the Supply of Video Programming Services

	Pre-Merger MHHI	Post-Merger MHHI	Delta MHHI ¹
<i>Silent Interest²</i>			
<i>Post-Merger, MediaOne's interest in Time Warner Entertainment becomes silent</i>			
Case 1: Liberty is a separate entity from AT&T	1934	1981	48
Case 2: Liberty is owned and controlled by AT&T	1940	2045	104
<i>Proportional Control³</i>			
<i>Post-Merger, MediaOne's interest confers proportional control of Time Warner Entertainment</i>			
Case 3: Liberty is a separate entity from AT&T	1934	1937	4
Case 4: Liberty is owned and controlled by AT&T	1940	2059	118

Notes:

¹May not equal the difference of the pre-merger and post-merger MHHIs due to rounding.

²All other control interests are proportional to ownership interests except in the following cases: Liberty's 9% interest in Time Warner and 8% interest in News Corp. are silent and AT&T's 33% interest in Cablevision is silent.

³All ownership interests confer proportional control except the cases noted in footnote 2.

Table 2
AT&T-MediaOne Merger
Results of MHHI Analysis
with Respect to the Purchase of Video Programming Services¹

	Pre-Merger MHHI	Post-Merger MHHI	Delta MHHI ²
<i>Silent Interest³</i>			
<i>Post-Merger, MediaOne's interest in Time Warner Entertainment becomes silent</i>			
Case 1: Liberty is a separate entity from AT&T	1051	1304	254
Case 2: Liberty is owned and controlled by AT&T	1069	1328	258
<i>Proportional Control⁴</i>			
<i>Post-Merger, MediaOne's interest confers proportional control of Time Warner Entertainment</i>			
Case 3: Liberty is a separate entity from AT&T	1051	1432	381
Case 4: Liberty is owned and controlled by AT&T	1069	1452	383

Notes:

¹AT&T sells 735,000 subscribers to Comcast post-merger.

²May not equal the difference of the pre-merger and post-merger MHHIs due to rounding.

³All other control interests are proportional to ownership interests except in the following cases: Liberty's 9% interest in Time Warner is silent and AT&T's 33% interest in Cablevision is silent.

⁴All ownership interests confer proportional control except the cases noted in footnote 3.

Appendix A
THE TECHNICAL UNDERPINNINGS OF THE MHI ANALYSIS⁸⁴

⁸⁴ This Appendix was written by Daniel P. O'Brien while employed by CRA.

Appendix A The Technical Underpinnings of the MHHI Analysis

A.1 Introduction

This appendix provides details on the theoretical underpinnings of the MHHIs and how they are calculated. It presents a model that allows one to calculate the change in concentration under arbitrary assumptions about the degree of influence owners have over the management of firms in which they have an interest. Section A.2 provides the notation used in the model. Section A.3 derives the MHHIs for the case of Cournot oligopoly and explains how they are calculated. Section A.4 explains the relationship between the MHHI and monopsony. Section A.5 gives an intuitive interpretation of how ownership and control affect concentration in the MHHI analysis.

A.2 Notation

N firms ($j=1, \dots, N$)

M owners ($i=1, \dots, M$)

x_j = output of firm j ;

$X = \sum_j x_j$ = industry output (summations are taken over all possible values of the index whenever the domain of the index is omitted)

$s_j = x_j/X$ = firm j 's market share

$C_j(x_j)$ = cost of output level x_j

$P(X)$ = inverse demand for X

$\pi_j = P(X)x_j - C_j(x_j)$ = profits of firm j

β_{ij} = share of firm j owned by owner i

γ_{ij} = measure of owner i 's degree of control over firm j

η = own price elasticity of demand (absolute value)

$\pi^i = \sum_j \beta_{ij} (x_j P(X) - C_j(x_j))$ = owner i 's profit

$\Pi_j = \sum_i \gamma_{ij} \pi^i$ = profit maximized by the manager of firm j

A.3 Analysis

We begin with the derivation of the MHHI as it applies to output markets.

The analog for input markets is presented in subsection A.4.

The manager of firm j is assumed to maximize a weighted sum of the profits of firm j 's owners. The idea is that in markets with cross-ownership, the owners generally have conflicting interests regarding the firm's behavior. The assumption here is that owner i 's influence over manager j is measured by its "control weight" γ_{ij} .

Thus, the manager of firm j solves

$$\max_{x_j} \Pi_j = \max_{x_j} \sum_i \gamma_{ij} \pi^i = \max_{x_j} \sum_i \gamma_{ij} \sum_k \beta_{ik} \pi_k = \max_{x_j} \sum_i \gamma_{ij} \sum_k \beta_{ik} [P(X)x_k - C_k(x_k)].$$

The first-order condition for an interior solution is

$$\sum_i \gamma_{ij} \left\{ \sum_k \beta_{ik} P' x_k + \beta_{ij} [P - C_j'(x_j)] \right\} = 0.$$

Multiplying through by X/X and $1/P$, this condition can be rewritten as

$$\sum_i \gamma_{ij} \sum_k \beta_{ik} \left(\frac{P' X}{P} \right) \frac{x_k}{X} + \sum_i \gamma_{ij} \beta_{ij} \frac{P - C_j'(x_j)}{P} = 0,$$

and after rearranging sums, the condition becomes

$$L_j = \frac{P - C_j'(x_j)}{P} = \frac{1}{\eta} \sum_k \frac{\sum_i \gamma_{ij} \beta_{ik}}{\sum_i \gamma_{ij} \beta_{ij}} s_k.$$

Multiplying both sides by s_j and summing over all j yields

$$(1) \quad \sum_j s_j \frac{P - C_j'(x_j)}{P} = \sum_j s_j L_j = \frac{1}{\eta} \left\{ \sum_k \sum_j \left(\frac{\sum_i \gamma_{ij} \beta_{ik}}{\sum_i \gamma_{ij} \beta_{ij}} \right) s_k s_j \right\}$$

In the standard Cournot model, the bracketed term in (1) would be the Herfindahl-Hirschman index of concentration, $HHI = \sum_j s_j^2$. Thus, the HHI can be thought of as a measure of concentration constructed to be proportional to the share-weighted sum of the margins of all firms under Cournot competition. Using the same rule to construct a concentration index for the case of partial cross-ownership, the modified-HHI (MHHI) is the bracketed term in (1):

$$(2) \quad MHHI = \sum_k \sum_j \left(\frac{\sum_i \gamma_{ij} \beta_{ik}}{\sum_i \gamma_{ij} \beta_{ij}} \right) s_k s_j.$$

By separating out the terms for which $k=j$, expression (2) can be written as

$$(3) \quad MHHI = HHI + \sum_j \sum_{k \neq j} \left(\frac{\sum_i \gamma_{ij} \beta_{ik}}{\sum_i \gamma_{ij} \beta_{ij}} \right) s_k s_j.$$

To carry out the calculations using actual data on market shares and ownership and control parameters, it helps to write expression (2) in matrix form. This gives

$$MHHI = \mathbf{s}' \Phi \mathbf{s}$$

where $\Phi = \begin{bmatrix} \phi_{11} & \cdots & \phi_{1N} \\ \vdots & \ddots & \vdots \\ \phi_{N1} & \cdots & \phi_{NN} \end{bmatrix}$, $\phi_{kj} = \frac{\sum_i \gamma_{ij} \beta_{ik}}{\sum_i \gamma_{ij} \beta_{ij}}$, and $\mathbf{s} = (s_1, s_2, \dots, s_N)'$.

A.4 The MHHI for Input Markets

The derivation of the MHHI in the previous subsection was based on the assumption that firms compete as Cournot oligopolists in a market for output. Under that assumption, the MHHI is a measure of market power among competing oligopolists. In this subsection we show that the MHHI can also be interpreted as a measure of market power among oligopsonists that purchase inputs in a competitive input market. We consider an industry in which N firms are monopolists in their own output markets. This discussion assumes that the input price must be the same for each purchaser. Let $P_j(x_j)$ be the inverse demand for product j in the final product market, and let $w(X)$ ($X = \sum_j x_j$) be the inverse supply of an input under constant returns (specifically, 1 unit of the input yields 1 unit of output) by downstream firms to produce the final output. The absolute value of the elasticity of final demand for product j is $\eta_j = -1/[(\partial P_j / \partial x_j)(x_j / P_j)]$, and the elasticity of supply of the input is $\epsilon^S = 1/[(\partial w / \partial X)(X / w)]$, where w is the input price. The profits of downstream firm j are then $\pi_j = P_j(x_j)x_j - w(X)x_j$.

Retaining the rest of the notation introduced in subsection A.1, the manager of firm j solves

$$\max_{x_j} \Pi_j = \max_{x_j} \sum_i \gamma_{ij} \pi^i = \max_{x_j} \sum_i \gamma_{ij} \sum_k \beta_{ik} \pi_k = \max_{x_j} \sum_i \gamma_{ij} \sum_k \beta_{ik} [P_k(x_k)x_k - w(X)x_k]$$

We will not work through the complete derivation of the MHHI for this case, as it is similar to the derivation for the output market case. Suffice it to say that after taking the first order condition to each manager's profit maximization problem and making the appropriate substitutions, the share-weighted sum of the margins can be written as

$$(4) \quad \sum_j \frac{P_j - w}{w} s_j = \sum_j \frac{1}{\eta_j} \frac{P_j}{w} s_j + \frac{1}{\varepsilon^S} MHHI$$

where

$$MHHI = HHI + \sum_j \sum_{k \neq j} \left(\frac{\sum_i \gamma_{ij} \beta_{ik}}{\sum_i \gamma_{ij} \beta_{ij}} \right) s_k s_j.$$

The terms under the summation sign on the right-hand side of (4) represents the component of the average margin that arises from the pricing incentives of each firm in its own downstream market.⁸⁵ The second term, $(1/\varepsilon^S)MHHI$, represents the component of the margin that arises from incentives of the firms in purchasing their inputs. Condition (4) shows that these incentives, like the incentives governing quantity decisions in the Cournot output model, are proportional to the MHHI as it is defined in equation (3). In other words, the same expression for the MHHI holds for measuring the effects of oligopsony in input markets as holds for measuring the incentive effects of oligopoly in output markets.

A.5 Interpretation of the MHHIs

The MHHI can be rewritten as:

$$MHHI = HHI + \sum_j \sum_{k \neq j} \left(\frac{HHIAF_{jk}}{HHIWF_j} \right) s_k s_j$$

where $HHIAF_{jk} = \sum_i \gamma_{ij} \beta_{ik}$ measures the “across-firms” concentration arising through owners that have ownership interests in firm k and control interests in firm j, and

⁸⁵ To see this, note that a monopolist with a constant input price w would choose output so that $(P_j - w)/w = (1/\eta_j)(P_j/w)$. The summation on the right-hand side of (4) is simply the share-weighted average of these terms across all the output markets.

$HHIWF_j = \sum_i \gamma_{ij} \beta_{ij}$ measures the “within-firm” concentration of the joint ownership and control of firm j. All else equal, the greater is the across-firms concentration from joint ownership of firm k and control of firm j, the greater is the weight placed on the cross-product of the shares of firms j and k in the MHHI calculation. This makes perfect sense; additional joint ownership and control causes managers to internalize more of the adverse effects on cross-owned firms of an expansion in their output. On the other hand, the greater is the within-firm concentration of the ownership and control of firm j, the smaller is the effect of an increase in concentration arising through the joint control of firm j and ownership of firm k. Intuitively, if the within-firm ownership and control of firm j is already highly concentrated, then *additional* control exercised over firm j by owners of firm k has little *additional* influence over firm j’s management.

An example will help to clarify these intuitive arguments concerning the role of across-firms and within-firm concentration in determining the MHHI. Suppose that there are two firms, 1 and 2. Initially, firm 1 is wholly owned and controlled by owner A, and firm 2 is wholly owned and controlled by owner B. Suppose that owner A buys an α share of firm 2. If the investment is a silent financial interest, the across-firms concentration factors are given by

$$HHIAF_{12} = \gamma_{A1}\beta_{A2} + \gamma_{B1}\beta_{B2} = (1)(\alpha) + (0)(1-\alpha) = \alpha,$$

$$HHIAF_{21} = \gamma_{A2}\beta_{A1} + \gamma_{B2}\beta_{B1} = (0)(1) + (1)(0) = 0,$$

and the within-firm concentration factors are

$$HHIWF_1 = \gamma_{A1}\beta_{A1} + \gamma_{B1}\beta_{B1} = (1)(1) + (0)(0) = 1,$$

$$HHIWF_2 = \gamma_{A2}\beta_{A2} + \gamma_{B2}\beta_{B2} = (0)(\alpha) + (1)(1-\alpha) = 1-\alpha.$$

The total weight applied to the cross-product s_1s_2 in the MHHI calculation is

$$\frac{HHIAF_{12}}{HHIWF_1} + \frac{HHIAF_{21}}{HHIWF_2} = \frac{\alpha}{1} + \frac{0}{1-\alpha} = \alpha.$$

Thus, the change in the MHHI when the owner of firm 1 (owner A) takes a silent financial interest in firm 2 is αs_1s_2 . This adjustment factor reflects the idea that, after the acquisition, the manager of firm 1 will take into account the effects of its output decision on the profits of firm 2 because the owner of firm 1 (owner A) will have a partial interest in firm 2.

Suppose that instead of being silent owner A's financial interest in firm 2 allows it to exercise proportional control over the manager of firm 2. In this case:

$$HHIAF_{12} = \gamma_{A1}\beta_{A2} + \gamma_{B1}\beta_{B2} = (1)(\alpha) + (0)(1-\alpha) = \alpha$$

$$HHIAF_{21} = \gamma_{A2}\beta_{A1} + \gamma_{B2}\beta_{B1} = (\alpha)(1) + (1-\alpha)(0) = \alpha$$

$$HHIWF_1 = \gamma_{A1}\beta_{A1} + \gamma_{B1}\beta_{B1} = (1)(1) + (0)(0) = 1$$

$$HHIWF_2 = \gamma_{A2}\beta_{A2} + \gamma_{B2}\beta_{B2} = \alpha^2 + (1-\alpha)(1-\alpha),$$

and

$$\frac{HHIAF_{12}}{HHIWF_1} + \frac{HHIAF_{21}}{HHIWF_2} = \frac{\alpha}{1} + \frac{\alpha}{\alpha^2 + (1-\alpha)^2} = 2\alpha \frac{1-\alpha(1-\alpha)}{1-2\alpha(1-\alpha)}.$$

Thus, the increase in the MHHI from a partial investment α that confers proportional control is

$$2\alpha \frac{1-\alpha(1-\alpha)}{1-2\alpha(1-\alpha)} s_1s_2.$$

Note that the increase in the MHHI is greater when the investment confers proportional control than when the investment is a silent interest.

Appendix B

**OWNERSHIP AND CONTROL SHARES
IN PROGRAM SERVICES**

CNBC ("CNBC"):

Revenues: \$260,000,000

Owners: NBC 100%

Control: NBC 100%

Comedy Central ("COM"):

Revenues: \$197,000,000

*Owners:*⁸⁷ Liberty 3.3516%, MediaOne 12.76%, Other Time Warner Shareholders ("Time Warner") 33.8884%, Viacom 50%

Control: MediaOne 12.76%, Time Warner 37.24%, Viacom 50%

*Control2:*⁸⁸ Time Warner 50%, Viacom 50%

Court TV ("CourtTV"):

Revenues: \$54,300,000

*Owners:*⁸⁹ Liberty 53.3516%, MediaOne 12.76%, Time Warner 33.8884%

Control: Liberty 50%, MediaOne 12.76%, Time Warner 37.24%

*Control2:*⁹⁰ Liberty 50%, Time Warner 50%

⁸⁷ Time Warner Entertainment owns 50% of Comedy Central. Time Warner Entertainment is owned by Time Warner (74.49%) and MediaOne (25.51%). Liberty has a 9% silent financial interest in Time Warner.

⁸⁸ MediaOne's ownership interest in Time Warner Entertainment is assumed to be silent post-merger in this control scenario.

⁸⁹ Time Warner Entertainment owns 50% of Court TV. Time Warner Entertainment is owned by Time Warner (74.49%) and MediaOne (25.51%). Liberty has a 9% silent financial interest in Time Warner.

⁹⁰ MediaOne's ownership interest in Time Warner Entertainment is assumed to be silent post-merger in this control scenario.

The Discovery Group ("Disc"):

Services: Discovery, TLC, Animal Planet, Discovery People, Travel.

Revenues: \$624,200,000

Owners: Liberty 49%, Cox 24.5%, Newhouse 24.5%, Hendricks 2%

Control: Liberty 49%, Cox 24.5%, Newhouse 24.5%, Hendricks 2%

The Disney Channel ("Disney"):

Revenues: \$578,000,000

Owners: Disney 100%

Control: Disney 100%

The E! Group ("E!"):

Services: E!, style.

Revenues: \$124,500,000

Owners: MediaOne 10.4%, Liberty 10.0%, Comcast 79.6%

Control: MediaOne 10.4%, Liberty 10.0%, Comcast 79.6%

Encore+Starz! ("Enc+Stz!"):

Revenues: \$532,000,000

Owners: Liberty 100%

Control: Liberty 100%

The ESPN Group ("ESPN"):

Services: ESPN, ESPN2, ESPNNews, Classic Sports.

Revenues: \$1,481,000,000

Owners: Disney 80%, Hearst 20%

Control: Disney 80%, Hearst 20%

FiT TV ("FitTV"):

Revenues: \$4,600,000

*Owners:*⁹¹ News Corp. 82.8%, Liberty 7.2%, Body by Jake 10%

Control: News Corp. 90%, Body by Jake 10%

Food Network ("Food"):

Revenues: \$36,100,000

*Owners:*⁹² MediaOne 5.5%, E. W. Scripps 58.734%, Tribune 28.934%, PCI 4.933%, Time Warner .84903%, Liberty .08397%, Cox .733%, C-Tec .233%

Control: MediaOne 5.5%, E. W. Scripps 58.734%, Tribune 28.934%, PCI 4.933%, Time Warner .933%, Cox .733%, C-Tec .233%

⁹¹ News Corp. owns 90% of FiT. Liberty has an 8% silent financial interest in News Corp.

⁹² Time Warner owns 1% of Food. Liberty has a 9% silent financial interest in Time Warner.

The Fox Family Group ("FoxFam"):

Services: Fox Family

Revenues: \$319,500,000

*Owners:*⁹³ News Corp. 45.54%, Liberty 3.96%, Saben 49.5%, Allen & Co. 1%

Control: News Corp. 49.5%, Saben 49.5%, Allen & Co. 1%

Fox Sports New England ("SCNE"):

Revenues: \$22,859,000

*Owners:*⁹⁴ MediaOne 50%, News Corp. 46%, Liberty 4%

Control: MediaOne 50%, News Corp. 50%

Gameshow ("Game"):

Revenues: \$21,600,000

Owners: Sony 100%

Control: Sony 100%

Golf ("Golf"):

Revenues: \$62,300,000

*Owners:*⁹⁵ Comcast 42%, News Corp 30.36%, Liberty 2.64%, Other Golf Owners
25%

Control: Comcast 42%, News Corp 33%, Other Golf Owners 25%

⁹³ News Corp. owns 49.5% of Fox Family. Liberty has an 8% silent financial interest in News Corp.

⁹⁴ News Corp. owns 50% of Fox Sports New England. Liberty has an 8% silent financial interest in News Corp.

⁹⁵ News Corp. owns 33% of Golf. Liberty has an 8% silent financial interest in News Corp.

Goodlife TV ("Goodlife"):

Revenues: \$5,200,000

Owners: Concept Communications 71%, Other Goodlife Owners 29%

Control: Concept Communications 71%, Other Goodlife Owners 29%

HGTV ("HGTV"):

Revenues: \$78,600,000

Owners: E. W. Scripps 100%

Control: E. W. Scripps 100%

Knowledge ("Know"):

Revenues: \$22,500,000

Owners: Jones Education Network 51%, Jones Intercable 38%, Glenn R.
Jones 11%

Control: Jones Education Network 51%, Jones Intercable 38%, Glenn R.
Jones 11%

Lifetime ("Life"):

Revenues: \$468,200,000

Owners: Disney 50%, Hearst 50%

Control: Disney 50%, Hearst 50%

MSNBC ("MSNBC"):

Revenues: \$89,900,000

Owners: Microsoft 50%, NBC 50%

Control: Microsoft 50%, NBC 50%

Music Choice ("MC"):

Revenues: \$18,107,500

*Owners:*⁹⁶ MediaOne 11.783459875%, Cox 14.17125%, Jerold 19.05125%,
Sony 12.51125%, EMI 12.51125%, Time Warner 18.78152651375%,
Liberty 1.85751361125%, Adelphia 3.56125%, Comcast 5.77125%

Control: MediaOne 11.783459875%, Cox 14.17125%, Jerold 19.05125%,
Sony 12.51125%, EMI 12.51125%, Time Warner 20.639040125%,
Adelphia 3.56125%, Comcast 5.77125%

*Control2:*⁹⁷ MediaOne 9%, Cox 14.17125%, Jerold 19.05125%, Sony 12.51125%,
EMI 12.51125%, Time Warner 23.4225%, Adelphia 3.56125%,
Comcast 5.77125%

New England Cable News ("NECN"):

Revenues: \$14,182,938

Owners: MediaOne 50%, Hearst 50%

Control: MediaOne 50%, Hearst 50%

⁹⁶ Time Warner Entertainment owns 11.01% of Music Choice. Time Warner Entertainment is owned by MediaOne (25.51%) and Time Warner (74.49%). Warner Music owns 12.61% of Music Choice. Warner Music is fully owned by Time Warner. Liberty has a 9% silent financial interest in Time Warner.

⁹⁷ MediaOne's ownership interest in Time Warner Entertainment is assumed to be silent post-merger in this control scenario.

The News Corp. Group ("NewsC"):

Services: Fox News, Fox Sportsnet, FX

Revenues: \$448,200,000

*Owners:*⁹⁸ News Corp. 92%, Liberty 8%

Control: News Corp. 100%

Odyssey ("Odyssey"):

Revenues: \$21,500,000

Owners: Liberty 33%, Hallmark 22.33%, Jim Henson 22.33%, VISN 22.34%

Control: Liberty 33%, Hallmark 22.33%, Jim Henson 22.33%, VISN 22.34%

Outdoor Life ("OL"):

Revenues: \$22,700,000

*Owners:*⁹⁹ MediaOne 15.43%, Cox 32.96%, News Corp. 30.3232%, Liberty 2.6368%, Comcast 16.82%, Roger Werner 1.83%

Control: MediaOne 15.43%, Cox 32.96%, News Corp. 32.96%, Comcast 16.82%, Roger Werner 1.83%

⁹⁸ News Corp. owns 100% of the NewsC Group. Liberty has an 8% silent financial interest in News Corp.

⁹⁹ News Corp. owns 32.96% of Outdoor Life. Liberty has an 8% silent financial interest in News Corp.

The Playboy Group ("Playboy"):

Services: Playboy, AdultVision

Revenues: \$63,000,000

Owners: Playboy 100%

Control: Playboy 100%

The Rainbow Group ("Rainbow"):

Services: AMC, Bravo, Romance Classics, The Independent Film Channel.

Revenues: \$250,100,000

*Owners:*¹⁰⁰ AT&T 24.75%, NBC 25%, other Cablevision shareholders ("CV")
50.25%.

Control: NBC 25%, CV 75%

Speedvision ("Speed"):

Revenues: \$24,300,000

*Owners:*¹⁰¹ MediaOne 13.3%, Cox 32.68%, News Corp. 30.0656%, Liberty
2.6144%, Comcast 14.83%, Daniels Properties 3.81%, Roger Werner
2.7%

Control: MediaOne 13.3%, Cox 32.68%, News Corp. 32.68%, Comcast
14.83%, Daniels Properties 3.81%, Roger Werner 2.7%

¹⁰⁰ Cablevision owns 75% of the Rainbow Group. AT&T has a 33% ownership interest in Cablevision. AT&T has an 8.9% voting interest in Cablevision, but the board of directors is largely controlled by members of the Dolan family and thus, AT&T's interest is treated as silent.

¹⁰¹ News Corp. owns 32.68% of Speedvision. Liberty has an 8% silent financial interest in News Corp.

The Time Warner Entertainment Group ("TWE"):

Services: HBO+Cinemax, WB Network.

Revenues: \$2,107,000,000

*Owners:*¹⁰² Liberty 6.7041%, MediaOne 25.51%, Time Warner 67.7859%

Control: MediaOne 25.51%, Time Warner 74.49%

*Control2:*¹⁰³ Time Warner 100%

The Turner Group ("Turner"):

Services: CNN+HN, CNN/FN, CNN/SI, TCM, Cartoon, TNT, TBS.

Revenues: \$2,406,200,000

*Owners:*¹⁰⁴ Liberty 9%, Time Warner 91%

Control: TW 100%

TV Guide Channel ("TVGuide"):

Revenues: \$58,300,000

*Owners:*¹⁰⁵ Liberty 48.48%, News Corp. 51.52%

Control: Liberty 44%, News Corp. 56%

¹⁰² The TWE Group is owned by Time Warner (74.49%) and MediaOne (25.51%). Liberty has a 9% silent financial interest in Time Warner.

¹⁰³ MediaOne's ownership interest in Time Warner Entertainment is assumed to be silent post-merger in this control scenario.

¹⁰⁴ Time Warner owns 100% of the Turner Group. Liberty has a 9% silent financial interest in Time Warner.

¹⁰⁵ News Corp. owns 56% of the TV Guide Channel. Liberty has an 8% silent financial interest in News Corp.

The USA Networks Group ("USA+SF"):

Services: USA Network, Sci-Fi

Revenues: \$870,800,000

*Owners:*¹⁰⁶ Liberty 21.67%, Seagram 44.665%, Other USA Owners 33.665%

Control: Liberty 21.67%, Seagram 44.665%, Other USA Owners 33.665%

Viewer's Choice ("VC"):

Revenues: \$190,403,000

*Owners:*¹⁰⁷ MediaOne 19.612483%, Liberty 35.56447653%, Comcast 11.12%,
Cox 11.11%, Time Warner 22.59304047%

Control: MediaOne 19.612483%, Liberty 33.33%, Comcast 11.12%, Cox
11.11%, Time Warner 24.827517%

*Control2:*¹⁰⁸ MediaOne 11.11%, Liberty 33.33%, Comcast 11.12%, Cox 11.11%,
Time Warner 33.33%

The Viacom Group ("Viacom"):

Services: VH-1, TV Land, Nickelodeon, MTV, Showtime + TMC, The BOX

Revenues: \$2,236,900,000

Owners: Viacom 100%

Control: Viacom 100%

¹⁰⁶ Liberty's share is 21.67% per Willkie Farr & Gallagher.

¹⁰⁷ Time Warner Entertainment owns 33.33% of Viewer's Choice. Time Warner Entertainment is owned by MediaOne (25.51%) and Time Warner (74.49%). Liberty has a 9% silent financial interest in Time Warner.

¹⁰⁸ MediaOne's ownership interest in Time Warner Entertainment is assumed to be silent post-merger in this control scenario.

Weather ("Weather"):

Revenues: \$163,700,000

Owners: Landmark Communications 100%

Control: Landmark Communications 100%

B.2 AT&T Fully Owns and Controls Liberty

This case is identical to the video program service ownership shares outlined in section B.1, except that any ownership or control share previously attributable to Liberty is now attributed to AT&T. In the event that AT&T and Liberty are both owners of a program service, the combined share is simply the sum of the individual shares.

B.3 AT&T-MediaOne Post-Merger

After the merger, AT&T and MediaOne's ownership and control shares, outlined in sections B.1 and B.2, are summed to find combined shares for the newly formed company. In one of the scenarios considered in our report, post-merger assumptions about control remain the same as pre-merger assumptions. In this case, the post-merger control shares of AT&T-MediaOne are determined by summing their pre-merger control shares as given under "*Control*." In the other scenario, we assume that MediaOne's interest in TWE becomes silent after the merger. In this case, the post-merger control shares of AT&T-MediaOne are determined by summing the control shares given under "*Control2*." These shares are reported in section B.1 only when they differ from those given under "*Control*."

Appendix C

OWNERSHIP AND CONTROL SHARES OF MVPDS

Appendix C Ownership and Control Shares of MVPDs

In Appendix B, we identified the video program services that have the same ownership and control structure, and aggregated them into different groups of program services accordingly. This appendix identifies the ownership and control structures for the top 25 MSOs, DirecTV, EchoStar, and the systems in which AT&T and MediaOne have financial interests.¹⁰⁹

We use two alternative assumptions about Liberty Media Group ("Liberty"). In section C.1, we assume that AT&T and Liberty are completely separate entities, while section C.2 assumes that AT&T fully owns and controls Liberty. Section C.3 describes how the AT&T-MediaOne merger changes the ownership/control structure (with respect to both section C.1 and section C.2). Throughout, we assume proportional control (i.e., the degree of control that owners can exercise over management is equal to their ownership interest in the firm), with some significant exceptions that are footnoted. For some cable systems, we also present an alternative case in which we assume that MediaOne's interest in Time Warner Entertainment becomes silent after the merger.

¹⁰⁹ We use the following data sources:

Applications and Public Interest Statement, *In the Matter of Applications for Consent to the Transfer of Control of Licenses MediaOne Group, Inc., to AT&T Corp.*, July 7, 1999.

Higgins, John M., "Top MSOs own 90% of subs," *Broadcasting & Cable*, May 24, 1999, pp. 34-44.

Paul Kagan Associates, *DBS Report*, August 10, 1999, p. 3.

Time Warner Entertainment 10K.

Jones Intercable 10K.

C.1 Liberty is a Separate Entity

In this section, we assume that AT&T and Liberty are separate entities. We thus distinguish between the cable system interests of AT&T and the cable system interests of Liberty. The various cable systems are grouped as follows:

Alabama T.V. Cable Inc. ("Alabama"):

Subscribers: 27,000

Owners: AT&T 86.67%, William J. McDonald 6.67%, Locust Mountain Part II
6.66%

Control: AT&T 86.67%, William J. McDonald 6.67%, Locust Mountain Part II
6.66%

Adelphia ("Adelphia"):

Subscribers: 4,474,000

Owners: Adelphia 100%

Control: Adelphia 100%

American Cable TV Investors 5, Ltd. ("AC"):

Subscribers: 20,000

Owners: AT&T 1%, Other AC Owners 99%

Control: AT&T 1%, Other AC Owners 99%