

distributed costs, but there is no requirement under the price cap rules for all services to be set at fully distributed cost and no requirement to justify "charg(ing) less than fully loaded costs for video dialtone." MCI at 10.

2. Petitioners incorrectly characterize incremental costs for VDT and telephony services.

16. ACC, NCTA and MCI assert that Bell Atlantic's cost studies produce unreasonable results, giving as examples, the facts that

the *majority* of assigned Drop Facilities investment has been assigned to the voice telephony category, despite the obvious fact that the coaxial cable drops that are being installed are entirely unnecessary for voice telecommunications

ACC, Declaration of Patricia D. Kravtin ("Kravtin Declaration") at 17;

extensive broadband transmission facilities and the accompanying terminal equipment and electronics are not needed to deliver high quality telephone services [footnote omitted]. The ineluctable implication of this analysis is that a very high proportion of common costs of the broadband network should be assigned to video

NCTA at 13-14, and

[t]wo pieces of equipment [Host Digital Terminal Equipment and the Optical Network Unit] . . . are necessary solely because Bell Atlantic is providing VDT service, yet Bell Atlantic assigns the majority of the costs of both to voice.

MCI at 8-9. In each of these cases, Bell Atlantic's treatment of the investment is appropriate.

17. None of the plant in the portion of the network that is shared between voice and video services can be assigned directly in its entirety to either voice or video services.¹³ The equipment is necessary to provide either voice or video service (or both) in the integrated network, and it is not true that the equipment would not be required--and the costs not incurred--if the network supplied only voice telephony services. On a forward-looking basis, additional traffic--either

¹³This equipment includes drops, Host Digital Terminal Equipment and Optical Network Units.

voice or video--will cause the capacity of the plant to exhaust sooner and an incremental cost to be incurred. Users of the integrated network should face prices determined by incremental costs in that network rather than in some other hypothetical network as some parties claim.

18. In economic theory, how would cost differences between a facility in the joint-use broadband network and, for example, a functionally equivalent facility in a network engineered for voice services only be treated? Should video services be assigned some higher proportion of the costs of the joint use network if another facility could be engineered to provide just voice services at a lower overall cost? Or for that matter, should other new services be assigned more of the common costs of today's joint use network that includes digital switching and advanced common channel signaling technologies if another facility could have been engineered to provide the most basic voice telephone services at a lower overall cost?

19. From an economist's perspective, the answer is "no." The question confuses costing principles with cost recovery. Incremental costs in our hypothetical example are caused--not by the telephone company's desire to enter the video transport business--but by the actions of a customer using scarce resources to place a call.¹⁴ If the true incremental cost of voice service in an integrated network were too high compared with its cost in the current network, then some portion of the voice-related costs could be found to be imprudent (in a conventional rate-of-return-regulated environment). Under price cap regulation, which is in effect both in New Jersey and at the Federal level, the telephone company would simply receive lower contribution from its voice services in this circumstance, but its voice subscribers would see no effect on the prices they paid.

20. In sum, Bell Atlantic assigned all those costs that are caused by the provision of VDT services or that vary with the volume of VDT services supplied, as well as a reasonable portion of the shared and other common costs, directly to VDT services. In addition, Bell Atlantic assigned a reasonable portion of the overhead costs, as required by the Commission, to the rates

¹⁴Indeed, in order for customers to make efficient decisions in the marketplace, prices must reflect the opportunity costs of the goods and services given up to produce the service in question.

for VDT services.¹⁵ Bell Atlantic's decision to propose rates above the price floor and at or below the price ceiling is consistent with the principles of efficient pricing. A reasonable allocation of common costs cannot hold the price of a service so high that customers do not purchase the service at all or sales of one vendor or one technology are preferentially treated in comparison with its competitors. The efficient choice of goods and services, vendors and technologies must be made at the margin--so that for services perceived to be of equal quality the service having the lower marginal cost has a competitive advantage. If this advantage is distorted through a required unreasonable allocation of common costs, the potential efficiency gains from competition in video distribution will be lost.

21. Moreover, there are other safeguards beyond cost allocation to prevent cross-subsidization of video services by telephone services. The Commission recognizes that the implementation of price cap regulation has a more significant role in preventing cross-subsidization than its other regulations.¹⁶ Because price cap regulation decouples prices from regulatory costs, users of other regulated services cannot be burdened by the inappropriate allocation of regulatory accounting costs or by investments that may not prove to be economic.¹⁷ Indeed, a fundamental feature of price cap regulation is that it provides incentives similar to those faced by unregulated firms--successful investments are rewarded and shareholders, not ratepayers, bear the risk for unsuccessful investments.

3. Stand alone costs do not determine whether a service receives a subsidy.

22. NCTA confuses the roles of long run incremental costs and stand alone costs in the economic theory of cross-subsidization. It asserts that

¹⁵Reconsideration Order, ¶ 220.

¹⁶Reconsideration Order, ¶ 166. In fact the Commission views "the price cap regulatory regime, and not the Part 36/Part 69 cost allocation scheme, as [its] primary means of protecting the telephone customers of price cap LECs from unreasonably high rates."

¹⁷Thus, MCI's belief that price cap regulation does not "fully protect[] access customers from paying for the costs of network upgrades needed to provide a video dialtone services that telephone customers do not require" is unfounded. MCI Petition at 3.

[u]nder the stand alone cost test, there are two essential elements to a cross-subsidy test. First, prices must recover at least all properly measured long run incremental costs. Second, no service should be priced above its stand alone cost [footnote: See Gerald R. Faulhaber, "Cross-Subsidization: Pricing in Public Enterprises," American Economic Review, December 1975, pp. 966-977.]

NCTA at 16. On the contrary, in economic theory--and in Dr. Faulhaber's cited article--there is only one "essential element" necessary to determine whether a service receives a subsidy: VDT service receives a subsidy if the incremental revenue from supplying the service is less than the incremental cost of producing it. No stand alone cost test is required to detect the presence of a subsidy; indeed, even in Dr. Faulhaber's theory, every other service could be priced above its stand alone cost, and if VDT were priced above average incremental cost, it would still not receive a subsidy.¹⁸

23. NCTA proposes the following stand alone cost test to determine the portion of the costs of the integrated network that must be recovered from broadband services:

If narrowband service can be provided on a stand alone basis for \$10 and the total cost of an integrated network is \$20, then the minimum amount of costs that should be assigned to video dialtone is the \$10 difference. If out of the hypothetical \$20 for construction of the broadband network, only \$5 can be assigned directly to video and \$5 to narrowband, with the remaining investment designated as common, any allocator that assigns more than \$5 of common cost to narrowband services is inappropriate because the resulting narrowband costs will be greater than the stand alone cost of \$10.

NCTA at 16-17. This test represents merely a different way of calculating the incremental cost of the broadband service. If a company provides two classes of services (narrowband and broadband), if the forward-looking total cost of supplying narrowband services alone is \$10, and if the forward-looking total cost of supplying both narrowband and broadband services is \$20,

¹⁸If a service (say voice telephony) were priced above its stand alone cost, then (i) only in a "perfectly regulated" firm in which total cost equaled total revenue could voice telephony be said to provide a subsidy, but (ii) it is not true in general that if one service provides a subsidy, any other single service can be identified as receiving it.

then, by definition, the incremental cost of broadband services is \$10. This fact says nothing about how common costs should be assigned or allocated to narrowband services.

24. Moreover, the test only calculates the (total service) incremental cost of the set of all services other than voicegrade local exchange service. It does not purport to calculate the incremental cost of video dialtone service by itself. Like the narrowband network before it, the integrated broadband network is a platform that supports a variety of services including broadband telephony as well as video services. The entire cost of the platform is, in no sense, incremental to the supply of VDT service. As each service comes on-line, it brings its own incremental cost and incremental revenue. That additional revenue must cover the direct incremental cost of the service, and, under the Commission's new service pricing rules, must cover a reasonable share of the incremental shared costs of the platform as well as a reasonable share of the Company's overhead costs. The responsibility for current narrowband and broadband services to cover the common costs of the platform are no different, in principle, from the responsibilities of new services. In the aggregate and in the long run, the common costs of the platform must be recovered from the totality of services available, but the assignment of costs--above the incremental cost that each service imposes--ought to be apportioned using the same methodology across services, neither advantaging nor disadvantaging existing services relative to new services.

B. Volume and term discounts are economically sound.

25. ACC asserts that Bell Atlantic's offering of term and volume discounts is "wholly unreasonably discriminatory" because of lack of cost support or other economic benefit. ACC at 17-18. On the contrary, term and volume discounts are a general feature of unregulated competitive markets and of other regulated telecommunications markets. Multiproduct unregulated firms in competitive markets have the flexibility to recover their fixed costs in those market segments in which they have a comparative advantage. In telecommunications markets, part of that advantage lies in the ability to adapt services and price structures to the fundamentally different needs of different customers. Both technical and allocative efficiency can be enhanced

by permitting the regulated firm to set the same types of tariffed rates, generally involving volume and term discounts, that we observe unregulated firms setting in other markets.¹⁹

26. Technical efficiency is increased when different technologies compete under conditions of parity so that the service that most efficiently meets a customer's needs has the best chance of obtaining its business. Many telecommunications services can be provided in reasonably similar ways using very different underlying network architectures and technologies: e.g., the transport of video information by broadcast, cable, and telephone facilities. Success in the competitive markets for these services ideally should be determined by the combination of economic cost and service quality. Only the market can determine which set of technologies is best suited for future needs. Regulatory restrictions that are technology or firm-specific--such as different limitations on volume or term discounts for VDT services compared with telephone transport services or cable services--run the risk of distorting this competition among technologies. Telecommunications can learn from the transportation industries where the combination of competition, technical change and regulation has produced unsatisfactory results--e.g., for trucking, railroad and barge companies--at least partially attributable to the use of technology-specific cost allocation rules.²⁰

27. Allocative efficiency is enhanced by flexible pricing because customers of VDT service are better off whenever VDT service is supplied at a price that covers incremental cost--compared with when VDT service is not supplied at all--because they buy it voluntarily. Thus pricing plans such as volume and term discounts that expand the market for VDT service beyond that which would be forthcoming with constant prices (regardless of volume or term), make all recipients of the pricing plans better off. In addition, however, customers of all other services--including those ineligible for volume or term discounts--are better off because they pay less for the aggregate of those services if more units of VDT service are supplied at a price that covers incremental cost

¹⁹Technical efficiency means that output is produced using the lowest-cost bundle of inputs possible. Allocative efficiency means that prices of outputs are equal to their incremental costs so that the highest-valued bundle of outputs will be produced.

²⁰See, for example, the description of the *Ingot Molds* case in A.E. Kahn, The Economics of Regulation, 2nd Edition, Vol. 2, (Cambridge: The MIT Press), 1989, at 24.

rather than not at all. Competitors for VDT service are not necessarily better off if the firm provides the service at a compensatory price, but (i) their customers, (and customers of all services) are better off, and (ii) there is no sense in which a price that covers incremental cost is anticompetitive or predatory.

28. Given the prevalence of volume and term discounts in unregulated markets, it is not surprising that the Commission has recognized the benefits of volume and term discounts for other switched transport services, and has determined that they constitute reasonable and lawful pricing mechanisms for competitive services.²¹ And as the supplier of an optional interstate switched transport service that competes with the services of an incumbent cable company and begins with a zero market share, it is especially unlikely that volume or term discounts could exert an anticompetitive effect. Even for the case in which the telephone company is the incumbent, the Commission recognized the importance of symmetric regulation of the structure of tariffs when competition is emerging in a market:

"[T]he rules governing the pricing of transport services, even for price cap LECs, do not allow the LECs sufficient ability to respond to growing access competition, particularly in light of our expanded interconnection policies...Retention of this blanket prohibition [against volume or term discounts, even when cost-justified] would unduly restrict LEC responses to competition."²²

29. In addition, the level of contribution in the VDT rates should vary depending on market conditions, as it does in the prices of unregulated firms in competitive markets. As long as the discount prices exceed the incremental costs of the service, the firm should be free to determine the contribution to be included in its rates. As a new entrant in a competitive market, Bell Atlantic must set its discount prices above the price floor, but the extent to which it contributes to the overhead costs depends on the VDT-related market, not the telephony market. Thus, the level of contribution included in the actual price of competitive services should not be

²¹Expanded Interconnection with Local Telephone Company Facilities, Second Report and Order and Third Notice of Proposed Rulemaking, CC Docket No. 91-141, Transport Phase I (rel. Sept. 2, 1993), ¶ 4. ("Switched Access Interconnection Order")

²²Id., ¶ 90.

determined by the level of contribution previously recovered in Bell Atlantic's rates. Ultimately, if Bell Atlantic's revenue from VDT services does not materialize to cover the costs, it is Bell Atlantic that pays for the error, not Bell Atlantic's other interstate or intrastate customers.²³

C. The use of telephony factors to calculate price ceilings and floors is appropriate.

30. ACC asserts that

neither the direct operating expenses made by the [annual cost factors] nor the overhead loading factor would capture the added operating expenses, *above and beyond those associated with traditional telephony*, that can reasonably be expected to be incurred in providing video dialtone service.

Kravtin Declaration at 21. Other petitioners also assert that Bell Atlantic's overhead loadings are too low for a new, competitive service (ACCJ at 11-13) or for a VDT service that will "surely result in a substantial increase in these overhead expenses." (NCTA at 21).

31. To understand the issue, we must first recognize that the assignment of overhead costs must, by definition, be done on some basis other than cost-causation. While the cost characteristics of video services may differ from telephone services, those differences have no bearing on the reasonableness of an allocator which does not, in the first instance, depend on costs. The loadings chosen by Bell Atlantic are reasonable because they do not differ across switched transport services and because, in the end, they do not prevent Bell Atlantic from recovering as much overhead from VDT services as from other switched transport services if VDT market conditions permit.

32. Similarly, to determine the annual direct costs associated with incremental investment, Bell Atlantic used annualization factors relating annual expenses to one-time investment, including depreciation, cost of money, taxes, maintenance, and administration. These factors were then multiplied by the unit investment necessary to provide the service. The factors Bell Atlantic

²³Interstate telephone customers are protected because interstate price cap regulation separates changes in costs from changes in prices. Intrastate customers are similarly protected by price cap regulation in New Jersey and other states with price cap regulation and by the regulator's authority to disallow imprudent costs and investment in traditionally-regulated states.

employed to determine the annual costs are the same ones used to annualize the investment costs of its other interstate access services.

33. In contrast to the above allegations, the cost characteristics of the investment for VDT service are not entirely different from those that support telephony. Carrier access and VDT service are wholesale services supplied to long distance or video service retailers. The level of expenses associated with constructing and maintaining interstate network components--channels and ports--are likely to be similar. For both long distance and VDT service, the expenses of marketing to end users are likely to be paid by long distance carriers and VIPs, respectively. If there is an obvious difference in the likely levels of current interstate telephone annualization factors and separate factors calculated for VDT investment and expenses, it would be that the technologically less advanced interstate telephone network would experience higher annualization factors or overhead loadings (at least for maintenance and related expenses) than would the more advanced VDT investment. To that extent, the annual cost attributed to a unit of VDT investment by using telephony annualization and loading factors would overstate the actual annual cost of the VDT facilities.

D. VDT costs based on full network capacity are not understated.

34. Several petitioners assert that the annual cost of the system should include the cost of an entire 383 channel system, not the cost of the capacity used at any point in time. See, e.g., ACC at 14-15; ACCJ at 9-10. Some components of Bell Atlantic's cost study are based on calculations of the capacity cost of the system (e.g., channel costs in Section 3.2). This method calculates the unit cost of the system by dividing the total investment by the demand served by the system at capacity. Under general conditions, this capacity cost is identical to the cost caused by advancing the timing of the future planned additions to capacity to serve additional demand, which is the traditional measure of the long run incremental cost of a piece of capital equipment.²⁴ Moreover, if actual demand does not materialize, the additional broadband

²⁴See, e.g., R.D. Emmerson, "Theoretical Foundation of Network Costs," in W. Pollard, (ed.) Marginal Cost Techniques for Telephone Services: Symposium Proceedings, The National Regulatory Research Institute, January 1991, at 145-189.

capacity brought on line by these investments will be used for some new broadband service, possibly traditional telephone broadband services such as high-speed Internet access, distance learning, medical image transmission, or home security and energy management or different VDT services such as pointcast services. As future broadband services come on line, the same cost allocation rules for new services will be applied to them, and they will commence to recover both the incremental capital costs not associated with telephony and an additional share of the common overhead costs of the firm. As a result, the ability of the totality of broadband services to recover incremental and common costs is probably understated in this tariff filing.

E. Shared investments are properly treated in the Bell Atlantic cost study.

35. AT&T asserts that Bell Atlantic did not reallocate to its VDT service any portion of the investments (such as land and buildings) whose use will be shared by VDT service, and that were previously allocated exclusively to voice services.

AT&T at 4. In addition, AT&T claims that Bell Atlantic should be required to reallocate among voice and video services all shared investments that were previously allocated exclusively to voice services. Bell Atlantic should also be required to adjust voice service rates to avoid potential double recovery of these shared investments.

AT&T at 4-5 n.7. AT&T is wrong on both counts. In the first place, in the Bell Atlantic cost study, land, buildings, power and common equipment investments located in buildings which simultaneously handle VDT and voice service are treated as investments shared by VDT and voice services.²⁵ Hence a share of investment currently allocated exclusively to voice services has been allocated to VDT service. Second, there is no "double recovery" of shared investments because prices for neither video nor voice services are set equal to fully distributed costs.²⁶ The effect of the reallocation suggested by AT&T at most would mean that a fully distributed cost study for voice services would necessarily allocate to voice services a smaller portion of those shared

²⁵ Bell Atlantic Transmittal No. 741, at 3-9, 3-10.

²⁶An example may help. When Bell Atlantic loses a special access customer to a Competitive Access Provider (CAP), allocators in the Part 69 fully distributed cost rules change, sending more costs to switched access and fewer to special. Under the price cap plan, neither shift in allocated costs has any bearing on Bell Atlantic's prices or its price cap indices.

investments than it would if VDT service were not supplied. However, changes such as this (due to shifts in demand or growth of new services) have no bearing on the prices charged for services under the FCC's price cap plan.

F. Any assignment of costs for separations purposes has no effect on VDT pricing.

36. MCI also errs in its discussion of the effect of the VDT tariff on jurisdictional cost separations and associated service prices. It asserts that Bell Atlantic's proposal to

charge for its broadcast and narrowcast channels based on the number of potential subscribers will affect the assignment of costs under Part 36 [b]y making every video loop revenue-producing, and therefore by definition a working loop, Bell Atlantic will assign more costs to the interstate side.

MCI at 12-13. It is not clear that this characterization of "revenue producing loops" is a correct interpretation of Part 36 of the separations rules. Nonetheless, if it were correct, any separations shifts that resulted would have no effect on the direct cost of VDT service as defined in the Commission's rules, so that they would not affect the price floor for VDT service. Nor would they affect the price ceiling, since changes in allocators for fully distributed cost measures, such as those used in the Commission's separations rules, have no bearing on economic costs.

William E Taylor
William E. Taylor

Subscribed and sworn to before me this
2nd day of March 1995.

Alan P. Romano
Notary Public

My Commission expires July 7, 2000.

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Dr. Taylor received a B.A. *magna cum laude* in Economics from Harvard College, an M.A. in Statistics and a Ph.D. in Economics from the University of California at Berkeley. He has taught economics, statistics, and econometrics at Cornell and the Massachusetts Institute of Technology and was a Research Fellow at the Center for Operations Research and Econometrics at the University of Louvain, Belgium.

At NERA, Dr. Taylor has worked primarily in the field of telecommunications economics on problems of state and federal regulatory reform, competition policy, economic issues concerning broadband network architectures, quantitative analyses of state and federal price cap and incentive regulation proposals, and antitrust and contract litigation in telecommunications markets. He has applied the economic theories of price squeezes and cross-subsidization to long distance telephone, Centrex, and public telephone markets. In the area of environmental regulation, Dr. Taylor has worked on statistical issues in the measurement of emissions levels from coal-fired electric power generators and municipal waste-to-energy facilities.

He has published extensively in the areas of telecommunications policy related to access and in theoretical and applied econometrics. His articles have appeared in numerous telecommunications industry publications as well as *Econometrica*, the *American Economic Review*, the *International Economic Review*, the *Journal of Econometrics*, *Econometric Reviews*, the *Antitrust Law Journal*, *The Review of Industrial Organization*, and *The Encyclopedia of Statistical Sciences*. He has served as a referee for these journals (and others) and the National Science Foundation and is currently an Associate Editor of the *Journal of Econometrics*.

EDUCATION

UNIVERSITY OF CALIFORNIA, BERKELEY
Ph.D., Economics, 1974

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EMPLOYMENT

- 1988- **NATIONAL ECONOMIC RESEARCH ASSOCIATES, INC. (NERA)**
Senior Vice President, Vice President. Dr. Taylor has been responsible for studies concerning the interaction of regulation and competition in various telecommunications markets, including pay telephones, operator services, and large business switched services, the efficiency benefits of state regulatory reforms such as price caps and incentive regulation, the structure of costs and rates in a broadband ISDN network, historical comparisons of rate-of-return and price cap regulation of interstate telephone access charges, carrier access charges and bypass, regulatory and antitrust concerns with intraLATA competition, cost and demand for video dial tone services, and contract and antitrust litigation in the paging industry. In the area of environmental regulation, he has studied statistical problems associated with measuring the level and rate of change of emissions.
- 1983-1988 **BELL COMMUNICATIONS RESEARCH, INC. (Bellcore)**
Division Manager, Economic Analysis, formerly Central Services Organization, formerly American Telephone and Telegraph Company. While at Bellcore, Dr. Taylor performed theoretical and quantitative research focusing on problems raised by the implementation of access charges. His work included design and implementation of demand response forecasting for interstate access demand, quantification of potential bypass liability, design of optimal nonlinear price schedules for access charges, design and quantification of methods to disaggregate carrier common line charges, and theoretical and quantitative analysis of price cap regulation of access charges.
- 1985- Journal of Econometrics, North-Holland Publishing Company.
Associate Editor.
- 1975-1983 **BELL TELEPHONE LABORATORIES**
Member, Technical Staff, Economics Research Center. Performed basic research on theoretical and applied econometrics, focusing on small sample theory, panel data and simultaneous equations systems.
- Fall 1977 **MASSACHUSETTS INSTITUTE OF TECHNOLOGY**
Visiting Associate Professor, Department of Economics. Taught graduate courses in econometrics.
- 1972-1975 **CORNELL UNIVERSITY**
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1974-1975 Research Associate. Performed post-doctoral research on finite sample econometric theory and on cost function estimation.

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TESTIMONIES

Florida Public Service Commission (Docket No. 820537-TP) on behalf of Southern Bell Telephone and Telegraph Company: economic analysis of premium intraLATA access charges. Filed July 22, 1983.

Arkansas Public Service Commission (Docket No. 83-042-U) on behalf of Southwestern Bell Telephone Company: economic analysis of non-traffic sensitive cost recovery proposals. Filed October 7, 1985.

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Georgia Public Service Commission (Docket No. 3882-U) on behalf of Southern Bell Telephone and Telegraph Company: analysis of incentive regulation plans. Filed September 29, 1989.

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State of Maine Public Utilities Commission (Docket No. 89-397) on behalf of New England Telephone & Telegraph Company: theoretical and historical analysis of incentive regulation in telecommunications, entitled "Incentive Regulation in Telecommunications," filed June 15, 1990.

Illinois Commerce Commission (Docket No. 88-0412) on behalf of Illinois Bell Telephone Company: analysis of pricing issues for public telephone service. Filed August 3, 1990. Rebuttal testimony filed December 9, 1991.

Delaware Public Service Commission (Docket No. 89-24T) on behalf of The Diamond State Telephone Company: rebuttal testimony describing the appropriate costing and pricing methods for the provision of contract Centrex services by a local exchange carrier. Filed August 17, 1990.

Montana Public Service Commission (Docket No. 90.8.46) on behalf of US West Communications: theoretical and historical analysis of incentive regulation plans in telecommunications. Filed October 4, 1990.

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