

ORIGINAL
ORIGINAL
FILE
RECEIVED

OCT - 5 1992

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
)
Price Cap Performance Review)
for AT&T)

CC Docket No. 92-134

REPLY COMMENTS OF BELL ATLANTIC¹

AT&T's current price cap plan bears a regulatory bias against local exchange carrier access services that systematically distorts the competitive market for interstate access. The plan requires AT&T to pass much of the savings from LEC access charge reductions through to AT&T's end users, but allows AT&T to keep every dollar of savings from switching to a competitive access provider ("CAP") network. This creates a powerful incentive for AT&T to bypass the LECs' access services, even if those services are the lowest cost.² This uneconomic incentive looms large in an access market facing an order-of-magnitude increase in competition under Commission-mandated collocation. The Commission should eliminate this incentive by requiring the same treatment for access cost savings from bypass as for savings from LEC price reductions.

¹ The Bell Atlantic telephone companies ("Bell Atlantic") are The Bell Telephone Company of Pennsylvania, the four Chesapeake and Potomac telephone companies, The Diamond State Telephone Company, and New Jersey Bell Telephone Company.

² See Comments of U S WEST Communications, Inc. (filed Sept. 4, 1992); Comments of Southwestern Bell Telephone Company (filed Sept. 4, 1992).

The Commission should not limit service quality and network reliability monitoring to AT&T and price cap LECs. Instead, the Commission should initiate a separate proceeding to establish reporting requirements for all exchange, access, and interexchange carriers, whether or not they are subject to price caps.

I. AT&T's Price Cap Plan Should Not Favor Bypass Over Use of LEC Access.

The Commission should modify AT&T's price cap formula to eliminate its built-in bias against the use of LEC access services.³ By requiring AT&T to pass LEC access charge reductions through to its customers, but allowing it to keep reductions that result from the purchase of CAP services, or from bypass on AT&T's own facilities, the current price cap formula creates a powerful incentive for bypass. This is true even though AT&T actually passes through only about 80% of LEC access charges.⁴

³ See *Price Cap Performance Review for AT&T*, CC Docket No. 92-134, Notice of Inquiry, FCC 92-257 at ¶ 33, Issue 2 (released July 17, 1992) ("Notice").

⁴ Since divestiture, the local exchange carriers have reduced their annual access charges to AT&T by \$10.1 billion, but AT&T has reduced its annual prices by only \$8.2 billion, or 81%. William E. Taylor, *Effects of Competitive Entry in the U.S. Interstate Toll Markets: An Update*, at 1 and Exh. 1, Table 1 (Nat'l Economic Research Assoc., Inc., May 28, 1992) ("Taylor Study") (Appendix A hereto).

Moreover, the incentive works even if bypass services are more costly or less efficient -- indeed, the LECs' price reductions would have to be *five times* those from bypass in order for the LECs to compete.⁵ And because AT&T purchases 63% of all access minutes,⁶ this regulatory bias in favor of uneconomic bypass builds a substantial distortion into the competitive access market.

The CAPs themselves have not been shy about pointing out that this bias in the formula tilts the access playing field in their favor. A senior vice president of Metropolitan Fiber Systems reported at an industry conference,

[U]nlike reductions in switched access carrier common line charges made by the BOCs, ... savings [from use of CAP bypass services] need not be flowed through to the

⁵ This can be seen by examining the 1991 AT&T rate of return calculation in the Updated Notice at Chart 4. *Public Notice*, CC Dkt. No. 92-134, DA 92-1206 (released Sept. 1, 1992) ("Updated Notice"). If LEC access charges declined by \$100 million, and AT&T passed only 80% through as a revenue reduction, its net earnings would increase by \$20 million to \$1,515 million and its shareholders' rate of return would increase from 13.41% to 13.59%. If, however, AT&T achieved the same \$100 million access expense reduction by switching to a CAP, and passed none of the reduction through in its prices, its net revenue would increase by the full \$100 million to \$1,595 million, and its rate of return would jump to 14.31%. LECs would have to reduce their access charges to AT&T by \$500 million to generate the same result.

⁶ Industry Analysis Div., Common Carrier Bur., FCC, *Long Distance Market Shares*, First Quarter 1992, at Table 3 (June 26, 1992).

end user. The long distance carrier may keep the savings for itself to improve its own bottom line.⁷

The vigorous growth of the CAPs since the adoption of AT&T's price cap plan indicates that this message has not been lost on AT&T.⁸

The importance of the resulting market distortion increases daily as the Commission and state regulatory authorities adopt policies encouraging the further expansion of CAP networks. The Commission's recent actions in the *Expanded Interconnection* docket require Tier I LECs to provide physical collocation space in virtually every central office to give CAPs and others -- including AT&T itself -- discounted interconnection to all LEC special access users.⁹ This will enable CAPs to leapfrog the confines of the central business district to compete as national access providers. If at the same time, the Commis-

⁷ Deposition of Robert Douglas Bradbury at 66-67 (Texas PUC Dkt. No. 9796, Mar. 25, 1991), *quoted in* Comments of Southwestern Bell Telephone Company, *Expanded Interconnection With Local Telephone Company Facilities*, CC Dkt. No. 91-141, at App. B, pp. 9-10 (filed Aug. 6, 1991).

⁸ Since the inception of the AT&T price cap plan, CAP networks have grown from 12,111 to 101,932 fiber miles, an increase of 742%. Jonathan M. Kraushaar, Industry Analysis Div., Common Carrier Bur., *Fiber Deployment Update, End of Year 1991*, at 33, Table 14 (Mar. 1992).

⁹ *Expanded Interconnection With Local Telephone Company Facilities*, Report and Order, CC Dkt. No. 91-141 (adopted Sept. 17, 1992) (ordering special access collocation); see *Expanded Interconnection With Local Telephone Company Facilities*, Second Notice of Proposed Rulemaking, CC Dkt. No. 91-141 -- Transport Phases I and II (adopted Sept. 17, 1992) (proposing switched access collocation).

sion's regulations also award them a *five to one* cost advantage in the eyes of their largest potential customer, the effect on the access market will be drastic indeed.¹⁰

When it established the current price cap formula, the Commission expected price competition among interexchange carriers to eliminate this distortion by forcing AT&T to pass access bypass savings through to consumers.¹¹ Experience, however, has disappointed that expectation. In fact, interexchange competition has not even forced AT&T to pass through to consumers all of the LEC access charge reductions that the Commission's rules require to it to pass through.

Since divestiture, the LECs have reduced their annual access charges to AT&T by \$10.1 billion, primarily by shifting non-traffic-sensitive costs to the subscriber line charge and by aggressively cutting payroll and other costs.¹² During the same period, however, AT&T has reduced its annual prices by only \$8.2

¹⁰ The effect of this regulatory bias on the much larger switched access market will be serious as long as the AT&T services that use the most switched access -- its core MTS services -- are governed by the current price cap formula.

¹¹ *Policy and Rules Concerning Rates for Dominant Carriers*, Memorandum Opinion and Order on Reconsideration, 6 FCC Rcd 665 at ¶ 71 (1991).

¹² See Taylor Study at 1 and Exh. 1, Table 1.

billion -- and apparently kept the remainder for itself.¹³ That remainder totals more than \$4.7 billion since the advent of price caps.¹⁴ This is not the record of a market in which competition forces the automatic pass through of access charge reductions.

AT&T's Comments suggest three possible set-offs against this otherwise unaccounted-for windfall to AT&T for the years 1989 to 1992.¹⁵ The first is \$819 million in "Consumer Productivity Dividend" built into the price cap formula. The second is \$742 million by which AT&T has priced below its Price Cap Indices ("PCIs"). The third is \$850 million in price reductions that are not reflected in its Actual Price Indices ("APIs") -- from customer shifts from higher- to lower-priced services. Even if all of these set-offs were accepted without question, the result would still be that AT&T has been able to retain for itself more

¹³ Taylor Study at 1 and Exh. 1, Table 1. In addition, AT&T appears to have kept another \$700 million in reductions in other exogenous costs without reducing its consumer prices. *Id.* Bell Atlantic filed the original version of this study over a year ago, Comments of Bell Atlantic, CC Docket No. 91-141 (filed Aug. 6, 1991), and resubmitted the attached update three months ago. Comments of Bell Atlantic on Ameritech's Application for Partial Review, CC Docket No. 92-141 (filed July 8, 1992). AT&T has not refuted either filing.

¹⁴ This is the difference between cumulative LEC Access Charge Changes and Cumulative AT&T Price Changes for the seven half years beginning December 1, 1988. See Taylor Study at Exh. 1, Table 1; compare Updated Notice at Chart 3, Notes (time period for assessment of AT&T price cap data).

¹⁵ See Comments of AT&T at 40-43.

than \$2.3 billion in LEC access charge reductions under price caps.

AT&T's most recent price cap filing continues this pattern. That filing admits that AT&T is the beneficiary of \$190.8 million in 1992 LEC access charge reductions, but proposes *not a dollar* of reductions in its own customer prices.¹⁶ Although it reduced its PCIs to account for this savings, it proposed no change at all in its APIs, or in the customer prices on which they are based.¹⁷

Clearly, the Commission cannot rely on market pressures alone to compel AT&T to pass its access cost savings on to consumers and to make economically sound choices in the access market. The Commission must, therefore, require AT&T to pass all access cost reductions, from whatever source, through to consumers.¹⁸

¹⁶ AT&T 1992 Annual Price Cap Filing, at Attachment pp. 4-5, 9 (filed May 15, 1992) (the access charge reductions in this filing were partially offset by exogenous cost increases of \$109.8 million).

¹⁷ *Id.* at Att. p.8 and Exh. 4.

¹⁸ Bell Atlantic has previously shown how a minor adjustment in the formula for calculating access charge adjustments will remove AT&T's incentive for uneconomic bypass. Petition for Reconsideration of the Bell Atlantic Telephone Companies, CC Docket No. 87-313 at 7-8 and Att. (filed June 8, 1989). The Commission could accomplish the same result by requiring pass through of no access charge changes, although this solution would deny consumers the benefits of access savings.

II. **The Commission Should Initiate a Separate Proceeding on Service Quality and Reliability.**¹⁹

Public concern about service quality and reliability is not limited to price cap carriers. As Bell Atlantic recently pointed out in another proceeding, "[t]he public's interest in service quality and reliability transcends conventional classification of carriers as LECs, competitive access providers, and interexchange carriers."²⁰ When faced with a disruptive outage or service deficiency, customers care little whether the Commission has classified the network involved as dominant or non-dominant, or price cap, rate-of-return or forbearance.

Accordingly, the Commission should break the connection between price caps and service quality and reliability reporting. The Commission should establish overall service quality and reliability reporting requirements for AT&T, the LECs, and all of their competitors -- exchange, access, and interexchange -- in a separate proceeding outside of price caps.

¹⁹ Notice at ¶ 33, Issue 4.

²⁰ Comments of Bell Atlantic, CC Docket No. 87-313, App., p. 1 (filed August 11, 1992).

VI. Conclusion.

For services that are not effectively competitive, price cap regulation benefits both the public and AT&T.²¹ AT&T's current price cap formula, however, generates uneconomic incentives that distort competition in the access marketplace with an undeniable regulatory bias against LEC services. Accordingly, the Commission should modify AT&T's formula to cure this defect. In addition, the Commission should divorce service quality and reliability reporting requirements from price caps, and establish the same reporting requirements for all network providers, not just price cap carriers.

Respectfully submitted,

**The Bell Atlantic Telephone
Companies**

By Their Attorneys



Michael D. Lowe
Lawrence W. Katz

James R. Young
Of Counsel

1710 H Street, N.W.
Washington, D.C. 20006

October 5, 1992

²¹ To the extent that individual services in Basket 1 or 2 are now or become effectively competitive, those services should be removed from price cap regulation, as the Commission suggests in the Notice at ¶ 33, Issue 5 and n. 26.

APPENDIX A

**EFFECTS OF COMPETITIVE ENTRY IN THE U.S.
INTERSTATE TOLL MARKETS:
AN UPDATE**

National Economic Research Associates, Inc.
One Main Street
Cambridge, Massachusetts 02142

William E. Taylor
Study Director

May 28, 1992

EFFECTS OF COMPETITIVE ENTRY IN THE U.S. INTERSTATE TOLL MARKETS

A. Prologue and Summary

This study was originally performed in August 1991, and was filed with the Federal Communications Commission in CC Docket No. 91-141. It addressed the extent to which competitive pressures in the interstate toll market led to lower toll rates and an expansion of toll demand. It found that reductions in carrier access charges more than accounted for reductions in AT&T's toll prices, and that the reduction in toll prices more than accounted for the growth in interstate toll demand.

We have updated the study using data through 1992. The results are unchanged:

- Regulated competition in the interstate toll market has not led to price competition. While annual carrier access charges paid by AT&T have fallen by \$10,131 million from 1984 through 1992, AT&T annual prices have fallen by only \$8,223 million.
- When you account for the changes in access charges billed to AT&T, toll prices actually declined faster before divestiture than after. Even if AT&T's prices had remained constant (net of access charges), the rate of decline of real toll prices (net of access charges) would have been about half the rate at which they declined (net of separations changes) in the decade prior to divestiture.
- Regulated competition in the interstate toll market has not led to an expansion of demand. Toll demand grew no more than would be expected, based on price, income, and population changes.

While the FCC's policies for interstate toll services have resulted in enormous welfare gains for U.S. consumers, competition--or rather the type of regulated competition actually observed for interstate toll services--is not responsible for these benefits. In general, the FCC's rebalancing efforts led to dramatic reductions in interstate carrier access charges which, in turn, led to lower toll rates and increased toll demand. But the substantial price reductions that might have been expected to arise from toll competition have yet to materialize.

B. Introduction

In its Notice of Proposed Rulemaking and Notice of Inquiry in CC Docket No. 91-141, (released May 6, 1991) , the Commission suggested that historical evidence supports the view that entry and regulated competition have brought benefits to consumers of U.S. interstate long distance services.¹

In particular,

"...competition in the provision of interstate long-distance service has led to sharply reduced rates, a larger variety of service options, and more rapid deployment of new technologies..." (¶11).

Indeed, since divestiture and equal access transformed interstate long-distance services, prices have fallen and demand has grown at unprecedented rates. While it is tempting to ascribe these changes to the pressures of competition, careful analysis shows that the Commission's policy of rebalancing local and toll rates is directly and entirely responsible for the overall reduction in long distance rates. There is no evidence that entry and competition--as experienced to date for U.S. long-distance services--have had any effect in reducing prices or expanding output in the interstate long distance market.

C. Price Changes

Long-distance prices fell faster (in real terms) since divestiture than their long-run historical average: from 1984 to 1991, real interstate toll rate reductions averaged about 8.18 percent annually.² From 1972-1983, the longest pre-divestiture period over which interstate rate data are compiled by the Bureau of Labor Statistics, interstate toll rates declined at an annual average (real) rate of 2.7 percent. Since the post-divestiture period coincides with the period for which equal access was available and during

¹Expanded Interconnection with Local Telephone Company Facilities, CC Docket No. 91-141, Notice of Proposed Rulemaking and Notice of Inquiry (released May 6, 1991) ("NPRM" or "NOI").

²Using the Bureau of Labor Statistics producer price index for interstate toll rates, deflated by the BLS GNP-PI.

which AT&T lost some of its substantial market share,³ it is tempting to attribute these additional price reductions to direct competition among interexchange carriers. But that would be wrong.

From 1984 to 1990, the FCC undertook a fundamental rebalancing of local access and toll rates in the United States, primarily through two related activities. First, the FCC instituted subscriber line charges (end user common line charges) by which interstate non-traffic sensitive costs were recovered directly from end users on a flat rate basis rather than from toll usage charges. Beginning in 1984, subscriber line charge revenues grew from approximately \$1.296 billion to \$6.069 billion in 1990-91, and all of that revenue represented lower carrier access charges paid by the interexchange carriers.⁴ Second, the FCC instituted a number of separations changes which effectively reduced interstate costs while increasing intrastate costs. The net effect of separations changes (and other regulatory changes, including changes in income tax rates) was to reduce carrier access charges an additional \$4.493 billion (annually) by 1990.⁵ By 1990, carrier access charge expenditures were approximately \$9.266 billion less per year because of these changes in federal regulatory policy.

Thus access charges, which constitute a large fraction of the marginal cost of interexchange carriers, fell significantly over the post-divestiture period due to the implementation of subscriber line charges and changes in separations policy. Indeed, AT&T lowered its interstate toll rates over this period, reflecting this reduction in its marginal cost. However, AT&T's total price reduction over this period was substantially less than the amount by which its access charges were reduced. See Exhibit 1.

This finding is important in interpreting the U.S. experience with competition for interstate toll services. It suggests that beyond the mandatory reflection of access charge reductions in AT&T's rates, which were then followed by the other IXCs, interexchange carriers initiated no significant price

³The FCC calculates that AT&T's market share of switched access minutes of use fell from 84.2 percent in the third quarter of 1984 to 62.8 percent in the fourth quarter of 1991: see Federal Communications Commission, "Long Distance Market Shares: Fourth Quarter, 1991," Analysis Division, Common Carrier Bureau, March 24, 1992, Table 3. The FCC calculations show that AT&T's market share loss stopped its decline in the second quarter of 1990 and has risen slightly since then.

⁴United States Telephone Association, ex parte presentation to the FCC, CC Docket 87-313, filed August 6, 1990, Table 2.

⁵Ibid., Table 5.

competition for toll services.⁶ Indeed, the current situation could better be described as a regulated price umbrella: MCI and Sprint generally followed AT&T price reductions but the gap in prices shrunk from 10-20 percent in mid-1984 to about 5 percent in 1987 when the unequal access discount was essentially eliminated.⁷

This lack of price reductions among the IXCs is surprising because we observe comparatively large reductions in real interstate toll rates (adjusted for changes in access charges) during the period before divestiture and equal access.⁸ If we adjust interstate toll rates to account for the changes in the non-traffic sensitive cost assignment in the Ozark Plan between 1972 and 1984, we observe that real interstate toll rates, net of changes in separations, fell at an annual rate of 6.28 percent.⁹ See Exhibit 2. Since divestiture (1984-1991), inflation averaged approximately 3.70 percent per year. If we (conservatively) treat AT&T nominal interstate toll prices as constant (net of access charge changes), real interstate toll rates, net of changes in access charges, fell at an annual rate of less than 3.70 percent. Net of access charge changes, then, real interstate toll rates fell roughly twice as fast in the decade before divestiture than in the seven years after. This finding is hardly consistent with the view that competition among interexchange carriers led to drastically lower prices. Rather, it suggests that the type of competitive entry experienced for U.S. interstate toll services since divestiture may not encourage price rivalry for ordinary interstate toll calling.¹⁰

⁶This generalization applies to aggregate interstate toll service. There is evidence of competitive pressure reducing toll rates (i) paid by large business customers (e.g., through new services such as Megacom, Prism, and Ultra-WATS), and (ii) in the intrastate toll markets where long-haul rates fell and short-haul rates rose from 1983 to 1987 (see A. Mathios and R. Rogers, "The Impact of Alternative Forms of State Regulation of AT&T on Direct-Dial Long-Distance Telephone Rates," The Rand Journal of Economics, Autumn 1989, p. 446.

⁷See Michael E. Porter, "Competition in the Long Distance Telecommunications Market: An Industry Structure Analysis," filed with AT&T's Comments in CC Docket 87-313, October 19, 1987.

⁸Competition in interstate switched services technically began in 1974 with the entry of MCI's Execunet Service.

⁹1972 is the earliest year for which BLS price data for interstate toll service is available.

¹⁰Competitive entry for U.S. interstate toll services differed in several important ways from unfettered free competition. The seven regional (former) Bell holding companies are barred from the market, and GTE is subject to a decree which regulates its participation. In addition, the FCC instituted (i) access charge discounts for entrants to compensate for unequal access, (ii) non-cost-based access transport pricing which favored the smaller entrants to compensate for AT&T's locational advantage, and (iii) asymmetric regulation of AT&T which continues to this day.

D. Demand Growth

A second possible consequence of competition for interstate toll services was growth in demand. While changes in the units of measurement make it difficult to compare pre- and post-divestiture interstate toll growth rates, the evidence suggests that toll demand grew more rapidly in the post-divestiture period. Between 1962 and 1982, annual growth in interstate minutes of use averaged 10.5 percent.¹¹ From 1984 to 1991, interstate switched access minutes of use grew at an annual rate of 11.81 percent,¹² and this measure of demand probably understates demand growth, as it ignores demand served by bypass services, including WATS and MEGACOM-type services. Competition is sometimes alleged to have caused this increase in demand through reducing prices and also through increasing marketing activities (such as advertising) and the introduction of new services. Indeed, in its Notice of Proposed Rulemaking in CC Docket 91-141, the Commission cites overall traffic growth as a reason why a loss of market share to competitors need not result in higher prices for remaining customers.¹³

While interstate toll demand did grow at an unprecedented rate after competitive entry, the growth was not due to additional new services, advertising, consumer awareness, etc. The change in the growth rate is completely explained by changes in price, income and population. In Exhibit 3, we predict toll demand based on observed price, income and population and subtract the predicted value from the actual observed value. The rate of growth of this unexplained component of demand measures the rate at which the demand curve shifted outward, due to such non-price factors as marketing and advertising efforts. From the data, we observe that unexplained demand grew approximately 1.91 percentage points more slowly after divestiture: that is, changes in price, income and population more than explain the increase in the rate of growth of interstate toll demand after divestiture.¹⁴

¹¹AT&T, "Long Lines Statistics, 1960-1982."

¹²Federal Communications Commission, "Trends in Telephone Service," February, 1992, Table 24.

¹³NPRM, paragraph 66.

¹⁴If one believes competition began in the 1970s, this comparison of pre and post-divestiture growth rates may seem inappropriate. Nonetheless, if the same comparison is done before and after 1978, the same result appears: unexplained demand grew approximately 1.82 percentage points more slowly in the 1979-91 post-competitive period than in the 1972-1978 period. See Exhibit 3, Table 2A.

One explanation for this slowdown in the rate of growth of toll demand is bypass: toll demand may have expanded due to competition but the proportion of toll demand measured by switched access minutes of use may have fallen. To examine this possible explanation, we took the LEC estimates of traffic lost to bypass filed with the FCC as part of its Monitoring Report and added them to the switched access demand measurements. Using the sum of bypass and switched access minutes to measure toll growth from 1984 to 1991, we still observe slower growth of unexplained demand in both the post-competition period and the post-divestiture period. See Exhibit 3.

The same point was made in the recent price cap proceeding (CC Docket 87-313), where the Commission staff requested estimates of the demand stimulation for interstate toll service stemming from the implementation of subscriber line charges and other exogenous cost changes in LEC access charge filings. As shown in Exhibit 4, the measure of demand stimulation deemed "reasonable" by the Commission in its Order,¹⁵ accounts fully for the demand stimulation actually observed over the period.

E. Conclusions

Consumers have benefitted enormously from lower interstate toll prices and expanded interstate toll demand. However, competition in the interstate toll market is not responsible for either of those benefits. Reductions in the carrier access charges paid by AT&T outweigh AT&T's toll price reductions, and the increase in toll demand is more than explained by changes in toll prices, income and population.

¹⁵Second Report and Order, CC Docket 87-313, released October 4, 1990, Appendix C, paragraph 30.

**THE REDUCTION IN AT&T'S ACCESS CHARGES EXCEEDS
THE REDUCTION IN ITS TOLL PRICES**

In Table 1, we list each date on which a substantial access charge change or AT&T price change occurred, the dollar amount of the access cost reduction experienced by AT&T,¹⁶ and the dollar amount of revenue change forecasted by AT&T as a result of its price change. All data through 9/17/88 were taken from FCC and AT&T filings in the price cap docket.¹⁷ The 7/1/89 and 7/1/90 data were taken from the FCC's report on AT&T's performance under price caps.¹⁸ The 1/1/90 and 1/1/91 data are taken from AT&T filings, as reported by Victor Glass of the National Exchange Carrier Association. The remaining access charge and price changes are taken from AT&T price cap filings.¹⁹

It is unlikely that every AT&T price change or access charge change since AT&T went under price caps on July 1, 1989 is accounted for in Table 1. However, we can check our work by calculating the total AT&T price reduction directly from AT&T's actual price index (API) reported in their latest (May 15, 1992) price cap filing. Table 1A gives the total percentage and dollar annual rate reductions implemented by AT&T since January 1989, July 1989, and July 1990. Evaluated at 1992 demand levels, AT&T price reductions since January 1989 totalled \$1,193.0 million per year; our calculation in Table 1, where each price reduction is evaluated at current demand, shows a total annual rate reduction over the period of \$1,239 million. The small difference in these estimates is due to (i) additional AT&T price changes other than those listed in Table 1 and (ii) the different revenue bases used to evaluate the changes in price. Table 1 shows that during that period, AT&T experienced annual access charge reductions totalling approximately \$2,118 million, evaluated at the concurrent level of demand.

¹⁶At forecasted demand levels that include stimulation from anticipated AT&T rate reductions.

¹⁷FCC, Appendix C, 2nd Further Notice, CC Docket 87-313, 4/17/89, and AT&T, "Retrospective Analysis of AT&T's Productivity Growth, 1984-88," AT&T Comments on Further Notice of Proposed Rulemaking, CC Docket 87-313, Appendix D, 7/26/88.

¹⁸FCC, Common Carrier Bureau, "AT&T's Performance Under Price Cap Regulation," Report to the Subcommittee on Telecommunications and Finance, Committee on Energy and Commerce, U.S. House of Representatives, October, 1990, Chart II-B.

¹⁹The 7/1/91 cost and rate change data were taken from AT&T's May 17, 1991 Annual Access Charge Filing and Transmittal No. 3242, filed June 29, 1991. The 12/19/91 data was taken from AT&T Transmittal No. 3734, filed 12/19/91. The 7/1/92 data comes from AT&T's 1992 Annual Price Cap filing dated 5/15/92.

Table 1
Changes in Carrier Access Charges and
Changes in AT&T Interstate Toll Rates
(\$ Million)

Date	Access Charge Change	Other Exogenous Cost Changes	Cumulative Cost Changes	AT&T Price Changes	Cumulative AT&T Price Changes
1/1/84	\$0	\$0	\$0	\$0	\$0
5/25/84	(\$1,400)		(\$1,400)	(\$1,400)	(\$1,400)
1/15/85	\$274		(\$1,126)		(\$1,400)
4/26/85			(\$1,126)	\$303	(\$1,097)
6/1/85	(\$1,157)		(\$2,283)	(\$1,157)	(\$2,254)
10/1/85	(\$525)		(\$2,808)		(\$2,254)
1/1/86			(\$2,808)	(\$135)	(\$2,389)
1/11/86	\$25		(\$2,783)	\$248	(\$2,141)
2/28/86			(\$2,783)	\$18	(\$2,123)
4/15/86			(\$2,783)	\$72	(\$2,051)
6/1/86	(\$2,000)		(\$4,783)	(\$2,000)	(\$4,051)
1/1/87	(\$1,865)		(\$6,648)	(\$1,865)	(\$5,916)
3/13/87			(\$6,648)	\$18	(\$5,898)
7/1/87	(\$593)		(\$7,241)	(\$593)	(\$6,491)
12/1/87			(\$7,241)	\$77	(\$6,414)
1/1/88	(\$772)	(\$524)	(\$8,537)	(\$772)	(\$7,186)
6/17/88			(\$8,537)	\$28	(\$7,158)
9/17/88			(\$8,537)	\$174	(\$6,984)
7/1/89	(\$776)		(\$9,313)	(\$785)	(\$7,769)
1/1/90	(\$385)	(\$141)	(\$9,839)	(\$267)	(\$8,036)
7/1/90	(\$482)	(\$143)	(\$10,464)	(\$192)	(\$8,228)
1/1/91	\$0	(\$1)	(\$10,595)	(\$84)	(\$8,312)
7/1/91	(\$251)	(\$9)	(\$10,855)	\$18	(\$8,294)
12/19/91	\$97	(\$25)	(\$10,783)	\$71	(\$8,223)
7/1/92	(\$191)	\$110	(\$10,864)	\$0	(\$8,223)
TOTAL	(\$10,131)	(\$733)	(\$10,864)	(\$8,223)	(\$8,223)

Table 1A
AT&T Price Changes Under Price Caps

	1992 API	7/1/90 API	7/1/89 API	1/1/89 API
BASKET 1	0.943	0.943	0.984	1.000
BASKET 2	0.939	0.928	0.973	1.000
BASKET 3	0.979	0.931	0.970	1.000
	1992 BASE REVENUE	7/1/90	7/1/89	1/1/89
BASKET 1	\$17,762	\$0	(\$746)	(\$1,012)
BASKET 2	\$2,935	\$35	(\$102)	(\$179)
BASKET 3	\$96	\$5	\$1	(\$2)
TOTAL	\$20,793	\$40	(\$847)	(\$1,193)
PERCENT	100.00%	0.19%	-4.07%	-5.74%
<p>SOURCE: FCC: 10/90 PRICE CAPS REPORT AT&T: 5/15/92 PRICE CAPS FILING</p>				

**REAL INTERSTATE TOLL RATES (NET OF ACCESS CHARGES) FELL FASTER
BEFORE DIVESTITURE THAN AFTER**

Absent changes in access charges, Exhibit 1 shows that interstate toll rates would have risen in nominal terms from 1984 to 1991. In real terms, then, interstate toll rates would have fallen at less than 3.70 percent per year (net of access charge changes), since the GNP-PI for all commodities grew at an annual rate of 3.70 percent from 1984 to 1991.

This rate of decline of real toll rates (net of access charges) is low compared with the 1970s. According to the Bureau of Labor Statistics producer price index, real interstate toll rates fell at about 2.6 percent annually from 1972 to 1983, which was a period in which interstate costs were increasing due to changes in separations generated by the Ozark formula. If we held the interstate NTS allocation fixed at its 1972 level, real interstate revenues would have grown 3.68 percentage points more slowly (per year) from 1972 to 1983.²⁰ Thus, adjusting for the change in the interstate NTS allocation, we find that real interstate toll rates would have fallen at an annual rate of 6.28 percent ($6.28 = 2.6 + 3.68$) from 1972 to 1983. Since divestiture, real interstate toll rates (net of access charge changes) have declined at less than an annual rate of 3.70 percent -- about half the annual rate at which they declined in the decade prior to divestiture.

²⁰Between 1972 and 1982, the subsidy from interstate toll for the Bell System (in the form of non-traffic sensitive cost allocations) increased from \$1.570 billion to \$7.690 billion. (C.L. Weinhaus and A.G. Oettinger, Behind the Telephone Debates, Norwood, New Jersey: Ablex Publishing Corporation, 1988, p. 81.) At the same time, Bell System interstate revenues increased from \$6.493 billion to \$21.8 billion. (FCC, Form M (Monthly Report No. 1), various years) If the interstate NTS allocation had been held constant between 1972 and 1982, interstate revenues would have increased from \$6.493 billion to \$15.68 billion (where $15.68 = 21.8 - 7.690 + 1.570$). Annual growth in interstate revenues thus was 12.88 percent, and annual growth in interstate revenue net of NTS allocation changes was 9.22 percent. The difference in the annual growth rate of revenue accounted for by the change in NTS cost allocation was thus 3.68 percentage points.

GROWTH IN DEMAND DUE TO COMPETITION

We compare the decade before divestiture (1972-1982) with the period after divestiture (1984-1988).²¹ In each period, we divide actual demand growth into two parts:

1. predicted growth: a part due to changes in prices, income, and population and
2. unexplained growth: a (residually-measured) part due to other changes--changes in taste, changes in the market place (such as competitive entry) etc.

If competition shifts the demand curve outward due to advertising, the availability of new products or services, or a heightened awareness of the possibility of telephone service, we would expect to see that shift as an increase in unexplained growth.

Using conventional measures of the responsiveness of demand to changes in price, income, and population, we calculate the rate of growth of unexplained demand. In the 1972-82 period, demand was predicted to grow at an annual rate of 4.04 percent. Actual demand growth averaged 8.92 percent, leaving a growth rate of unexplained demand of 4.88 percent. In the 1984-91 period, demand growth was predicted to average 8.83 percent and actual demand growth averaged 11.81 percent. Thus the growth rate of unexplained demand in the 1984-91 period averaged 2.97 percent. Growth in demand unexplained by changes in price, income, and population averaged 1.91 percentage points lower in the 1984-91 period compared with the 1972-82 period. See Table 2. Table 2A provides the same analysis, comparing the pre-ENFIA period with the post-ENFIA period (1972-78 with 1979-91) and obtains the same qualitative result.

One explanation of this reduction in the growth rate of unexplained demand after divestiture is the growth of bypass. Interstate toll demand is measured as interstate switched access demand after divestiture, and the growth of bypass demand--including MEGACOM and WATS-type services--would mask

²¹Again, we treat the post-divestiture period as the competitive period, although the same analysis as that described below yields the same qualitative results if applied to the 1972-78, 1979-1990 periods. To judge the effects of competition on demand growth, it is useful to note that MCI and Sprint advertising was less than \$5 million in 1980 compared with \$45 million for AT&T (measured in 1986 dollars). Between 1983 and 1984, total annual advertising for AT&T, MCI and Sprint increased from about \$100 million to about \$150 million (in 1986 dollars). See Michael Porter, op. cit., Figure 23.

growth in toll demand after divestiture. To adjust our results for the possibility of bypass, we estimate interstate bypass usage from 1984 through 1991 and add that usage to our measure of switched access demand. Calculation of the bypass adjustment is outlined below. The results are shown in Table 2, where it is evident that adjusting for bypass growth does not reverse our earlier finding: growth in interstate toll demand (adjusted for bypass) unexplained by economic factors averaged 0.81 percentage points lower in the 1984-91 period than in the 1972-82 period.

TABLE 2
UNEXPLAINED EXOGENOUS GROWTH SLOWED AFTER DIVESTITURE

PERIOD	GROWTH IN PRICE	GROWTH IN INCOME/POP	GROWTH IN POP	PRICE	INCOME	POP	TOTAL	ACTUAL GROWTH	UNEXPLAINED GROWTH	(INCLUDING BYPASS)	
				EFFECT	EFFECT	EFFECT	EFFECT: PREDICTED GROWTH			ACTUAL	UNEXPLAINED
				ELAS= -0.72	ELAS= 0.80	ELAS= 1.00					
1972-82	-2.65%	1.28%	1.01%	1.95%	1.02%	1.01%	4.04%	8.92%	4.88%	8.92%	4.88%
1984-91	-8.16%	1.75%	0.95%	6.32%	1.40%	0.95%	8.83%	11.81%	2.97%	12.90%	4.07%
DIFFERENCE	-5.51%	0.47%	-0.07%	4.37%	0.38%	-0.07%	4.79%	2.88%	-1.91%	3.98%	-0.81%

	PPI		
	GNP-PI	INTERSTATE TOLL NOMINAL	REAL
1972	50.3	100.0	198.8
1982	100.0	152.0	152.0
1984	108.3	148.8	137.4
1991	139.5	105.6	75.7
GROWTH			
72-82	7.11%	4.28%	-2.65%
84-91	6.53%	-4.78%	-8.16%

SOURCES: BLS

	LONG LINES MESSAGE VOLUMES AND HOLDING TIMES		
	MESSAGES	HOLDING TIME	MINUTES
1982	1,173,079	6.88	8,070,784
1970	2,714,007	7.84	21,277,815
1972	3,216,010	7.63	25,181,358
1980	6,440,602	8.65	55,711,207
1982	6,827,695	8.67	59,196,116
GROWTH			
1982-82	9.21%		10.48%
1972-82	7.82%		8.92%
1970-80	9.03%		10.10%

SOURCE: LONG LINES STATISTICS, 1980-1982

	PER-CAPITA REAL INCOME	
	POP	REAL INCOME
1972	209,896	\$8,562
1982	232,171	\$9,725
1984	236,343	\$10,419
1991	252,474	\$11,768
GROWTH		
72-82	1.01%	1.28%
84-91	0.95%	1.75%

SOURCES: 1990 STATISTICAL ABSTRACT: TABLES 2,695
1991 STATISTICAL ABSTRACT: TABLES 2,703
1990 INCOME: 790, 1992 SURVEY OF CURRENT BUSINESS
1991 - EXTRAPOLATION

	INTERSTATE SWITCHED ACCESS MINUTES		
	USAGE	EST BYPASS	TOTAL
84Q3	37.5	7.9	45.4
88Q3	62.1	18.5	80.6
89Q3	69.7	19.9	89.6
90Q3	77.8	22.2	100.0
91Q3	81.9	24.4	106.3
GROWTH			
1984-88	13.44%	23.65%	15.43%
1984-91	11.81%	17.38%	12.90%

SOURCE: FCC "TRENDS IN TELEPHONE SERVICE"
FEBRUARY, 1992, TABLE 24.

FCC "MONITORING REPORT," JULY 1991, TABLES 6.1A.3

TABLE 2A
UNEXPLAINED EXOGENOUS GROWTH SLOWED AFTER COMPETITIVE ENTRY

PERIOD	GROWTH IN PRICE	GROWTH IN INCOME/POP	GROWTH IN POP	PRICE EFFECT	INCOME EFFECT	POP EFFECT	TOTAL EFFECT: PREDICTED GROWTH	ACTUAL GROWTH	UNEXPLAINED GROWTH	(INCLUDING BYPASS)	
				ELAS=-0.72	ELAS=0.80	ELAS=1.00	ACTUAL GROWTH			UNEXPLAINED GROWTH	
1972-78	-2.80%	2.16%	0.98%	2.06%	1.73%	0.98%	4.85%	9.95%	5.10%	9.95%	5.10%
1979-91	-5.71%	1.51%	0.96%	4.32%	1.21%	0.96%	6.60%	9.89%	3.28%	10.65%	4.05%
DIFFERENCE	-2.91%	-0.65%	-0.02%	2.26%	-0.52%	-0.02%	1.75%	-0.06%	-1.82%	0.70%	-1.05%

	PPI INTERSTATE TOLL		
	GNP-PI	NOMINAL	REAL
1972	50.3	100.0	198.8
1978	72.7	121.9	167.7
1979	78.8	120.8	153.3
1989	129.5	108.3	83.6
1991	139.5	105.6	75.7
GROWTH			
72-78	6.33%	3.36%	-2.80%
79-91	4.87%	-1.11%	-5.71%

SOURCES: BLS

	PER-CAPITA REAL INCOME	
	POP	REAL INCOME
1972	209,896	\$8,542
1978	222,585	\$9,735
1979	225,055	\$9,829
1989	247,350	\$11,531
1991	252,474	\$11,768
GROWTH		
72-78	0.96%	2.16%
79-91	0.96%	1.51%

SOURCES: 1990 STATISTICAL ABSTRACT: TABLES 2,695
1991 STATISTICAL ABSTRACT: TABLES 2,703
1990 INCOME: 790, 1992 SURVEY OF CURRENT BUSINESS
1991 - EXTRAPOLATION

	LONG LINES MESSAGE VOLUMES AND HOLDING TIMES		
	MESSAGES	HOLDING TIME	MINUTES
1972	3,216,010	7.83	25,181,358
1978	5,328,034	8.35	44,489,064
1979	5,953,960	8.49	50,549,120
1982	6,827,695	8.67	59,196,116
GROWTH			
1972-78	8.78%		9.95%
1979-1982	4.67%		5.40%

SOURCE: LONG LINES STATISTICS, 1960-1982

	INTERSTATE SWITCHED ACCESS MINUTES		
	USAGE	EST BYPASS	TOTAL
1984-Q3	37.5	7.9	45.4
88Q3	62.1	18.5	80.6
89Q3	69.7	19.9	89.6
90Q3	77.8	22.2	100.0
91Q3	81.9	24.4	106.3
GROWTH			
1984-91	11.81%	17.38%	12.90%
1979-1991	9.89%		10.65%

SOURCE: FCC "TRENDS IN TELEPHONE SERVICE" FEBRUARY 1991, TABLE 24.

FCC "MONITORING REPORT," JULY 1991, TABLES 6.1.63