V. Local-Exchange Carriers and the Long-Distance Market

The RBOCs have alleged that their entry into the long-distance market would reduce the market power of and prices charged by existing carriers. Such allegations have been used to support proposals to remove the line-of-business restriction in the MFJ. There are three significant logical problems with the argument.

First, as we have emphasized, available evidence supports the idea there is little to be gained by the RBOCs' entry. Long-distance markets are already quite competitive, as evidenced by price trends, accelerating customer churn, and the proliferation of new products and discount programs.

Second, the RBOCs are not the only firms capable of successful competitive entry into long-distance services. In addition to further facilities-based expansion by existing carriers such as WilTel and others, long-distance carriers face potential competition from satellite service vendors, cable TV, and network equipment providers (which offer customers the alternative of investing in private networks). The RBOCs are not unique in possessing the expertise and available capacity to successfully accomplish large scale entry into long distance services. Moreover, since small-scale entry in niche markets can be just as effective in intensifying competition, the universe of potential entrants is quite large.

Third, ownership and control of a long-distance carrier by an RBOC may magnify rather than reduce exploitable market power. Moreover, the effects of such entry cannot be examined in isolation since it would have implications for the performance of local-exchange markets, equipment markets, and the evolution of U.S. information infrastructure more generally.

A. Competition Prior to RBOCs' Entry

We have provided extensive evidence that competition is strong in long-distance service; indeed, there is no evidence to suggest abnormal profits from long-distance service. Moreover, there are no important barriers to entry. If profits of existing competitors were high, new firms would enter either locally or nationally.[61]

B. RBOCs as Potential Competitors

A number of economists submitting affidavits supporting the RBOCs' contention that they should be allowed to compete in providing long-distance services, argue that RBOCs are unique in being able to offer serious competition against existing long-distance carriers.[62] This argument rests on two presumptions, that: (1) other facilities-based and non-facilities-based resellers do not already offer effective competition; and (2) no other firms have the expertise required to enter long-distance services in the United States. Neither of these presumptions is warranted.

First, other carriers do offer effective competition. For example, according to Lester Taylor:

> The only prospect at present for vigorous price competition on a broad scale to occur in the interLATA market is through the appearance of major new players, specifically in

[61] Indeed, allowing RBOCs to control long-distance carriers need not raise the number of long-distance carriers. Since other entrants are possible, RBOC entry may simply supplant entry by another new long-distance carrier.

[62] See *Affidavits* of Jerry A. Hausman, Daniel F. Spulber, and Lester Taylor, Motion of Bell Atlantic Corp., BellSouth Corp., NYNEX Corp, and Southwestern Bell Corp. to Vacate the Decree, *United States of America v. Western Electric Company, Inc., and American Telephone and Telegraph Company*, Civ. No. 82-0192.

> the form of the Regional Bell Companies. With removal of interLATA restrictions, each Bell Company would probably, for a variety of economic reasons, use its existing network as the basis for providing toll service within its own region, and would resell capacity leased from the three major IXCs to complete calls outside its region.[63]

Taylor's own argument suggests that reselling of capacity leased from the existing carriers offers a viable vehicle for effective competitive entry against the long-distance carriers. Furthermore, the large numbers of existing resellers demonstrates that the skills to be an effective reseller are not limited to a small subset of firms nor are there significant barriers to entry.

Second, many large U.S. corporations have access to sufficient investment capital and retail marketing expertise to undertake entry into long distance services if such entry were desirable. Firms such as TCI, Time-Warner, GM, American Express, Sears, and Citibank have experience selling services to, billing, supporting, and communicating with large, geographically dispersed diverse communities of retail and wholesale customers. These companies are already managing large national and global telecommunications and data communications networks which include both owned and leased facilities. The experience of the RBOCs in managing central office switching systems and inter-switch trunking facilities is no doubt extensive, but such experience is not limited only to AT&T, MCI, Sprint, and the RBOCs. It is also unlikely that the RBOCs' entry into long distance services would encourage them to increase their R&D expenditures significantly beyond those that are already being undertaken to support their current activities. We have discussed elsewhere the impressive record of investments in new capacity, new technologies, and new services which has occurred without RBOC entry.

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[63] See Taylor, note 62, *supra*, paragraph 9.

C. Anticompetitive Consequences of RBOC Entry into the Interexchange Market

Because the RBOCs have generally elected not to enter long-distance markets indirectly,[64] their desire to vacate the MFJ suggests that there must be some economic gain to them from combining control of the provision of local-exchange and long-distance services. The impressive productivity gains in the long-distance industry suggests that technical advantages are unlikely to be the source of those gains.

Indeed, it is difficult to imagine the source of the RBOCs' allegedly unique ability to compete in the long-distance market if it does not stem from their position as essentially monopoly providers of local-exchange services.[65] There are many ways in which the RBOCs

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[64] The RBOCs have not generally pursued available strategies for entry into long-distance telecommunications. Specifically, an RBOC could create a new, separate corporation to operate long-distance services and distribute shares to the shareholders of the RBOC. Such an approach would make sense, and be consistent with the RBOC managers' responsibility to pursue value-maximizing strategies, if abnormal returns were available in the long-distance market.

[65] Some event studies conducted by economists filing affidavits on behalf of the RBOCs have concluded that recent pro-competitive events have reduced any monopoly power held by the RBOCs. See, *e.g.*, *Affidavit* of Kenneth Lehn, note 60, *supra*.

However, even if one accepts the argument that financial market values of the RBOCs have been reduced as a consequence of recent announcements signaling future increased competition in local-exchange services, one *cannot* conclude that markets for local-exchange services are currently competitive. The vast majority of customers have no alternative for local-exchange services and interconnection services to their long-distance carrier of choice except the local Bell operating company.

Taken at face value, the event studies indicate only that the RBOCs must have been perceived by financial market participants as having significant market power relatively recently (*e.g.*, Lehn's analysis considers events which occurred from the second half of 1992 through the end of 1993). The results do not necessarily imply that the RBOCs no longer have any monopoly power, only perhaps that such power will be weaker in the future.

Consider the following simple example. Suppose a firm has a riskless stream monopoly profits of $\$X$ (inflation-adjusted) in perpetuity. At a riskless discount rate of r percent, the present value of the monopoly returns is $\$X/r$. Suppose, then, that it becomes evident that the monopoly profits will be earned only for the next five years, and after that time the industry will be perfectly competitive (*e.g.*, $X = 0$). Following this event the present value of monopoly could exploit their position as the current monopoly provider of local-exchange services for the vast majority of telephone customers so as to gain significant and unique advantages in the market for long-distance services. For example, if a long-distance carrier wished to offer an innovative service which required the local-exchange carrier to offer new local access capabilities, the long-distance carrier would need to share its strategic plan with the local-exchange carrier to design and configure the necessary new facilities. This collaboration would be threatened if the local-exchange carrier were permitted to compete directly in long-distance markets and may provide it an advantage in the development of new long-distance offerings. It would be difficult for a regulator to determine whether the local-exchange carriers were manipulating the pace and design of new facilities so as to enhance their strategic market position (*e.g.*, by introducing services quickly where they perceived themselves as leaders, while delaying services in products where they sought additional time to prepare their marketing strategy).

As another example, consider that the RBOCs are in a unique marketing relationship with most customers because local access is required for long-distance service and because the RBOCs often provide billing services for the long-distance carrier. Only the local-exchange carriers know customers' local *and* long-distance calling habits. This knowledge gives them access to market research data which are not available to long-distance carriers. On the one hand, in the absence of regulatory restrictions governing the use of such data, the local-exchange carriers would have an unfair competitive advantage. On the other hand, regulatory restrictions

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profits is reduced by $(1/(1 + r))^5(X/r)$, or by 86 percent, though markets will not be competitive for five years. Therefore, a significant reduction in a firm's market value on account of the advent of increased competition in the future need not imply that markets are competitive today.

adequate to prevent exploitation of this advantage would limit the ability to realize the joint economies the RBOCs argue exist. The RBOCs would also be assisted by their "brand image;" however, such an asset is not unique to the RBOCs, as evidenced by the willingness of customers to switch long-distance carriers.

There is also a danger that the RBOCs may fail to provide similar quality local access facilities to competing long-distance companies. Such behavior would be evidenced by an RBOC's failure to offer connections of the same technical quality or with the same level of customer support and timeliness of delivery. The RBOCs contend that this danger may be mitigated in part by the fact that regulators are now sensitive to the importance of Equal Access and that deviations of this sort may be hard to sustain because inter-exchange carriers, as well-informed customers, can be expected to complain in response to such discrimination. As long as RBOC participation in long-distance markets is not allowed, however, this is not a regulatory issue, because there is no incentive to discriminate among long-distance providers. Indeed, local-exchange carriers have an incentive to encourage competition in long-distance markets to further lower long-distance prices and greater demand for complementary local-exchange services.

Finally, there is a possibility that local-exchange carriers could use their existing market power in local-exchange markets to cross-subsidize their entry into long-distance services. For example, to the extent that access charges paid to the RBOCs by existing long-distance carriers generate revenues that more than cover true costs and pay for subsidies for universal access, the RBOCs have an anticompetitive weapon should they be allowed to enter long-distance markets. Specifically, the RBOCs would have a cost advantage by charging other carriers access costs in excess of true incremental cost. The size of this cost advantage is an empirical question, but one which deserves thorough investigation.[66]

If, instead, there are no special advantages accruing to the RBOC from its dominant position in local-exchange services (because regulations are sufficiently strong to enforce arm's length, identical treatment for all interexchange carriers), it is difficult to understand how the RBOCs might realize such economies as might be available from vertical integration. To summarize, from an efficiency perspective, little is gained in potential price reductions from allowing RBOCs to enter long-distance markets (because of the already successful competition in those markets), and anticompetitive risks of allowing such entry are significant.

One widely cited argument to the contrary is the assertion in a recent study by the WEFA Group[67] that large reductions in long-distance telephone prices and important macroeconomic improvements will accompany lifting the line-of-business restrictions in the MFJ. That study's conclusions, based on three arguments about the ineffectiveness of competition in long-distance markets, are flawed.[68]

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[66] Preliminary evidence reviewed by Mark Sievers suggests that a large portion of switched access charges represent profits not being used for access subsidies such as the Universal Service Fund and Lifeline and Linkup programs. See Mark Sievers, "Should the InterLATA Restriction Be Lifted?: Analysis of the Significant Issues," Paper presented at the Seventh Annual Western Conference, Rutgers University, Advanced Workshop in Regulation and Public Utility Economics, July 6-8, 1994.

[67] See WEFA Group, note 26, *supra*.

[68] General criticisms of the WEFA study are also offered by Robert E. Hall, note 1, *supra*, and by Ray Marshall, "Building the Information Superhighway: Getting the Competition Right," Discussion Paper, University of Texas-Austin, May 12, 1994.

One argument attempts to infer that the industry is noncompetitive[69] because the prices charged by AT&T, MCI, and Sprint are approximately equal. Putting aside for the moment the fact that marginal prices are difficult to measure from the complex tariffs, there is no equivalence between imperfect competition and the equivalence of prices. This is important: "Lock-step" pricing is consistent with a number of market structures, including perfect competition.

The second argument emphasizes heterogeneity in prices available to customers depending on their volume of services purchased. While significant savings are available to customers through virtual networks or through bulk purchases, no inference of imperfect competition is possible. The differences are akin to differences between wholesale and retail prices. If there were indeed abnormal profits available from reselling bulk capacity, such profits would be competed away by the hundreds of resellers in the market, as we discussed in section II. That these price differences persist suggests that there are cost differences associated with servicing high- versus low-volume customers, and that incremental customer-marketing costs are significant, as suggested above. Moreover, the increased availability of services such as SDN has made it even easier for would-be entrants to offer the advantages of high-volume discount tariffs to smaller customers.

The third argument emphasizes that price significantly exceeds a narrow measure of marginal cost. WEFA's estimated marginal cost includes only access cost and an undefined incremental network cost. As we noted earlier, this measure understates access costs per

[69] The study's description of the current state of competition in the interLATA market is factually inaccurate at points; *e.g.*, the study overstates AT&T's market share for several service groupings.

conversation minute and true incremental operating costs significantly.

The alleged positive macroeconomic benefits of allowing RBOCs to enter the long-distance market appear as a consequence of reducing prices by 50 percent from their assumed baseline value.[70] The assumed price decline is based in part on an analysis of a Cournot model with no fixed costs (problems with which we discussed in section IV) and with an assumed number of current competitors of three (which, as we established in section III, is too low). The full extent of the estimated price decline is virtually assumed, as is an associated increase in the rate of technological change however, with little substantiation. As a result, the macroeconomic analysis sheds no new light on the consequences for economic activity of vacating the line-of-business restrictions in the MFJ.

VI. Conclusions

Arguments claiming that the long-distance market reflects collusive pricing are misguided and not supportable using appropriate available evidence on prices and costs. Long-distance prices have fallen in real terms faster than local access costs, reflecting the intensity of competition in long-distance services and the resulting efforts by carriers to improve the diversity and quality of their products and the efficiency of their network facilities. MacAvoy's analysis to the contrary is flawed in its presentation of a simplistic analysis biased in favor of estimating

[70] WEFA makes mistakes similar to MacAvoy's in defining prices and costs. Reported prices exceed average revenue per minute, and variable costs do not include incremental costs beyond access charges and undefined network costs. Hence, WEFA's statements about margins are inaccurate.

excessively high prices and unreasonably low incremental costs.[71] Analysts should not oversimplify an examination of price competition in long-distance markets by attempting to treat all classes of service as identical irrespective of customer or product attributes. We have examined a range of indicators which include trends in prices, operating and investment expenditures, financial ratios and market valuations, service offerings, and customer responses. We found that, while none of these indicators proves the market for long-distance services is competitive, they are consistent with our view that aggressive competition is the norm.

One cannot reach a similar conclusion about the current state of competition in local-exchange markets. Although some signs suggest that competition may improve in the future, it is still too early to say with certainty how competitive local-exchange markets will be. When local-exchange markets achieve the same level of competition as that prevailing in long-distance markets, reexamining the need for continuing the restriction against local-exchange participation in interLATA toll markets may be warranted.

That time is, however, not now. As we stated in section V, ownership and control of a long-distance carrier by an RBOC may magnify rather than reduce exploitable market power. Since the MFJ was signed in 1982, there has been impressive growth in the diversity and in the quality of telecommunications services in both long-distance and local-exchange services. Both markets are experiencing an intensification of competition. However, the two markets are at very different stages of development. Given the rapid pace of change, it seems ill-advised to change a policy which has been successful thus far without first carefully considering the risks which might accompany such a change. There are ample reasons to suspect that the RBOCs

[71] See *Affidavit* of Paul W. MacAvoy, note 11, *supra*.

may be able to exploit their existing power in local-exchange services unfairly in competition with long-distance carriers and/or with potential local-exchange competitors. Offsetting these risks, there are no significant costs associated with postponing a decision until evidence on the state of competition in markets for local-exchange services is clearer.

Table 1

Comparison of Access Charge Estimates

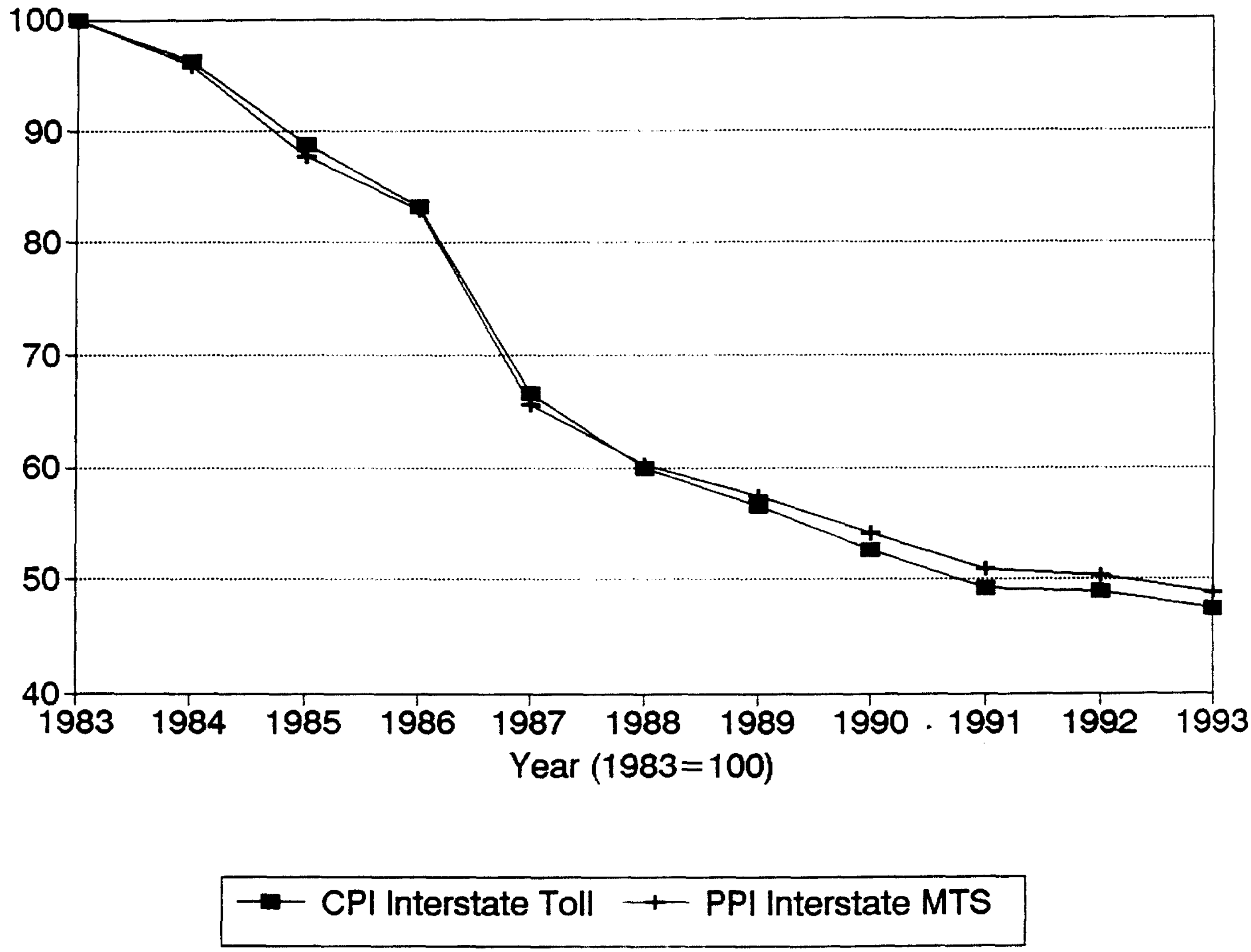
	1990	1991	1992	1993	Percentage Change '90-'93 Nominal	Real
Interstate Access Charges (Cents per Access Minute)						
(1) Originating Charge	1.0	0.9	0.8	0.8		
(2) Terminal Charge	1.4	1.1	1.0	1.1		
(3) TS Charge	2.5	2.4	2.4	2.3		
(4) Special Access	0.9	0.9	0.9	0.8		
Estimated Access Charges (Cents per Conversation Minute)						
(5) Long Distance	7.6	7.1	6.9	6.7	-12%	-20%
(6) 800-service	4.7	4.5	4.3	4.2	-10%	-18%
(7) Other Business	4.8	4.4	4.3	4.2	-13%	-21%
(8) MacAvoy Estimate	6.3	5.9	5.7	5.5	-12%	-20%

Notes:

1. Table 5.11, *Monitoring Report*, "Carrier Common Line Charge per Originating Access Minute;" average is based on share of year.
2. Table 5.11, *Monitoring Report*, "Carrier Common Line Charge per Terminating Access Minute;" average is based on share of year.
3. Table 5.11, *Monitoring Report*, "Total Traffic Sensitive Charge per Access Minute;" average is based on share of year.
4. Special Access Estimate = .25*1.07*(Line #1 + Line #3). The estimate assumes that special access is selected when it is cheaper than alternative switched access and that the special access results in savings of 75 percent of originating switched access charge.
5. Table 5.11, *Monitoring Report*, "Total Charges per Conversation Minute," estimated as 1.07*(Line #1 + Line #3) + (Line #2 + Line #3); this calculation reflects 1.07 originating access minutes plus 1.0 terminating access minutes per conversation minute.
6. Estimated access charge per conversation minute for 800 service = Line #4 + 1.07*(Line #1 + Line #3).
7. Estimated access charge per conversation minute for other business services = Line #4 + (Line #2 + Line #3). Other business services include all business services except business long distance.
8. MacAvoy's estimates of access charges per conversation minute; see MacAvoy, note 11, *supra*, page 39.
9. Lines 6 and 7 underestimate access charges for 800 service and other business services because sometimes there is switched rather than special access on one end and not all special access service realizes a 75 percent discount.
10. Real growth from 1990 to 1993 is estimated using the GDP implicit price deflator.

Figure 1: Trends in Long-Distance Telephone Prices

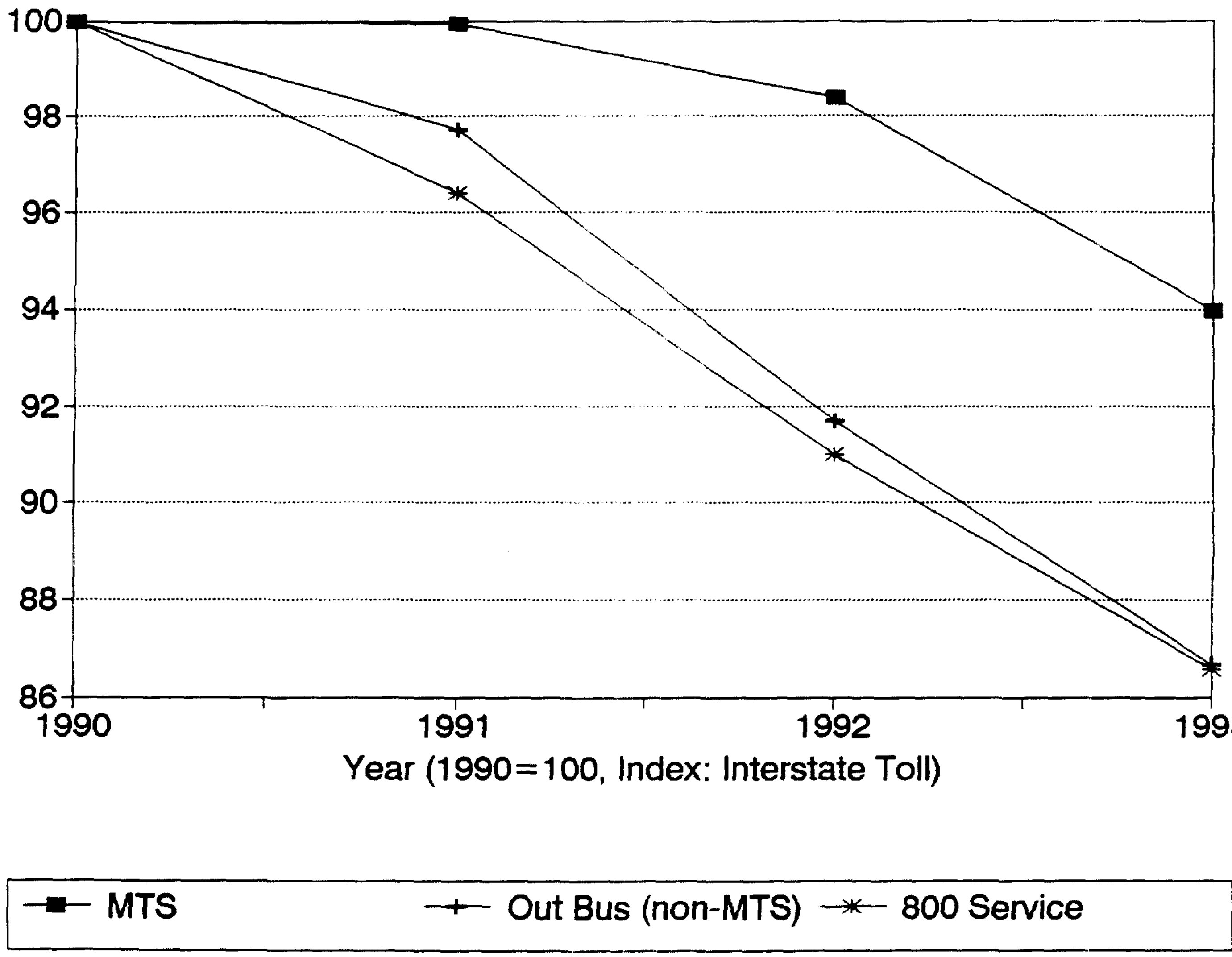
(BLS Price Indexs relative to GDP implicit price deflator)



Source: Bureau of Labor Statistics (BLS) Consumer (CPI) and Producer (PPI) price indices for interstate toll service and GDP implicit price deflator. The BLS indices are deflated using the implicit GDP price deflator to account for changes in the general price level. The GDP deflator is from the *Economic Report to the President*, February 1994, Table B-3, page 272. The BLS indices were provided by AT&T.

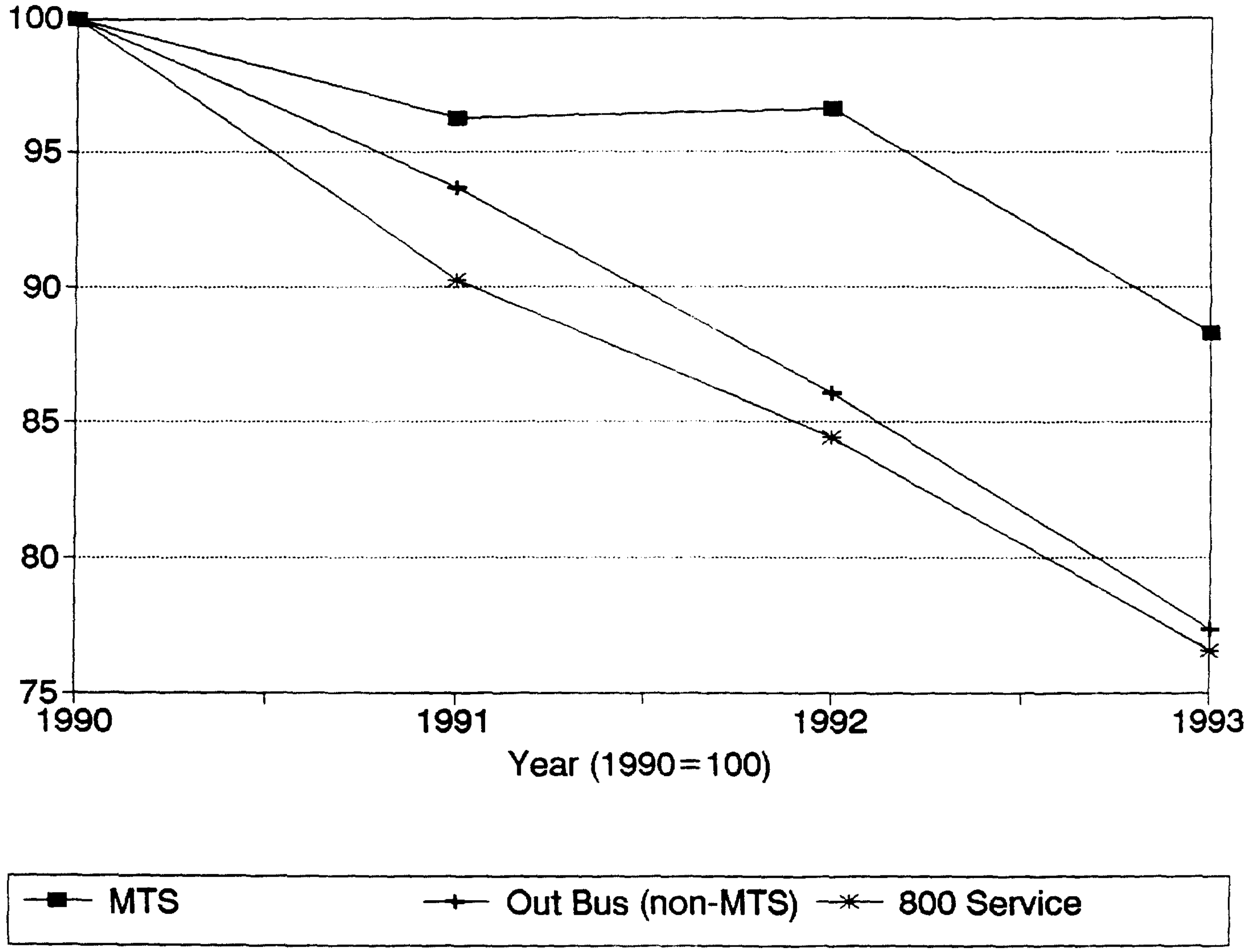
Figure 2: Trends in AT&T Average Revenue per Minute

(relative to BLS Price Indices)



Source: AT&T Average Revenue per conversation Minute (ARPM) data provided by AT&T for Residential and Business MTS (MTS), Business Outbound, excluding Business MTS (Out Bus, non-MTS) and 800 service (800 Service). The ARPMs are deflated using the BLS indices for interstate toll service. MTS is deflated using the BLS CPI, and the other services are deflated using the BLS PPI.

Figure 3: Trends in AT&T Average Revenue per Minute
Net of Access Charges
(in real terms, deflated using GDP implicit price deflator)



Source: Average revenue per conversation minute (ARPM) data provided by AT&T for Residential MTS (Res MTS), Business Long Distance (Bus LD), Other Outbound Business (Bus Oth Out) and 800 service (800 Serv). Estimated access charges from Table 1 are deducted; and prices net of access are then deflated using the GDP implicit price deflator.

ATTACHMENT 2

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Curriculum Vitae

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PERSONAL DATA

Born:	September 4, 1958, in Orlando, Florida.
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FIELDS OF SPECIALIZATION

Public Finance, Macroeconomics, Industrial Organization, Natural Resource Economics, Public Policy.

EDUCATION

Ph.D., Economics, Harvard University, May 1983
Dissertation: *Three Essays on Government Debt and Asset Markets*, supervised by Benjamin Friedman, Jerry Hausman, and Martin Feldstein.

A.M., Economics, Harvard University, May 1981

B.A., B.S., Economics, University of Central Florida, June 1979, *summa cum laude*.

HONORS AND AWARDS

Exceptional Service Award, U.S. Department of the Treasury, 1992.

Distinguished Alumnus Award, University of Central Florida, 1991.

John M. Olin Fellowship, National Bureau of Economic Research, 1987-1988.

Teaching Commendations, Graduate School of Business, Columbia University.

Northwestern University Associated Student Government Teaching Awards, announced in 1985, 1986, and 1987.

Graduate Distinctions: National Science Foundation Fellowship, Alfred P. Sloan Foundation Fellowship.

Undergraduate Distinctions: National Merit Scholarship, National Society of Professional Engineers Award, Florida Society of Professional Engineers Award, National Council of Teachers of English Award, Omicron Delta Kappa, Financial Management Association Honor Society.

POSITIONS HELD

1994-present	Russell L. Carson Professor of Economics and Finance, Graduate School of Business, Columbia University.

1994-present	Senior Vice Dean, Graduate School of Business, Columbia University.
1988-1994	Professor of Economics and Finance, Graduate School of Business, Columbia University.
1994	MCI Fellow, American Council for Capital Formation.
1994	John M. Olin Visiting Professor, Center for the Study of Economy and the State, University of Chicago.
1991-1993	Deputy Assistant Secretary (Tax Analysis), U.S. Department of the Treasury.
1987-1988	John M. Olin Fellow in residence at the National Bureau of Economic Research.
1983-1988	Assistant Professor of Economics, Northwestern University, with half-time research appointment in the Center for Urban Affairs and Policy Research.
1985	Visiting Scholar, Center for Business and Government, John F. Kennedy School of Government, Harvard University.
1981-1983	Teaching Fellow (Department of Economics) and Resident Tutor in Economics (Dunster House), Harvard University.

PROFESSIONAL ACTIVITIES

1987-present	Research Associate, National Bureau of Economic Research (Monetary Economics, Corporate Finance, Public Economics, Economic Fluctuations, Industrial Organization).
1994-present	Member, Economics Grants Panel, National Science Foundation.
1993-present	Panel of Economic Advisors, Federal Reserve Bank of New York.
1993-present	Board of Advisors, Institutional Investor Project, School of Law, Columbia University.
1993-present	Member, Federal Taxation and Finance Committee, National Tax Association.
1990-present	Co-organized research program on International Aspects of Taxation at the National Bureau of Economic Research, Cambridge, Massachusetts.
1983-1987	Faculty Research Fellow, National Bureau of Economic Research.
1983-1986	Adjunct Faculty Research Fellow, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, Cambridge, Massachusetts.
1986, 1988,1994	Member of the Brookings Panel on Economic Activity.
1985, 1987	Special guest of the Brookings Panel on Economic Activity.
1990-1991	Organized research program on Environmental Economics and Public Policy at the National Bureau of Economic Research, Cambridge, Massachusetts.

1988-1990	Co-organized research program on Dynamic Models of Firms and Industries at the National Bureau of Economic Research, Cambridge, Massachusetts.
1985-1989	Organized research program and workshops on contracting in financial markets at the Summer Institute, National Bureau of Economic Research, Cambridge, Massachusetts.
1988	Organized Economic Fluctuations program on Industrial Economics and Macroeconomics, National Bureau of Economic Research, Stanford, California.
1986-1988	Organized research program and workshop on links between macroeconomics and industrial organization at the Summer Institute, National Bureau of Economic Research, Cambridge, Massachusetts.
1991	Member, Program Committee, Econometric Society Winter Meetings.
1982-1983	Member, Energy Modeling Forum VII Study Group, Stanford University, Stanford, California.
1981-present	Consultant on research projects with government agencies, including the Internal Revenue Service, Social Security Administration, U.S. Department of Energy, U.S. Department of State, U.S. Department of Treasury, and U.S. International Trade Commission; National Science Foundation; The World Bank; Board of Governors of the Federal Reserve System; Federal Reserve Bank of New York; Congressional Budget Office; and private corporations.

Member:	American Economic Association, American Finance Association, Association for Public Policy and Management, Econometric Society, International Association of Energy Economists, National Tax Association, the Royal Economic Society, and the Institute for Management Science.
Referee:	*American Economic Review; Canadian Journal of Economics; Columbia Journal of World Business; Econometrica; Economic Journal; Energy Economics; Energy Journal; Journal of Business; Journal of Economic Literature; Journal of Finance; Journal of Financial Economics; Journal of Financial Intermediation; Journal of Financial Services Research; Journal of Industrial Economics; Journal of Law and Economics; Journal of Macroeconomics; Journal of Money, Credit, and Banking; Journal of Monetary Economics; Journal of Political Economy; Journal of Public Economics; Journal of Small Business Finance; Management Science; National Tax Journal; Quarterly Journal of Economics; Quarterly Review of Economics and Finance; Rand Journal of Economics; Review of Economic Studies; Review of Economics and Statistics; Review of Financial Economics; Scandinavian Journal of Economics; Southern Economic Journal*; National Science Foundation; C.V. Starr Center for Applied Economics (New York University); Addison-Wesley Publishing Company; Ballinger Press; Cambridge University Press; MIT Press; W.W. Norton; Oxford University Press.

Associate Editor: *Journal of Industrial Economics; Journal of Small Business Finance.*

PUBLICATIONS AND PAPERS

Edited Volumes

International Taxation (with M. Feldstein and J.R. Hines), Chicago: University of Chicago Press, forthcoming.

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Textbook

Money, the Financial System, and the Economy, Reading: Addison-Wesley Publishing Company, 1994.

Publications

Articles

"A Reconsideration of Investment Behavior Using Tax Reforms as Natural Experiments" (with J.G. Cummins and K.A. Hassett), *Brookings Papers on Economic Activity*, 1994:2.

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"The Importance of Precautionary Motives for Explaining Individual and Aggregate Saving" (with J. Skinner and S. Zeldes), *Carnegie-Rochester Conference Series on Public Policy*, forthcoming, 1994.

"Internal Finance and Firm-Level Investment" (with A. Kashyap and T. Whited), *Journal of Money, Credit, and Banking* 26 (1994): forthcoming.

"Corporate Financial Policy, Taxation, and Macroeconomic Risk" (with M. Gertler), *Rand Journal of Economics* 24 (Summer 1993): 286-303.

"Internal Net Worth and the Investment Process: An Application to U.S. Agriculture" (with A. Kashyap), *Journal of Political Economy*, 100 (June 1992) 506-534

"Long-Term Contracting and Multiple-Price Systems" (with R. Weiner), *Journal of Business* 65 (April 1992): 177-198.

"Efficient Contracting and Market Power: Evidence from the U.S. Natural Gas Industry" (with R. Weiner), *Journal of Law and Economics* 34 (April 1991): 25-67.

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