

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the matter of)	
)	
Implementation of Section 3 of the Cable)	
Television Consumer Protection and Competition)	MM Docket No. 92-266
Act of 1992)	
)	
Statistical Report on Average Rates for Basic)	
Service, Cable Programming Service, and)	
Equipment)	

REPORT ON CABLE INDUSTRY PRICES

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By the Commission:

I. INTRODUCTION

1. Section 623(k) of the Communications Act, as amended by the Cable Television Consumer Protection and Competition Act of 1992 (“1992 Cable Act”),¹ requires the Commission to publish annually a statistical report on cable prices, or more specifically, average rates for the delivery of basic cable service, cable programming service, and equipment.² The Act also requires the Commission to compare the average rates of cable operators subject to effective competition with those of operators not subject to effective competition.³ This 2001 Report is issued in compliance with those statutory

¹ Section 623(k) was adopted as Section 3(k) of the 1992 Cable Act, Pub. L. No. 102-385, 106 Stat. 1460, codified at 47 U.S.C. § 543(k).

² See 47 U.S.C. § 543(k). The 1992 Cable Act defines basic cable service as the tier of service that includes the retransmission of local television broadcast signals. See 7 U.S.C. § 543(b)(7). Cable programming service is defined as any video programming other than video programming carried on the basic service tier, and video programming offered on a per channel or per program basis. See 47 U.S.C. § 543(k)(1)(2). Equipment refers to a converter box, remote control, and other equipment necessary to access programming. See 47 U.S.C. § 543(b)(3).

³ Effective competition exists where a multichannel video programming distributor (“MVPD”) meets one of four tests within its franchise area: (1) fewer than 30% of households subscribe to the service of the cable system (herein referred to as the “low penetration test”); (2) at least two MVPDs serve 50% or more of households and at least 15% of those households take service other than from the largest MVPD (the “overbuild test”); (3) a municipal MVPD offers service to at least 50% of households (the “municipal test”); or (4) a local exchange carrier (“LEC”) or its affiliate (or any MVPD using the facilities of the LEC or its affiliate) offers video programming service (other than direct broadcast satellite (“DBS”) service) comparable to the service of an unaffiliated MVPD (the “LEC test”). See 47 U.S.C. § 543(1)(1)(A-D).

obligations.⁴

2. The information and analysis provided in this Report are based on the Commission's 2001 survey of cable industry prices ("Survey").⁵ The Survey requested data from selected cable operators as of July 1, 2001 and July 1, 2000. Limited amounts of data were requested as of July 1, 1999. The Survey enables the Commission to compare prices charged by two groups of cable operators: (1) operators that are deemed to face effective competition (herein referred to as the "competitive group") and (2) operators that do not face effective competition (the "noncompetitive group"). Within the noncompetitive group, information was collected from both regulated and unregulated operators.⁶ Operators in the competitive group are limited to those operators that have sought and obtained a Commission finding of effective competition.⁷ As a result, within the noncompetitive group, there may be operators that face competition but have not filed a petition with the Commission seeking a finding of effective competition. Similarly, there may be operators within the competitive group that may have met the criteria for a finding of effective competition at the time the finding was made, but because of changed circumstances, may not meet the statutory criteria currently.

3. The Survey collected information about average monthly rates for the basic service tier ("BST") and major cable programming service tier ("CPST").⁸ The BST typically consists of broadcast and other local origination stations plus a few satellite channels. The major CPST typically consists of satellite channels. Most cable customers subscribe to both BST and the major CPST.⁹ We collected information on the average monthly charge for equipment, consisting of an analog addressable converter

⁴ For the results of previous surveys, see *Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, Statistical Report on Average Prices for Basic Service, Cable Programming Services, and Equipment*, 16 FCC Rcd 4346 (2001); *Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, Statistical Report on Average Prices for Basic Service, Cable Programming Services, and Equipment*, 15 FCC Rcd 10927 (2000); *Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, Statistical Report on Average Prices for Basic Service, Cable Programming Services, and Equipment*, 14 FCC Rcd 8331 (1999); *Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, Statistical Report on Average Prices for Basic Service, Cable Programming Services, and Equipment*, 12 FCC Rcd 22756 (1997); *Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, Statistical Report on Average Prices for Basic Service, Cable Programming Services, and Equipment*, 12 FCC Rcd 3239 (1997); *Report on the Cable Services Bureau's Survey on the Rate Impact of the Federal Communications Commission's Revised Rate Regulations*, 9 FCC Rcd 5484 (1994); *Implementation of Sections of the Cable Television Consumer Protection and Competition Act of 1992: Rate Regulation*, 9 FCC Rcd 4119 (1994) ("Benchmark Order"); *Implementation of Sections of the Cable Television Consumer Protection and Competition Act of 1992: Rate Regulation*, 8 FCC Rcd 5631 (1994).

⁵ Pursuant to 47 U.S.C. § 543(k), the Commission directed cable operators, selected as part of a random sample representative of the industry, to respond to certain data requests. See *Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, Statistical Report on Average Prices for Basic Service, Cable Programming Services, and Equipment*, 16 FCC Rcd 10749 (2001).

⁶ Cable operators are not subject to rate regulation in franchise areas where the Commission has made a finding of effective competition. In other franchise areas, local communities may continue to have the authority to regulate the rates of the basic service tier and equipment. See 47 U.S.C. § 543(l)(2).

⁷ See fn. 3, *supra*.

⁸ The term "service tier" means a cable service for which the operator charges a separate rate. See 47 U.S.C. § 522(l)(7). The "major" CPST tier typically meets two criteria: (1) offers the most number of channels among the CPST tiers, and (2) has the highest number of subscribers among the CPST tiers.

⁹ Most subscribers (89%) take both BST and the major CPST; the remaining 11% take BST service only.

and remote control unit. The Survey also collected information on service installation charges.¹⁰ The Survey further sought information needed to determine average rates per channel and to explain changes in rates between the Survey dates. In addition, we sought to gather information about the price and availability of digital programming service tiers, Internet access, and telephony offered by cable operators. We summarize, below, the major findings of the Survey.

II. SUMMARY OF FINDINGS

4. The Survey shows that the average monthly rate for BST and CPST programming services for the competitive and noncompetitive groups combined increased by 7.3%, from \$31.45 to \$33.75, for the 12-month period ending July 1, 2001. The average monthly charge for equipment increased by 9.1%, from \$2.97 to \$3.24, and the overall charge for programming services and equipment increased by 7.5% from \$34.42 to \$36.99, over the same period.

5. During the year ending July 1, 2001, the average monthly rate for BST programming increased by 2.1% and the average monthly rate for CPST programming increased by 10.8%. The average rate per channel increased by 1.5% for the year ending July 1, 2001.¹¹ The average number of channels increased by 5.5%, from 56.3 to 59.4 channels, over the same period. Table 1 presents these and other results for the competitive and noncompetitive groups combined.

6. Both the competitive and noncompetitive groups increased their average monthly rate for programming and equipment by 7.5% over the 12-month period ending July 1, 2001.¹² Over the same period, competitive and noncompetitive operators, respectively, increased rates for programming services by 7.0% and 7.3%. The average monthly charge for equipment increased for competitive and noncompetitive operators, respectively, by 12.8% and 9.1%. The average price per channel (based on the cost of programming services only) was unchanged for competitive operators and increased by 1.5% for noncompetitive operators. The competitive group averaged 60.9 channels and the noncompetitive group averaged 59.3 channels, increases in channel offerings of 5.9% and 5.5%, respectively.

7. For the 12 months ending July 1, 2001, competitive and noncompetitive operators attributed, on average, 64.7% and 58.2%, respectively, of rate increases to higher programming costs. Other factors that reportedly led to price increases were system upgrades, and general inflation. In addition, the competitive group attributed 9.2%, and the noncompetitive group 13.4%, of their rate increases to unspecified costs. Competitive and noncompetitive operators also attribute 4.9% and 3.8%, respectively, of their rate increases to factors other than cost.

8. The difference in average monthly rates between the competitive and noncompetitive

¹⁰ Installation charges represent one-time charges in contrast to monthly charges.

¹¹ We calculated average monthly rate per channel equal to average monthly rate divided by number of channels. Ideally, when calculating price changes, we would like to take into account changes in the quantity and quality of service provided. In the case of cable rates, however, that is difficult to do because there is no readily available measure of service and programming quality. Both the quantity and quality of services provided have changed significantly in recent years as cable operators have upgraded their systems' capacity. Increased system capacity, typically, results in additional channels of service and may also result in improved signal quality, improved system reliability and the provision of new services. We report average monthly rates on a per channel basis as a proxy for quality adjusted price changes.

¹² Throughout this report, there is only a slight difference, if any, in the overall average and the average for the noncompetitive group. This is because the group of operators that have received a specific Commission "effective competition" finding represents a relatively small group of cable operators, and thus there is only a slight effect from this group on the overall average. We estimate that competitive and noncompetitive operators serve, respectively, approximately 6% and 94% of cable households nationwide.

groups (the “competitive differential”) remained at 6.3% for both 2000 and 2001. On July 1, 2000, the competitive and noncompetitive groups, respectively, charged \$32.49 and \$34.54, representing a 6.3% differential between the two groups. By July 1, 2001, cable operators facing competition were charging, on average, \$34.93 while operators not facing competition were charging \$37.13, also representing a 6.3% differential. In addition, the differential in average monthly rate per channel was 9.4% on July 1, 2001, as competitive and noncompetitive cable operators, respectively, charged 55.1 cents and 60.3 cents per channel. The monthly charge for equipment was three cents lower for the noncompetitive group at \$3.24, than for the competitive group, as of July 1, 2001. Tables 2-8 present these and other results from the Survey.

9. Growth in capacity and advanced services continued, as shown in Tables 9-13, for both competitive and noncompetitive operators. For the noncompetitive group, the fraction of total revenue derived from programming declined from 83.1% to 79.9%, even as digital programming grew, primarily as a result of growth in cable Internet and telephony. Operators belonging to the competitive group experienced a similar shift among revenue sources. Approximately two-thirds of all cable systems (68.7% of competitive operators and 63.2% of noncompetitive operators) have achieved a capacity of 750 MHz and above. Over the year ending July 1, 2001, the percentage of noncompetitive cable systems deploying digital video service to at least a portion of their subscribers increased from 57.8% to 77.6%. Similarly, the percentage deploying Internet access service rose from 51.4% to 70.8%. The percentage offering cable telephony, however, remained virtually constant at 21.1% in July 2001, compared with 20.7% in July 2000. Over the same period, the percentage of subscribers electing to take digital programming increased from 7.5% to 15.7%, while the percentage of cable households purchasing cable Internet access service grew from 3.1% to 7.4%. The percentage of cable subscribers taking cable telephony increased from 0.7% in July 2000 to 2.2% in July 2001.

10. Finally, the results of our econometric analysis suggest that the demand for cable service as well as the price charged for that service was sensitive to the type of competition faced by cable operators. In those areas where a cable operator faces effective competition from a wireline overbuilder (i.e., where a finding of effective competition was based on the LEC test or the wireline portion of the overbuild test), we found that operators tend to offer more channels at a lower rate. In the few areas where the Commission has made a finding of effective competition as a result of DBS penetration, we found that the presence of DBS competition had no statistically significant effect on the demand for cable service or on cable rates. However, because of the specific nature of the sample, no general conclusions may be drawn from this fact.

III. SURVEY METHODOLOGY

A. Sample

11. To compare average monthly rates of competitive and noncompetitive cable operators,¹³ we selected a separate sample from each group. These samples included 283 of the 368 operators in the competitive group and 472 of the 9,789 operators in the noncompetitive group. To ensure that the samples were representative and to gain more precise estimates, we stratified both groups into subgroups (or strata) and selected a portion of the sample from each stratum. The competitive group was divided according to the test by which effective competition was determined and the noncompetitive group according to the number of subscribers in each operator’s cable system. The number of operators selected from each stratum depended on the number of subscribers nationwide in that stratum. Attachment A displays sample-size percentages and contains further information on our stratified sampling

¹³ Operator is defined for this report on a system basis. For example, if a multiple system operator (“MSO”) has 10 cable systems, that MSO is considered to be 10 operators for the purpose of this report.

methodology.¹⁴

12. We divided competitive operators into five strata: (1) LEC; (2) wireline overbuild; (3) DBS overbuild;¹⁵ (4) low penetration; and (5) municipal. For the LEC, wireline overbuild, DBS overbuild, and municipal strata, we included all 99, 45, 39, and 17 operators, respectively, in our Survey because of the relatively small number of operators in each of these four strata. We chose to use a random sample for the low penetration stratum because that subgroup had a large number of operators, 168 in all, from which we randomly selected 83 for that stratum. This resulted in a total of 283 operators for the competitive group.

13. Noncompetitive operators also were divided into five strata. The “very large” stratum includes operators serving more than 50,000 subscribers in a single community. The “large” stratum contains operators serving more than 50,000 subscribers, but with no individual community reaching 50,000 subscribers. The “medium” stratum is comprised of operators serving from 10,001 through 50,000 subscribers. The “small” stratum includes operators serving from 1,001 through 10,000 subscribers and, finally, the “very small” stratum includes operators with fewer than 1,000 subscribers. A sample of operators not stratified by size would have placed a disproportionately greater emphasis on smaller systems relative to the number of subscribers the smaller systems serve. The high proportion of subscribers nationwide represented by the very large stratum resulted in the selection of all 97 operators in that stratum. Other selections include 113 of the 170 large operators; 151 of the 888 medium-sized operators; 71 of the 2,717 small operators; and 40 of the 5,917 very small operators. If a system selected for our sample served more than one community, as identified by the FCC community unit identification codes, we randomly selected one of those communities for the Survey.

14. Of the 755 Survey questionnaires mailed to cable operators from both groups, respondents returned 731 questionnaires to the Commission. Of the 24 questionnaires not returned, 12 operators were no longer in business or had recently sold the system. Of the 731 returned questionnaires, 723 met the minimum necessary data requirements to be included in the analysis.¹⁶ As of July 1, 2001, cable operators that returned usable questionnaires served a total of 15.4 million subscribers or 22.3% of the 69.0 million cable subscribers nationwide.¹⁷

15. Of the 723 usable responses, competitive cable operators submitted 266 questionnaires. These 266 respondents served approximately 2.3 million subscribers, or 3.3% of all cable subscribers. Of these, 187 respondents had direct competition in their geographic area, with 93 meeting the LEC test, 78 meeting the overbuild test (with 40 in the wireline overbuild subgroup and 38 in the DBS overbuild subgroup), and 16 served a community in which the municipality owned one of the operators (thereby meeting the municipal test). Of the remaining respondents in the competitive group, 79 served less than 30% of households in their service area (thereby meeting the low penetration test). Noncompetitive cable operators submitted the remaining 457 responses. These respondents served 13.1 million subscribers, or approximately 19.0% of all cable subscribers.

¹⁴ For a general explanation of stratified sampling methodology, see G. W. Snedecor and W. G. Cochran, *Statistical Methods* 434-59, 7TH ed. (1980). A positive correlation exists between system size and the monthly rate for cable service. Using statistical analysis of data from the year 2000 survey, we stratified noncompetitive cable systems prior to selecting the sample according to size thresholds that yielded relatively uniform rates within each stratum.

¹⁵ We subdivided the operators meeting the overbuild test into two subgroups -- wireline overbuild and DBS overbuild.

¹⁶ To be included in the statistical analysis, respondents must have provided the average monthly rate and number of channels offered as of July 1999, 2000, and 2001.

¹⁷ Kagan World Media, *Kagan's 10-Year Cable TV Industry Projections*, *Broadband Cable Financial Databook 2001*, (July 2001) at 10.

B. Variables

16. From the Survey responses, we calculated monthly average rates for the variables described below.

Average monthly rate for BST and CPST programming. This is the average monthly rate for programming services. It is the total of the monthly rate paid by subscribers to receive the BST and major CPST. It excludes additional charges that may be incurred for a CPST beyond the major tier, pay-per-view or pay-per-program services, and digital programming. It also excludes the cost of equipment, which is shown separately.

Average monthly charge for equipment. This variable is the monthly charge paid by subscribers for an analog addressable set-top box plus a remote control.

Average monthly rate for programming and equipment. This variable is the sum of the average monthly rate for programming and equipment. It represents the rate that a typical subscriber pays for BST and CPST service, and equipment.

Average number of channels. This variable is the average number of local and satellite channels in the BST and CPST channel lineup. Consistent with the monthly rate for programming services, this variable excludes channels on any CPST beyond the major tier, as well as channels devoted to pay-per-view or pay-per-program services, and channels devoted to digital service.

Average monthly rate per channel. This variable is the average monthly rate for programming service divided by the average number of channels.¹⁸ We also report the average monthly rate per satellite channel, which is equal to the average monthly rate for programming service divided by the average number of satellite channels.

17. In addition to these variables, we sought information that would enable us to attribute the changes in average rates to various categories of increased costs or to other factors. We also sought information on (1) service installation charges; (2) availability and growth of digital service, Internet access, and telephony; and (3) the distribution of channels among major categories of programming. We present Survey findings on these additional variables. We also provide the results of an econometric analysis of factors influencing cable rates and the demand for cable service.

C. Estimates of Average Monthly Rates

18. As noted in Section III.A and Attachment A, we used a stratified sampling methodology to estimate average monthly rates. This entailed dividing the competitive and noncompetitive groups into strata and drawing a sample from each stratum. Using those samples, we calculated average monthly rates for each stratum,¹⁹ and then combined those results to form averages for each major group

¹⁸ The value of cable services can be measured in various ways. Some analysts have suggested that the average number of channels (or satellite channels) received by subscribers, along with their respective per channel rates, are an appropriate measure of value. Alternatively, others have suggested that subscribers may not similarly value an increase in the number of channels as more channels are added, and thus the additional channels may have a declining marginal value. Because of the difficulty of obtaining consumer valuation data, our Survey did not seek information on how consumers value the channels on the BST and CPST tiers they receive, or how they would value those tiers if given the option of receiving fewer channels or different channels than those offered.

¹⁹ The use of statistics as an analytical tool is a way of estimating the unknown characteristics of a population by examining a random sample selected from that population. The monthly rates we calculate from our samples probably do not match exactly the average monthly rate for the entire population of cable operators, even though our samples are representative. Rather, the average monthly rate for the entire population falls within a range around our sample's reported average. This range is bounded by the sample average plus or minus 1.955 multiplied by the standard error of our estimated average. This gives us a "95.5% confidence interval." If, for example, a sample's average monthly rate is \$35.00 and the standard error is \$0.50, we estimate that the true average monthly rate is

(continued...)

(competitive and noncompetitive) using a weighted average methodology.²⁰

19. The weight given to each stratum depended on the number of subscribers nationwide in that stratum. Within the competitive group, we estimate that operators in the LEC stratum served 60.4% of subscribers.²¹ Similarly, we estimate that the percentage of subscribers served by operators in each of the remaining strata were as follows: wireline overbuild 16.1%, DBS overbuild 11.7%, low penetration 10.9%, and municipal 0.9%. Within the noncompetitive group, we estimate that operators in the very large and large strata served, respectively, 22.6% and 24.6% of subscribers. We also estimate that operators in the medium-sized stratum served 33.8%, operators in the small stratum served 15.6% and operators in the very small stratum served 3.3% of subscribers. These percentages became the weights used to calculate weighted averages of monthly rates for the competitive and noncompetitive groups.

IV. SURVEY RESULTS

A. Change in Average Monthly Rate for All Cable Operators

20. Table 1 shows the average monthly rate of competitive and noncompetitive operators combined for programming services and equipment as of July 1, 2000, and 2001.²² The average monthly rate for programming and equipment increased by 7.5% for the year ending July 1, 2001 from \$34.42 in July 2000 to \$36.99 in July 2001. This change is statistically significant at the 5% level as denoted by the asterisk next to the percent change.²³

21. Table 1 also presents the components of programming -- BST and CPST. Between July 1, 2000 and July 1, 2001, the average rate for BST, which typically includes broadcast and other local channels plus a few satellite channels, increased by 2.1%, from \$12.57 to \$12.84. The average rate for CPST, which typically consists entirely of satellite channels, increased by 10.8%, from \$18.88 to \$20.91. In addition, Table 1 divides the number of channels on BST and major CPST into local and satellite channels and shows the average rate per channel for satellite channels and all channels (based on the cost of programming services only). Significantly, the large increase in the average rate for CPST service correlates with substantial growth in the number of satellite channels. While the number of local channels increased by 2.8%, from 14.1 to 14.5 channels, satellite channels increased by 6.4%, from 42.2 to 44.9

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between \$34.02 and \$35.98 with 95.5% probability. We arrive at \$34.02, the lower end of the range, by subtracting $1.955 \times \$0.50$ from \$35.00, and we arrive at \$35.98, the higher end of the range, by adding $1.955 \times \$0.50$ to \$35.00. We report the standard errors for the estimated averages in the Attachments. See J. Kmenta, *Elements of Econometrics* 70-153 (1971) for a further explanation of sampling techniques.

²⁰ These weighted averages could be calculated by several methods. In the method we use, the weighted average for each group equals the sum of the average monthly rate calculated for each stratum times the percent of subscribers in that stratum. For further information on methods of calculating weighted averages, see W. E. Deming, *Some Theory of Sampling* 135-211 (1950).

²¹ The LEC stratum consists of both the incumbent cable operators who competed with an affiliate of a LEC at the time that a finding of effective competition was made and the LEC affiliate. The other strata, except for the DBS stratum, similarly consist of the incumbent cable operator as well as the relevant competitor. The DBS stratum includes only the incumbent because monthly rates of the DBS competitor are not part of the Survey. Most of the operators represented by the LEC stratum are incumbent operators. Only a small percentage (about 20%) of the operators belonging to this stratum are new entrants, which are either LEC affiliates or former LEC affiliates in cases where the LEC may have sold these operations subsequent to the finding of effective competition.

²² We combined the averages for the competitive and noncompetitive groups using a weight of 6.1% for the competitive group and 93.9% for the noncompetitive group. See Attachment A for information on data used to compute those weights.

²³ In all tables, a 5% level is used to denote statistical significance.

channels. Correspondingly, the increase of 0.5% in the average rate per satellite channel compares with an increase of 1.5% in the average rate per channel overall.²⁴ Table 1 also reports the average monthly rate for equipment. The average monthly rate for an analog addressable converter and remote control increased by 9.1%, from \$2.97 to \$3.24 over the year ending July 1, 2001.

Table 1. Average Monthly Rate, by Component (Competitive and Noncompetitive Groups Combined)

	July 1, 2000	July 1, 2001	12-Month Change	Percent Change
Basic service tier (BST)	\$12.57	\$12.84	\$0.27	2.1%
Cable programming service tier (CPST)	<u>\$18.88</u>	<u>\$20.91</u>	<u>\$2.03</u>	10.8%*
Total programming services (BST and CPST)	\$31.45	\$33.75	\$2.30	7.3%*
Equipment (set-top box and remote control)	<u>\$2.97</u>	<u>\$3.24</u>	<u>\$0.27</u>	9.1%
Programming and equipment combined	\$34.42	\$36.99	\$2.57	7.5%*
Number of local channels	14.1	14.5	0.4	2.8%
Number of satellite channels	<u>42.2</u>	<u>44.9</u>	<u>2.7</u>	6.4%*
Total channels on BST and CPST	56.3	59.4	3.1	5.5%*
Programming rate per satellite channel	\$0.797	\$0.801	\$0.004	0.5%
Programming rate per channel overall	\$0.591	\$0.600	\$0.009	1.5%

* An asterisk denotes a statistically significant change. See Attachment B-1.

22. The Bureau of Labor Statistics (“BLS”) publishes a Consumer Price Index (“CPI”) which measures price inflation related to all goods and services.²⁵ By this measure, inflation increased by 2.7% over the 12 months ending July 2001. The BLS also publishes price indexes for many components and sub-components of the overall CPI. Among these, the BLS publishes a price index for cable services (“cable CPI”), which is one of the sub-components of the overall CPI. The cable CPI increased by 3.9% over the 12 months ending July 2001. The cable CPI cannot be compared directly with the results of our Survey, however, because the cable CPI covers a different mix of services, and includes quality adjustments such as for the number of channels added.²⁶

B. Comparison between Competitive and Noncompetitive Groups

23. Table 2 shows the difference in average monthly rate (“competitive differential”) between the group of operators facing effective competition and those not facing effective competition, as of July 1, 2000, and 2001. On July 1, 2000, competitive and noncompetitive cable operators charged, respectively, \$32.49 and \$34.54; a 6.3% differential. On July 1, 2001, competitive operators were charging \$34.93 while noncompetitive operators were charging \$37.13; also a 6.3% differential. Table 2 also compares the number of channels and the rate per channel. As of July 1, 2001, competitive operators offered 1.6 more channels and charged 9.4% less per channel than noncompetitive operators.

²⁴ Because the average monthly rate per channel is a weighted-average, a direct division of the average monthly rate by the average number of channels does not yield the average monthly rate per channel.

²⁵ See www.bls.gov/cpi/#data for information on the CPI series.

²⁶ BLS bases the cable CPI on a survey of items on consumers’ monthly cable bills, including premium services (i.e., pay-per-program services) and installation costs, which are not included in our monthly average. When an item shows a significant change in price, BLS attempts to make a quality adjustment. BLS may increase or decrease the observed price of an item, depending on whether the change deteriorated or improved the quality of the particular product or service in question. In the case of cable service, the addition of channels is perceived, in most cases, as an improvement in quality. For a further discussion of BLS methodology, see www.bls.gov/cpi/fact9.htm.

Table 2. Differential between the Competitive and Noncompetitive Groups

<u>Date</u>	<u>Competitive</u>	<u>Noncompetitive</u>	<u>Competitive Differential</u>	
			<u>Amount</u>	<u>Percent</u>
			Average Monthly Rate	
July 1, 2001	\$34.93	\$37.13	\$2.20	6.3% *
July 1, 2000	\$32.49	\$34.54	\$2.05	6.3% *
			Number of Channels	
July 1, 2001	60.9	59.3	-1.6	-2.6%
July 1, 2000	57.5	56.2	-1.3	-2.3%
			Average Rate per Channel (Programming Only)	
July 1, 2001	\$0.551	\$0.603	\$0.052	9.4% *
July 1, 2000	\$0.551	\$0.594	\$0.043	7.8%

* An asterisk denotes a statistically significant differential. See Attachments B-1, B-2, and B-3.

24. In order to determine if the competitive differentials shown in Table 2 hold over different system size thresholds, we calculated average rates by system size for the competitive and noncompetitive groups, as of July 1, 2001. Table 3 presents the results of these calculations and shows that the competitive differential varies across the size strata.

Table 3. Competitive Differential, by System Size, as of July 1, 2001

<u>System Size</u>	<u>Competitive</u>	<u>Noncompetitive</u>	<u>Differential</u>	<u>Percent</u>
Very small and small	\$31.72	\$34.45	\$2.73	8.6%*
Medium-sized	\$36.40	\$37.18	\$0.78	2.1%
Large and very large	\$35.64	\$38.17	\$2.53	7.1% *

* An asterisk denotes a statistically significant differential. See Attachment B-4.

25. Tables 4 and 5 divide the monthly average rate for the competitive and noncompetitive groups into BST and CPST components. The tables also report channels by local and satellite and average equipment price, for July 1, 2000, and July 1, 2001. For the competitive group, BST service increased by 4.0%, from \$11.95 to \$12.43. This compares with a 2.0% increase for the noncompetitive group, from \$12.62 to \$12.87. CPST service for the competitive group increased by 9.0%, from \$17.64 to \$19.23, while the increase for the noncompetitive group was 10.9%, from \$18.95 to \$21.02.

26. The monthly average rate for BST and CPST combined increased by 7.0% and 7.3%, respectively, for the competitive and noncompetitive groups. However, when equipment is added to average monthly rate, the rate of increase is the same for both groups -- 7.5%. Within the competitive group, the average number of satellite channels offered increased by 6.9%, from 43.4 to 46.4 and the average rate per satellite channel declined by 0.9%, from 75.1 cents to 74.4 cents. Within the noncompetitive group, satellite channels grew by 6.4%, from 42.1 to 44.8, and the average rate per satellite channel increased by 0.6%, from 80.0 cents to 80.5 cents. The average rate per channel overall (including local and satellite channels) was unchanged and increased by 1.5%, respectively, for the competitive and noncompetitive groups.

Table 4. Averages for the Competitive Group, by Service Component

	<u>July 1, 2000</u>	<u>July 1, 2001</u>	<u>12-month Change</u>	<u>Percent Change</u>
Basic service tier (BST)	\$11.95	\$12.43	\$0.48	4.0%
Cable programming service tier (CPST)	<u>\$17.64</u>	<u>\$19.23</u>	<u>\$1.59</u>	9.0%
Total programming services (BST and CPST)	\$29.59	\$31.66	\$2.07	7.0%*
Equipment (set-top box and remote control)	<u>\$2.90</u>	<u>\$3.27</u>	<u>\$0.37</u>	12.8%
Programming and equipment combined	\$32.49	\$34.93	\$2.44	7.5%*
Number of channels (local)	14.1	14.5	0.4	2.8%
Number of channels (satellite)	<u>43.4</u>	<u>46.4</u>	<u>3.0</u>	6.9%
Total channels on BST and CPST	57.5	60.9	3.4	5.9%
Programming rate per satellite channel	\$0.751	\$0.744	-\$0.007	-0.9%
Programming rate per channel overall	\$0.551	\$0.551	\$0.000	-0.0%

* An asterisk denotes a statistically significant change.

Table 5. Averages for the Noncompetitive Group, by Service Component

	<u>July 1, 2000</u>	<u>July 1, 2001</u>	<u>12-month Change</u>	<u>Percent Change</u>
Basic service tier (BST)	\$12.62	\$12.87	\$0.25	2.0%
Cable programming service tier (CPST)	<u>\$18.95</u>	<u>\$21.02</u>	<u>\$2.07</u>	10.9%*
Total programming services (BST and CPST)	\$31.57	\$33.89	\$2.32	7.3%*
Equipment (set-top box and remote control)	<u>\$2.97</u>	<u>\$3.24</u>	<u>\$0.27</u>	9.1%
Programming and equipment combined	\$34.54	\$37.13	\$2.59	7.5%*
Number of channels (local)	14.1	14.5	0.4	2.8%
Number of channels (satellite)	<u>42.1</u>	<u>44.8</u>	<u>2.7</u>	6.4%*
Total channels on BST and CPST	56.2	59.3	3.1	5.5%*
Programming rate per satellite channel	\$0.800	\$0.805	\$0.005	0.6%
Programming rate per channel overall	\$0.594	\$0.603	\$0.009	1.5%

*An asterisk denotes a statistically significant change.

27. Finally, Table 6 reports the average monthly rate for each competitive stratum -- wireline overbuild, DBS overbuild, LEC, low penetration, and municipal -- compared with the average for the noncompetitive group. It shows that average monthly rates vary significantly among the competitive strata, from \$24.35 to \$37.13, as of July 1, 2001. The average monthly charge for every stratum of the competitive group except the DBS overbuild stratum, is lower than the average monthly rate of \$37.13 for the noncompetitive group. The average rate charged by operators in the DBS overbuild stratum is the same as the average for the noncompetitive group. The competitive response of those operators making up the DBS overbuild stratum, however, may not be representative of the competitive response to DBS among cable operators generally because this subgroup consists of only 38 operators and is made up almost entirely of small cable operators located in rural areas. Cable operators in rural areas may face higher costs per subscriber because operators in those areas may need more distribution plant per subscriber to reach their customers. The table also provides a comparison of the average number of channels and the average monthly charge per channel for each stratum of the competitive group and the noncompetitive group.

Table 6. Comparison between Competitive Strata and the Noncompetitive Group

<u>Date</u>	<u>Wireline Overbuild</u>	<u>DBS Overbuild</u>	<u>LEC</u>	<u>Low Penetration</u>	<u>Municipal</u>	<u>Non- Competitive</u>
Average Monthly Rate						
July 1, 2001	\$34.03*	\$37.13	\$35.03*	\$34.30*	\$24.35*	\$37.13
July 1, 2000	\$31.45*	\$34.25	\$32.55*	\$32.57	\$23.40*	\$34.54
Number of Channels						
July 1, 2001	56.0	53.3	65.3*	52.9	51.4	59.3
July 1, 2000	52.7	46.5	62.4*	49.5	50.8	56.2
Average Rate per Channel (Programming Only)						
July 1, 2001	\$0.587	\$0.727	\$0.489*	\$0.663	\$0.447*	\$0.603
July 1, 2000	\$0.578	\$0.761	\$0.483*	\$0.674	\$0.437*	\$0.594

*An asterisk denotes a statistically significant differential when compared with the noncompetitive group.

C. Explanation for Changes in Average Monthly Programming Rates

28. The Survey asked respondents to explain changes in their monthly programming rates between July 2000 and July 2001, and between July 1999 and July 2000, by attributing those changes to various categories of increased costs or other factors. Table 7 shows the percentage by which each factor contributed to the increase in programming rates. Both the competitive and noncompetitive groups attributed much of their rate increases to changes in the cost of programming, including both the increased cost of existing programming and the initial cost associated with new programming. For the 12 months ending July 2001, the competitive group attributed 64.7% and the noncompetitive group attributed 58.2% of their higher rates to programming costs. For the competitive and noncompetitive groups, respectively, system upgrades accounted for 10.6% and 9.9% of the increases in average monthly rates, general inflation accounted for 10.6% and 14.7% of the increases, and unspecified costs accounted for 9.2% and 13.4% of the increases. Survey responses showed that, for the same year, 4.9% of the rate changes made by the competitive group, and 3.8% of the rate changes made by the noncompetitive group, were unrelated to cost increases.

Table 7. Reported Explanations for Changes in Average Monthly Programming Rates

<u>Explanation</u>	<u>Competitive Group</u>		<u>Noncompetitive Group</u>	
	<u>July 1, 2000</u>	<u>July 1, 2001</u>	<u>July 1, 2000</u>	<u>July 1, 2001</u>
Fees for existing programming	43.6%	50.7%	46.0%	46.1%
Fees for new programming	9.2%	14.0%	8.0%	12.1%
Upgrades to cable system	15.3%	10.6%	14.4%	9.9%
General inflation	12.3%	10.6%	13.8%	14.7%
Unspecified costs	13.5%	9.2%	10.3%	13.4%
Unrelated to costs	6.1%	4.9%	7.5%	3.8%

Note: See Attachment B-5.

D. Charges for Installation of Cable Service

29. Table 8 compares one-time charges for service installation exclusive of promotional discounts that may have been offered. The charge for service installation increased, although at a slower pace than monthly charges for programming and equipment. As of July 1, 2001, competitive operators charged \$38.67 and noncompetitive operators charged \$42.41 for installation at previously unwired households; a 9.7% differential. For pre-wired installation, competitive operators charged \$27.28 and noncompetitive operators charged \$29.93; also a 9.7% differential. Competitive operators charged \$25.00 and noncompetitive operators charged \$26.75 for service reconnection; a 7.0% differential.

Table 8. Average Charge for Installation of Cable Service

Type of Installation	Competitive Group			Noncompetitive Group		
	July 1, 2000	July 1, 2001	Change	July 1, 2000	July 1, 2001	Change
Unwired installation	\$37.95	\$38.67	1.9%	\$41.85	\$42.41	1.3%
Pre-wired installation	\$27.23	\$27.28	0.2%	\$29.44	\$29.93	1.7%
Service reconnection	\$25.10	\$25.00	-0.4%	\$26.28	\$26.75	1.8%

Note: See Attachment B-6.

V. OTHER FINDINGS

A. Distribution of Programming by Major Categories

30. Table 9 shows a breakdown by category of the average number of channels on BST and major CPST, as of July 1, 2000, and July 1, 2001. The number of total channels grew by 3.4 within the competitive group and by 3.1 within the noncompetitive group. Most of this difference is reflected in an increase in the number of news and general entertainment channels. These channels increased by 2.8 in the competitive group, from 36.9 to 39.7 channels, and by 2.4 in the noncompetitive group, from 36.3 to 38.7 channels.

Table 9. Average Number of BST and CPST Channels, by Category

Category of Channel	Competitive Group		Noncompetitive Group	
	July 2000	July 2001	July 2000	July 2001
Local broadcast stations	10.7	10.9	10.5	10.7
Public, educational, & governmental	1.9	2.0	2.2	2.3
Commercial leased access	0.8	0.8	0.5	0.6
Other local origination	<u>0.7</u>	<u>0.8</u>	<u>0.9</u>	<u>0.9</u>
Total of local channels	14.1	14.5	14.1	14.5
News & general entertainment	36.9	39.7	36.3	38.7
Sports	3.8	3.9	3.3	3.5
Children's	<u>2.7</u>	<u>2.8</u>	<u>2.5</u>	<u>2.6</u>
Total satellite channels	43.4	46.4	42.1	44.8
Total channels on BST and major CPST	57.5	60.9	56.2	59.3

Note: See Attachment C.

B. Annual System Revenues

31. The Survey sought information on system-wide revenues from six major sources: (a) all types of analog and digital cable programming (non-premium, premium and pay-per-view); (b) equipment; (c) Internet access; (d) telephony; (e) advertising; and (f) other sources (commissions, leased access, etc.). While operators received the bulk of revenues from programming services, Table 10 shows that revenue from non-video sources increased as a percent of total revenue between 2000 and 2001, with Internet access and telephony showing the largest percentage increases.

Table 10. Percent of Annual System Revenue, by Source

Source of Revenue	Competitive Group		Noncompetitive Group	
	July 2000	July 2001	July 2000	July 2001
Programming services	82.2%	78.7%	83.1%	79.9%
Equipment	4.5%	4.5%	4.1%	4.0%
Internet access	1.8%	3.8%	1.3%	3.1%
Cable telephony	1.4%	3.6%	0.5%	2.4%
Advertising	5.3%	5.1%	5.0%	4.9%
Other sources	4.8%	4.3%	6.0%	5.7%
Total	100%	100%	100%	100%

C. System Capacity and Advanced Services

32. Over the year ending July 1, 2001, the percentage of systems with capacity of 750 MHz and above increased from 58.3% to 68.7% for competitive operators and from 54.1% to 63.2% for noncompetitive operators. Table 11 shows that capacity on an analog basis, including capacity used for all types of programming -- non-premium, premium and pay-per-view, as well as analog channels devoted to digital tier services -- grew to 83.3 and 81.7 channels, respectively, for the competitive and noncompetitive groups. Table 12 shows that 74.1% of competitive systems and 77.6% of noncompetitive systems offered digital service. In addition, for competitive and noncompetitive systems, respectively, the number of systems offering cable modem service for Internet access grew to 65.5% and 70.8%, and the number of systems offering cable telephony remained virtually unchanged at 19.8% and 21.1%.²⁷

Table 11. System Capacity

	Competitive Group		Noncompetitive Group	
	July 2000	July 2001	July 2000	July 2001
Average system capacity (MHz)	630	666	623	652
Percent of systems with capacity of:				
330 MHz and below	10.0%	8.5%	9.0%	8.3%
331 through 749 MHz	31.7%	22.8%	36.9%	28.5%
750 MHz and above	58.3%	68.7%	54.1%	63.2%
Number of 6-MHz activated channels:				
Devoted to analog service	69.2	72.0	67.7	69.9
Devoted to digital service	6.7	11.3	7.0	11.8
Total number of channels	75.9	83.3	74.4	81.7

Table 12. Advanced Services

	Competitive Group		Noncompetitive Group	
	July 2000	July 2001	July 2000	July 2001
Percent of cable systems offering:				
Digital programming	52.3%	74.1%	57.8%	77.6%
Internet access	51.7%	65.5%	51.4%	70.8%
Cable telephony	19.7%	19.8%	20.7%	21.1%
Percent of cable subscribers taking:				
Digital service	5.9%	13.4%	7.5%	15.7%
Internet access	2.9%	6.9%	3.1%	7.4%
Cable telephony	1.2%	2.3%	0.7%	2.2%

²⁷ These percentages refer to the percentage of cable systems offering these services, and not the percentage of U.S. households passed.

D. Digital Programming Service

33. Table 13 provides additional information on the major digital tier of programming,²⁸ as well as the average monthly cost of a digital converter (which is required to receive digital service) and remote. For operators belonging to the competitive group, the average price for programming and equipment for digital service increased by 4.7%, while the price per channel decreased by 10.2%. For operators in the noncompetitive group, the average price of digital programming and equipment increased by 8.5%, while the average price per channel decreased by 7.3%.

Table 13. Average Monthly Rate for Major Digital Tier

	Competitive Group			Noncompetitive Group		
	July 2000	July 2001	% Change	July 2000	July 2001	% Change
Average programming rate †	\$10.09	\$10.61	5.2%	\$10.40	\$11.58	11.3%
Converter & remote control	<u>\$4.10</u>	<u>\$4.24</u>	3.4%	<u>\$4.38</u>	<u>\$4.46</u>	1.8%
Programming and equipment	\$14.19	\$14.85	4.7%	\$14.78	\$16.04	8.5%
Number of digital channels	24.0	29.5	22.9%	26.3	32.4	23.2%
Average price per channel ††	\$0.430	\$0.386	-10.2%	\$0.426	\$0.395	-7.3%

† Does not include digital premium, pay-per-view, music (and other audio) channels. †† Programming only.

VI. ECONOMETRIC ANALYSIS OF CABLE RATES AND DEMAND FOR CABLE SERVICE

A. Factors Affecting Rates

34. In this section, we use regression analysis as well as various other types of econometric analysis to examine the influence of several factors on cable rates and to determine the effects of each factor separately by holding all other factors constant. This additional analysis is useful because the foregoing comparison of averages or means does not enable us to separate the influences of various factors on the averages. The number of channels offered, for example, may influence the rate charged. Cable operators that offer more channels typically charge higher rates. Regression analysis enables us to measure the effects of the number of channels offered on rates while holding the effects of all other variables that also influence rates constant. This type of analysis also enables us to determine whether specific factors influence rates, and to measure the extent of that influence.

35. In the Benchmark Order, the Commission identified a number of factors (or variables) that may affect cable rates and used regression analysis to measure the effects of these variables.²⁹ These variables include competitive status, system size, average household income in the area served, and whether the operator was a multiple system operator (“MSO”), i.e., was affiliated with more than one system. System size was represented by two variables: total number of channels offered and number of system subscribers. In addition, several “product mix” ratios were identified and used as variables, including: (1) the ratio of satellite channels to total channels; (2) CPST subscribers to total subscribers; and (3) subscribers taking analog addressable converter leases relative to total subscribers. We analyzed 2001 Survey data using a regression equation similar to that used in the Benchmark Order in order to determine the current effects of each of these variables on average monthly rates. The results of this

²⁸ Services on digital tiers are separate from BST and CPST. Charges for digital tier service were not included in the calculation of average monthly rates that serve as the focus of this report.

²⁹ See *Benchmark Order*, 9 FCC Rcd 4119 at Appendix C (1994).

analysis are shown in Attachment D-1.³⁰

36. The results of this analysis show that MSO affiliation was associated with higher monthly rates in 2001. Holding all other variables constant, we found that operators with two or more systems, on average, had rates that were approximately 23% higher than single system operators.³¹ The variable for number of channels offered captured the full effects of size in our equation. The estimated coefficient for this variable was large and statistically significant. It shows that, other things held constant, average monthly rates increase as the number of channels offered increases. The effect, however, is nonlinear which means that as the number of channels offered increases, the effect on monthly rates diminishes. For example, the effect on rates of going from 40 channels to 50 channels is greater than the effect of going from 70 channels to 90 channels. We also found that the product mix variables mentioned above -- the ratios of satellite channels, CPST subscribers, and converter leases -- were not associated with significantly higher rates during 2001.

37. We also found significant differences in average rates among the five competitive strata compared with the noncompetitive group holding system size and other variables constant. When number of channels, MSO affiliation, and consumer income are held constant, we estimated for 2001 that competitive operators that meet the LEC test had rates that were 7.7% lower than the noncompetitive group. For the same year, the regression coefficients for the wireline overbuild and low penetration subcategories indicated that the prices charged by operators belonging to these subcategories were 7.0% and 4.7% lower, respectively, than the rates charged by the noncompetitive group. We also found that systems owned by a municipality had rates that were 22.0% lower than rates charged by the noncompetitive group. For the DBS overbuild subgroup, rates were 5.1% higher than rates charged by the noncompetitive group. As mentioned above, the DBS overbuild subgroup is made up largely of operators that serve rural areas and, therefore, may have higher distribution costs per subscriber than other operators.

38. We note that the equation used to explain the effects of competitive status on rates may be subject to a potential bias.³² More specifically, as explained above, monthly cable rates are influenced by changes in the number of channels offered. Cable operators, however, may be willing to supply more channels after raising monthly rates or, conversely, may seek to raise rates after supplying more channels. Therefore, it is not possible to determine the direction of causality between higher rates and an increased number of channels. This interdependency between variables results in estimates that reflect the mix of the effects of these variables on each other. As a result, the estimated value can no longer be attributed to an unambiguous effect of one variable on the other. This type of interdependency, or simultaneity problem as it is called in this type of analysis, can be eliminated by using a simultaneous equation technique such as the three-stage least squares ("3SLS") procedure which is discussed below.

B. Simultaneous Analysis of Monthly Rates, Demand, and Quality of Service

39. In an effort to fully understand the effects of various factors on the demand for cable service and on average cable rates (including the effects of interactions among those factors), we estimated a model consisting of three equations measuring prices (or monthly rates), household

³⁰ We found that some of the variables used in the benchmark analysis were not statistically significant in our analysis and thus are not shown in Attachment D-1.

³¹ The benchmark analysis found a similar, although smaller, difference and attributed this difference in average rates to possible cost differences or differences in the quality of service (or other non-price dimensions of the product offering) between multiple system operators and single system operators. See *Benchmark Order* at Appendix C.

³² For a further explanation of this potential bias, see *Benchmark Order*, 9 FCC Rcd 4119 at Appendix C.

subscriptions, and product quality. Our model is an extension of prior academic studies in which the demand for cable service, the number of channels offered (which is used as a proxy for quality of service), and monthly cable rates were analyzed simultaneously.³³ The three equations in the model not only enable us to measure the direct effects of factors affecting subscription, price, and quality of cable service, but also provide us with estimates of other interesting parameters, including the price elasticity of demand for cable service.³⁴

40. Our three-equation model also incorporates the effects of competition on the demand for cable service, monthly cable rates, and quality of service by examining the effects of specific types of effective competition, e.g., wireline overbuild compared with DBS overbuild. Our hypothesis underlying each of the three equations is set forth below.

41. *The Demand Equation.* We hypothesize that household subscription to cable service is: (1) inversely related to cable rates (since, as cable rates increase, subscription is expected to decrease); (2) positively related to number of homes passed (since the number of homes passed, in the short run, represents the upper limit of a cable system's potential market); (3) positively related to system age (since subscribers will tend to be more aware of availability and quality of cable service the longer those services are available); (4) positively related to median household income (since, as income rises, households can better afford cable service); (5) inversely related to urbanization (since in urban areas many alternative forms of entertainment, including over-the-air broadcasts, are available to subscribers); (6) inversely related to wireline overbuild and DBS overbuild status (since the incumbent cable operator is likely to face lower demand for service in areas where there is competition from overbuild competitors); and (7) positively related to the number of channels offered on the system (since, as the number of channels increases, consumers may place a higher value on cable service and therefore are likely to demand more of that service).

42. *The Price Equation.* Our price equation hypothesizes that monthly rates (which are used as a proxy for the price of cable service) are: (1) negatively related to number of subscribers (since, as the number of subscribers increases, economies of scale should be adequate to offset any increased costs per subscriber associated with serving additional subscribers); (2) positively related to median household income (since areas with higher incomes may also have higher average wages and hence higher operating costs which may lead to higher monthly rates); (3) inversely related to the number of subscribers belonging to the MSO of which the operator is a part (since larger MSOs may have a relative cost advantage over single system operators or smaller MSOs, particularly in programming and financing

³³ See, e.g., R. N. Rubinovitz, *Market Power and Price Increases for Basic Cable Service since Deregulation*, Rand Journal of Economics 10 (Spring 1993) ("Rubinovitz"); J. W. Mayo and Y. Otsuka, *Demand, Pricing, and Regulation: Evidence from the Cable TV Industry*, Rand Journal of Economics 405 (Autumn 1991) ("Mayo and Otsuka"); T. Chipty, *Horizontal Integration for Bargaining Power: Evidence from the Cable Television Industry*, Journal of Economics and Management Strategy 385 (Summer 1995); G. S. Ford and J. D. Jackson, *Horizontal Concentration and Vertical Integration in the Cable Television Industry*, Review of Industrial Organization 507 (1997) ("Ford and Jackson"). These studies examined a variety of factors that influence the demand, price, and quality of cable service, and our model uses similar factors. For a description of other equally valid approaches, see R. W. Crandall and H. Furchtgott-Roth, *Cable TV Regulation or Competition*, the Brookings Institution (1996) at Appendix B.

³⁴ According to a well-established economic theory related to consumer demand, substitutability of a product or service depends upon the level of responsiveness of the quantity demanded to changes in price for that good. The responsiveness of the quantity demanded to changes in price of the good is known as "price elasticity of demand." For example, the price elasticity of demand for cable services would measure the effects of changes in average monthly cable rates on the demand for cable services assuming that all other factors, such as the number of channels offered, were held constant. Another such parameter is income elasticity of demand. Income elasticity is defined as the responsiveness of demand for a particular good or service to changes in household income. See C. E. Ferguson and J. P. Gould, *Microeconomic Theory* 4TH ed., (1975).

costs, which may be reflected in lower monthly rates);³⁵ (4) inversely related to the degree of vertical integration³⁶ (since costs, especially programming costs, may be reduced as a result of efficiencies gained through vertical integration which, in turn, may be reflected in lower monthly rates); (5) inversely related to wireline overbuild and DBS overbuild status (since, as the degree of direct competition from an alternative MVPD provider increases, the price of cable service is likely to decrease); (6) inversely related to population density (since costs and therefore prices may be lower in areas with higher population density); (7) positively related to the number of channels offered (since it costs more to provide more channels and customers may be willing to pay more for more channels); and (8) positively related to system age (since it may cost more for an older system to provide service to its customers compared with a newer system).

43. *The Quality of Service Equation.* We hypothesize that the quality of cable service as measured by the number of channels offered is: (1) positively related to system capacity in megahertz (since, as capacity increases, the operator is likely to offer more channels); (2) positively related to wireline overbuild and DBS overbuild status (since operators that face competing MVPDs may be compelled to deliver more channels to attract subscribers); (3) positively related to median household income (since, as income rises, consumers can afford to pay for higher service quality, i.e., more channels); (4) positively related to the degree of vertical integration (since vertical integration with programming networks may result in increased efficiency, which may lower programming costs, which, in turn, may result in an increase in the number of channels offered); (5) inversely related to the presence of digital service and Internet access service (since, unless there is an accompanying change in system capacity, the presence of digital and/or Internet access service may lead operators to shift channels from CPST to these services); and (6) positively related to number of subscribers (since, as the number of subscribers increases, operators may offer more channels in order to satisfy the diverse programming interests of their larger subscriber base).

44. *Results.* We estimated these three equations simultaneously using 3SLS techniques, and the results are shown in Attachment D-2. Most notably, results from the demand equation indicate that the estimated price elasticity of demand for cable service is 2.19, which indicates that the demand for cable service is price elastic.³⁷ This means that a one-percent increase in the price of cable service, for example, would result in a slightly more than two-percent decrease in the demand for that service, all other things being held constant. The estimated price elasticity suggests that there are substitutes for cable service, which is reflected by the negative and statistically significant coefficient for the wireline overbuild subgroup.³⁸ This level of price elasticity suggests that cable subscriptions tend to be lower in those areas where a wireline competitor provides a substitute for cable service. The estimated coefficient for the DBS overbuild variable, however, is also negative, but is not statistically significant, which suggests that the presence of effective competition due to DBS overbuild status has no measurable effect

³⁵ See, e.g., Ford and Jackson; and D. Waterman and A. A. Weiss, *Vertical Integration in Cable Television*, MIT Press and AEI Press 136-7 (1997).

³⁶ The degree of vertical integration is measured by the number of BST and major CPST channels which are devoted to the carriage of programming networks in which the operator has an ownership interest. Data for the number of channels devoted to the carriage of vertically affiliated networks is from the 2001 Competition Report, at Appendix D, Table D-1. We also considered an alternative method for measuring the degree of vertical integration. This method, which involved identifying whether or not the operator has an affiliation with a programming network, produced similar results.

³⁷ A price elasticity estimate of less than one is referred to as “inelastic.” Conversely, an elasticity estimate of more than one is considered “elastic.” Recent econometric estimates of the price elasticity of demand for cable service range from 2.41 to 3.22. See, e.g., Ford and Jackson; and General Accounting Office, *The Effects of Competition from Satellite Providers on Cable Rates* 30 (2000) (“GAO Report”).

³⁸ Throughout the analysis, a 5% level is used to denote statistical significance.

on the demand for cable service. This may be due to the characteristics of the operators in the DBS overbuild subgroup. For example, it may be that the DBS overbuild subgroup consists of operators that are located primarily in rural areas where cable penetration may be limited by high deployment costs. There may, however, be other explanations for the differences between the wireline and DBS subgroups that are not captured by our analysis.

45. Our price equation shows that the presence of a wireline overbuilder has a negative effect on cable rates. However, based on our limited data, the presence of effective competition due to DBS overbuild status has no significant effect on cable rates.³⁹ Contrary to our hypothesis, the data suggest that as the number of subscribers belonging to the MSO of which the operator is a part increases, the rates charged by that MSO also increase.⁴⁰ It is unclear whether this effect is due to some exogenous factor not controlled for in our analysis,⁴¹ or whether, in fact, there is a positive correlation between horizontal concentration and cable rates. We found that vertical integration has no significant effect on cable rates. As expected, the results of our equation show that as more channels are offered, monthly rates tend to be higher. Both the number of system subscribers and the population density of the areas served have no measurable effect on monthly rates.

46. Our results show that the quality of cable service (as measured by the number of channels offered) increases directly with the system capacity of the operator. Also, the results show that in areas where wireline competitive providers are present, subscribers receive more channels. We found that where a finding of effective competition was due to DBS penetration, there is no measurable effect from DBS competition on number of channels offered. Larger systems, as measured by number of subscribers, tend to offer more channels. We found that the degree of vertical integration has a statistically significant negative effect on the number of channels offered.⁴² Contrary to our hypothesis, we found that operators offering digital services also offer more BST and CPST channels, most likely due to a reallocation of channel capacity from other service tiers. However, we found that Internet access service has no measurable effect on the number of channels offered.

³⁹ As explained above, the operators meeting the criteria for this subgroup include only those who have filed a petition seeking a finding of effective competition with the Commission and where the Commission has made such a finding. There may be other operators, however, who could meet the criteria for effective competition, but who have not filed a petition with the Commission. In 30 states, for example, DBS penetration has reached an average level of more than 20% (*see Annual Assessment of the Status of Competition in Markets for Delivery of Video Programming*, at ¶ 58, FCC 01-389, released Jan. 14, 2002 (“2001 Competition Report”). In those states, there are most likely a number of operators who would be able to meet the test for effective competition based on overbuild status (50% of homes passed and 15% penetration by a competitor), but who have not filed a petition with the Commission seeking such a finding.

⁴⁰ *See, e.g.*, GAO Report; and W. M. Emmons and R. A. Prager, *The Effects of Market Structure and Ownership on Prices and Service Offerings in the U.S. Cable Television Industry*, Rand Journal 732-50 (Winter 1997) for similar findings.

⁴¹ For example, the demographics of the various areas served by operators may differ in a consistent manner.

⁴² This may be due to the possibility that vertically integrated systems are using a larger proportion of their channel capacity than non-vertically integrated systems for services other than the BST and major CPST, the measure of channel capacity used in our model. For example, our model does not include premium or pay-per-view services. Results from a recent academic study show that the number of channels offered tends to vary depending on the type of networks with which the operator is vertically integrated (a refinement not included in our analysis). According to this study, which was based on pre-1992 data, operators vertically integrated with the owners of networks carried on BST and CPST tend to offer an increased number of both CPST and premium channels. Those operators that are vertically integrated with the owners of premium service networks tend to offer fewer CPST and premium channels. *See T. Chipty, Vertical Integration, Market Foreclosure, and Consumer Welfare in the Cable Television Industry*, American Economic Review 436 (July 2001).

47. The results of these three equations suggest that there are substitutes available for cable service. In areas where a wireline overbuild is present, cable subscribers receive more channels at lower prices and the subscriptions for cable service tend to be reduced. In areas where effective competition is achieved as a result of DBS penetration, there is no measurable effect on cable subscriptions, the price of cable service, or the number of channels offered.

VII. CONCLUSION

48. We found that operators belonging to the competitive and noncompetitive groups both increased their average monthly rates by 7.5% for programming and equipment during the time period surveyed. We also found that the competitive differential between the competitive and noncompetitive groups remained unchanged at 6.3%. The average monthly rate per channel for operators in the competitive group was unchanged and for operators in the noncompetitive group increased by 1.5% over the 12-month period ending July 1, 2001.

49. Operators in the competitive and noncompetitive groups both attribute a large percentage of their rate increases to increased programming costs. System upgrades also are cited as a factor to explain higher rates. Both groups continue to increase system capacity and, as a result, offer their subscribers more BST and CPST channels along with new services such as digital programming tiers, Internet access, and telephony.

50. This report fulfills the Commission's annual statutory obligation to compare prices charged by cable operators facing effective competition with those of cable operators not facing effective competition for the delivery of basic service, other cable programming services, and equipment.

VIII. ADMINISTRATIVE MATTERS

51. It is ORDERED that this Report be issued pursuant to authority contained in Section 623(k) of the Communications Act of 1934, as amended, 47 U.S.C. § 543(k).

FEDERAL COMMUNICATIONS COMMISSION

William F. Caton
Acting Secretary

ATTACHMENT A

SURVEY SAMPLE

Sample Group and Strata (A)	Number of Operators (B)	Percent of Subscribers (C)	Sample Size (D)	Number of Responses (E)	Usable Responses (F)
<u>Competitive Group</u>					
Local exchange carrier	99	60.35%	99	96	93
Wireline overbuild	45	16.14%	45	41	40
DBS overbuild	39	11.67%	39	39	38
Low penetration	168	10.92%	83	80	79
Municipal	<u>17</u>	<u>0.92%</u>	<u>17</u>	<u>16</u>	<u>16</u>
Total	368	100%	283	272	266
<u>Noncompetitive Group</u>					
Very large	97	22.62%	97	97	97
Large	170	24.59%	113	111	111
Medium	888	33.82%	151	148	148
Small	2,717	15.63%	71	68	67
Very small	<u>5,917</u>	<u>3.34%</u>	<u>40</u>	<u>35</u>	<u>34</u>
Total	9,789	100%	472	459	457
Grand Total	10,157	100%	755	731	723

For the data file listing these communities, see fcc.gov/csb on the Internet, *All Cable Communities Registered with the FCC* (updated as of Feb. 2001). Subscriber data are from Form 325 filings (as of 1994), the most recent year that subscriber counts are available on a system basis. Since it is likely that the percentage growth in subscribers has been fairly evenly distributed across all operators, the 1994 weights serve as a reasonable approximation of year 2001 weights. Column A shows the competitive group stratified by competitive test, and the noncompetitive group by system size. In order to stratify by system size, it was necessary to know the number of subscribers for each operator. Consequently, we excluded 822 noncompetitive operators for which we lacked a subscriber count. These 822 operators, however, are believed to be similar to other operators in the sample frame, and thus our sampling frame is representative of all operators. In Column B, an MSO is considered an operator for each of its systems. For example, an MSO with 10 systems would count as 10 operators in column B. Column C shows the number of subscribers in each stratum, as a percent of subscribers in that group nationwide. Column D shows the sample size for each group and strata. Column E is the number of questionnaires that were returned, and Column F shows the remaining questionnaires after eliminating those lacking the requisite 3 years of price data.

We determined the overall sample size for the competitive and noncompetitive groups by applying a standard statistical formula, which can be found in B. J. Mandel, *Statistics for Management* (1984), at 258. Parameters were chosen to include a maximum allowable error of \$0.49 at a confidence level of 99%, based on standard deviation calculations using our 2000 Survey data. A non-response factor was added to account for the ratio of the number of usable surveys to sample size in the 2000 Survey. We distributed the number of sample selections among strata, based on the percentages shown in Column C. Adjustments were made, however, to ensure that each stratum had a sufficient number of observations for statistical precision. Many of the cable systems selected for our sample serve more than one community, as identified by community unit identification codes. For those operators, we randomly selected one community from each selected system.

ATTACHMENT B-1

AVERAGE MONTHLY RATES AND COMPARISON BETWEEN GROUPS

<u>Cable Service</u>	<u>All Surveyed Operators</u>	<u>Competitive Group</u>	<u>Noncompetitive Group</u>	<u>Absolute Difference</u>	<u>Percent Difference</u>
July 1, 2001					
BST	\$12.84	\$12.43	\$12.87	\$0.44	3.5%
Standard error	0.48	0.56	0.48	--	---
Major CPST	\$20.91	\$19.23	\$21.02	\$1.79	9.3%
Standard error	0.55	0.84	0.54	--	---
Programming total	\$33.75	\$31.66	\$33.89	\$2.23	7.0%*
Standard error	0.37	0.62	0.35	--	---
Equipment	\$3.24	\$3.27	\$3.24	-\$0.03	-0.9%
Standard error	0.13	0.18	0.13	--	---
Programming and equipment	\$36.99	\$34.93	\$37.13	\$2.20	6.3%*
Standard error	0.39	0.69	0.37	--	---
Number of channels	59.37	60.92	59.27	-1.65	-2.7%
Standard error	1.03	1.45	1.00	--	---
Rate per channel †	\$0.600	\$0.551	\$0.603	\$0.052	9.4%*
Standard error	0.01	0.02	0.01	--	---
No. of satellite channels	44.88	46.42	44.79	-1.63	-3.5%
Standard error	0.89	1.26	0.86	--	---
Rate per satellite channel	\$0.801	\$0.744	\$0.805	\$0.061	8.2%
Standard error	0.02	0.04	0.02	--	---
July 1, 2000					
BST	\$12.57	\$11.95	\$12.62	\$0.67	5.6%
Standard error	0.50	0.55	0.49	--	---
Major CPST	\$18.88	\$17.64	\$18.95	\$1.31	7.4%
Standard error	0.54	0.80	0.51	--	---
Programming total	\$31.45	\$29.59	\$31.57	\$1.98	6.7%*
Standard error	0.33	0.57	0.31	--	---
Equipment	\$2.97	\$2.90	\$2.97	\$0.07	2.4%
Standard error	0.11	0.16	0.11	--	---
Programming and equipment	\$34.42	\$32.49	\$34.54	\$2.05	6.3%*
Standard error	0.35	0.61	0.33	--	---
Number of channels	56.27	57.47	56.20	-1.27	-2.2%
Standard error	1.03	1.46	0.97	--	---
Rate per channel †	\$0.591	\$0.551	\$0.594	\$0.043	7.8%
Standard error	0.01	0.02	0.01	--	---
No. of satellite channels	42.16	43.41	42.09	-1.33	-3.1%
Standard error	0.86	1.26	0.83	--	---
Rate per satellite channel	\$0.797	\$0.751	\$0.800	\$0.049	6.5%
Standard error	0.02	0.04	0.02	--	---
July 1, 1999					
Programming total	\$29.71	\$27.96	\$29.83	\$1.87	6.7%*
Standard error	0.31	0.54	0.30	--	---
Number of channels	53.66	54.81	53.59	-1.22	-2.2%
Standard error	0.99	1.42	0.99	--	---
Rate per channel †	\$0.587	\$0.549	\$0.589	\$0.040	7.3%
Standard error	0.01	0.02	0.01	--	---

* An asterisk denotes a statistically significant difference between the competitive and noncompetitive groups.

† Equals the number of channels divided by the monthly rate for programming. This average cannot be computed using the numbers in this Attachment, because the number of channels and the monthly rate shown are weighted separately.

ATTACHMENT B-2

AVERAGE MONTHLY RATES, COMPETITIVE GROUP BY STRATA

<u>Cable Service</u>	<u>Wireline Overbuild</u>	<u>DBS Overbuild</u>	<u>Local Exchange Carrier (LEC)</u>	<u>Low Penetration</u>	<u>Municipal</u>
July 1, 2001					
BST	\$15.09	\$11.01	\$11.45	\$15.42	\$12.77
Standard error	0.99	0.39	0.42	0.79	1.28
Major CPST	\$16.04	\$23.31	\$19.85	\$17.01	\$9.50
Standard error	1.52	1.07	0.57	0.97	2.10
Programming total	\$31.13	\$34.32	\$31.30	\$32.43	\$22.27
Standard error	1.10	0.84	0.46	0.54	1.12
Equipment	\$2.90	\$2.81	\$3.73	\$1.87	\$2.08
Standard error	0.27	0.24	0.14	0.19	0.52
Programming and equipment	\$34.03	\$37.13	\$35.03	\$34.30	\$24.35
Standard error	1.22	1.00	0.51	0.55	1.31
Number of channels	55.98	53.26	65.32	52.94	51.38
Standard error	2.42	2.63	0.88	1.74	3.02
Rate per channel †	\$0.587	\$0.727	\$0.489	\$0.663	\$0.447
Standard error	0.03	0.05	0.01	0.02	0.02
No. of satellite channels	42.43	39.92	49.73	41.42	40.81
Standard error	2.12	2.21	0.78	1.53	2.80
Rate per satellite channel	\$0.796	\$1.066	\$0.647	\$0.870	\$0.571
Standard error	0.04	0.12	0.02	0.03	0.04
July 1, 2000					
BST	\$14.43	\$10.98	\$10.95	\$14.76	\$12.19
Standard error	1.01	0.40	0.40	0.76	1.25
Major CPST	\$14.40	\$20.46	\$18.39	\$16.01	\$9.23
Standard error	1.44	0.93	0.56	0.95	2.07
Programming total	\$28.83	\$31.44	\$29.34	\$30.77	\$21.42
Standard error	0.97	0.71	0.44	0.49	1.12
Equipment	\$2.62	\$2.81	\$3.21	\$1.80	\$1.98
Standard error	0.25	0.24	0.12	0.17	0.49
Programming and equipment	\$31.45	\$34.25	\$32.55	\$32.57	\$23.40
Standard error	1.07	0.85	0.46	0.50	1.29
Number of channels	52.68	46.50	62.41	49.52	50.81
Standard error	2.35	2.58	0.95	1.66	3.06
Rate per channel †	\$0.578	\$0.761	\$0.483	\$0.674	\$0.437
Standard error	0.03	0.05	0.01	0.03	0.03
No. of satellite channels	39.82	34.63	47.08	38.08	40.44
Standard error	1.95	2.17	0.83	1.48	2.81
Rate per satellite channel	\$0.777	\$1.13	\$0.645	\$0.906	\$0.558
Standard error	0.04	0.12	0.02	0.04	0.04
July 1, 1999					
Programming total	\$27.23	\$29.63	\$27.71	\$29.24	\$20.55
Standard error	0.94	0.66	0.41	0.45	1.14
Number of channels	50.62	42.63	59.77	47.03	49.94
Standard error	2.45	2.30	0.93	1.53	2.91
Rate per channel †	\$0.578	\$0.777	\$0.477	\$0.672	\$0.428
Standard error	0.03	0.05	0.01	0.03	0.03

† Equals the number of channels divided by the monthly rate for programming. This average cannot be computed using the numbers in this Attachment, because the number of channels and the monthly rate shown are weighted separately.

ATTACHMENT B-3

AVERAGE MONTHLY RATES, NONCOMPETITIVE GROUP BY STRATA

<u>Cable Service</u>	<u>Very Large Operators</u>	<u>Large Operators</u>	<u>Medium-Sized Operators</u>	<u>Small Operators</u>	<u>Very Small Operators</u>
July 1, 2001					
BST	\$11.36	\$10.84	\$12.78	\$16.36	\$22.56
Standard error	0.26	0.29	0.47	0.95	1.26
Major CPST	\$23.64	\$23.03	\$21.09	\$17.15	\$5.85
Standard error	0.37	0.37	0.50	0.98	1.52
Programming total	\$35.00	\$33.87	\$33.87	\$33.51	\$28.41
Standard error	0.33	0.34	0.28	0.41	0.98
Equipment	\$3.76	\$3.76	\$3.31	\$2.00	\$1.03
Standard error	0.10	0.11	0.11	0.22	0.22
Programming and equipment	\$38.76	\$37.63	\$37.18	\$35.51	\$29.44
Standard error	0.34	0.35	0.30	0.49	1.04
Number of channels	66.84	63.51	59.79	45.85	34.21
Standard error	0.80	0.96	0.84	1.47	2.01
Rate per channel [†]	\$0.529	\$0.545	\$0.584	\$0.778	\$0.899
Standard error	0.01	0.01	0.01	0.02	0.04
No. of satellite channels	48.91	47.15	46.05	36.19	26.88
Standard error	0.68	0.77	0.73	1.37	1.79
Rate per satellite channel	\$0.726	\$0.739	\$0.764	\$1.026	\$1.192
Standard error	0.01	0.01	0.02	0.05	0.07
July 1, 2000					
BST	\$11.12	\$10.54	\$12.57	\$16.23	\$21.48
Standard error	0.33	0.27	0.47	0.93	1.26
Major CPST	\$21.50	\$21.04	\$18.89	\$15.00	\$5.68
Standard error	0.35	0.33	0.48	0.91	1.47
Programming total	\$32.62	\$31.58	\$31.46	\$31.23	\$27.16
Standard error	0.28	0.31	0.27	0.33	0.87
Equipment	\$3.45	\$3.39	\$3.05	\$1.88	\$1.00
Standard error	0.08	0.09	0.10	0.21	0.21
Programming and equipment	\$36.07	\$34.97	\$34.51	\$33.11	\$28.16
Standard error	0.29	0.33	0.29	0.38	0.93
Number of channels	63.81	60.37	56.41	43.22	32.56
Standard error	0.83	0.97	0.84	1.29	1.80
Rate per channel [†]	\$0.518	\$0.536	\$0.577	\$0.765	\$0.900
Standard error	0.01	0.01	0.01	0.02	0.04
No. of satellite channels	46.61	44.38	42.89	33.75	25.29
Standard error	0.68	0.77	0.71	1.23	1.63
Rate per satellite channel	\$0.711	\$0.735	\$0.764	\$1.019	\$1.211
Standard error	0.01	0.01	0.02	0.04	0.07
July 1, 1999					
Programming total	\$30.68	\$29.75	\$29.72	\$29.68	\$26.34
Standard error	0.25	0.28	0.27	0.33	0.83
Number of channels	61.26	57.64	53.20	41.54	32.24
Standard error	0.87	0.95	0.82	1.29	1.67
Rate per channel [†]	\$0.508	\$0.531	\$0.579	\$0.759	\$0.870
Standard error	0.01	0.01	0.01	0.02	0.04

[†] Equals the number of channels divided by the monthly rate for programming. This average cannot be computed using the numbers in this Attachment, because the number of channels and the monthly rate shown are weighted separately.

ATTACHMENT B-4

COMPARISON OF AVERAGE MONTHLY RATES
BETWEEN GROUPS BY SYSTEM SIZE

<u>System Size</u>	<u>Competitive Group</u>	<u>Noncompetitive Group</u>	<u>Difference in Averages</u>	<u>Percent Difference</u>
July 1, 2001				
Very large and large	\$35.64	\$38.17	\$2.53	7.1%*
Standard error	0.60	0.35	--	---
Medium sized	\$36.40	\$34.18	\$0.78	2.1%
Standard error	0.49	0.30	--	---
Small and very small	\$31.72	\$34.45	\$2.73	8.6%*
Standard error	0.68	0.59	--	---
July 1, 2000				
Very large and large	\$33.02	\$35.50	\$2.48	7.5%*
Standard error	0.53	0.31	--	--
Medium sized	\$34.08	\$34.51	\$0.43	1.3%
Standard error	0.47	0.27	--	---
Small and very small	\$29.83	\$32.24	\$2.41	8.1%*
Standard error	0.64	0.43	--	---

* An asterisk denotes a statistically significant difference between competitive and noncompetitive groups.

ATTACHMENT B-5

OPERATORS' EXPLANATION FOR CHANGES IN MONTHLY RATE
COMPETITIVE AND NONCOMPETITIVE GROUPS

Explanation	Change in Monthly Rate, July 1, 1999 to July 1, 2000				Change in Monthly Rate, July 1, 2000 to July 1, 2001			
	Competitive Group		Noncompetitive Group		Competitive Group		Noncompetitive Group	
	Amount Attributed	% of Total	Amount Attributed	% of Total	Amount Attributed	% of Total	Amount Attributed	% of Total
Cost increases for program licenses & copyright fees: existing programs	\$0.71	43.6%	\$0.80	46.0%	\$1.05	50.7%	\$1.07	46.1%
Standard error	0.07		0.07		0.08		0.07	
Cost increases for program licenses & copyright fees: new programs	\$0.15	9.2%	\$0.14	8.0%	\$0.29	14.0%	\$0.28	12.1%
Standard error	0.05		0.04		0.08		0.06	
For upgrades to distribution facility and headend plant and equipment	\$0.25	15.3%	\$0.25	14.4%	\$0.22	10.6%	\$0.23	9.9%
Standard error	0.06		0.05		0.07		0.06	
General inflation unaccounted for elsewhere	\$0.20	12.3%	\$0.24	13.8%	\$0.22	10.6%	\$0.34	14.7%
Standard error	0.03		0.03		0.03		0.03	
Other cost increases or decreases	\$0.22	13.5%	\$0.18	10.3%	\$0.19	9.2%	\$0.31	13.4%
Standard error	0.07		0.05		0.07		0.07	
Unrelated to cost change	\$0.10	6.1%	\$0.13	7.5%	\$0.10	4.9%	\$0.09	3.8%
Standard error	0.04		0.05		0.04		0.05	
Total change in monthly rate (sum of above)	\$1.63	100%	\$1.74	100%	\$2.07	100%	\$2.32	100%
Standard error	0.16		0.13		0.20		0.16	

ATTACHMENT B-6

AVERAGE MONTHLY CHARGES FOR INSTALLATION OF CABLE SERVICE
(EXCLUDING PROMOTIONS)

Type of <u>Installation</u>	July 1, 2000		July 1, 2001	
	<u>Competitive Group</u>	<u>Noncompetitive Group</u>	<u>Competitive Group</u>	<u>Noncompetitive Group</u>
Unwired installation	\$37.95	\$38.67	\$41.85	\$42.41
Standard Error	1.36	1.28	0.92	0.91
Pre-wired installation	\$27.23	\$27.28	\$29.44	\$29.93
Standard Error	1.28	1.20	0.93	0.87
Service reconnection	\$25.10	\$25.00	\$26.28	\$26.75
Standard Error	0.98	1.00	0.81	0.79

ATTACHMENT C

AVERAGE NUMBER OF CHANNELS ON AN ANALOG BASIS
BY CATEGORY OF PROGRAMMING

Category	Competitive Group				Noncompetitive Group			
	Number of Channels		Annual Change		Number of Channels		Annual Change	
	July 2000	July 2001	Number	Percent	July 2000	July 2001	Number	Percent
BST and Major CPST Channel Lineup[†]								
Local broadcast	10.7	10.9	0.2	1.9%	10.5	10.7	0.2	1.9%
Standard error	.48	.47			.38	.37		
PEG^{††}	1.9	2.0	0.1	5.3%	2.2	2.3	0.1	4.5%
Standard error	0.20	0.21			0.18	0.19		
Leased access	0.8	0.8	0.0	0.0%	0.5	0.6	0.1	20.0%
Standard error	0.11	0.11			0.06	0.06		
Other local	0.7	0.8	0.1	14.3%	0.9	0.9	0.0	0.0%
Standard error	0.11	0.17			0.09	0.09		
Children's satellite	2.7	2.8	0.1	3.7%	2.5	2.6	0.1	4.0%
Standard error	0.15	0.15			0.09	0.09		
Sports satellite	3.8	3.9	0.1	2.6%	3.3	3.5	0.2	6.1%
Standard error	0.21	0.20			0.12	0.13		
Other satellite	36.9	39.7	2.8	7.6%	36.3	38.7	2.4	6.6%
Standard error	1.47	1.53			0.75	0.82		
Total of above	57.5	60.9	3.4	5.9%	56.2	59.3	3.1	5.5%
Standard error	1.45	1.46			1.00	0.97		
Other Channels^{†††}								
Devoted to analog service	11.7	11.1	-0.6	-5.1%	11.5	10.6	-0.9	-7.8%
Standard error	0.64	0.73			0.42	0.44		
Devoted to digital service	6.7	11.3	4.6	68.7%	7.0	11.8	4.8	68.6%
Standard error	1.06	1.08			0.74	0.84		
Total Channels								
Total number of channels	75.9	83.3	7.4	9.7%	74.4	81.7	7.3	9.8%
Standard error	1.84	1.80			1.18	1.14		

[†] Excludes CPST tiers beyond the major CPST, as well as premium, pay-per-view, digital and audio (e.g., music) channels.

^{††} PEG: Public, educational, and governmental.

^{†††} Excludes channels in the BST and major CPST lineup and audio channels.

ATTACHMENT D-1

REGRESSION RESULTS SHOWING EFFECTS OF COMPETITIVE STATUS,
MSO AFFILIATION, SYSTEM SIZE, NUMBER OF CHANNELS, AND
HOUSEHOLD INCOME ON AVERAGE MONTHLY RATES

<u>Variable</u> ¹	<u>Coefficient</u> ²
Low penetration dummy	-0.048 (0.015)*
LEC dummy	-0.080 (0.014)*
Municipal dummy	-0.249 (0.035)*
Overbuild dummy	-0.071 (0.019)*
DBS dummy	0.050 (0.020)**
MSO dummy	0.228 (0.026)*
Reciprocal of average total channels	-10.795 (0.652)*
Log of median household income	0.018 (0.020)
Intercept	3.387 (0.212)*
Adjusted R-squared	0.48
Number of observations	722
Impact of LEC systems	0.077
Impact of Overbuild Systems	0.069
Impact of DBS systems	0.051

¹ Dependent variable is log of average monthly rates. Values for log of median household income is from US Department of Commerce, County and City Data Book (1994). Values for all other variables are from the Survey.

² standard errors are in parenthesis.

* Denotes significance at the 1% level.

** Denotes significance at the 5% level.

ATTACHMENT D-2
THREE-STAGE LEAST SQUARES ESTIMATION RESULTS FOR DEMAND, PRICE AND QUALITY EQUATIONS

<u>Variable¹</u>	Demand Equation: <u>Log of Number of Subscribers²</u>	Price Equation: <u>Log of Average Monthly Rates</u>	Quality Equation: <u>Log of Number of Channels</u>
Log of subscribers		-0.001 (0.014)	0.0859 (0.007)*
Log of average monthly rate	-2.193 (0.768)*		
Log of number of channels	3.668 (0.410)*	0.257 (0.053)*	
Log of system households passed	0.273 (0.036)*		
Log of system megahertz			0.363 (0.029)*
Log of MSO subscribers		0.018 (0.002)*	
Log of system age	0.268 (0.095)*	0.017 (0.017)	
Log of median household income	-0.180 (0.303)	-0.005 (0.026)	0.666 (0.036)
Log of percent urban population	0.229 (0.047)*		
Log of population density		-0.003 (0.008)	
Log of number of vertically integrated channels		-0.001 (0.006)	-0.014 (0.006)*
Digital service dummy			0.053 (0.013)*
Internet access service dummy			0.017 (0.013)
Wireline competition dummy	-0.536 (0.178)*	-0.068 (0.014)	0.059 (0.021)*
DBS competition dummy	-0.440 (0.289)	0.035 (0.023)	0.016 (0.036)
Constant	-1.452 (3.446)	2.31 (0.240)*	0.248 (0.373)
Number of Observations	702	702	702

¹ Data for log of system age variable is from FCC Form 325. We used data from US Department of Commerce, County and City Data Book (1994) for median household income, population density, and percent urban population variables. Data for vertically integrated channels is from 2001 Competition Report at Appendix D, Table D-1. This variable includes all BST and CPST channels that are vertically integrated. Premium and pay-per-view channels are not included in the calculation. Values for all other variables are from the Survey.

² Standard errors are in parenthesis.

* Denotes significance at the 1% level.

Notes on Attachment D-2

1. Attachment D-2 shows the results of our three-equation structural model, which describes the relationships among all the variables included in the model. The endogenous variables (i.e., those variables the value of which are determined within the model) are functions of other endogenous variables, predetermined or exogenous variables (i.e., variables whose values are determined outside the model), and random variables. The estimated coefficients express the direct effects of each explanatory variable (both endogenous and exogenous) on the dependent variables (i.e., the variable determined by the other variables in the equation).⁴³

2. We estimated the following three structural equations:

Demand equation: Log of subscribers = f (log of average monthly rate, log of number of channels offered, log of number of system households passed, log of system age, log of household median income, log of percent urban population, wireline competition dummy, DBS competition dummy).

Price equation: Log of average monthly rate = f (log system subscribers, log of number of channels offered, log of number of subscribers belonging to the MSO of which the operator is a part, log of system age, log median household income, log of population density, log of number of vertically integrated channels, wireline competition dummy, DBS competition dummy).

Quality equation: Log of number of channels = f (log of system subscribers, log of system megahertz, log of household median income, log of number of vertically integrated channels, digital service dummy, Internet access service dummy, wireline competition dummy, DBS competition dummy).

3. The variables included in our model are similar to those used in previous academic studies.⁴⁴ Several variables, including number of subscribers, number of channels offered, and average monthly rates, produce two-way (or simultaneous) relationships. To illustrate, we believe that demand for cable service is sensitive to changes in average monthly rates and to the number of channels offered. At the same time, as demand increases, cable operators may be able to offer more channels and charge higher rates for their service. To correct for this simultaneity problem, we chose a three-stage least squares (“3SLS”) procedure.⁴⁵ This procedure uses a three-step method to solve simultaneous relationships among the variables and to account for any possible correlation between random variables in the equations. This technique yields estimates that are asymptotically more efficient than the two-stage least squares method. However, if the random variables are independent, then two-stage and three-stage estimators produce similar results.

⁴³ See R. C. Mittelhammer, G. G. Judge, and D. J. Miller, *Econometric Foundations* 446-95 (2000) (“Mittelhammer”) for a further discussion of this methodology.

⁴⁴ Previous studies using similar sets of independent variables include Rubinovitz; Mayo and Otsuka; Chipty; and Ford and Jackson.

⁴⁵ In ideal terms, we would prefer that all influences captured in a demand equation go in one direction only, i.e., influences should go from the independent variables to the dependent variable. In this case, the influences go in both directions. In economic terms, this is called “simultaneity.” Failure to deal with this problem will result in biased estimations of the demand function.

4. As its name implies, 3SLS involves three stages to purge the simultaneous relationships among the variables and contemporaneous relationships among the structural equations. In the first stage, we derive predicted values for each of the explanatory endogenous variables. These predicted values of the explanatory endogenous variables are then used to estimate coefficients for each of the equations, which in turn are used to obtain estimates of the error terms of the structural equations for the second stage. The third stage involves use of generalized least-squares estimation of all coefficients in the system, using a covariance matrix for the error terms of the structural equations that are estimated from the second-stage.⁴⁶

5. The estimated coefficients shown in the table above were derived using the procedure described above. The predicted values used in the second stage were estimated in separate “first stage” regressions of the log of number of subscribers, average monthly rates, and number of channels on a set of instrument variables, which served as independent variables in the equations. The instrument variables included all the predetermined variables, including log of number of system households passed, log of system age, log of household median income, log of percent urban population, wireline competition dummy, DBS competition dummy, log of population density, log of number of vertically integrated channels, log of number of MSO subscribers, digital tier dummy, Internet access service dummy, and log of system megahertz.

⁴⁶ For a further explanation of this technique, *see* Mittelhammer.