

response can take up to a half an hour. TCG has requested from Ameritech an electronic interface for maintenance and repair and Ameritech has informed TCG that the electronic interface for maintenance and repair would support only unbundled network elements, and it would not support access services such DS0, DS1 and DS3 circuits. TCG has not requested the electronic interface for maintenance and repair due to these unacceptable limitations. TCG Ex. 1, pp. 3-4.

B. Quality of Service and Quality of Service Reporting

Section 271 (c) (2) (B) (i) of the federal Act requires that Ameritech provide interconnection in accordance with the requirements of Sections 251 (c) (2) and 252 (d) (1). Section 251 (c) (2) (C) requires that ILECs provide interconnection "that is at least equal in quality to that provided by the local exchange carrier to itself or to any subsidiary, affiliate, or any other party to which the carrier provides interconnection." Mr. Pelletier showed that Ameritech has failed this requirement. Ameritech has installed trunks to carry traffic from Ameritech's network to TCG's network in such a way that there is a single point of failure between the two networks. The creation of a single point of failure for each of the three interconnect points between the two networks is contrary to TCG's policy for its own network deployment, and contrary to TCG's request. The result of the interconnection arrangement with Ameritech is that local traffic originating on Ameritech's network to TCG is being blocked in Ameritech's network behind the tandems where the point of interconnection with TCG is located.

TCG become aware of the blocking problem only through customer complaints because the source of blocking is in Ameritech's network behind the tandem. Once TCG became aware

of a pattern of customer traffic being blocked, TCG requested the data it needs from Ameritech to diagnose and request correction of the problem. Specifically, TCG requested (1) the percentage of trunk groups blocked by route in Ameritech's network, (2) traffic studies for each TCG NXX to determine which TCG traffic by NXX is getting blocked, and (3) the point(s) in Ameritech's network where the blocking is occurring. Ameritech did not provide the data requested by TCG. Ameritech has provided TCG only with the quality of service and performance reports which do not contain the detailed level of information required for TCG to diagnose the blocking of TCG traffic.

TCG attempted to negotiate an interim solution to the blocking of its inbound traffic in Ameritech's network. TCG's understanding was that Ameritech would route blocked traffic to overflow to alternative trunk groups with the result that it would eventually be routed to TCG's switch, rather than being blocked. TCG's understanding at the time of the memo memorializing that agreement, March 18, 1997, was that this arrangement would remain in place until the source of the blocking was identified and corrected.

Ameritech did not implement the interim solution and allow it to remain in place until the source of the blocking was identified and corrected. Ameritech implemented the interim alternative routing plan, but allowed the arrangement to remain in place only for several weeks, when the arrangement was terminated without notice to TCG. Ameritech has not provided the data to TCG to diagnose the trunk blocking problem, nor has it provided a diagnosis and correction of the problem in the absence of providing the data to TCG that would allow TCG to diagnose the problem and request a correction.

In his Supplemental Reply Testimony, Ameritech witness Mickens attempted to show that Ameritech is doing all it can to correct the problems it has created. He stated:

On April 23, Ameritech made a recommendation to reconfigure the network to obviate some of these difficulties. Although TCG initially rejected Ameritech's proposal, TCG reconsidered and tentatively approved the network reconfiguration on May 1. Ameritech is now awaiting final approval of the proposal. In the meantime, however, Ameritech is proceeding as if approval is final.

Ameritech Ex. 8.2, p. 25.

While Mr. Mickens' explanation at first sounds reasonable, there is one major problem. He was talking about the wrong state. In response to an oral data request (attached to this brief and marked Ameritech Illinois Ex. 8.2) Mr. Mickens admits that the network reconfiguration he discussed took place in Michigan. In Illinois, Ameritech only began to identify the direct end office trunk group candidates required for TCG on April 24, 1997. Ameritech has just taken the step of requesting a Point of Interconnection CLLI (Common Language Location Identification) code from Bellcore for TCG. Only after that is given can Ameritech process an order for additional lines. There are no current deadlines and the only pending event is a meeting between TCG and Ameritech scheduled to take place on May 22, 1997. Ameritech Exhibit 8.2

Finally, hoping to avoid future problems, TCG has requested more detailed service quality and performance, as well as a more formal process to manage and monitor TCG's and Ameritech's mutual networks. TCG Ex. 1, pp. 4-6.

C. Parity Reporting

Ameritech has not provided any data to TCG that would allow TCG to understand how the quality of service and performance provided by Ameritech compares to the quality of service and performance provided by Ameritech to itself or to other CLECs interconnected with Ameritech. In fact, the type of negotiation and achievement of understanding with Consolidated Communications Inc. regarding operating, communication and reporting procedures described by

VIII. CONCLUSION

For the reasons stated herein TCG requests that the Commission recommend to the FCC that Ameritech Illinois is not yet eligible to receive interLATA relief.

Dated: May 21, 1997

TELEPORT COMMUNICATIONS GROUP INC.

By:



Stephen J. Moore
Rowland and Moore
55 East Monroe Street
Suite 3230
Chicago, Illinois 60603
(312) 803-1000

Douglas W. Trabaris
233 South Wacker Drive
Suite 2100
Chicago, Illinois 60606
(312) 705-9829

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JUL - 7 1997

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

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

In the Matter of)

Application of Ameritech)
Michigan Pursuant to Section)
271 of the Telecommunications)
Act of 1996 to Provide In-)
Region, InterLATA Services in)
Michigan)

CC Docket No. 97-137

Reply Affidavit of Paul W. MacAvoy
on Behalf of Ameritech Michigan

**REPLY AFFIDAVIT OF PAUL W. MACAVOY IN SUPPORT OF THE APPLICATION OF
AMERITECH MICHIGAN FOR PROVISION OF IN-REGION,
INTERLATA SERVICES IN MICHIGAN**

1. My name is Paul W. MacAvoy and I hold the Williams Brothers Professorship in Management Studies at the Yale School of Management. In the initial stage of this proceeding I submitted an affidavit on behalf of Ameritech Corporation ("Ameritech") which took the position that consumer welfare would be substantially enhanced if Ameritech Michigan could offer in-region, interLATA services.¹ This finding was based on the following:

- While seller concentration in Ameritech's service area had declined substantially from 1989 through 1996, price-cost margins of the three largest carriers had increased for MTS, WATS, and Combined Services. This inverse relationship between price-cost margins and concentration is consistent only with the major facilities-based carriers developing an increased ability over time to tacitly collude in price setting. Such behavior was not limited to standard or "list price" tariffs; discount MTS calling plans had the same pattern of increasing price-cost margins over time associated with decreasing concentration. Wholesale (WATS) prices followed the same pattern. All major markets became less competitive in the 1990s, to such an extent that it can only be concluded that AT&T, MCI, and Sprint do not compete among themselves in prices and service offerings.
- Entry by Ameritech into long-distance telecommunication service in its region would be the most direct remedy for the observed lack of competitive pricing. Given that its goal is to achieve a position of providing substantial volumes of message toll service in its area, Ameritech is in a position where it has to initiate competitive pricing among the major carriers in long-distance, in-region services. Although Ameritech must incur the costs of establishing a separate long-distance subsidiary, it remains the most significant potential entrant in its service area in terms of operations at a scale that can affect prices throughout the markets.
- Significant consumer welfare gains can be expected to result from Ameritech's entry into long-distance service in its region. My estimate, based on projected but realistic cost and demand conditions, is that these gains will be from \$1.9 to \$2.1 billion per year in

¹ *Affidavit of Paul W. MacAvoy Before the Federal Communications Commission, In the Matter of Application of Ameritech Michigan Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in Michigan, CC Docket No. 97-137, April 1997 (hereinafter "MacAvoy Affidavit").*

Ameritech's region and approximately \$450 million per year in the state of Michigan. Ameritech will likely seek to establish a major revenue share of in-region long-distance service markets, and in the shakedown that follows the reallocation of shares the other carriers will be forced to lower prices. The estimated gains for consumers that follow from these price reductions are conservative since they rely only on Ameritech, putting in place its own non-cooperative current pricing strategies, not on a breakdown of the strategies of the incumbent carriers that now deter competition.

2. Based on these findings on gains from increased competition in markets for long-distance telecommunications services, there is a persuasive case for allowing Ameritech to offer in-region, interLATA services. The public interest is served by reduced prices. Allowing Ameritech entry can only reduce prices in long-distance markets, no matter the response of incumbents, since the lack of effective competition currently makes possible only those responses that decrease prices.

3. This reply addresses the affidavits of several witnesses who have criticized my findings.² As a threshold matter, I would underline the fact that none of these witnesses disputes the integrity of my process for estimating prices for long-distance calls or the use of price-cost margins to assess competitiveness, which form the basis of my benefit analysis. Instead, their criticisms center on two essentially derivative issues: (1) whether I should have examined price trends in two specific, relatively new discount MTS plans in addition to those in the extensive list of discount plans I did examine, and (2) whether the price of a long-distance call should be

² *Affidavit of B. Douglass Bernheim, Janusz A. Ordover, and Robert D. Willig on Behalf of AT&T Corp. Before the Federal Communications Commission, In the Matter of Application of Ameritech Michigan Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in Michigan*, CC Docket No. 97-137, June 1997 (hereinafter "Bernheim, Ordover, and Willig Affidavit"); *Affidavit of Robert Hall on Behalf of MCI Telecommunications Corporation Before the Federal Communications Commission, In the Matter of Application of Ameritech Michigan Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in Michigan*, CC Docket No. 97-137, June 1997 (hereinafter "Hall Affidavit"); *Affidavit of R. Glenn Hubbard and William H. Lehr on Behalf of AT&T Corp. Before the Federal Communications Commission, In the Matter of Application of Ameritech Michigan Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in Michigan*, CC Docket No. 97-137, June 1997 (hereinafter "Hubbard and Lehr Affidavit").

measured by “average revenue per minute” rather than my price index. These points are addressed in the following sections and additional analysis on both indicate that they do not affect my conclusions. In addition, their criticisms raise a third issue: (3) whether the existence of numerous discount MTS plans with different prices for the same underlying long-distance service is evidence of substantial price variation within the market. If there were competition among the major carriers, the variation would be reduced until all prices net of cost differences were the same. Otherwise, continued price variation is evidence of monopoly price discrimination. Thus the issue is whether prices across these plans varied with plan costs. Only the long-distance carriers can provide documentation to that effect, but none of the witnesses for AT&T, MCI, or Sprint have shown that observed price variations among plans are consistent with underlying cost variations. Below I test to determine whether that is a reasonable explanation. Observed price differences are too great to be explained by cost differences, and thus are necessarily part of the non-competitive pricing practices of the three largest carriers in the market.

4. I have organized this response as follows. Section I presents data on the carriers’ actual prices for specific calling plans in a new, more simplified format. The new prices are developed so that no claim can be made that my estimates depend on unrealistic calling pattern assumptions or customer calling volumes. These actual prices paid by subscribers – including those on new discount plans specified by experts for the long-distance carriers – show the same pattern of rising price-cost margins as reported in my affidavit. Section II addresses the claim that carriers’ prices should be measured by average revenue per minute (“ARPM”) rather than by the prices customers actually pay. Section III discusses the price discrimination associated with tacit collusion in oligopoly inherent in the current offerings of numerous discount plans. Section IV revisits my findings on the welfare benefits of allowing Ameritech Michigan to offer in-region, interLATA services, based on the responses in sections I and II. Section V contains my conclusions.

I. MEASURING CARRIERS' PRICES

5. The choice of carrier price for long-distance calls is critical to determining competitiveness. My critics have not alleged that the prices reported in my affidavit were conceptually faulty and/or calculated inaccurately. Their criticism instead has been limited to dislike for my procedure for going from prices on one MTS plan to those on another MTS plan. Any home consumer placing a call using one of the many standard or discount MTS plans, where that call has any one of many sets of characteristics (i.e., time-of-day, mileage, length of call, and monthly bill), would pay *exactly* the prices in my affidavit. On this basic point there is no dispute.

6. A major theme of the opponents to Ameritech's Section 271 Application is that the long-distance market is "already vigorously competitive," and thus Ameritech's entry cannot generate any consumer benefits. The opponents assert that support for this claim is demonstrated by the hallmarks of competitive markets: hundreds of new entrants; declining market share of the largest carrier (AT&T); excess capacity; a high rate of customer churn; and falling prices.³ None of these is a test of competitiveness. Valid tests in economics do not include whether market concentration is declining, or prices are falling, or even if prices are falling more than long distance access costs. The single valid test used most often in industrial economics is to define increased competitiveness in times of declining supplier concentration as being associated with declining price-cost margins. Using actual prices from tariffs to create price indices reflecting the trend, and marginal cost estimates based on actual access and network costs, I have consistently carried out that testing procedure, only to find declining concentration associated with an increase in price-cost margins. This pattern of results is at odds with the AT&T and MCI experts' claim of increased competitiveness in the last decade. Notably, they do not counter that such a test is inherently incorrect. (Indeed, Professor Hall states at paragraph 138 of his Affidavit that

³ See, e.g., AT&T Brief, p. 46.

“[e]conomists generally agree that the relation between price and marginal cost is useful for understanding issues about competition and performance.”) Rather, they attack the use of the price index⁴ and the exclusion of certain fixed costs from marginal costs.⁵ Although I have already addressed their positions, in Appendix A of my Affidavit, I again address them here.

7. The AT&T and MCI expert witnesses in this proceeding pay inordinate attention to the declining trend in their measures of “price” for interexchange long-distance services. They do not confront the fact that actual prices paid by customers have been steadily increasing in the 1990s.⁶ Those prices, which have been calculated as index numbers for the representative call from data from in actual tariffs, have been criticized as “unverifiable,” a patently misleading argument given that anyone can go to the source in the FCC tariffs to do just that.⁷ Moreover, these experts have not presented their company’s price indexes based on their tariffs as alternative to the price series in my affidavit. Instead, they rely on measures of average revenue per minute of service that offer no insight into changes in prices (see section II below).

8. To cut thorough distracting arguments about index numbers, I offer here the most direct measure of “price” for the period since the AT&T divestiture. This is the per minute charge customers in Washington picking up a telephone standard service actually have paid since 1987 when they have placed a call to Los Angeles. Tables One and Two set forth daytime and night/weekend prices, respectively, for standard MTS tariff service. In order to dispel any

⁴ Bernheim, Ordoover, and Willig Affidavit, pp. 87-97; Hall Affidavit, pp. 66-72; Hubbard and Lehr Affidavit, pp. 65-69.

⁵ Bernheim, Ordoover, and Willig Affidavit, p. 84; Hall Affidavit, pp. 50-51.

⁶ MacAvoy Affidavit, pp. 23-26.

⁷ I have little doubt that AT&T’s experts, for example, with access to AT&T’s data on its own tariffs, have been able to replicate my price indexes. Even if their efforts have not been successful, their claim that they cannot verify my analysis because I have “steadfastly refused” to produce my underlying data is false. This unfounded accusation is no more than a scurrilous personal attack on me that demonstrates the weakness of affiants’ analytical arguments. The attached Appendix makes the record clear.

confusion regarding the calculation of long-distance price indices, it is the prices in Tables One and Two (as well as those in Tables Three and Four below) that are the rates for that single call. There can be, therefore, no dispute that these are the exact prices customers have paid for a specified call, not only for Washington to Los Angeles but for an east to west coast major city pair of that distance.

9. Table One shows not only daytime prices per minute but also price-cost margins on that call for AT&T, MCI, and Sprint from January 1987 to June 1997. Daytime prices have increased for all three companies for five years, since January 1992; and price-cost margins have increased, for seven years, since 1990, for all three carriers.

TABLE ONE
PRICE PER MINUTE FOR A 3,000 MILE CALL;
DAYTIME RATES – STANDARD MTS PLANS

Date	Price (cents/minute)			Price-Cost Margin		
	AT&T	MCI	Sprint	AT&T	MCI	Sprint
1/1/87	34	38.5	38.2	0.606	0.652	0.649
1/1/88	30	30.7	33	0.615	0.624	0.650
1/1/89	28.2	27	27.7	0.625	0.607	0.618
1/1/90	25	24.5	24.5	0.649	0.642	0.642
1/1/91	25	24	24	0.673	0.659	0.659
1/1/92	24.5	24	24.5	0.683	0.677	0.683
1/1/93	25	24	25	0.690	0.677	0.690
1/1/94	25	25	25	0.694	0.694	0.694
1/1/95	27	27	27	0.708	0.708	0.708
1/1/96	28	28	28	0.744	0.744	0.744
1/1/97	31	30.2	31	0.773	0.767	0.773
6/1/97	31	30.2	31	0.773	0.767	0.773

Notes:
Prices based a single, four-minute phone call.
Price-Cost Margin equals [(Price-Marginal Cost) / Price] based on Price shown in the previous columns and Marginal Cost including Access and Network Costs (as defined in my Affidavit, pages 27-30).

10. Night/weekend prices also have increased for all three companies over the last four years since January 1993 (see Table Two). AT&T's price-cost margins on night/weekend service have increased for a decade, while those of MCI and Sprint have increased every year since 1989 (with a brief exception for both in 1993). Night/weekend service is supposed to be "discount" service, offered to increase traffic off peak; it is also presumed to be more "competitive" given increased excess capacity in that period over that in peak periods. But that service is not more competitive; price-cost margins have been at least two-thirds of levels on daytime calls, and they have been increasing in the same trend as on-peak margins.

TABLE TWO
PRICE PER MINUTE FOR A 3,000 MILE CALL;
NIGHT/WEEKEND RATES – STANDARD MTS PLANS

Date	Price (cents/minute)			Price-Cost Margin		
	AT&T	MCI	Sprint	AT&T	MCI	Sprint
1/1/87	16	17	16.7	0.162	0.211	0.199
1/1/88	15	14.2	15.5	0.229	0.189	0.254
1/1/89	14.2	13.7	13.7	0.256	0.229	0.229
1/1/90	13.2	12.5	12.5	0.337	0.298	0.298
1/1/91	12.5	12.5	13	0.346	0.346	0.371
1/1/92	12.5	13	13.5	0.379	0.403	0.425
1/1/93	13	12.5	13	0.403	0.379	0.403
1/1/94	13	13	13	0.411	0.411	0.411
1/1/95	15	15	14	0.474	0.474	0.436
1/1/96	15	15	14	0.523	0.523	0.489
1/1/97	16	16	17	0.560	0.560	0.586
6/1/97	16	16	17	0.560	0.560	0.586

Notes:
Prices based a single, four-minute phone call.
Price-Cost Margin equals [(Price-Marginal Cost) / Price] based on Price shown in the previous columns and Marginal Cost including Access and Network Costs (as defined in my Affidavit, pages 27-30).

11. Lest there be any doubt about these prices, it is worth recalling that they are the exact rates paid by millions of customers. According to Bernheim and Willig, one-third of AT&T's customers cannot qualify for any discount MTS offered by that company.⁸ Thus, a minimum of 21 million AT&T customers pay these rates. In fact, that number of customers on AT&T's standard MTS plan is higher, given Bernheim and Willig's statement that 47 percent (or approximately 30 million) of AT&T's customers have average monthly bills of less than \$10 and thus are not eligible for a discount plan.⁹ With respect to MCI, Professor Hall reported that 20 percent or approximately three million of its customers are not on a discount plan,¹⁰ while for Sprint, Ms. Banks reported that something less than 25 percent or approximately 1.7 million of its customers are not on a discount plan.¹¹

12. The rebuttal argument is that only subscribers not on discount plans pay these prices. Consider then that our representative caller in Washington is on a plan with one of the three largest carriers. Tables Three and Four present prices she would pay if her plan was one of the well-known MTS discount plans offered by AT&T (*True Reach Savings*), MCI (*Friends & Family I*), or Sprint (*Sprint Sense*). We assume that she has made a sufficient number of identical calls to qualify for each of these discount plans (50 four minute calls per month) and that for *Friends & Family I*, three of ten calls are to a "friend." The trend in prices and margins is the same as she encountered in standard plans. Daytime prices have increased for all three companies

⁸ Bernheim, B. and Willig, R. (October 1996), *The Scope of Competition in Telecommunications*, chapter two, p. 55.

⁹ *Id.*

¹⁰ Hall Affidavit, p. 48.

¹¹ *Affidavit of Marybeth M. Banks on Behalf of Sprint Communications Company, L.P. Before the Federal Communications Commission, In the Matter of Application of Ameritech Michigan Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in Michigan*, CC Docket No. 97-137, June 1997 (hereinafter "Banks Affidavit"), p. 6.

for every year since the introduction of their respective plans. The resulting price-cost margins have increased every year as well.

TABLE THREE
 PRICES PER MINUTE FOR 3,000 MILE CALL;
 DAYTIME RATES – WELL-KNOWN MTS DISCOUNT PLANS

Date	Prices (cents/minute)			Price-Cost Margin		
	AT&T <i>True Reach Savings</i>	MCI <i>Friends & Family I</i>	Sprint <i>Sprint Sense</i>	AT&T <i>True Reach Savings</i>	MCI <i>Friends & Family I</i>	Sprint <i>Sprint Sense</i>
1/1/92	n.a.	22.6	n.a.	n.a.	0.656	n.a.
1/1/93	n.a.	22.6	n.a.	n.a.	0.656	n.a.
1/1/94	n.a.	23.5	n.a.	n.a.	0.674	n.a.
1/1/95	19.6	26.3	n.a.	0.597	0.700	n.a.
1/1/96	19.6	27.2	22.0	0.635	0.736	0.675
1/1/97	21.7	29.3	25.0	0.676	0.760	0.718
6/1/97	21.7	29.3	25.0	0.676	0.760	0.718

Notes:
 Prices based on 50 four minute phone calls.
 Price-Cost Margin equals [(Price-Marginal Cost) / Price] based on Price shown in the previous columns and Marginal Cost including Access and Network Costs (as defined in my Affidavit, pages 27-30).

13. Night/weekend prices on discount plans for AT&T and Sprint have remained approximately constant, while those prices for MCI's *Friends & Family I* plan have increased since inception (see Table Four). AT&T's and Sprint's price-cost margins on night/weekend service have increased from the introduction of their respective plans, while MCI's price-cost margin has increased every year except one.

TABLE FOUR
 PRICES PER MINUTE FOR 3,000 MILE CALL;
 NIGHT/WEEKEND TIME RATES – WELL KNOWN MTS DISCOUNT PLANS

Date	Prices (cents/minute)			Price-Cost Margin		
	AT&T <i>True Reach Savings</i>	MCI <i>Friends & Family I</i>	Sprint <i>Sprint Sense</i>	AT&T <i>True Reach Savings</i>	MCI <i>Friends & Family I</i>	Sprint <i>Sprint Sense</i>
1/1/92	n.a.	12.2	n.a.	n.a.	0.365	n.a.
1/1/93	n.a.	11.7	n.a.	n.a.	0.340	n.a.
1/1/94	n.a.	12.2	n.a.	n.a.	0.373	n.a.
1/1/95	11.2	14.1	n.a.	0.299	0.440	n.a.
1/1/96	10.5	14.5	10.0	0.318	0.508	0.284
1/1/97	11.2	15.5	10.0	0.371	0.546	0.296
6/1/97	11.2	15.5	10.0	0.371	0.546	0.296

Notes:
 Prices based on 50 four minute phone calls.
 Price-Cost Margin equals [(Price-Marginal Cost) / Price] based on Price shown in the previous columns and Marginal Cost including Access and Network Costs (as defined in my Affidavit, pages 27-30).

14. However, as pointed out by witnesses for these companies, there are “lower-priced” plans that have been introduced recently. AT&T’s *One Rate* plan now offers 15 cents per minute, on this 3,000 mile call as well as on all other calls anytime. MCI with *MCI One* also charges 15 cents per minute for all calls;¹² as does Sprint with its *Sprint Sense Day* plan. Switching from standard or other discount plans to these newer low priced plans is not costless: all plans have specific, different benefits and/or disadvantageous requirements; the switching process involves transaction costs; and one can encounter higher prices (e.g., AT&T’s *One Rate* is three cents per minute higher than its *True USA* on nights and weekends). From the aggressive language of these witnesses for the long-distance companies, obviously they would like the Commission to believe any aspect of non-competitive market behavior before these plans is history – now markets are “competitive.” Other interpretations are more plausible, because they

¹² If a customer’s monthly bill exceeds \$25, the rate for *MCI One* is 12 cents per minute.

follow from changes in these markets. The impending elimination of tariffing at the FCC imposes information and transactions costs on the large carriers that makes tacitly collusive prices at 15 cents per minute more attractive. The impending entry of the Bell operating companies implies a new, lower price schedule (see section IV below). It is too early to develop an empirical analysis that can determine which of these hypotheses are most probable.

15. The long-distance company experts provide another description of these price increases. They argue that increasing price-cost margins are not relevant, because customers avoid the underlying price increases by switching from higher to lower price discount plans as new plans arrive on the scene. Rather than competition breaking out to generate price declines for standard service, the plans reward the caller as long as she hops and skips from her old plan to the latest new discount plan. This caller may be Alice in Wonderland, not the person that has stayed with plans for considerable periods through the 1990s. Moreover the long-distance company experts do not provide any information on who she is – on how many customers with what part of total call volume have avoided these continual price increases on their existing standard and on their initial discount plans over the last several years by leaving for new plans.¹³ In any event, plan “shopping,” as assumed, does not provide an unambiguously preferred substitute in the form of the same service at lower prices. The newer discount plans have various requirements and conditions of their own and, thus, are not perfect substitutes for the older plans. Some offer tiered monthly purchase requirements to earn discounts (e.g., *MCI One* requires a minimum bill of \$25 to obtain the 12 cent per minute rate); require minimum monthly bills (e.g., *MCI One* has a minimum monthly charge of \$5); or, in the case of *Sprint Sense*, provide little benefit versus standard MTS unless the customer avoids making calls during business hours.

¹³ Professor Hall does present some information on MCI’s customers use of discount plans: “Almost 80% of MCI’s customers use plans other than the standard rate” (Hall Affidavit, p. 48). Professor Hall states that this high use of discount plans assures that customers are not subject to price increases: “The prices paid for most calls have fallen even though standard rates have risen” (Hall Affidavit, p. 48). As will be shown shortly, even the majority of customers on MCI discount plans have been subject to price increases in recent years.

16. There is no evidence that long-distance subscribers skip from plan to plan in the way that experts for the long-distance carriers assume. A survey performed for Ameritech indicates that a large percentage of its customers have never moved at all from one long-distance plan to another and, thus, have been subject to price increases on older plans.¹⁴ This survey, based on a panel of customers, included assessment of customers' bills in February and March 1995 and again in November and December 1996. Combining the survey results into two periods (early 1995 and late 1996) permits a comparison of plan usage patterns over a 21 month period. Over 53% of the customers were on a standard MTS plan, and very few of them went to a discount plan. By late 1996 only 3.7% of the surveyed customers migrated from standard to some discount plan during this time frame. Moreover, 40% of those on discount plans remained on the same plan throughout the 1995 to the late 1996 time period. They were necessarily subject to price increases on their plans.¹⁵ Overall, at least 71.6 percent of the total customers were subject to price increases.¹⁶

17. Of particular interest is the expert witness testimony for MCI, which ignores tests for competitiveness over the long run to focus on inferences from their very latest price. Professor Hall acknowledges that I did in fact examine prices in discount plans, but notes that I

¹⁴ The survey was performed by Paragren, Inc.

¹⁵ Such price increases are demonstrated in Table Three, which shows the increasing price (and increasing price-cost margin) for the *True USA* and *Friends & Family I* plans from early 1995 to late 1996.

¹⁶ Consider the results from a comparison of these survey data with Professor Hall's data on MCI's discount plans. Professor Hall states that 22% of MCI customers are not on discount MTS plans (Hall Affidavit, p. 49). If correct, this implies based on the survey data in late 1996 that 22% of MCI's customers were on its standard MTS plan; 59% were on *Friends & Family I*; and the remaining 19% were on other MCI discount plans. Then in Ameritech's service area over 80% of MCI's customers paid standard or *Friends & Family I* rates. Note that *Friends and Family I* rates yield a 0.9 cent per minute daytime and 0.5 cent per minute night/weekend cost saving over MCI's standard MTS service based on prices in Tables One to Four. Since the prices of MCI's standard and *Friends and Family I* plans increased from early 1996 to the present (see Tables One to Four), at least 80% of MCI's customers paid higher rates despite the introduction of its *MCI One* plan.

did not examine those in the most recent MCI plan (*MCI One*) which he alleges reflect increasingly competitive market conditions.¹⁷ But MCI's new plan copies the 15 cent per minute rate offered by AT&T in its *One Rate* plan, except that customers who spend more than \$25 per month can obtain a 12 cent per minute rate. It's *deja vu* again, with MCI replicating the tariffs of the dominant carrier, except with selective reductions to certain classes of customers. However, suppose, *arguendo*, that Professor Hall is correct and *MCI One* does in fact represent, at last, a competitive pricing initiative. Since the price of this plan is lower, then other MCI plans perforce must be non-competitive. This has two important implications: (1) most MCI customers do not pay competitive rates since they are not on the *MCI One* plan, and (2) all of MCI's prices for the last ten years have been non-competitive and could become so quickly once again. The same follow from Sprint's in-house witness Ms. Banks where she acknowledges that its standard MTS rates "are significantly higher than (those for) Sprint's competitive products, *The Most* and *Sprint Sense*."¹⁸ This long-awaited admission that only one price is competitive has the implication that Sprint's standard MTS rates, as well as those in other plans in excess of *The Most* and *Sprint Sense*, have never been competitive.

18. But then the question is why should the Commission accept this conclusion of the affiants that two recent discount plan offerings (i.e., *MCI One* and *Sprint Sense*), make a permanent shift – that of tectonic plates in the bowels of the earth – from non-competitive to competitive pricing? These plans and AT&T's *One Rate* are currently subscribed to by a limited fraction of all subscribers, and the industry's prior history, of more than ten years of tacitly collusive pricing by these long-distance carriers, makes it as likely that the shift to competitiveness is not here, now, but will come in the next move, after the entry of the Regional Bell Operating Companies.

¹⁷ Hall Affidavit, pp. 71-72.

¹⁸ Banks Affidavit. p. 6.

II. THE SUPERIORITY OF ACTUAL TARIFF PRICES TO AVERAGE REVENUE PER MINUTE AS A MEASURE OF MARKET PRICES

19. Every expert working for the long-distance companies claims that ARPM yields a more “meaningful” measure of price than those taken directly from the tariffs of the interexchange carriers.¹⁹ ARPM is not an appropriate measure of market price for economic and statistical reasons I make clear in Appendix A of my initial affidavit. Unfortunately when faced with arguments sufficient to dispel further discussion on the technical flaws of this index number, these experts do not abandon ARPM but rather go on using their flawed measure. This pattern of behavior makes further analysis of their untenable position a waste of time. But there is another approach to evaluating any economic analysis of competitiveness based on ARPM data. One can accept, *arguendo*, ARPM as a measure of price. The resulting “ARPM-cost margin” as a measure of competitive behavior demonstrates the same increasing trend identified with the price-cost margin based on actual tariff prices.²⁰ Thus, even under this flawed measure, long-distance markets have not become more competitive since the 1984 AT&T divestiture.

20. Professors Bernheim, Ordovery, and Willig (as well as Hall, and Hubbard and Lehr) do not present factual support for their position that ARPM is an index of price that meets substantive requirements for measuring value in transactions between carriers and subscribers. They do not state that ARPM can be used to develop an index that measures what consumers pay when they place a long-distance call. In fact no consumer has ever picked up the phone, placed a call, and paid ARPM.²¹ Bernheim, et. al., provide commentary, although no documentation, on the fact that ARPM as a price index for long-distance services is subject to important changes with other non-price determinants. Variations in (1) the size of customers’ monthly bills; (2) the

¹⁹ MacAvoy Affidavit, Appendix A, pp. A-11 to A-17.

²⁰ MacAvoy Affidavit, Appendix A, pp. A-14 to A-17.

²¹ This is a “measure zero” event since it occurs with a vanishingly small probability. That is, the probability that the tariff price of a call exactly equals ARPM to an arbitrary accuracy is approximately zero.

distribution of calls by day, evening, and night/weekend; (3) the distribution of calls by mileage; and (4) the average number of minutes per call all cause variations in ARPM that become misidentified as price changes. For example, a relative increase in customers' monthly usage levels could cause ARPM to fall, as would relative increases in evening calls, short-distance calls, and longer calls, so that it appears that price is declining. Bernheim, et. al., claim these composition factors are unimportant because (1) the FCC data show large decreases in AT&T's best prices, and (2) they have not seen evidence in confidential company reports available to them that such composition effects have been important. Neither they nor Professor Hall present any empirical evidence to support this position. But markets have grown, lower priced wholesale services have grown more rapidly, and service offerings have widened, which would cause ARPM to decrease without any decrease in transactions prices.

21. Nevertheless, experts for the long-distance companies use ARPM minus access costs, as their (only) crude measure of price-cost margins, to argue a trend of falling margins over time.²² I assume for the sake of completing his type of analysis that this approach can be used. Dividing this margin by ARPM results in a crude approximation of the Lerner Index. In October 1994, AT&T (under the signature of Mr. Alex Mandl) sent a letter to FCC Chairman Hundt that contained an attachment showing AT&T's ARPM for "Interstate (Switched)" calls. From these data this "ARPM-cost margin" (i.e., ARPM net of average interstate access costs, divided by ARPM) can be constructed for a ten year period. These margins increased by more than 20 percent over this period (see Table Five and Appendix A-Figure One in my affidavit, p. A-15). Further along these lines, the long-distance company experts extol a table prepared by Dr. Lande

²² Bernheim, *et al.* dismiss the observed trend of increasing ARPM-cost margins reported in Appendix A of my affidavit. In their one-sentence paragraph 194, they state these findings are "plainly contradicted by the evidence discussed in the Bernheim and Willig manuscript, and cited extensively by the FCC in its decision to streamline the regulation of basket 1 services." There is no such evidence in their manuscript, nor does the cite to the FCC provide the confirming evidence they state is there.

of the FCC that shows a fall in ARPM net of access costs.²³ Given that the monetary measure of ARPM net of average interstate access costs is not an economically relevant measure of competition – in each market the measure would be different, regardless of competitiveness – a reconstruction of his estimates can be undertaken by dividing them by the relevant ARPM. These Lande-margins reveal that the ARPM-cost margin increased over the period 1992 to 1995 by approximately one percent per year (as in Table Five).

TABLE FIVE
ARPM-COST MARGINS FROM FIVE STUDIES

Study	Time Period	Firm/Industry Coverage	Terminal Year ARPM-Cost Margin as a Percentage of Initial Year
AT&T (Mandl)	1984 - 1994	AT&T	122
FCC (Lande)	1992 - 1995	All Interstate Carriers	103
Hall	1985 - 1996	AT&T, MCI, and Sprint	93 ¹
Hubbard and Lehr	1984 - 1996	AT&T	134
Bernheim and Willig	1984 - 1995	AT&T	118

¹ This result depends solely on the first year (1985) of Professor Hall's study, which has a higher ARPM-cost margin than the subsequent years. The margin fell one year, in 1986. The ARPM-cost margin in 1996 exceeds that in 1986, and the margin increased four percent from 1995 to 1996.

²³ Federal Communications Commission (December 1996), "Telecommunications Industry Revenue: TRS Fund Worksheet Data, Table 3.

22. Professor Hall has undertaken another ARPM analysis,²⁴ and his results confirm those from the AT&T and FCC studies. His data are confidential and have been adjusted to merge two disparate average revenue series without revealing the underlying calculations. All that has been reported are ARPM and the absolute difference between ARPM and access charges. But checking Professor Hall's margin by his ARPM results in a series for an ARPM-cost margin that increased by five percent from 1987 to 1996,²⁵ with most of the increase – four percent – taking place from 1995 to 1996. Assuming, *arguendo*, that ARPM is a legitimate measure of the prices customers pay, then the ARPM-access cost margin (divided by ARPM) is a rough approximation to the actual price-cost margin. Professor Hall's ARPM-cost margin has not declined in the past ten years despite large reductions in market concentration (see further notes in Table Five).

23. Intuitively, the error in using the absolute difference between price and marginal cost as a measure of competitiveness (verses the correct measure of price minus marginal cost, divided by price) can be explained as follows. The absolute difference between price and marginal cost varies with a change in price according to a constant (see footnote 23). Thus, suppose that

²⁴ Hall Affidavit, p. 45. Professor Hall has also taken the position that the absolute value of the margin, not the ratio of the margin to price, is what is relevant, but in his published work he takes the position that (price / marginal cost) has theoretical validity, *see* Hall, R. (1988), *The Relation Between Price and Marginal Cost in U.S. Industry*, JOURNAL OF POLITICAL ECONOMY, pp. 921-947. In the research reported here, the correct ratio is (price - marginal cost) / price since it (the "Lerner Index") equals $(HHI (1 + \nu)) / e$, for the HHI, the coefficient of conjectural variation ν , and the market elasticity of demand (in absolute value) e . If instead the absolute value (price - marginal cost) is used, then it equals $(price)(HHI (1 + \nu)) / e$. A reduction in (price - marginal cost), as in Dr. Lande's work, is only indicative of increased competitiveness if caused by reductions in HHI and ν . That is, reductions in (price - marginal cost) equal to those in price (or $d(\text{price} - \text{marginal cost}) / dp = k$ (a constant)) have no implication for competitiveness. That is why it is more convenient to use the Lerner Index.

²⁵ The first year (1985) of Professor Hall's study has a high ARPM-cost margin of 0.643. Access charges used in Table Five are taken from *Affidavit of Robert Hall Before the Federal Communications Commission, In the Matter of Application of SBC Communications, Inc., Pursuant to Section 271 of the Telecommunications Act of 1996 to Provide In-Region, InterLATA Services in Oklahoma*, CC Docket No. 97-121, April 1997, p. 12. This was done because Professor Hall made an error in the calculation of access charges in his affidavit regarding Ameritech Michigan, but he did not make that error in his SBC Oklahoma affidavit.

the price of a service equals \$2 and the marginal cost equals \$1, and let the price decrease to \$1 and the marginal cost to \$0.50 so that the absolute difference falls. But since the change in the absolute difference varies with the change in price according to a constant, it necessarily follows that the ratio of the absolute difference to price must be the same in both cases (i.e., $(\$2 - \$1) / \$2$ equals $(\$1 - \$0.50) / \$1$). Thus the fall in the absolute difference has no implication for competitiveness. A reduction in the absolute difference between price and marginal cost is only indicative of increased competitiveness if the ratio of that difference as a percentage of price (i.e., $\text{price} - \text{marginal cost} / \text{price}$) does not remain constant but rather declines as a result of reductions in market concentration (HHI) or increased price competitiveness on the part of firms (conjectural variation).

24. Finally, both the affidavit of Professor Hubbard and Lehr, and the so-called "book manuscript" of Bernheim and Willig, attached to their affidavit, contain figures based, again, on confidential AT&T data which show that the absolute difference between ARPM and access costs declined over the period 1984 to 1996.²⁶ They too fail to understand that the absolute difference between price and marginal cost is irrelevant as a measure of market performance. Taking their margins as a percentage of ARPM, however, the resulting margin series increased over this period (see Table Five).

25. These five separate studies, by FCC staff, and experts retained by AT&T and MCI, show a convergence in trend lines of price-cost margins. To be sure, ARPM does not measure price, and access charges are not a complete measure of marginal costs; but each of these people constructing these series assumes that they are useful approximate measures, at least for the purpose of rebutting my findings on actual prices and marginal costs. Table Five illustrates their convergence. Taking only the simplest measure of trend, terminal year divided by initial year, for ARPM-cost percentage margin, the trends are all positive since the ratios exceed one hundred.

²⁶ Hubbard and Lehr Affidavit, Figure Three; Bernheim, B. and Willig, R. (October 1996), *The Scope of Competition in Telecommunications*, chapter two, Figure Six.

(The Hall study, with a 93 percent value, is the exception that proves the generality of the result: after a very high margin in 1985, there was a drop in 1986 to a low in 1987; but increases since then make the 1987 to 1996 ratio equal to 105).

26. One has to conclude that flawed ARPM data support and confirm findings based on actual price-cost margins, to the effect that long-distance markets have not become more competitive since the AT&T divestiture. ARPM margins have increased, which would indicate that markets have been in a process of becoming less competitive. Even if there are problems with the estimates of ARPM, that create downward bias, the upward movement in price cost margins from the emergence of tacit collusion overwhelms the bias. Even if one believed that ARPM was an appropriate measure of price, these five studies show that the margin derived from that measure has increased, demonstrating again the lack of competitiveness in the market.

III. PRICE DISCRIMINATION

27. The existence of numerous tariff plans for message toll service raises complex issues as to the competitiveness of the rate structure. The economic experts for AT&T, MCI, and Sprint have offered opinions that some one of the discount tariff schedules is competitive, since its prices are lower. To describe the distribution of prices, across all plans, as competitive, one would expect that they would have attempted to establish that price differences equal cost differences for the services of one plan over the other. But none has offered evidence that price variations are consistent with underlying cost variations. And the available evidence suggests that carriers' marginal costs do not vary sufficiently by calling plan to account for the price differences. In this case, the observed rate structure results from a type of price discrimination inherent in non-competitive market behavior.

28. As acknowledged by all parties, there can be large differences between the prices of standard and discount MTS plans. The price of a one minute weekday-daytime call from Washington to Los Angeles in AT&T's standard MTS plan equals 31 cents, but the price under

its *One Rate* discount plan equals 15 cents (see Tables One and Four). The price differences would not constitute a pattern of price discrimination if they were equal to the differences in marginal costs of the two services. Price discrimination can be defined “as the sale of two or more similar goods at prices which are in different ratios to marginal cost.”²⁷ Thus, in the present case, AT&T’s standard MTS and *One Rate* prices would not be discriminatory if the ratio of price to marginal cost were the same for each. But this appears unlikely – in order for this equality in the ratios to hold, the marginal cost of AT&T’s standard MTS would have to be more than twice as high as the marginal cost for its *One Rate* plan. Since I can only approximate costs from public data, I rely on AT&T’s experts to provide accurate marginal costs from company sources. But none of AT&T’s experts have even alleged that such large differences in marginal costs among MTS plans exist.

29. This is not surprising since the overwhelming majority of AT&T’s marginal cost of MTS is accounted for by access costs, which do not vary by MTS plan. The current average access cost per conversation minute for an interstate call equals 6.04 cents (see FCC Monitoring Report, Table 35). Suppose, at one extreme, AT&T incurred marginal, non-access costs of providing its *One Rate* plan equal to zero (an assumption that maximizes the explainability of the “competitive” rationale for price differences). In this case, the ratio of the discount *One Rate* price to marginal cost would equal 2.48 (i.e., $0.15/0.0604$). In order for the ratio to be the same for AT&T’s standard MTS plan, and therefore there is no discrimination, its marginal cost would have to equal 12.5 cents per minute, an increase of 6.5 cents per minute. This is at least one third more than the high cost estimates of Hubbard and Lehr,²⁸ the least reliable source.

30. Assume contrary to current knowledge that non-access marginal costs for *One Rate* were as high as 9 cents per minute so that the price to marginal cost ratio for *One Rate*

²⁷ Stigler, G. (1966), *THE THEORY OF PRICE*, London: The Macmillan Company, p. 209.

²⁸ Hubbard and Lehr Affidavit, p. 71, note 97. Bernheim, Ordoover, and Willig’s comment that one must consider a carrier’s fixed costs cannot ameliorate this problem since the fixed costs would have to be allocated or “distributed” to both standard and the *One Rate* plan.