D. Capitalization of Early Developmental Losses

A cable franchisee is usually characterized by low or even negative earnings during the early years of its operation. These start-up losses reflect the high developmental costs associated with most cable television systems. They bear the fixed costs of the outside plant when subscriber penetration is low. Only when the number of subscribers grows do they begin to make a return. If the Commission uses a cost-of-service backstop we believe that these start-up losses should be capitalized into the rate base so as to allow their recovery over time. The rationale for this capitalization is that this is what would occur in a competitive market which an efficient regulatory scheme should seek to emulate. In a competitive market, the cable operator would recover start-up losses through the rates charged in later years. It would be able to do so because, in the absence of significant differences in technology, any potential entrant would face the same start-up costs. Again, Professor Kahn addresses this point in his testimony regarding cable regulation before the Connecticut Public Utility Commissioners:

> Here the typical situation, as I understand it, is one in which there are substantial losses or underearnings in the development period; for a commission as a matter of policy to refuse to permit their capitalization and recovery, while holding rates henceforth to a level that will return only the current cost of capital, amounts to a policy of systematically denying investors the opportunity to recover the cost of capital to which they are entitled and which they must have if they are to make their capital available.[33]

E. The Cost-of-Service Approach Would Be Complex and Time Consuming

The Commission and telephone companies took years to develop the rules and methods for separating regulated and unregulated costs in the telephone industry. Yet that industry had already developed deep experience in cost accounting processes over many decades of regulation. It would be unreasonable to expect the Commission and the cable companies to develop rules and procedures in a few months that would be anything but a caricature of accuracy.

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[33] Kahn, Connecticut Testimony, pp. 45-46.

Since the Commission and the cable companies have so little experience with calculating costs-of-service in the cable industry, corrections to the initial rules and procedures are highly probable. These corrections could cause gyrations in prices over time, dislocating cable customers. To avoid such events, the Commission should consider showings using a variety of bases in addition to costs-of-service.

To avoid the uneconomic incentive problems described in Section II, the Notice asks for comment on whether it should use industry average costs. If the Commission were to use industry costs, the cost-of-service approach ceases to be useful as a backstop for high-cost companies. Further, although this approach would reduce the number of individual cost reports the Commission would have to review, the Commission would still have to collect cost data to calculate cost averages. Thus, the Commission would have to confront exactly the same complexities and arbitrary rules to establish what goes into the regulated rate base and expenses and what does not. In addition, the cable companies would have to collect uniform cost data to enable the Commission to calculate an average, causing them completely to redesign their accounting and management systems.

The Commission has recognized many of the incentive problems and complexities of a cost-of-service approach. For example, this is a short selection from its telephone price caps order:[34]

> 30. The distorted incentives created by rate of return regulation are easily illustrated. In a competitive environment, where prices are dictated by the market, a company's unit costs and profits generally are related inversely. If one goes up, the other goes down. Rate of return regulation stands this relationship on its head. Although carriers subject to such regulation are limited to earning a particular percentage return on investment during a fixed period, a carrier seeking to increase its dollar earnings often can do so merely by increasing its aggregate investment. In other words, under a rate of return regime, profits (i.e., dollar earnings) can go up when investment goes up. This creates a powerful incentive for carriers to "pad" their costs, regardless of whether additional investment is necessary or efficient. And, because a carrier's operating expenses generally are recovered from ratepayers on a dollar-

[34] Federal Communications Commission, *Policy and Rules Concerning Rates for Dominant Carriers*, Report and Order and Second Further Notice of Proposed Rulemaking in CC Docket 87-313, 4 FCC Rcd. 2873, 2889-2890 (1989). Emphasis in original.

for-dollar basis, and do not affect shareholder profits, management has little incentive to conserve on such expenses. This creates an additional incentive to operate inefficiently. Moreover, in situations in which carriers providing more than one service face competition for one or more of such services, rate of return regulation enables carriers to distort the competitive process by manipulating their reported cost allocations.

31. A system that establishes such incentives is unlikely to encourage efficiency. Moreover, administering rate of return regulation in order to counteract these incentives is a difficult and complex process, even when done correctly and well. This is so primarily for two reasons. First, such regulation is built on the premise that a regulator can determine accurately what costs are necessary to deliver service. In practice, however, a regulator may have difficulty obtaining accurate cost information as the carrier itself is the source of nearly all information about its costs. Furthermore, no regulator has the resources to review in detail the thousands of individual business judgments a carrier makes before it decides, for example, to install a new switching system.

32. The second inherent difficulty associated with administering rate of return regulation relates to its requirement that determinations be made about how to allocate a carrier's costs among services that often are provided jointly or in common. Such determinations tend to become more economically problematic as they become more detailed. The history of this Commission's experience in this area over the past several decades reflects the difficulty of implementing cost allocation systems.[35] We recently have been able to implement rational and effective allocation systems for the purpose of allocating cost between regulated and nonregulated activities.[36] It must be recognized, however, that even though cost allocation systems deter anticompetitive activity and assist in its detection, these results may be obtained at a high cost to society.

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[35] See, e.g., AT&T, Charges for Interstate Telephone Services, Docket No. 19129 (Phase II), 54 FCC 2d 1 (1977).

[36] See Separation of Regulated from Nonregulated Costs, 2 FCC Rcd 1298 (1987); Further Notice, 2 FCC Rcd at 3225-26 and notes therein.

IV. TELECOMMUNICATIONS AND ELECTRICITY ARE MOVING AWAY FROM COST-OF-SERVICE REGULATION

In telecommunications and electricity, both the regulated firms and regulators have been recognizing the disadvantages of cost-of-service regulation. Thus, in the last decade these industries have been moving away from traditional cost-of-service regulation. This section summarizes the trends in each industry.

A. Telecommunications

Regulatory commissions are moving away from traditional cost-of-service regulation of telecommunications carriers because of its shortcomings. The Commission itself has been converting to price caps for AT&T's interstate services and for the local exchange carriers' interstate access services. Similarly, many state commissions have instituted some form of regulatory reform for local exchange carriers. Since the Commission is familiar with its own practices, this discussion focuses on practices in the state jurisdictions, with which the Commission might be less familiar.

In telecommunications, almost all regulatory reforms have occurred within the last decade as telephone companies and regulatory commissions have agreed that there are serious disadvantages with traditional rate base regulation and have devised workable alternatives. We discuss six categories of regulatory reform:[37]

- *Earnings Sharing.* Some states have approved plans that have the telephone company share with rate payers a portion of any increased earnings via price decreases or refunds. Many of these plans give the company some pricing flexibility.
- *Service-specific Flexible Pricing.* For particular services or categories of services, some states give the telephone company complete or limited pricing flexibility.

[37] This discussion and the subsequent data are adapted from Timothy J. Tardiff and William E. Taylor, "Performance under Alternative Forms of Regulation in the U.S. Telecommunications Industry," April 13, 1993, filed on behalf of AGT in Alberta, Canada.

- *Indexed Price Cap Regulation.* Some states have adopted price cap plans similar to that of the Commission for interstate access services.[38] The United Kingdom has such a plan as well.
- *Social Contract/Rate Freeze.* Some states have negotiated a social contract with the telephone company in which flexible regulation or deregulation has been exchanged for a price freeze for certain services, for modernization investments, or for other goals.
- *Complete Deregulation.* Nebraska authorized complete deregulation in 1987.
- *Streamlined Regulation.* Some states have streamlined the regulatory process so that the telephone company can change prices or offer new services more rapidly than before.

Type of Reform	Number of States
Earnings Sharing	21
Service-specific Flexible Pricing	25
Indexed Price Cap Regulation	6
Social Contract/Rate Freezes	14
Complete Deregulation	1
Streamlined Regulation	9
Any Regulatory Reform in Place or in Progress	36

All these reforms are less than ten years old. The implication of these data is that regulation of the telecommunications industry is rapidly moving away from traditional cost-of-service regulation in response to the problems discussed above. Therefore, it seems inadvisable for the Commission to embrace cost-of-service regulation as its sole or primary

[38] Some regulators frequently adjust the productivity offset factor. This practice blurs the distinction between cost-of-service regulation and price caps if a regulator sets a separate price cap for each firm based on the firm's own cost trends. If a regulator sets a price cap productivity offset factor based on *industry* trends, however, the price cap approach retains its incentive superiority over a cost of service approach. The trade-off is that a uniform factor treats firms the same even if their potential for productivity gains is different.

back stop for its benchmark process. The Commission should also allow a variety of other kinds of showings that could avoid the problems of cost-of-service regulation.

B. Electricity

In the United States as well as around the world, regulatory authorities have been moving away from traditional cost-of-service regulation for electricity as well. In part, this is due to the complexity and cost of such a regulatory scheme, but it is also due to dissatisfaction with the results of cost-based regulation. One common criticism of traditional regulation is that it stifles innovation and technological change, while encouraging potentially wasteful investment. As a result, regulators have increasingly encouraged reliance on competition where competition already exists or where it can reasonably be stimulated. Where competition is not a feasible option, incentive regulation is being actively explored as a partial replacement of traditional rate of return regulation. In areas such as utility conservation, load management and independent power production, incentive regulation is becoming a tool of choice.

Currently, 41 states and the District of Columbia have some type of incentive program in place. We briefly discuss two examples below.

1. *California*

In 1982, the California PUC adopted a revenue decoupling mechanism known as the Electric Revenue Adjustment Mechanism (ERAM). ERAM was originally introduced as a means to insulate utility revenue from the effects of unforeseen fluctuations in demand. Since ERAM severs the link between the utility's level of sales and its short run profits, it is also seen as a means of reducing the disincentive for utilities to encourage the conservation of energy. ERAM operates within a three-year cycle of general rate cases and applies only to the portion of electricity rates meant to cover fixed costs and the allowed rate of return on the rate base. During the general rate case, budgeted base revenues are determined for the first year of the three-year period and base rates are calculated. In each of the subsequent two years, base rates are adjusted for various attrition factors including inflation indices, changes in the cost of capital and changes in the rate base. In each month, actual base revenue is compared with budgeted base revenue. The difference is accumulated and the net balance is amortized over the following twelve months through a factor added to or subtracted from customers' bills.

2. *Mississippi*

In 1990, the Mississippi PSC instituted a performance-based ratemaking plan. The PSC examines the Mississippi Power Company's (MPC's) earned retail return on equity, a benchmark return on equity (based on the cost of equity for utilities with the same bond rating as MPC) and MPC's weighted average performance in seven operational categories. It then determines whether revenue increases or decreases are needed. The rate adjustments are designed to keep MPC's return on equity within a band around the benchmark return on equity and higher or lower within that band based on actual performance.

These are just two examples of a trend away from traditional cost-based regulation towards programs which encourage utilities to reduce costs and maximize efficiency. The following table provides an overview of the forms of electrical utility incentive programs adopted in the United States.

Types of Programs in the U.S.	Number of States
Power Plant Performance	21
Fuel and Operating Costs	6
Generating Plant Out of Ratebase	2
DSM-Related Measures	47
Off-System Sales	3
Operating Efficiency and Safety	7
Indexed Rates	36

V. A BACKSTOP PROPOSAL THAT AVOIDS THE PROBLEMS OF A COST-OF-SERVICE APPROACH

As discussed above, relying strictly on a cost-of-service approach to create a backstop could have undesirable incentive problems, and formulating appropriate and fair cost rules will be complex and time consuming. Such problems could be avoided if the Commission were to develop alternative backstops which were more directly related to its benchmark approach. Our approach avoids the incentive problems and complexities of the cost-of-service approach, yet it is consistent with the Commission's goals and other aspects of its proposed regulatory structure for the cable industry. In focusing discussion on our proposal, we do not intend to suggest that other approaches might not also be useful.

The benchmark approach can be viewed as a mechanism for establishing a market-based, competitively determined price for cable operator services. In its current form, however, the prices that the benchmark formula produces are highly aggregated and may well pose undue burdens on companies which serve high cost territories or which offer a mix of cable services which differ from the average.

Commenters in the Commission proceedings have cited many cost or product mix factors which are not reflected in the current benchmark and which nevertheless may influence the competitive market price for cable service in a particular franchise. The following list includes factors mentioned in petitions for reconsideration as justifications for higher-than-benchmark prices:

1. Low density.
2. Low revenues from unregulated services, including a lack of local cable advertising or an absence of pay-per-view service.
3. Regulated optional service tiers with less than universal acceptance among subscribers.
4. High operating costs due to location, including:
   (a) a high-cost city,
   (b) a high-cost state/region,
   (c) an extreme rural area, e.g., above the Arctic Circle.
5. High programming costs, due to:
   (a) more expensive programming, including local news channels, regional sports channels, nonadvertiser-supported programming, and "pay" channels (if offered as part of basic or tier regulated service),
   (b) more expensive technology such as having to transmit signals via microwave when they are not available via satellite, and
   (c) high Copyright Royalty Tribunal payments for imported distant signals.
6. High churn, including the disconnect/reconnect expense associated with seasonal households.
7. Technical sophistication of the cable plant and customer equipment, including investment in fiber transmission facilities and addressability.
8. Underground plant.

9. Taxes and franchisee obligations, other than the sales taxes and franchise fees which are external to the benchmark, including:
   (a) state possessory interest taxes or local utility user taxes; and
   (b) franchise obligations for public, educational, and government access facilities/support and institutional networks.

Such high cost circumstances might be accommodated or mitigated by permitting individual companies to make appeals from the benchmark by showing explicitly that it does not adequately account for the circumstances of some of their franchisees. We propose that such companies be permitted to submit alternative statistical or engineering analyses of industry cost data showing that firms with characteristics like theirs typically charged higher prices (even after controlling for competition) and hence that even with competition they would be expected to have prices above the benchmark. Evidence would consist of showing that specific cost-related or product-related characteristics were significantly related to price and that, controlling for such factors, the firm in question should be given a higher benchmark. Individual companies could appeal from the benchmark on this basis, or groups of similarly situated companies could make a common appeal.

The Commission could verify (or reject) the validity of such pleadings using standard statistical tests to measure the appropriateness of the variables included, the sample selected, and the functional form. In such a proceeding the Commission could consider not only the cost factors proposed by the firm or firms bringing the appeal but also other factors suggested by its own analyses or suggested by the showings of other firms. However, the results of such an appeal would apply only to the firms who were parties to it and would not apply broadly to the industry. In this way, our proposal operates similarly to the Commission's suggested cost-of-service backstop. We recognize that granting relief to some companies through our backstop approach would slightly raise the average price level in the industry. But the Commission already appears to countenance such a result in proposing a cost-of-service backstop. Further, our approach would yield improved efficiencies and service offerings.

This approach has several distinct advantages over the Commission's proposed exclusive reliance on cost-of-service regulation as a backstop for the benchmark. First, it does not require the Commission to develop an elaborate new regulatory framework covering all aspects of a company's costs relative to the average. The same criteria used to develop the

original benchmark could be used to judge individual company appeals without the additional necessity of developing an equation which either requires data on every one of the original sample franchises or that must be applied to all firms in the industry.

Some examples of the massive new efforts that the Commission could avoid are the following: The Commission would not need to prescribe a uniform system of accounts that backstop applicants would be compelled to use. Nor would the Commission have to prescribe a detailed cost allocation manual and cost-of-capital methods for them. Further, it could avoid designing a set of controls to compensate for any incentive distortions that cost-of-service regulation might cause.

By providing this mechanism for appeals, the Commission would reduce the need for firms to rely on a broad-based cost-of-service appeal, thereby saving resources used in the appeal process and the resources needed to develop specific cost-of-service regulations. If cost-of-service regulation is only rarely used, guidelines for such regulation might then only need to be developed on a case by case basis.

Second, firms would gain relief from the benchmark only if they could show that specific features of their service territory or product led to above average costs or prices. They would not gain relief simply by showing that they experienced high costs. Thus, exceptions would be made for high cost circumstances rather than for high costs *per se*. This would eliminate the adverse incentive effects attributed to cost-of-service regulation.

Third, our proposed process would contribute to the Commission's understanding of factors which influence the cost of providing cable service. The process of appeals would identify cost and service characteristics which generally contribute to high costs and would, over the long term, assist the Commission in promulgating better regulations.

One of the features of our proposal is that results of individual appeals apply only to the company or companies making the appeals and not the industry broadly. This feature is central. If the Commission were to apply the results of such appeals broadly, then every appeal would become a near zero sum game. While some companies might benefit by focussing on specific cost factors, the inclusion of such factors might disadvantage others. The Commission would then find itself as referee in an intrinsically contentious and acrimonious process in which companies argued about the appropriateness of specific proposals. In contrast, our process provides a backstop to the existing benchmark for high cost firms without

the inherent contentiousness of a wholesale review. At the same time the Commission might well use information gained in any one appeal to test the appropriateness of subsequent appeals.

In addition to statistical analyses of prices, the Commission might use this process of appealing from the benchmarks to consider other types of demonstrations that costs were high. These might include, for example, engineering or accounting studies showing that particular circumstances lead to unusually higher costs than the average. However constructed, the key feature of such studies would be a showing that some factor or factors experienced in a particular franchise lead to unusually high costs relative to the average. For example, such a study could use an engineering analysis to determine the effect of density or product mix on cost. A company would then seek to show that its density or product mix led to unusually high costs.

VI. AN EXAMPLE OF A POTENTIAL BENCHMARK APPEAL

As an illustration of the possible use of statistical analysis to structure appeals from the benchmark, we have developed a statistical analysis which starts from the current benchmark regression but adds a number of cost-related or product-related features which may account for high prices in competitive cable markets for specific franchisees. The Commission benchmark model predicts the price per channel for a cable franchisee based on only three franchise characteristics. It implicitly views any other price determinants as simply random and presumably transitory variations in observed prices. As we noted in an earlier paper, the Commission's model is not very accurate.[39] Even if it correctly captures the "true" competitive effect, it will incorrectly predict a franchise as being above the benchmark when it is actually at or below the "true" benchmark about 29 percent of the time. An important contributor to this error is the omission of cost or product mix related factors which would result in a higher benchmark for some firms.

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[39] Lewis J. Perl, Linda McLaughlin and Jonathan Falk, "Econometric Assessment of the FCC's Benchmark Model," June 18, 1993, submitted in connection with Petition for Reconsideration of Time Warner Entertainment Company, L.P. in the Matter of Implementation of the Cable Television Consumer Protection and Competition Act of 1992, Rate Regulation, MM Docket No. 92-266, pp. 3-5 and Appendix Table 1.

To illustrate these effects, we have developed five examples of cost-related factors which, when added to the Commission's regression, appear to be significant predictors of price. Appellants might use these or other similar factors to gain needed relief from the benchmark. The specific factors we examined are:

1. Churn: installations, reconnects and disconnects per subscriber.
2. Addressability: number of addressable converters per subscriber.
3. Nonuniversality: the number of basic and tier channels purchased by the average subscriber. The price per channel purchased depends on both the number of channels offered (included in the Commission's regression) and the number purchased; for example, the investment in cable plant will be greater when more channels are offered. When second or third tiers are chosen by less than all basic subscribers, the cable operator has fewer subscribers to bear the fixed costs associated with those channels and, thus, higher costs per subscriber.[40]
4. Lack of pay/pay-per-view: a dummy variable for franchisees with no pay or pay-per-view channels. This affects costs in two possible ways. First, a "pay" channel may be offered as part of basic or tier service. If so, the programming cost will clearly be above average. Second, such channels may simply be absent from the system. In this case, the operator receives no contribution from pay and pay-per-view revenue for investment and expenses that other operators use jointly to offer both basic/tier programming and pay/pay-per-view programming. Without this contribution, basic and tier subscribers tend to bear greater costs.
5. Pay/pay-per-view options: the number of pay and pay-per-view channels.[41] When operators add pay and pay-per-view channels, they are incurring costs

[40] Perhaps more important, since the Commission's regression attempts to explain the price per channel purchased based on the number of channels offered, and channels purchased are virtually the same as those offered in most franchises, the regression assumes the franchisee will be collecting from subscribers the predicted price per channel times the number of channels offered.

[41] The variable is in log form. For franchisees with no pay or pay-per-view channels the value of this variable is zero and a separate dummy variable has a value of one.

simultaneously for those who will subscribe to pay and pay-per-view and for those who value the option to subscribe to those channels. The regression shows that the competitive basic/tier price rises when subscribers have the option to take additional pay and pay-per-view channels.

When these five illustrative factors are included in the regression, they substantially increase its predictive ability. The standard error of the estimate declines by about 13 percent and the adjusted R^2 rises by about 9 percentage points. Moreover, the inclusion of these variables would afford some relief to about 10 percent of the firms which under the original approach were required to reduce rates. Thus, the original regression would require rate reductions by about 200 firms. In the revised regression, summarized in Attachment I, 24 of these firms either did not have to lower rates at all or lowered rates by less than predicted by the original benchmark. Such firms would have the basis for an appeal based on the approach we have suggested. Of course, this regression is meant only to be illustrative—other equally or more important factors might well be identified as part of the appeals process.

ALLOWED RETURNS ON EQUITY AND BOND YIELDS FOR ELECTRIC UTILITIES 1992-93

DECISION DATE	UTILITY	ALLOWED ROE (1)	S&P BOND RATING (2)	BOND YIELD (3)
12-Jun-92	Interstate Power (MN)	10.90%	A+	8.69%
29-Jun-92	Rochester Gas & Electric	11.00%	BBB+	8.82%
22-Jul-92	New York State E & G	11.20%	BBB+	8.72%
21-Jan-93	Metropolitan Edison	11.25%	A-	8.53%
02-Feb-93	Niagara Mohawk Power	11.40%	BBB	8.19%
09-Apr-92	Central Hudson G & E	11.45%	A-	9.10%
10-Apr-92	Narragansett Electric	11.50%	A+	8.98%
05-May-92	Union Light Heat & Power	11.50%	BBB+	9.75%
14-Apr-92	Consolidated Edison	11.50%	AA	8.08%
30-Sep-92	Massachusetts Electric	11.75%	A+	9.12%
31-Oct-92	Boston Edison	11.75%	BBB	8.87%
23-Nov-92	Southern Cal. Edison	11.80%	AA	8.41%
23-Nov-92	San Diego Gas & Electric	11.85%	A+	8.40%
12-May-92	Cincinnati Gas & Electric	11.87%	BBB+	9.03%
23-Nov-92	Pacific Gas & Electric	11.90%	A	8.58%
31-Dec-92	Iowa Ill. Gas and Elec.	11.90%	AA	8.49%
13-Jul-92	Interstate Power (IA)	11.90%	A+	8.65%
24-Feb-93	Potomac Edison	11.90%	AA-	8.90%
12-Jan-93	Northern States Power (WI)	12.00%	AA	8.56%
22-Sep-92	Florida Power	12.00%	AA-	8.31%
30-Dec-92	Public Service E & G	12.00%	A	8.68%
17-Dec-92	Tampa Electric	12.00%	AA	8.22%
03-Aug-92	Iowa Electric Lt. & Power	12.00%	A	7.92%
25-Feb-93	Jersey Central P & L	12.20%	A-	9.37%
12-Oct-92	Iowa Power	12.20%	A+	9.68%
29-Dec-92	Virginia Power	12.25%	A	8.61%
22-Dec-92	Wisconsin Public Service	12.30%	AA+	7.73%
15-Feb-93	Wisconsin Electric Power	12.30%	AA+	7.80%
01-Jun-92	Iowa Public Service	12.30%	A+	8.79%
26-Jun-92	Potomac Electric Power	12.35%	AA-	8.69%
16-Dec-92	United Illuminating	12.40%	BBB-	8.32%
22-Dec-92	Wisconsin Power & Light	12.40%	AA	8.41%
12-May-92	Columbus Southern Power	12.46%	BBB	9.55%
06-Aug-92	Nevada Power	12.50%	BBB-	8.86%
02-Oct-92	Hawaii Electric Light	13.00%	A-	8.67%
30-Jun-92	Hawaiian Electric	13.00%	A-	9.10%
13-Jul-92	Iowa Southern Utilities	13.50%	AA	8.37%
AVERAGE		11.99%		8.67%

Source and Note:

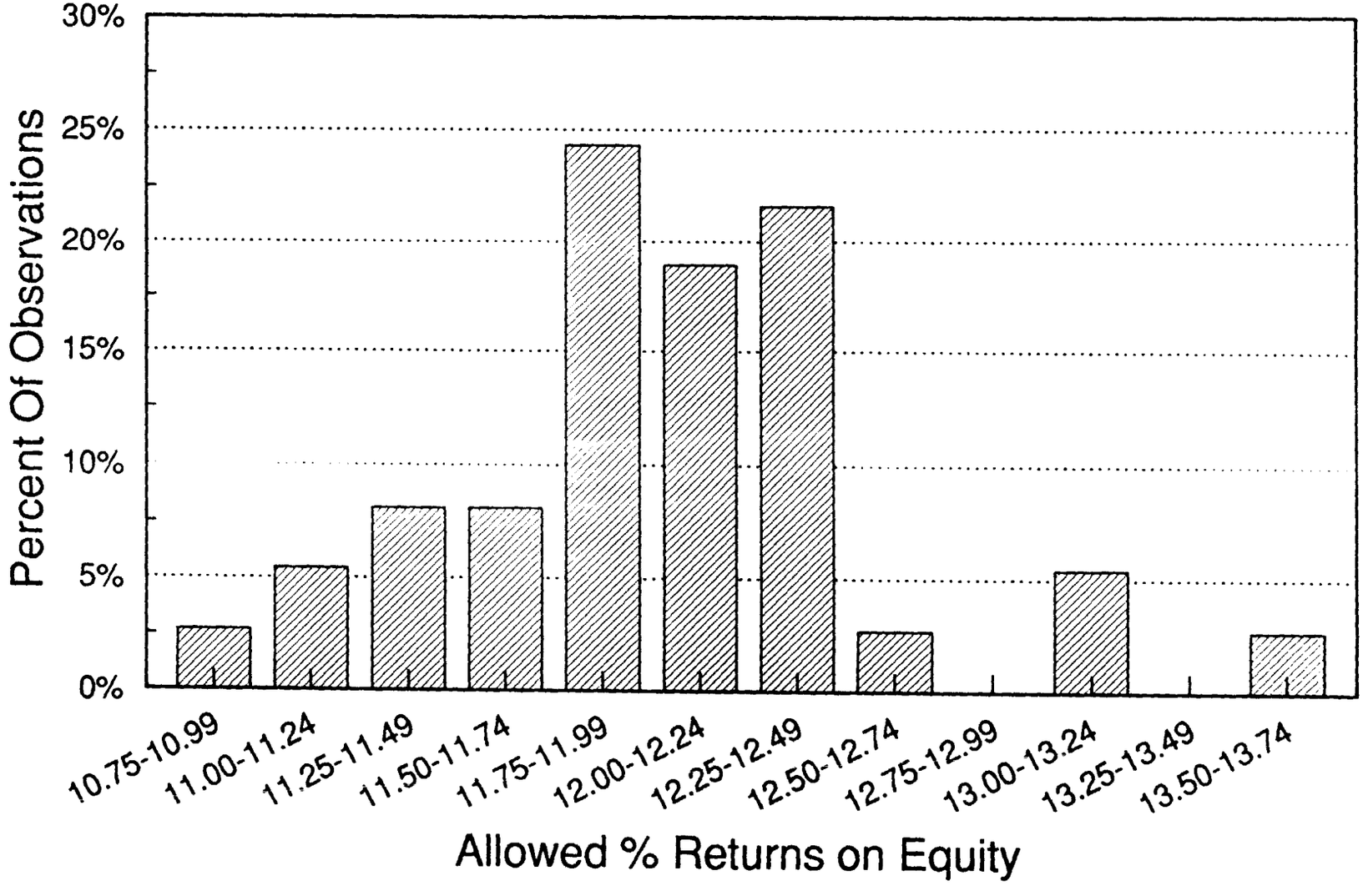
Col. (1): Regulatory Focus, Regulatory Research Associates, Inc., January 22, 1993 and April 13, 1993.

Cols. (2) & (3): Standard & Poor's Bond Guide, April 1992 - March 1993.

The bond yield shown for each company is the yield to maturity for the company's bond issue which has the highest rating with the most distant maturity date.

COMPARISON OF ALLOWED RETURNS ON EQUITY

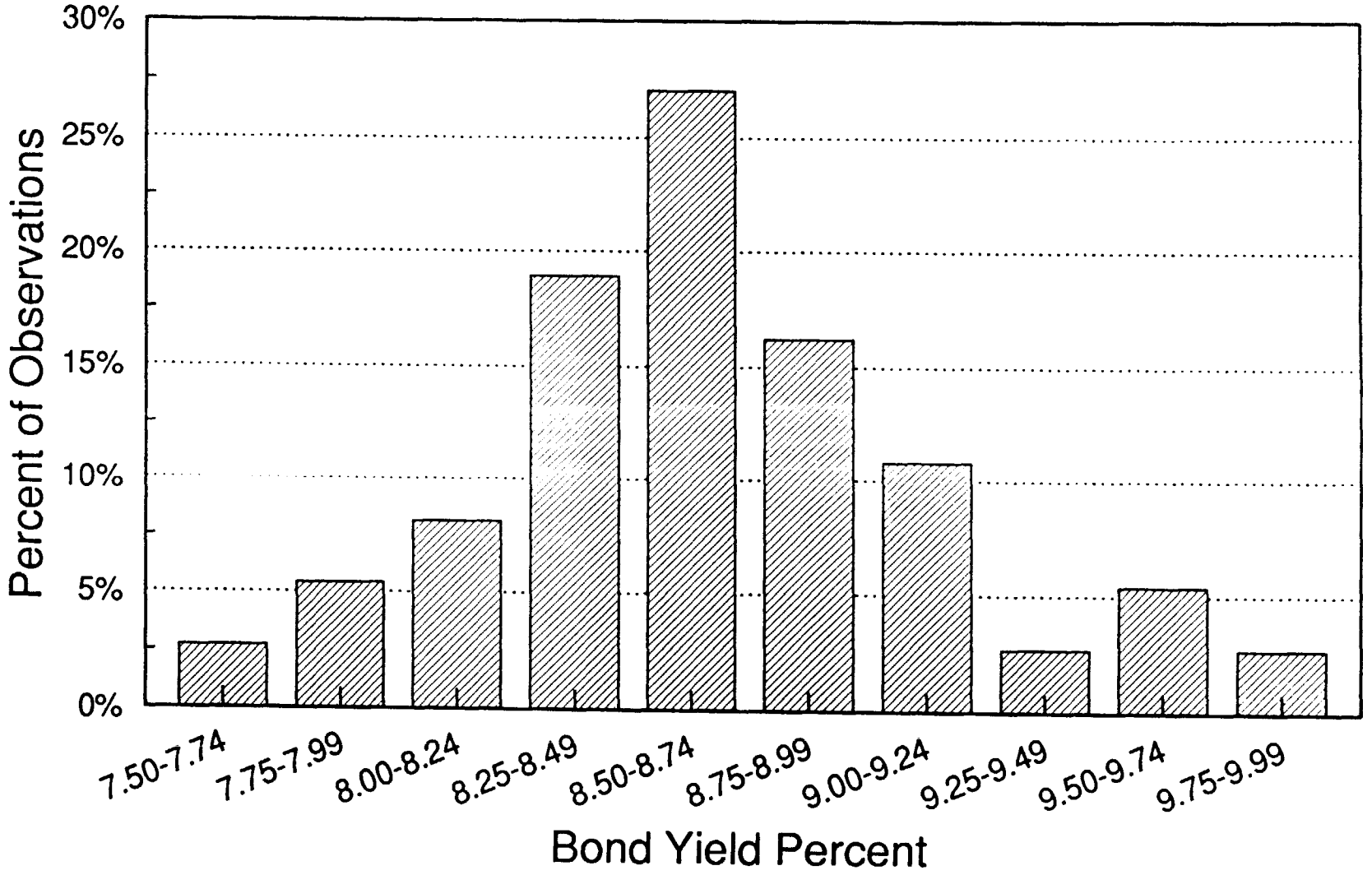
FOR ELECTRIC UTILITIES, 1992-93



Attachment B

COMPARISON OF BOND YIELDS

FOR ELECTRIC UTILITIES, 1992-93



Attachment C

DEBT TO BOOK EQUITY RATIOS OF CABLE OPERATORS
1992

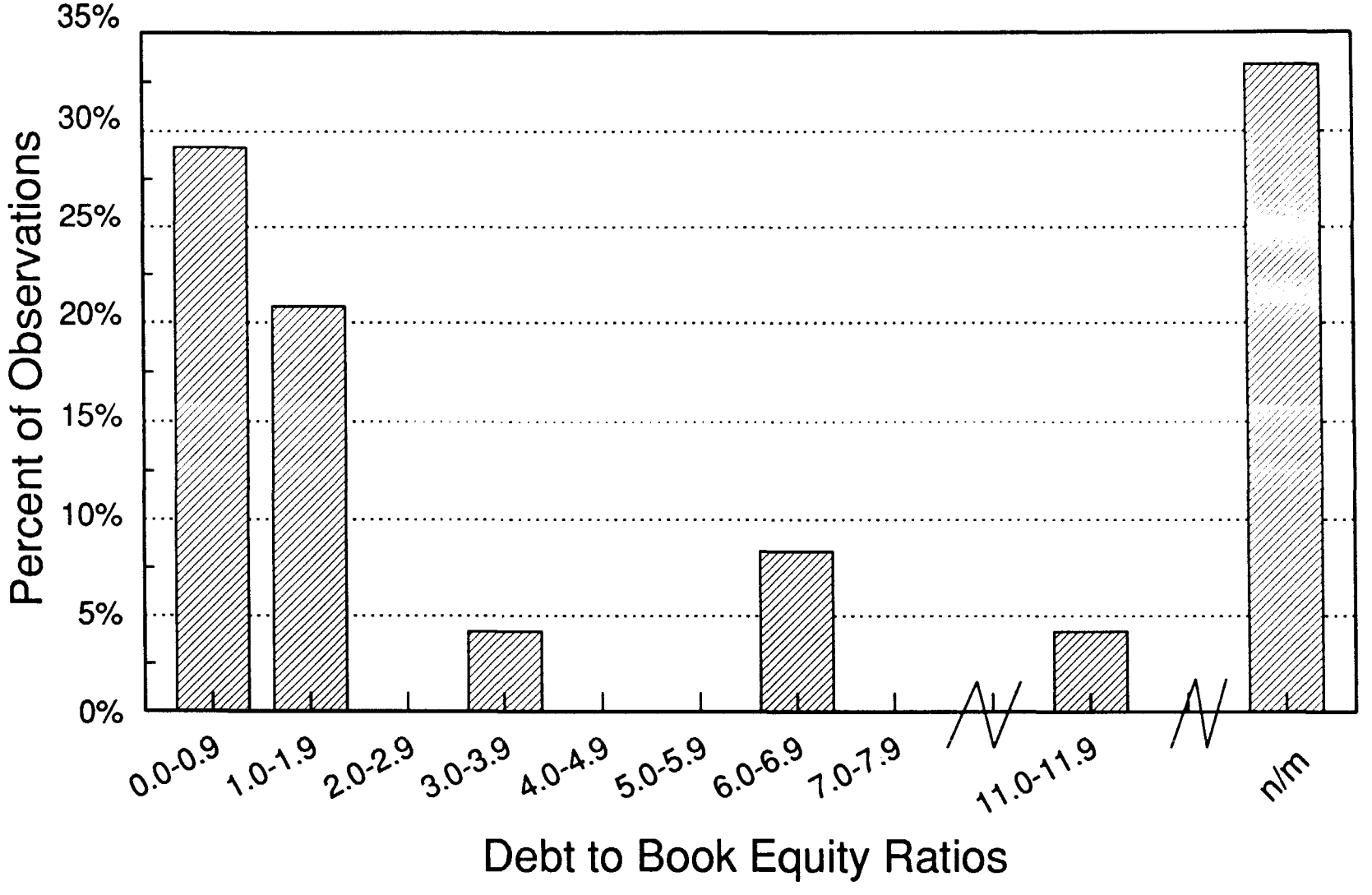
CABLE OPERATOR	BOOK VALUE OF LONG-TERM DEBT	BOOK VALUE OF EQUITY	DEBT TO BOOK EQUITY RATIO
	----($ millions)----		
			(1)/(2)
	(1)	(2)	(3)
Jones Intercable	$299.3	$26.9	11.1
Tele-Communications, Inc.	9,640.0	1,486.0	6.5
C-TEC	421.8	66.8	6.3
Viacom	2,397.0	756.5	3.2
TCA Cable	130.1	78.5	1.7
Gaylord Entertainment	299.3	204.9	1.5
Media General	320.5	209.9	1.5
Time Warner Inc.	10,068.0	8,167.0	1.2
Scripps Howard	238.8	215.1	1.1
Comcast/Philadelphia, L.P.	40.5	46.8	0.9
Times Mirror	1,114.4	1,700.6	0.7
E.W. Scripps	375.7	733.1	0.5
Liberty Media	167.7	365.7	0.5
Knight-Ridder	495.9	1,181.8	0.4
Galaxy Cable M.L.P.	28.1	73.4	0.4
Washington Post	51.8	993.0	0.1
Comcast	3,973.5	(181.6)	n/m
Multimedia	744.0	(290.7)	n/m
Adelphia	1,554.3	(713.5)	n/m
Century Communications Inc.	1,174.9	(178.3)	n/m
Cablevision Systems	1,913.8	(1,172.3)	n/m
Falcon Cable	169.1	(61.0)	n/m
MERCOM	29.8	(12.3)	n/m
Jones Spacelink	364.3	9.0	n/m

n\m - not meaningful

Source: Paul Kagan Associates, The Cable TV Financial Databook, June 1993, p. 67.

COMPARISON OF DEBT TO BOOK EQUITY RATIOS

FOR CABLE OPERATORS, 1992



Attachment E

DEBT TO MARKET EQUITY RATIOS OF CABLE OPERATORS
1992

CABLE OPERATOR	BOOK VALUE OF LONG-TERM DEBT	MARKET VALUE OF EQUITY	DEBT TO MARKET EQUITY RATIO
	----($ millions)----		
			(1)/(2)
	(1)	(2)	(3)
Jones Intercable <1	$299.3	$168.9	1.8
Tele-Communications, Inc. <2	9,640.0	9,171.9	1.1
C-TEC	421.8	230.8	1.8
Viacom <2	2,397.0	5,159.4	0.5
TCA Cable	130.1	528.2	0.2
Gaylord Entertainment	299.3	1,730.7	0.2
Media General	320.5	455.4	0.7
Time Warner Inc. <3	10,068.0	10,907.6	0.9
Scripps Howard	238.8	467.3	0.5
Comcast/Philadelphia, L.P.	40.5	103.8	0.4
Times Mirror	1,114.4	4,017.9	0.3
E.W. Scripps	375.7	1,846.4	0.2
Liberty Media <3	167.7	1,664.4	0.1
Knight-Ridder	495.9	3,202.6	0.2
Galaxy Cable M.L.P.	28.1	19.6	1.4
Washington Post	51.8	2,714.0	0.0
Comcast <4	3,973.5	2,522.1	1.6
Multimedia	744.0	1,198.8	0.6
Adelphia	1,554.3	217.6	7.1
Century Communications <3	1,174.9	697.3	1.7
Cablevision Systems	1,913.8	795.7	2.4
Falcon Cable	169.1	61.6	2.7
MERCOM	29.8	7.2	4.2
Jones Spacelink	364.3	70.0	5.2

1> Market value of equity calculated by adding Jones Intercable and Jones Intercable "A" stocks.

2> Market value of equity calculated by adding stock classes "A" and "B".

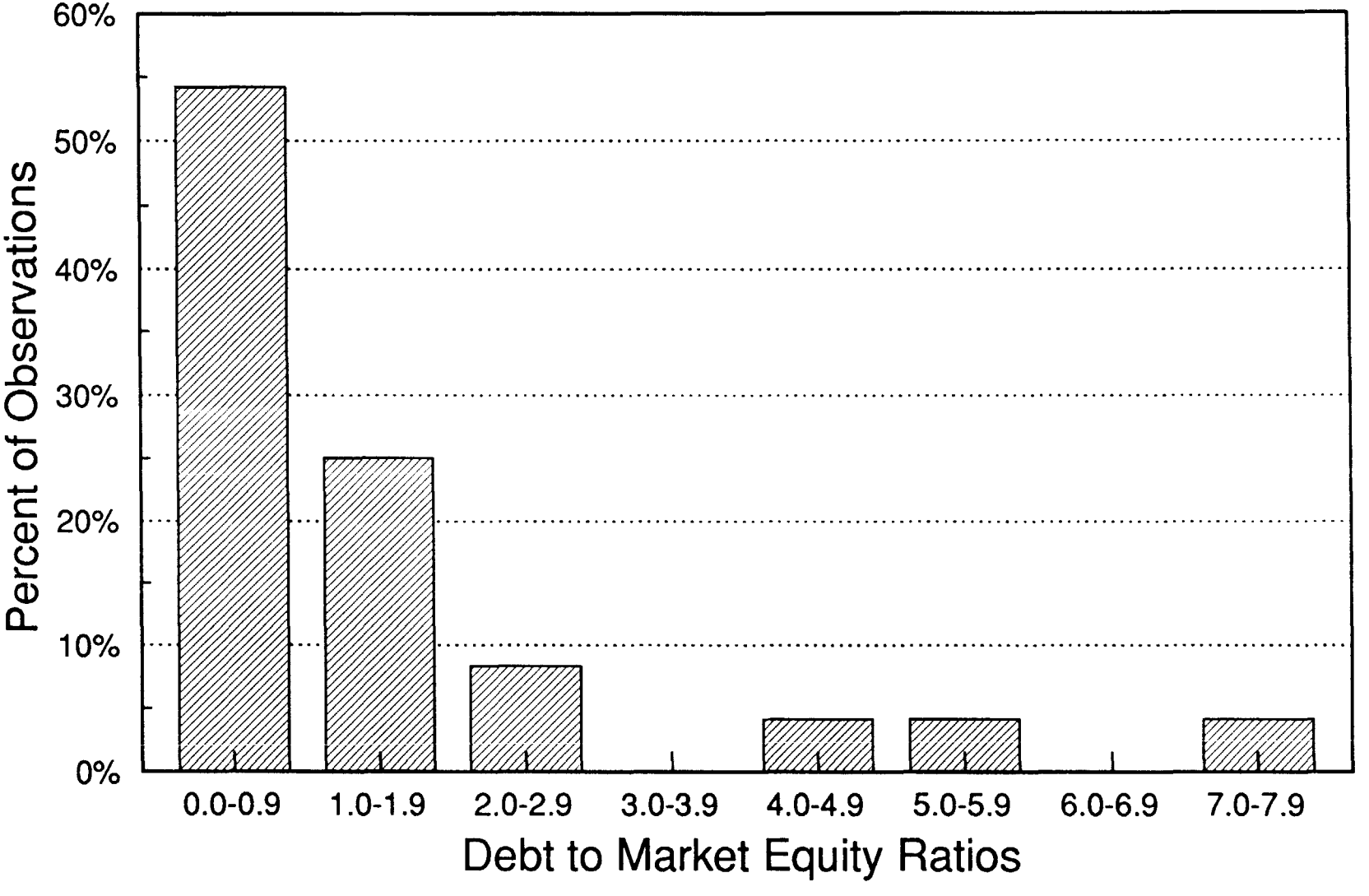
3> Adjusted for subsequent splits.

4> Market value of equity calculated by adding Comcast and Comcast Special stocks.

Source: Paul Kagan Associates, The Cable TV Financial Databook, June 1993, pp. 67 and 71.

COMPARISON OF DEBT TO MARKET EQUITY RATIOS

FOR CABLE OPERATORS, 1992



Attachment G

DEBT-TO-EQUITY RATIOS OF CABLE OPERATORS
BOOK VALUE VS. MARKET VALUE
1992

CABLE OPERATOR	DEBT TO BOOK EQUITY RATIO (1)	DEBT TO MARKET EQUITY RATIO (2)
Jones Intercable <1	11.1	1.8
Tele-Communications, Inc. <2	6.5	1.1
C-TEC	6.3	1.8
Viacom <2	3.2	0.5
TCA Cable	1.7	0.2
Gaylord Entertainment	1.5	0.2
Media General	1.5	0.7
Time Warner Inc. <3	1.2	0.9
Scripps Howard	1.1	0.5
Comcast/Philadelphia, L.P.	0.9	0.4
Times Mirror	0.7	0.3
E.W. Scripps	0.5	0.2
Liberty Media <3	0.5	0.1
Knight-Ridder	0.4	0.2
Galaxy Cable M.L.P.	0.4	1.4
Washington Post	0.1	0.0
Comcast <4	n/m	1.6
Multimedia	n/m	0.6
Adelphia	n/m	7.1
Century Communications <3	n/m	1.7
Cablevision Systems	n/m	2.4
Falcon Cable	n/m	2.7
MERCOM	n/m	4.2
Jones Spacelink	n/m	5.2

n/m - not meaningful

1> Market value of equity calculated by adding Jones Intercable and Jones Intercable "A" stocks.

2> Market value of equity calculated by adding stock classes "A" and "B".

3> Adjusted for subsequent splits.

4> Market value of equity calculated by adding Comcast and Comcast Special stocks.

Source: Paul Kagan Associates, The Cable TV Financial Databook, June 1993, pp. 67 and 71.

Commission's Model with Addition of Percent Addressable Variable

Source	SS	df	MS
Model	46.3425874	9	5.14917637
Residual	17.7548438	365	.048643408
Total	64.0974311	374	.171383506

Number of obs	= 375
F(9, 365)	= 105.86
Prob > F	= 0.0000
R-square	= 0.7230
Adj R-square	= 0.7162
Root MSE	= .22055

lnp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
abc	-.1068284	.0263756	-4.050	0.000	-.1586957	-.0549612
recipsub	6.065948	2.504871	2.422	0.016	1.140158	10.99174
lnchan	-.4715785	.1482799	-3.180	0.002	-.7631686	-.1799884
lnsat	.0860369	.0403254	2.134	0.034	.0067375	.1653362
fadrspct	.1001978	.0396793	2.525	0.012	.0221691	.1782265
instlcon	.7085145	.0821639	8.623	0.000	.5469405	.8700886
lwgchan	-.5423694	.1313924	-4.128	0.000	-.8007505	-.2839883
lpayppv	.0781274	.0323715	2.413	0.016	.0144694	.1417854
payppv0	.1715871	.0738663	2.323	0.021	.0263302	.3168441
_cons	2.718833	.1454658	18.691	0.000	2.432776	3.004889

Note: Number of observations does not equal 377 because two observations have missing data for "fadrspct".

Additional Independent variables:

- Percent addressable ("fadrspct") equals franchise number of addressable subscribers divided by franchise subscribers.
- Churn ("instlcon") is the number of installations, disconnections and reconnections per month as a percent of basic tier subscribers.
- Log of weighted channels ("lwgchan") is the number of channels in regulated tiers weighted by their subscribers relative to total subscribers.
- Log of the sum of pay and pay-per-view channels ("lpayppv") with zero inserted when there were no pay or pay-per-view channels.
- Dummy equal to one when the sum of pay and pay-per-view channels equals zero ("payppv0").