pricing and programming access problems examined in this report are consequences of the fact that the largest vertically-integrated MSOs control programming suppliers' access to very large shares of MVPD subscribers, it would be premature to consider relaxing either the horizontal ownership limits or the cable attribution rules until more effective programming access policies are in place. We make several suggestions for improving the rules governing access to programming. Section V summaries our findings.

II. The Size and Sources of Incumbent MSOs' Programming Cost Advantage

One of the virtues of competition is that it drives prices toward their underlying costs and motivates firms to seek ways to provide their products and services at lower cost. Consumers are the ultimate beneficiaries. While the public's interest in dynamically competitive markets is generally served by allowing firms that are able to better their competitors through lower costs and/or better products to profit from doing so, the public's interest is not well-served when these advantages are rooted in market power rather than efficiency-based sources of competitive superiority. The two sets of studies presented in this section employ different types of data to determine whether the large MSOs benefit from lower network supply prices than other MVPDs, how large these price advantages are, and what economic factors might explain their size and existence.

A. Network supply price studies

It is commonly understood in the multichannel video industry that large MSOs are able to license cable networks for distribution to their subscribers at considerably lower rates than are smaller MSOs and other MVPDs with fewer subscribers, including their direct competitors in local cable markets. Entrants, who by definition start small, must therefore compete at a cost disadvantage to incumbent MSOs. The magnitude of this disadvantage and the extent to which it can be justified by operational efficiencies attributable to size are important questions for the fashioning of cable competition policy.

Below we examine two sources of data that permit a rough quantification of the size of the financial disadvantage due to higher programming costs that local cable entrants must deal with in competing with systems operated by the larger MSOs. Both indicate that an entrant's cost disadvantage is quite substantial. Furthermore, limitations of the data available suggest that these estimates substantially understate the true programming cost disadvantage faced by entrants.

Contracts between networks and MVPDs typically specify per subscriber license fees. Typically, the per subscriber fee falls as the number of subscribers a MVPD makes available to a network increases. Typically a MVPD must deliver in excess of a million, and often several million, subscribers to a network to qualify for the lowest rates. As a first approach to quantifying the size of the programming cost disadvantage of cable entrants, we examined rate cards for six networks (whose identities were concealed). Summary statistics describing these contracts are presented in Table 1.

Table 1

Summary Statistics for 6 Network Contracts

Network	Maximum discount off top rate	Subs for min discount	Subs for max discount	Contract length (yrs)
1	15.0%	100,000	5 mil.	5
2	20.0%	500,000	4 mil.	5
3	20.0%	100,000	3.5 mil.	5
4	24+%	1,000	1.6 mil.	2
5	7.4%	250,000	1.5 mil	1
6	2.7%	4 mil.	4 mil.	4

Contractual terms vary considerably among the six networks. The lowest number of subscribers required to qualify for the minimum discount varied from 1,000 to five million, with all but one network requiring at least 100,000 subscribers; while the number of subscribers required to receive the maximum rate card discount ranged from 1.5 million to 5 million. As a percent of top rates, maximum discounts varied from just under 3% to

over 20%, with most being in the 15% to 20% range.[1] For all but Network 6, the discount increases gradually by small increments until the top rate is reached.

The most direct measure of the financial disadvantage to small MSOs inherent in these rate cards is how much more a small MSO of a given size must pay for programming if it pays top of card rates rather than the lower rates specified for much larger MSOs. Table 2 reports for each of the six networks described in Table 1, how much more a MSO with 100,000 subscribers would pay than would a MSO qualifying for the lowest rate on the network's card.

Table 2

Rate Card Estimates of Entrant Cost Disadvantage

Network	Annual Disadvantage
1	$15,876.00
2	28,800.00
3	79,230.00
4	43,874.63
5	72,000.00
6	12,000.00
Total	$251,780.63

If rate cards were strictly adhered to, for these six networks the annual programming cost disadvantage of a 100,000 subscriber entrant competing against the systems of a MSO large enough to qualify for the maximum discount on the rate cards would be approximately $2.52 per subscriber. Of course, six networks are a small fraction of the total carried by a cable system, so the actual disadvantage would be a substantial multiple of this amount. This, of course, assumes that the rate cards presented to a competitive overbuilder such as Ameritech reflect the rates actually paid by the large MSOs.

[1] For all networks except network 4, volume discounts applied to all subscribers. By contrast, Network 4's contract specified a blended rate schedule for which quantity discounts applied only to the number of subscribers by which a MSO's total number of subscribers exceeded the number that triggered the discount. While Network 4's maximum discount is 27.7 percent of its top rate, when averaged across all subscribers

It is generally believed that the largest MSOs are able to negotiate rates substantially below those reported on rate cards. Our analysis of annual financial data for cable networks reported by Paul Kagan Associates[2] bears this out, as well as providing an alternative means of estimating the programming cost disadvantage faced by entrants competing against large MSOs in local cable markets. While they almost certainly understate the magnitude of an entrant's programming cost handicap by a substantial amount, estimates based on the Kagan data are more realistic than those based on rate cards.

Table 3 presents Kagan figures for the top rates charged MVPDs (rates charged small MVPDs who receive no discounts) and the average industry discount off the top rate for 19 of the more popular basic cable networks. The average discount is the difference between the top rate and the average per subscriber rate for the industry as calculated by dividing a network's total licensing revenues by its national subscriber count. Also provided is Kagan's estimate of average local advertising revenue per subscriber for each network. All figures reported are monthly rates. Local ad revenue figures are reported because cable system operators should be willing to pay higher license fees for networks that enable them to generate additional income by selling ad time. An econometric analysis of local cable advertising described in Appendix B shows that the primary beneficiaries of local ad sales are cable systems in large urban areas, which is where major MSO systems are concentrated, and that MSOs pay approximately 52 cents in higher network license fees for every dollar they realize in local ad sales. This being the case, the true discounts realized by the largest MSOs are actually larger than would be indicated by the average discount figure alone, because what is in effect an MSO payment for the opportunity to sell ad time to local advertisers is treated as if it were simply part of a payment for the subscription value of the programming alone.

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the average percentage discount per subscriber must be less. For the largest MSOs, the average percentage discount can be above 24% for this rate card.

[2] Paul Kagan Associates, *Economics of Basic Cable Networks*, 1998.

Table 3

Top Rates, Discounts and Ad Revenues for 19 Basic Networks for 1997

Network	Top Rate ($/mo)	Discount ($/mo)	Discount %	Local Ad Rev ($/mo)
CNN	0.44	0.27	62	0.40
ESPN	0.80	0.16	20	0.43
FAMILY	0.20	0.08	40	0.03
NASHVILLE	0.40	0.24	60	0.05
DISCOVERY	0.30	0.15	50	0.10
USA	0.40	0.06	14	0.29
NICK	0.50	0.30	60	0.05
TNT	0.63	0.13	20	0.21
MTV	0.40	0.24	60	0.06
AE	0.30	0.15	51	0.09
LIFETIME	0.20	0.10	50	0.16
WEATHER	0.10	0.05	50	0.00
COUNTRY	0.11	0.10	91	0.00
VH1	0.10	0.05	50	0.01
CNBC	0.13	0.03	23	0.02
LEARNING	0.10	0.05	50	0.00
BET	0.12	0.02	20	0.01
SCI-FI	0.10	0.05	50	0.00
E!	0.10	0.03	30	0.01

Source: Paul Kagan Associates, **The Economics of Basic Cable Networks**, 1998.

Assuming that a 100,000 subscriber MSO pays the top rate, Table 4 reports for each of the 19 networks estimates of the additional programming costs a 100,000 subscriber MSO would incur paying the top rate compared to payments it would make if it received the average industry discount. The fact that small MVPDs receive either small or no discounts means that the average industry discount must be less than the maximum discounts offered the largest MSOs, most likely by a substantial amount. Therefore, the License Fee Disadvantage estimates reported in Table 4 almost certainly understate substantially the true programming cost disadvantages of cable entrants. Also reported are estimates of entrants' programming cost disadvantages which adjust for the implicit payments large MSOs make for the right to sell advertising on these networks by adding half of local ad revenues to the unadjusted discount.

Table 4

Estimates of Entrant Programming Cost Disadvantage with Kagan Data

Network	License Fee Disadvantage ($/yr)	50% Local Ad Revenue ($/yr)	Lic. Fee Disad plus 50% Ad Rev ($/yr)
CNN	$327,360	$240,000	$567,360
ESPN	192,000	258,000	450,000
FAMILY	96,000	18,000	114,000
NASHVILLE	288,000	30,000	318,000
DISCOVERY	180,000	60,000	240,000
USA	61,200	174,000	235,200
NICK	360,000	30,000	390,000
TNT	151,200	126,000	177,200
MTV	288,000	36,000	324,000
AE	182,880	54,000	236,880
LIFETIME	120,000	96,000	216,000
WEATHER	60,000	0	60,000
COUNTRY	119,724	0	119,724
VH1	60,000	6,000	66,000
CNBC	35,880	12,000	47,880
LEARNING	60,000	0	60,000
BET	28,656	6,000	34,656
SCI-FI	60,000	0	60,000
E!	36,000	6,000	42,000
Average	$142,784	$60,632	$203,416

Source: Paul Kagan Associates, **The Economics of Basic Cable Networks**, 1998.

For a MSO providing each of the 19 networks listed with 100,000 subscribers, the $142,784 annual per network handicap translates to a total cost disadvantage of over $2.7 million dollars, assuming the advertising revenue offset is ignored. At $27 per subscriber, this exceeds the average cable subscriber's monthly payment for basic service, which was $22.76 in 1997.[3] If the contribution of local advertising to license fees is included, the annual programming cost disadvantage to the entrant cable system is nearly $3.9 million, or just under $39 per subscriber per year. If what are likely to be similar price disadvantages on premium networks and other basic networks besides the 19 examined here were added in, the total programming cost disadvantage of cable entrants would certainly be much larger than this $39 estimate. That an entrant cost disadvantage of this magnitude might

[3] Ibid.

have serious implications for the viability of competitive cable systems and the prospects for competition in multichannel video services should be obvious.

How can such large differences in programming costs between cable entrants and incumbents be explained? There are three candidate explanations, none of which necessarily precludes the other. (1) Networks may be sold with volume discounts to incent MSOs to offer them to more of their subscribers. (2) Differences in the license fees paid by large incumbent MSOs and entrants may reflect differences in the cost of supplying networks to incumbent and entrant cable systems. (3) These license fee differences may reflect the bargaining leverage of the big MSOs who control access to large blocks of cable subscribers. To the extent that these large price differences are not based on true cost differences or legitimate business incentives, they are discriminatory and a barrier to competition.

Giving price breaks to incent system operators to make a network available to more of their subscribers is not a plausible explanation for strictly volume-based discounts, because networks would benefit from being made available to more of any cable operator's subscribers, not just those of the largest MSOs. Thus, price breaks based on the percentage of a MSO's subscribers delivered to a network would be a more appropriate way to promote this objective. In fact, percentage-of-subscribers-delivered discounts are a feature of the contract for the fifth network examined above, which offers a discount of over 23% off the top rate to MVPDs delivering at least 95 percent of their subscribers to the network via basic or expanded basic service compared to operators delivering less than 85 percent of their subscribers.

Because the activities of managing cable systems and delivering networks to them are entirely separate, any cost advantages in supplying networks to large MSOs must be due to either differences in the costs of delivering networks to large and small MVPDs or to savings realized in negotiating contracts with a single buyer representing a great many

subscribers rather than a larger number of small buyers who collectively might represent an equal numbers of subscribers. But delivery costs should be the same for large and small MSOs, because a network's satellite signal falls automatically on the headend of any cable system located within its broadcast footprint. Delivery costs are essentially zero. This leaves us with negotiation cost savings as the only remaining cost-based alternative to the leverage due to size explanation for the price breaks networks give large MSOs.

If negotiation cost savings are the primary reason for the price advantage large MSOs enjoy compared to their smaller competitors, the magnitude of these savings must be implicit in the differences in the rates network suppliers charge small and large MVPDs. In principle, these implied negotiation cost differences can be estimated. To evaluate the plausibility of negotiation costs as an explanation for the network supply price advantages of large MSOs, we calculated the negotiation costs implicit in the six network rate cards we analyzed and in the figures on top rates and discounts published by Kagan for representative MVPDs of different sizes. Calculations are based on the assumption that the cost of negotiating a network supply contract is independent of the number of subscribers represented by the MVPD a network supplier negotiates with.[4] Thus if one MSO represents 10 times more subscribers than another, a network supplier's negotiation cost savings from dealing with the larger MSO rather than 10 smaller ones would be nine times the cost of negotiating with a single MSO. Negotiation cost estimates that fall in a plausible range for such costs would be support for the negotiation cost explanation of the observed differences in rates charged different size MVPDs.

The formula employed to estimate negotiation costs is straightforward. Suppose the cost of negotiating a network supply contract is X, a network's supply price to an

[4] There is good reason to believe that negotiations might be more contentious and time consuming, and therefore more costly, between large MSOs and networks because the financial consequences are much large for both parties than in network negotiations with small MVPDs. Therefore, our assumption that negotiation costs are independent of MSO size is conservative in the sense that it overstates the negotiation cost advantage of dealing with large MSOs over small ones.

operator offering the network to Y consumers is P_y per subscriber, and the per subscriber supply price to an operator offering the network to Z subscribers is P_z, with P_y and P_z being the sum of annual per subscriber license fees paid by the operators over the term of the contract. Further assume that $Y>Z$ and $P_y<P_z$, the latter relationship reflecting the discount the larger operator realizes for lower per subscriber negotiation costs. If the difference between P_y and P_z is due entirely to the effect of averaging the negotiation cost of X over Y subscribers as opposed to averaging it over Z subscribers, the following relationship must hold:

$$P_z - P_y = \tfrac{X}{Z} - \tfrac{X}{Y} = X\left(\tfrac{1}{Z} - \tfrac{1}{Y}\right) \tag{1}$$

Solving for X, we have the following formula for negotiation costs:

$$X = \frac{P_z - P_y}{\frac{1}{Z} - \frac{1}{Y}}. \tag{2}$$

To illustrate how equation (2) is employed, let $Z = 100$ and $Y = 200$ be the number of subscribers to hypothetical small and a large MSOs, respectively, and consider a network is sold to the small MSO for 15¢ per subscriber per month and to the large MSO for 10¢ per subscriber per month. For 5 year contracts, P_z would be \$9 and P_y would be \$6. Plugging these values into equation (2), we get X = \$600 as the negotiation cost implicit in the difference in network's supply prices to the two MSOs.

Equation (2), suitably adjusted for different types of rate schedules, was used to back out the negotiation costs implicit in the rate cards we studied. The same approach was employed with the Kagan data, utilizing plausible assumptions regarding the numbers of subscribers required to qualify for discounts. The rate card estimates of negotiation costs reflect the negotiation cost implicit in differences in per subscriber license fees charged a small MSO supplying 100,000 subscribers to a network, which is assumed to pay the top

rate, and a much larger MSO representing either 1.5 million, 4 million, or 12 million subscribers, which is assumed to receive the average industry discount. 1.5 million subscribers is the approximate size of Jones Intercable, the eighth largest MSO, while Time-Warner, the second largest MSO, just slightly exceeds the 12 million figure.[5] (Subscriber counts for the 10 largest MSOs are reported in Table 11 below.) Estimates of implied negotiation costs based on the rate cards are presented in Table 5 for one, three, and five year contracts.

Table 5

Rate Card Estimates of Negotiation Costs

Networks	Contract Length (in years)	MSO with 1.5 mil. subs	MSO with 4 mil. subs	MSO with 12 mil. subs
Network 1				
	1	$4,860	$12,960	$16,009
	3	$14,580	$38,880	$48,028
	5	$24,300	$64,800	$80,047
Network 2				
	1	$11,571	$29,538	$29,042
	3	$34,714	$88,615	$87;126
	5	$57,857	$147,692	$145,210
Network 3				
	1	$49,146	$81,262	$79,896
	3	$147,439	$243,785	$239,687
	5	$245,732	$406,308	$399,479
Network 4				
	1	$41,748	$43,561	$44,243
	3	$125,243	$130,682	$132,730
	5	$208,738	$217,804	$221,217
Network 5				
	1	$77,143	$73,846	$72,605
	3	$231,429	$221,538	$217,815
	5	$385,714	$369,231	$363,025
Network 6				
	1	0	$12,308	$12,101
	3	0	$36,923	$36,303
	5	0	$61,538	$60,504

While the rate card estimates of negotiation costs seem implausibly large—especially those for the more typical five year contracts, they are dwarfed by the estimates

[5] These MSO rankings are based on 1997 data as reported in Warren Publications' 1998 *Television and Cable Factbook.*

based on the Kagan data which employ more realistic assumptions regarding the size of the price breaks networks give the largest MSOs (even though the use of average rather than maximum discounts makes these underestimates as well). Tables 6 through 8 present calculations of negotiation costs implicit in the Kagan data employing the assumptions that: (1) The average industry discount is equivalent to the maximum discount; (2) A 100,000 subscriber MSO pays the top rate; and (3) The number of subscribers required to receive the maximum discount from a network is equal to the average number of subscribers provided each network by an MSO that is statistically average for those ranked among the top 50 by subscriber counts. While dominated by the giants with millions of subscribers listed in Table 11, this average also includes MSOs with subscriber counts in the neighborhood of 150,000. For most of the networks (14 of 19), the average top 50 MSO supplied over a million subscribers, with the average being the highest for ESPN at 1.34 million. The lowest was the SCI-FI Channel, with an average of just over 320,000.

Table 6

One Year Contract Estimates of Negotiation Costs for 19 Networks

Network	Raw neg. cost estimate ($000)	Ad discount adjustment ($000)	Adjusted neg. cost estimate ($000)
CNN	354.45	259.86	614.31
ESPN	207.49	278.81	486.29
FAMILY	104.44	19.58	124.03
NASHVILLE	314.05	32.71	346.76
DISCOVERY	196.03	65.34	261.37
USA	72.75	188.38	261.14
NICK	390.49	32.54	423.03
TNT	165.17	137.64	302.82
MTV	312.09	39.01	351.10
AE	199.24	58.83	258.07
LIFETIME	130.25	104.20	234.46
WEATHER	65.57	0.00	65.57
COUNTRY	151.98	0.00	151.98
VH1	66.08	6.61	72.69
CNBC	39.36	13.16	52.53
LEARNING	83.80	0.00	83.80
BET	32.64	6.83	39.47
SCI-FI	87.27	0.00	87.27
E!	43.15	7.19	50.34
Average	158.75	65.83	224.58

Table 7

Three Year Contract Estimates of Negotiation Costs for 19 Networks

Network	Raw neg cost estimate ($000)	Ad discount adjustment ($000)	Adjusted neg cost estimate ($000)
CNN	1063.34	779.58	1842.92
ESPN	622.46	836.43	1458.88
FAMILY	313.33	58.75	372.08
NASHVILLE	942.15	98.14	1040.29
DISCOVERY	588.08	196.03	784.10
USA	218.26	565.15	783.41
NICK	1171.46	97.62	1269.09
TNT	495.52	412.93	908.45
MTV	936.27	117.03	1053.31
AE	597.72	176.49	774.22
LIFETIME	390.76	312.61	703.37
WEATHER	196.71	0.00	196.71
COUNTRY	455.95	0.00	455.95
VH1	198.24	19.82	218.06
CNBC	118.09	39.49	157.58
LEARNING	251.40	0.00	251.40
BET	97.91	20.50	118.41
SCI-FI	261.81	0.00	261.81
E!	129.44	21.57	151.02
Average	476.26	197.48	673.74

Table 8

Five Year Contract Estimates of Negotiation Costs for 19 Networks

Network	Raw neg cost estimate ($000)	Ad discount adjustment ($000)	Adjusted neg cost estimate ($000)
CNN	1772.23	1299.29	3071.53
ESPN	1037.43	1394.04	2431.47
FAMILY	522.22	97.92	620.14
NASHVILLE	1570.25	163.57	1733.81
DISCOVERY	980.13	326.71	1306.84
USA	363.77	941.91	1305.69
NICK	1952.44	162.70	2115.14
TNT	825.87	688.22	1514.09
MTV	1560.46	195.06	1755.51
AE	996.21	294.16	1290.36
LIFETIME	651.27	521.02	1172.29
WEATHER	327.85	0.00	327.85
COUNTRY	759.91	0.00	759.91
VH1	330.40	33.04	363.44
CNBC	196.81	65.82	262.63
LEARNING	419.00	0.00	419.00
BET	163.18	34.17	197.35
SCI-FI	436.35	0.00	436.35
E!	215.74	35.96	251.69
Average	793.76	329.14	1122.90

In spite of being biased downward by figures that understate maximum discounts, the size of the negotiation costs required to justify the difference in the per subscriber license fees paid by a small MSO supplying a network with 100,000 subscribers and a MSO assumed large enough to qualify for the maximum discount dwarfs any realistic estimate of negotiation costs for most of these networks, and is beyond credible for all of them. Even if one year contracts are assumed, the average negotiation cost unadjusted for advertising implicit in the different rates charged small and large MSOs is nearly $159,000. Adjusted for local advertising revenues, the figure rises to over $224,000. This is equivalent to a network having from two to four well-paid middle managers working full time year round on negotiations with each MSO, when our conversations with people in the industry suggest that, for small MSOs, discussions with network representatives rarely consume as much as a day. The fact that many networks do not even begin offering

discounts on their rate cards until the number of subscribers delivered by a buyer exceed from one hundred thousand to several hundred thousand is itself persuasive evidence that, at least for small MVPDs, negotiation costs must be quite low. In other words, negotiation costs are too small to produce a difference in the wholesale prices offered MVPDs with 100,000 subscribers compared to prices offered MVPDs with 1,000 subscribers.

Because the estimated implicit negotiation cost rises in direct proportion to the number of years network-MSO contracts are assumed to last, implicit negotiation costs become truly astounding when the apparently more common five year contract term is employed. Without the local advertising adjustment, the average implicit negotiation cost is over $790,000. With the advertising adjustment, it is over $1.1 million. At $1.95 million, Nickelodeon has the highest unadjusted negotiation cost. The highest advertising-adjusted figures are for CNN and ESPN, at $3.07 million and $2.43 million respectively.

Clearly negotiation cost savings cannot explain more than a tiny fraction of the differences in network license fees paid by cable entrants (and small MVPDs generally) and the large MSOs. Thus the only plausible explanation for the dramatically lower prices paid by large MSOs is the leverage they realize from control over very large blocks of multichannel video subscribers. While the above estimates of the bargaining consequences of MSO size are new, the suggestion that large subscriber bases provide the largest MSOs with extraordinary bargaining clout is not. Waterman (1996) presents a formal model in which he finds that the license fee paid by a MSO for access to a network decreases as its share of industry subscribers rises. Similarly, Chipty's (1995) econometric study of the pricing of cable services to consumers provides empirical confirmation of a MSO size advantage in bargaining with network suppliers. (Lower network license fees negotiated by large MSOs are reflected in lower subscriber fees, although such fees would be lower still with competition.) Our own econometric study of cable pricing and programming provides further evidence of the bargaining advantages of the largest MSOs.

B. Econometric evidence of bargaining power

To test various hypotheses regarding the impact of horizontal concentration on MSO programming, pricing and their relations with network suppliers, we analyzed information describing the operations of 8260 individual cable systems.[6] Outcomes of interest included the carriage of individual networks, numbers of networks by category (owned by vertically integrated MSOs and independents), and subscription fees. Explanatory variables included the number of over-the-air stations carried, whether the system was part of a regional interconnect, whether the system inserted local advertising, the number of homes passed (expressed in logarithmic terms), channel capacity (5 categorical variables for different ranges), MSO ownership (TCI, Time-Warner, other top-ten MSOs), and regional indicators (south, pacific, midwest, southwest, mountain and northeast). Tables 9 and 10 list the regression variables and provide definitions.

Appendix Tables A-1 through A-15 report detailed regression results for each of the 15 variables analyzed. Key findings of policy interest are the estimated relationships between MSO size and system outcomes. These are summarized in Table 12. The patterns, even when controlling for other factors, are quite significant and were consistent across all estimated models. The evidence suggests that systems owned by large MSOs systematically differ from the rest of the industry, with the differences being ;most pronounced for the two largest MSOs, TCI and Time Warner.

TCI and Time Warner carry more network programming of all types than do other cable system operators. For example, a typical TCI system carries over 20% more basic network programming, after controlling for system size. On average, a TCI system carries

[6] Data were compiled from the 1998 *Television and Cable Factbook*, Warren Publications. Although information describing nearly 11,000 systems was provided, we based our regression analyses on the subset of systems for which recent data (1996 or later) were reported.

.8 more TCI-affiliated networks and .4 more independent networks than MSOs outside the top 10. The effects for Time Warner are also significant, though somewhat smaller.

In part, this difference may stem from the license fee discounts that can be observed in published rate cards. Such cost differences would also affect rate setting, with larger MSOs able to profit by lowering subscription prices. The evidence suggests that this is the

Table 9

Dependent Variables

Dependent Variables	Definition
Time-Warner networks[7]	The number of T-W networks carried by the cable system
Independent networks	Number of cable networks not affiliated with an MSO
TCI networks[8]	Number of networks that are affiliated with TCI (Liberty)
log(monthly subscription)	The monthly subscription fee (in logarithms)
Ratio of MSO/independent	Ratio of MSO-owned networks over the number of independent networks
Individual Networks	Whether or not system carries an individual network (0,1)
Discovery	Affiliated with TCI (Liberty)
USA	Independent
Lifetime	Independent
MTV	Independent
Nashville	Independent
A&E	Independent
BET	TCI (Liberty)
AMC	Cablevision
Weather	Independent
log(Total basic networks)	The total number of basic networks (in logarithms)

[7] Includes TBS, CNN, Headline News, and TNT.

[8] Includes Discovery, QVC, BET, Learning, BET, FX (with Fox), and Sports channels.

Table 10

Independent Variables

Variable	Definition
log(Stations)	The number of over-the-air signals carried by the system (in logarithms)
Interconnect	Whether the system is part of a regional interconnect (0,1)
Local Adv	Whether the system inserts local advertising spots (0,1)
log(Homes)	The number of homes passed (in logarithms)
Capacity	Channel capacity categories (0,1)
	24-36 channels 36-51 channels 52-61 channels 62-79 channels 80 + channels
TCI	System affiliated with TCI (0,1)
Time Warner	System affiliated with Time Warner (0,1)
Large MSO	System affiliated with other top-ten MSO
Region	System located in region (0,1)
	South Pacific Midwest Southwest Mountain Other (outside continental U.S) Northeast

case, with TCI systems charging 30% less than smaller MSOs, all things equal. For Time Warner, the estimated price difference is 17%. For other larger MSOs, prices average 6% lower. It is important to note, however, that prices would be lower still if these systems faced overbuild competitors.

As a group, the 10 largest MSOs, including TCI and Time Warner, favor their own networks at the expense of those provided by independent, nonvertically integrated programmers. The ratio of vertically integrated networks to independent networks is significantly higher for these largest MSOs than it is for the smaller (nonvertically integrated) cable system operators. For example, the ratio, which averages .88 for the cable industry in general, is .15 higher for TCI systems.

It is worth noting that most of these MSO-related differences are most significant for TCI systems. The effects for Time Warner are similar, but clearly of smaller magnitude. The programming and pricing outcomes for the next biggest MSOs, ranging in size from about 1.2 million to just under 5 million subscribers (see Table 11), are different from the rest of the industry, but only a fraction of the TCI and Time Warner effects.

Table 11

Top-Ten Multiple System Owners in 1997

Multiple System Owner (MSO)	Total Subscribers (thousands)
Tele-Communications, Inc (TCI)[a]	15,729
Time Warner Cable	12,300
U.S. West Media Group (Media One)	4,861
Comcast Cable Communications, Inc.	4,300
Cox Communications, Inc.	3,275
Cablevision Systems Corp.	2,986
Adelphia Communications Corp.	1,829
Jones Intercable Inc.	1,488
Century Communications Corp	1,273
Marcus Cable	1,184
Total	49,225

[a]Includes systems belonging to Bresnan (211,000 subscribers) and Lenfest Communications (1,148,000 subscribers).

Source: *Television and Cable Factbook*, 1998, Warren Publications

Table 12
Summary of Empirical Results for MSO Affiliation

Variable	TCI	Time Warner	Other Top 10 MSO
TCI-Liberty Networks	.803*	.212*	.035
Time Warner Networks	.497*	.236*	.091*
Independent Networks	.476*	.467*	-.138*
Discovery	.186*	.066*	.022*
BET	.046*	.124*	.017*
USA	.067*	.026*	-.046*
Lifetime	.185*	.073*	-.025*
MTV	.132*	.111*	-.031*
Nashville	.106*	.053*	-.051*
A&E	.077*	.110*	-.057*
AMC	.423*	.066*	.074*
Weather	.144*	.103*	-.027
log(total networks)	.213*	.076*	-.014
log(monthly subs fee)	-.301*	-.171*	-.059*
ratio: MSO/Independ. Nets	.154*	.068*	.104*

*Significant at 95 percent
Note: Complete regression results are reported in appendix tables A-1 to A-15

These findings strongly suggest that TCI and Time Warner, and possibly other large MSOs, have exceeded a critical size threshold at which they are able to influence the market performance of their member systems. Policymakers should consider this evidence in evaluating the merits of horizontal concentration limits that exceed the levels currently represented by the two dominant cable system MSOs. Unfortunately, assessment of the social efficiency implications of these performance differences is more complicated. On the one hand, the largest MSO's subscribers appear to benefit from subscription fees that are lower than the industry average and a larger than average selection of channels. This is clearly a positive. But there are important negatives to be considered as well.

Large MSOs' programming selections seem to be biased in favor of vertically integrated networks, which reduces the number of independent voices available to viewers. Also, as Waterman (1996) points out, network suppliers will rationally respond to the larger cut of network revenues demanded by large MSOs by reducing their investments in programming, which presumably will diminish the benefits all consumers receive from cable television (or MVPDs generally). Perhaps more important are the implications of the market power advantages the largest MSOs enjoy over programmers for the development of competitive cable markets.

Entrants offer their subscribers substantially more channels than do the incumbents they compete against, as revealed by the descriptive statistics for the competitive markets in our sample in Table 13 (in Section III). In addition, a number of econometric studies have shown that consumers benefit from lower cable prices in local markets where there is competition (Emmons and Praeger, 1997; FCC, 1994; Levin and Meisel, 1991; Dertouzos and Wildman; 1998). Monopolists, just like competitors, find it profitable to lower their prices when their costs fall; so the fact that the largest MSOs charge the lowest prices does not mean that their prices are competitive. It is the benefits of competition that are threatened by the large MSOs' current ability to asymmetrically benefit from the bargaining leverage their size confers. If faced with competitors with comparable programming costs, their prices would be even lower.

Earlier, we described the empirical evidence that the programming cost handicap cable entrants must face if they want to compete in markets served by major MSOs is formidable. For example, the Kagan data reviewed above suggest that license fee discounts *average* over 40 percent in the industry overall. These savings represent as much as 10 percent of total industry revenues. (See Table B-1) Because these discounts are realized only by the largest MSOs, they also represent a margin competitive entrants cannot cut into without incurring substantial losses. Alternatively, they constitute a profit cushion

that allows incumbents to cut prices to levels that are unprofitable for entrants without incurring losses themselves.

Eliminating the asymmetry does not necessarily require preventing large MSOs from employing their size-based bargaining leverage in negotiations with network suppliers, however. Granting entrants access to cable networks on the same terms given the incumbents they face would be a major step toward eliminating the competitive asymmetry.

III. The Anticompetitive Consequences of Exclusivity Arrangements

Exclusive contracts between MSOs and networks have been a controversial topic in cable policymaking. On the one hand, there is the realization that entrants cannot be viable if incumbents lock up the rights to the most attractive programming. On the other hand, it is also recognized that MVPDs may be able to distinguish themselves from their competitors by developing or acquiring programming that they alone can offer consumers.[9] If entrants were able to do this, exclusive contracts with networks might facilitate the development of competitive cable markets—a possibility we carefully examine below. Before doing so, it is worth noting, however that exclusive arrangements with networks seem to have been employed primarily by incumbent operators, not the entrants contesting their markets. Thus, there is little empirical evidence that exclusive arrangements with networks have facilitated competitive entry.

Should cable entrants be able to profitably employ exclusive arrangements with networks to gain an edge in their competition with incumbent MSOs? In our opinion, this argument ignores two important realities of competition in multichannel video services. First, it overlooks the fact that even monopoly cable systems offer their subscribers

[9] Fourth Annual Report, In the Matter of Annual Assessment of the Status of Competition in Markets for the Delivery of Video Programming, FCC CS Docket No. 97-141, Jan. 13, 1998.

differentiated collections of services in the various combinations of networks and tiering arrangements they can choose among. If there is a consumer segment that can profitably be served by offering new programming services, there is no inherent reason why an incumbent should not find it just as profitable to do this an entrant. The differentiation as a vehicle for entry argument implicitly assumes that multichannel service providers are like the single product competitors in standard economic models of competition in differentiated product markets, an assumption that is clearly not valid when applied to cable television.

Second, and more important, there are strong theoretical reasons to expect that, due to their large subscriber bases and extensive geographic reach, incumbent MSOs will systematically find it profitable to outbid entrants for exclusive rights to popular networks, whether these rights are acquired by licensing or through outright ownership. Once acquired, networks over which they have exclusive rights can be bundled with networks they offer in common with entrants and priced so that entrants will not be able to compete even in the sale of the common networks. This possibility arises even in the absence of the cost advantages large incumbent MSOs realize in the purchase of programming. Thus, exclusivity is likely to be a more attractive strategy for incumbents trying to protect their customer bases and dominant positions in local markets than for entrants trying to gain a toehold. This is consistent with the statistically robust finding, from an econometric analysis of 103 systems in competitive markets in our sample, that large incumbents are 25% more likely than entrants in these markets to carry a regional sports channel, after controlling for the greater channel capacities of entrant systems. These findings are summarized in Table 13 and the details of the sports regression are reported in Appendix Table C-1.

Table 13

Characteristics of Overbuild Markets

	Incumbents	Entrants
Sample size	80	23
System owned by large MSO	69%	0%
Average channel capacity	56.1	80.7
Carry regional sports channel	65%	56%

[a]A large MSO is any one of the 8 largest MSOs.
[b]Entrant systems are those that overbuild an existing system.

We would expect large incumbent MSOs should find it profitable to outbid cable entrants when competing for exclusive programming rights for two reasons. To understand the first of these reasons, assume first, and unrealistically, that an entrant is able to equally share the cable subscribers in a franchise area with an incumbent from the day it turns on its system. In this situation, bidding between the incumbent and an entrant for exclusive rights within the franchise area they serve in common would result in two equal bids. With a tie, the exclusive rights could go to either the incumbent or the entrant. However, as long as the incumbent could raise its prices as a result of adding the new network, and thus increase its revenues in franchise areas in which it does not face competition, an incumbent that provided service in a number of franchise areas would always be willing to bid more than an entrant serving only one (or a subset) of those areas, because the value of the additional revenues would be factored into its bid. (Note that this logic also applies if the incumbent finds it revenue enhancing to substitute the new network for a network it previously carried. In this case, the entrant would always be left with the second best network.) Thus, even when competing against entrants who start out evenly matched with them in competitive franchise areas, MSOs serving both competitive and noncompetitive franchise areas will always find it profitable to outbid entrants for exclusive rights to networks. By the same reasoning, incumbent MSO's should also be able to compel those

networks for which exclusivity is a feasible option under current regulations to grant them exclusivity by demanding it on an all or nothing basis.

If we start with the more realistic assumption that an incumbent operator is likely to have some customers who are not very responsive to competitive promotional offers—either because they are not aware of the offers or they can not be bothered with the personal costs of switching unless the difference between the incumbent's price and service combination and that of the entrant become quite substantial, then these comparatively price insensitive customers would be an advantage to an incumbent operator analogous to subscribers in areas not served by the entrant in the above example. Thus, with some customer inertia, even an incumbent serving a single franchise area should be able to consistently outbid an entrant for exclusive local rights to popular channels.

At best, then, as long as there are some attractive channels for which incumbent cable operators and entrants can compete for exclusive licenses, we would expect to always find the entrant left in the position of selling a less appealing set of networks than the incumbent, and therefore not able to constrain the incumbents' prices and profits to the extent we normally expect and hope for in a competitive market. Even this outcome is likely to be an overly optimistic prediction of the entrant's fate. Modeling price competition between an incumbent with exclusive access to popular networks or local channels and an entrant that must compete without them (or with inferior substitutes) shows that under plausible conditions the incumbent is likely to find it profitable to set prices that drive the entrant from the market. (Aron and Wildman, 1998) The following example illustrates the economic logic that would lead an incumbent first to outbid an entrant for exclusive rights to programming and then to use that exclusivity to squeeze the entrant from the market.

Consider an incumbent MSO that operates cable systems in two franchise areas, designated Area 1 and Area 2. The incumbent faces a single competitor in Area 1 and serves Area 2 by itself. There are two cable networks, A and B. Network A is available at