

to 1996. H&L go on to claim that my price estimates are contradicted by Ameritech affiants, Robert Crandall and Leonard Waverman, who find that the “national average interLATA revenue per minute is currently more than 15 cents, significantly less than MacAvoy’s estimates.” (H&L, p. 69.) As shown in Tables One to Four of my Reply Affidavit, my tariff prices are not inconsistent with those levels (although I do not record combinations of retail and wholesale prices in one index, as in ARPM). The problem is one of relevance in such a comparison. The level of average revenues has never been used to evaluate competitiveness nor is it possible to make a case that this measure, however estimated, is a useful indicator of competitiveness.

7. *H&L claim that I rely on “an ad hoc (once-and-for-all) estimate of incremental network cost. . . .”* (H&L, pp. 69-70.) H&L fail to recognize that my estimates of incremental network costs for WATS, 800, and Combined services come directly from AT&T. (MacAvoy Affidavit, p. 28.) Moreover, the estimate of incremental network costs for MTS utilized in my Affidavit (obtained from a study by Wharton Econometric Forecasting Associates and supported by a study conducted by Strategic Policy Research) is essentially identical to the network costs reported by AT&T for the above services, differing by no more than \$0.003 per minute.

8. *“The portion of the non-network costs cited above which are not incremental (and hence included in a proper estimate of incremental margins) are fixed and still need to be recovered. (sic) If fixed costs are rising over time, prices could fall by less than the fall in access charges, invalidating MacAvoy’s inference based on trends in price-cost margins.”* (H&L, p. 72.) Contrary to H&L’s claims, price is determined in competitive markets by marginal costs of the enterprise. Fixed costs are irrelevant to price determination and only come into question on the entry or exit decision for fringe firms. H&L go on to state that “given the significance of fixed costs in long-distance

telecommunications, a proper test of competitiveness relies on average costs, including the user cost of fixed capital.” (H&L, p. 72) H&L seem to be of the view that if fixed costs and therefore average costs rise, then the competitive price also will rise. This is a logical error in microeconomic theory: regardless of changes in fixed cost, price and output remain unchanged. As any textbook puts the argument: “When a firm’s fixed cost increases, its profit-maximizing price and output remain completely unchanged, so long as it pays the firm to stay in business.”² Their following statement, that, assuming rising fixed costs, “prices could fall by less than the fall in access charges, invalidating MacAvoy’s inferences,” compounds the error.

III. RESPONSES TO AFFIDAVIT OF ROBERT E. HALL ON BEHALF OF MCI

Professor Hall’s criticisms do not differ from those offered by Bernheim *et al.* and Hubbard and Lehr. Rather than confronting my measures of the Lerner index based on transactions prices, Hall, as well as the others, proposes to substitute revenue measures that lack theoretical validity. Rather than repeat my rejection of this argument as irrelevant, I respond here to additional points raised in Professor Hall’s affidavit.

1. *Professor Hall disputes data from PNR and Associates that 65 percent of residential customers pay standard rather than discount plan.* (Hall, pp. 49-50.)

Professor Hall is critical of my use of the PNR survey data. He claims that “perhaps as many as one-fourth” of customers do not subscribe to any low-price plan because they have no toll usage. He also says the sample is biased in favor of smaller users, that no

² Baumol, W. and Blinder, A. (1997), *ECONOMICS, PRINCIPLES AND POLICY*, 7th ed., The Dryden Press, p. 197.

analysis (“to my knowledge”) has been made of survey non-respondents to validate the PNR sample, and that the bias from the claimed selective response “appears to be serious.” (Hall, p. 50.) I understand that PNR has rejected Professor Hall’s assertions, noting that they provide both unweighted (raw) data to clients, as well as panel data containing demographic information weighted to match realized values in specific census areas, so that there is no “non-response bias.” Moreover, Professor Hall’s statement that, according to PNR data, 54 percent of MCI’s customers spent \$10 or less on long distance is misleading. That statistic, from a 1995 survey, was for all phone bills in the sample that had at least one MCI call. Thus, even a bill with a single MCI call made on a payphone was included in the statistic cited by Professor Hall. The actual percent of customers presubscribed to MCI that had monthly bills of less than \$10 was 41% as of 1995.

2. *“If, as some economists have concluded, the long-distance industry earns abnormal profit from the market power that results from limited competition, then the profits of the established sellers should exceed the profits of the would-be rivals that are locked out of the market.”* (Hall, p. 61.) This is a mistaken argument. The profit rates of return of the potential entrants are determined by their activities elsewhere. They may or may not be greater than those of incumbents. What is relevant is the relative rate of return on new investment from entry into long distance over that on alternatives elsewhere. These activities may or may not include excess profit from other types of service.

3. *Professor Hall’s misleading statements on price measurement.* Professor Hall argues that the prices in Figures One to Eight of my affidavit “for a switched long-distance service are in the range of 22-28 cents per minute, essentially at the higher standard rates set by the three carriers he considers. It is impossible for all long-distance customers to be paying prices in this range and for revenue per minute to be only 14.5 cents.” (Hall, p. 70.) This is distracting because he never proves his point. Professor Hall’s 14.5 cent

ARPM apparently applies to MTS services, but only one of the figures he cites, Figure One, reports MTS prices, for which standard plan prices on MCI in 1996 were approximately 22 cents per minute given the assumed calling pattern.. Professor Hall states that this cannot be the price paid by *all* MCI customers, and of course it cannot. I never claimed that all of MCI's customers were on its standard MTS plan and had the calling pattern used to calculate this price. If all calls were for half the distance assumed, price would be one third less. But MCI's customers on its standard MTS plan pay exactly the prices shown for that call nevertheless (see Tables One and Two of my Reply Affidavit).

4. *“Under Professor MacAvoy’s view, if every carrier announced new flat rate plans at a penny a minute, and all customers switched to the new plans, the proper price for the analysis of price-cost margins would still be his 23 cents, derived from irrelevant unused standard plans..”* (Hall, p. 71.) Professor Hall’s assumptions make standard and discount plans identical, and that all customers know that. If all customers switched to the new plan, then there would be no standard plan. Why not save the costs of the new plan and drop the price of the standard plan to one cent per minute? Of course this hypothetical bears no relation to reality since, for example, at least 80 percent of MCI’s customers in Ameritech’s service region have not switched to *MCI One* and, therefore, have instead experienced price increases on its standard and *Friends and Family* plans (see also Reply Affidavit, section I).

5. *“Professor MacAvoy’s calculations appear to overstate prices even for customers paying standard rates.”* (Hall, p. 72.) Based on proprietary data, Professor Hall has estimated the average price for all MCI customers paying standard rates. This price is said to be less than the standard rate for MCI residential customers shown in my tables. The

difference is because the average customer call profile – time-of-day and mileage span – varies from those in my representative call. The difference is not “error” because MCI customers are not all customers, and I did not attempt to develop a price index to represent an average (weighted or arithmetic) for MCI customers only.

6. *“Professor MacAvoy makes another puzzling calculation.”* (Hall, p. 75.)

Professor Hall claims that I stated in the Appendix to my Affidavit “that competitiveness can be assessed from the margin of price over the access charge.” I have not made such a statement. My price-cost margin calculations use marginal costs, as Professor Hall claims is appropriate: “Competitiveness can be assessed by looking at the margin of price over marginal cost.” (Hall, p. 75.) Professor Hall appears here to be referring to my modification of *his analysis* of certain data from a FCC study by Jim Lande.³ Professor Hall noted that data in Figure 3 of that study showed ARPM net of access cost had been declining,⁴ which might then lead to an inference that price-cost margins were declining over the last several years. What Professor Hall did not consider was that ARPM minus access cost as a percentage of ARPM was increasing. Appendix A to my Affidavit shows that had Professor Hall calculated ARPM-cost margins rather than the absolute difference between ARPM and access costs, he would have found that this highly approximate measure of the Lerner-margin has been increasing, as have the more complete and less approximate measures in my affidavit and in Part III of my Reply Affidavit.

7. *Mistakes in calculations, continued.* (Hall, p. 76.) Here Professor Hall says that I make mistakes in marginal cost estimates by relying on WEFA estimates (his citation to

³ FCC (December 1996), *Telecommunications Industry Revenue: TRS Fund Worksheet Data*, Figure 3.

⁴ See Hall, R. (1995) *Long Distance: Public Benefits from Increased Competition, 1995 Update*.

MacAvoy affidavit, p. 33). This is misleading. My estimates of incremental network costs for WATS, 800, and Combined services come directly from AT&T. (MacAvoy Affidavit, p. 28.) Moreover, the estimate of incremental network costs for MTS utilized in my Affidavit was not unique to WEFA, but essentially identical to the network costs reported by AT&T for the above services, differing by no more than \$0.003 per minute. I could just as well have adopted the AT&T estimate.

8. *“Although the approach has some practicable value, the theory of conjectural variations cannot be rationalized in terms of formal game theory which provides the basis for most modern analysis of oligopoly.”* (Hall, p. 78) Perhaps so, but formal game theory has no practical value in the current context, i.e., ascertaining the extent of competition in long-distance markets. Finding competition is an empirical matter, and game theory conditions are not subject to testing from market prices and other aspects of market behavior. It is unfortunate that Professor Hall has chosen to become engaged in such theoretical matters and not provide proof of the state of current competitiveness. The only data he has presented are his series for ARPM net of access costs, and they support the conclusion that markets in the 1990s have become tacitly collusive.

9. *Professor Hall’s views on my findings as to relationships between dominant firm prices and outputs.* (Hall, p. 79.) Professor Hall attributes to me descriptions of interactive price/output relationships among AT&T, MCI and Sprint. The first is that MCI and Sprint’s price-cost margins are high relative to their market shares and that “[MacAvoy’s] model can explain this relation only by attributing a belief that high prices in relation to cost are optimal because the firms [MCI & Sprint] control AT&T’s output.” (Hall, p. 79, paragraph 223.) This is not my explanation. Rather, these margins are high because these two firms have chosen strategies to cut their sales more than proportionate to any small sales increase effected by AT&T. Professor Hall does recognize this inverse

relation when he states that my “model explains this relation by attributing a belief to AT&T that the rest of the sellers will raise their output if AT&T decreases output, a belief that the market is fairly competitive,” (Hall, p. 79) but he exaggerates magnitudes in his examples to produce bizarre results. The estimated conjectural variation for AT&T is a small negative number, so that I develop the hypothesis that AT&T’s conjectural variation is Cournot – that is, AT&T when restricting its output expects no response from other firms; but the other firms restrict their output more than proportionately. With AT&T implementing a Cournot strategy, and MCI with Sprint developing responses that restrict total output, then the result is market behavior that is tacitly collusive.

10. *Professor Hall’s Excel example.* (Hall p. 80.) In his attempt to critique my argument regarding firms’ reactions to rivals’ changes in prices and outputs, Professor Hall develops a case for Excel assuming its price-cost margin is similar to AT&T’s (Hall, p. 80). But there is no reason to make that assumption. He has not offered any evidence regarding Excel’s price-cost margins, so he cannot engage in a “repetition of my method” for Excel. Contrary to his assertion that “Excel has no fundamental disadvantage in the market,” Excel does have a fundamental disadvantage relative to AT&T, MCI, and Sprint in that it has no facilities and must rely on being able to resell the services of facilities-based carriers. I would not expect Excel’s price-cost margin to equal that of AT&T, but rather to be half or less of AT&T’s margin. Moreover, I would assume that Excel encounters limits on demands at current prices specific to the services and geographic areas in which it specializes. Within such market context, it would best be confirmed theoretically to have a coefficient of conjectural variation like that of AT&T’s. But this is all imaginary and thus without evidentiary foundation.

11. *“Professor MacAvoy’s analysis of the effect of Ameritech’s entry control of a long-distance carrier.”* (Hall, p. 83 *et seq.*) Professor Hall criticizes my benefit

estimation by mischaracterizing my pre-entry price of 15 cents per minute, asserting it contradicts my “claim that consumers are paying more like 25 cents.” I did not state that all consumers are paying “like 25 cents.” Rather, I show that consumers purchasing standard MTS services with a certain representative calling profile pay approximately 22 cents per minute (see Figure One in my Affidavit) and that consumers purchasing discount MTS services pay approximately 15 cents per minute (see Figures 21 to 23 in my Affidavit). Consumers making short-distance calls on the weekend pay less ten cents a minute (a price well established as part of a tacitly collusive plan). In order to accommodate my estimate of the welfare gains from Ameritech’s entry into long-distance markets to callers in that state making more calls on standard plans for 500 mile distances I used the 15 cents per minute estimate.

12. *Professor Hall’s analysis of the determination of market shares in my benefit study.* (Hall, p. 84.) Professor Hall asserts that the “central defect” in my benefit calculation is the “erroneous model of the determination of market shares.” Professor Hall plays a word game with Excel theoretically increasing its output to 50 percent of the market based on a certain hypothetical conjectural variation. This should be rejected on grounds that Excel does not have market presence beyond that of a reseller. The projected Ameritech market share is based upon market research conducted by Professor Itamar Simonson; his research found that the value of one-stop shopping for local and long-distance provided by Ameritech gave it presence that Excel would not have.

IV. COMMENTS OF MARYBETH M. BANKS, SPRINT COMMUNICATIONS COMPANY

1. *Ms. Banks uses various indicators of competitiveness which have no basis in economics.* According to Ms. Banks, being “bombarded by full-page newspaper ads and television commercials” is a measure of increased competitiveness. She states that

“competition is also evidenced by the significant declines in concentration in the long-distance industry.” These are false tests. In making her first claim, Ms. Banks contradicts elementary theory demonstrated over forty years ago, to the effect that a firm’s advertising expenses are determined by (1) how advertising shifts the demand function and (2) the level of price-cost margins. This “Dorfman-Steiner” condition⁵ that characterizes firms’ advertising expenditures implies that the greater the increase in demand and the larger the price-cost margin, the more profitable it is to advertise. As firms’ price-cost margins increase, and thus as markets become less competitive, advertising expenditures should increase as a percent of sales revenues. Ms. Banks’ first test is thus false. Her second test, that market structure determines competitiveness, has been rejected in the current textbooks in industrial organization, and it would be a waste of paper to go through once again why one cannot assume that markets with three firms possessing 80 percent of sales are competitive because those three are losing one or two percentage points of sales to fringe resellers.

2. *MacAvoy’s pricing data reflect only a non-representative fraction of the long-distance market.* (Banks, pp. 5-6) Ms. Banks criticizes my use of Sprint plans (MTS, Sprint *Select Day Plan* and *Sprint Plus Plan*) for measuring residential service prices of just Sprint subscribers. She claims that the bulk of Sprint’s customers are on newer plans: “These three products are subscribed to by less than a quarter of Sprint’s residential and small business customers . . . the majority of Sprint’s residential customers currently subscribe to Sprint Sense.” (Banks, p. 6) In my Reply Affidavit, I analyzed prices for the two plans identified by Ms. Banks (i.e., *Most II* and *Sprint Sense*) and determine that

⁵ See Dorfman R. and Steiner, P. (1954), *Optimal Advertising and Optimal Quality*, 44 AMERICAN ECONOMIC REVIEW 826; Telser, L. (1964) *Another Look at Advertising and Concentration*, 18 JOURNAL OF POLITICAL ECONOMY 85; and Martin, S. (1993), *ADVANCED INDUSTRIAL ECONOMICS*, Cambridge, UK: Blackwell Publishers, p. 137.

price-cost margins on these services have increased as well. Her statement on percentages of subscribers under various plans is the first to make them public. They have not been released before, and – even now – are not documented. Even so, her argument cannot counter the fact that I have applied price theory to products that are continuously in the market and are subscribed to by Sprint customers who have decided not to change plans. That Sprint customers are so proportioned among plans is indicative of the fragmentation of the market. AT&T, for example, has a majority of customers on older plans and prices in the older Sprint plans could be more indicative of competitiveness because they are comparable to AT&T's prices for similar plans subscribed to by the majority of MTS customers nationwide.

3. *Ms. Banks states that "there are well established and accepted ways of measuring price changes over time, but these have been ignored by MacAvoy."* (Banks, p. 5.) This is bluster. She has not provided a foundation for any such "well established" methodologies that I have not used. The single best way of measuring a price change is to estimate prices over time for the same product. Indeed, this is what Ms. Banks does when she calculates price trends for individual Sprint *products* in her affidavit Figures 1 to 3; those prices show substantial increases for each product. To ignore those increases by having the hypothetical customer switch from product to product as the old product price increases is an *unaccepted* way of measuring price change. To measure trend in breakfast cereal prices by changing brands as prices all go up, always switching to the low-priced brand, is economically meaningless.

4. *Contract tariffs determine wholesale prices.* (Banks, pp. 6-7.) Banks alleges that I omit competitive products specified by contract tariffs – including approximately 1,600 contract tariffs filed by Sprint. Her argument is that any competitive analysis of the long-distance market must consider this factor since "substantial volumes of traffic are now

carried at these contract rates.” Ms. Banks’ statement simply supports a finding of price discrimination. As stated in my Reply Affidavit, to describe the distribution of prices, across all plans, as competitive, she would have to establish that price differences between Sprint’s Dial 1 WATS, TMFB, Business Sense, and contract tariffs were all equal to cost differences for the services of one plan over the other.

5. *Sprint Clarity tariff rates are at 7 cents for dedicated outbound and toll free services and 10 cents for switched outbound and toll free service.* (Banks, p. 7.) Ms. Banks offers these particular tariff rates as “far closer to MacAvoy’s estimates of marginal costs – 4 cents for dedicated and 7 cents for switched services.” In making this comparison, Ms. Banks accepts my estimates of marginal costs so that the relevant price-cost margins are 30 to 43 percent for customers “that meet certain requirements” (an undisclosed volume of service). Sprint charges certain business subscribers prices resulting in 30 percent margins, and other business subscribers prices with margins in excess of 70 percent (her estimate for WATS Advantage, see Banks Affidavit, Figure 5). These form a revealing pattern of price discrimination that requires seller market power.

6. *“MacAvoy offers neither explanation nor justification for his failure to include Sprint’s most popular, competitive products.”* (Banks, p. 8.) I can only point to my prior Affidavit and throughout this Reply Affidavit the inclusion of all “popular, competitive products.” Some of these plans entered into my analysis late in the process because they are relatively new on the scene. Their newness is reflected, for example, in Figure One of Ms. Banks’ affidavit where certain products are shown to be without any history of product prices. In fact, they show no price change because they have only been announced. One wonders if Ms. Banks is arguing that competition has only recently broken out, or that it is right around the corner? Certainly, plans without a price history cannot by themselves indicate an association between the Lerner Index and declining HHI.

7. *Sprint Sense*. (Banks, pp. 8-9.) Ms. Banks claims I have got “the wrong facts” when I say that “a Sprint customer pays . . . \$0.10 per minute for all calls made during the evening period, because the 10 cents per minute applies for “calls placed during the off peak period” – i.e., 7 p.m. to 7 a.m. Monday - Friday and weekends. Even on this simple matter Ms. Banks is wrong. The plan I referred to as *Dime a Minute* was a Sprint “promotional offering” that gave customers subscribing to the plan the 10 cent per minute rate during the evening time period. (See Sprint tariff FCC No. 1, 9th revised page 418, issued on October 31, 1995.) She also charges that my use of the product *Sprint Residential Promotion* (which she alleges should be called “*The Most II*”) is inappropriate because according to her there are very few customers for this product. Again Ms. Banks is wrong. Again I used a Sprint “promotional offering,” which I referred to as *Sprint Residential Promotion*, that went into effect prior to the introduction of *Most II*. (See Sprint tariff FCC No. 1, 8th revised page 427.11, issued on January 1, 1996.)

8. *Ms. Banks asserts that use of “correct” price theories “shows the consistency between the HHI and the price-cost margins, and a validation that competition exists in the long-distance industry.”* (Banks Affidavit, p. 10.) Ms. Banks refers here to Figures 4 and 5 attached to her paper. These figures indicate that price-cost margins for the products for which there is a price history, such as *Dial One*, *The Most*, and *WATS Advantage*, have been steadily increasing as the Herfindahl index declines. Banks modifies this analysis by superimposing the price-cost margins for *Sprint Sense* and *Business Sense*. She puts in dots to connect *The Most* with *Sprint Sense* that are so small as to be invisible (an indication that Ms. Banks did not have the courage to argue that these two series are connected for two different plans). There are numerous problems with her analysis. First, the *Sprint Sense* series is not long enough to establish any relationship between margins and concentration indices. Second, the *Business Sense* series consists of two observations

in which price-cost margins increase, connected to a single observation of a margin reduction in late 1995. (With the reduction obviously following from correcting Sprint's price, which was at that point in time significantly higher than those of the other two dominant carriers). Again, this is not sufficient to establish a relationship. Ms. Banks has to resort to assuming that some representative subscriber switches from plan to plan to establish a price series: that is not appropriate because the plans are not equivalent.

9. *"Had MacAvoy used Sprint's most competitive products with the highest usage the price cost margins would certainly have flattened and likely have decreased."*

(Banks, p. 12) In my Reply Affidavit, I analyzed the plan that Ms. Banks represents as Sprints most competitive MTS product, i.e., *Sprint Sense*. I determined that price-cost margins earned on the provision of Sprint's Sense have increased since its introduction in early 1996.

10. *Sprint has examined the price-cost margins based on total revenue for interstate direct distance dialing (DDD) services.* (Banks, p. 13.) Ms. Banks also asserts that ARPM "is a far superior method for measuring trends". Her insistence that ARPM is a measure of "prices" is incorrect because no consumer has ever placed a call and paid ARPM. Moreover, ARPM does not hold constant other factors that cause the index to fall besides the price. These factors include changes in (1) the total size of customers' monthly bills; (2) the 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. But all of these factors affect the price of making a phone call without constituting a reduction in the price level of all calls. If, for example, customers' monthly usage levels increased, then ARPM would tend to fall. ARPM fails as a price index.

11. *All of these callers pay the same tariff rate for the same call.* (Banks, p. 14, quoting Appendix A of my Affidavit at p. A-37.) Ms. Banks argues that in fact all callers do not pay the same tariff for the same call. A residential caller can pay from 10 to 30 cents per minute, depending on her product plan. She misunderstands my argument. Only customers on the same tariff can make the same “call” while customers on different discount plans incur various costs and benefits of their specific plan and as a result do not place the same “calls.” Nevertheless, Ms. Banks acknowledges that customers making calls placed at the same time over the same distance, but on different plans could pay as little as 10 cents and as much as 30 cents per minute. This variation is evidence of Sprint’s ability to price discriminate.⁶

12. *“MacAvoy has misstated the trend in costs for the inter-exchange carriers by overstating the access charges paid by MCI and Sprint in the early years of the period.”* (Banks, p. 17.) Access charges in the early years were higher for AT&T than for MCI and Sprint, but the access service provided to MCI and Sprint was of significantly lower quality. Because of the absence of full equal access, the requirement for dialing extra digits for the non-AT&T long-distance carriers imposed on them the necessity of offering lower quality retail services. The service quality differential and the price differential may or may not have canceled each other; if not then there would have been significant movement of shares to MCI and Sprint. More practically, one can ask if her adjustment makes a difference to the analysis of price-cost margins. The answer is it does not as can be seen by comparing Ms. Banks’ Figure 7 to my prior Affidavit Figure Thirteen. After adjusting for differences in scale in these two charts the adjustment to my Figure Thirteen

⁶ At pp. 5-6 of her paper, Ms. Banks admits that MTS and two early Sprint calling plans (Sprint Select Day and Sprint Plus) are used by less than 25 percent of Sprint’s residential and small business customers. Based on other statements by Banks, it is reasonable to conclude that the bulk of these customers are on MTS and that this percentage is higher for residential compared to small business customers.

suggested by Banks is minimal. Indeed, the adjustment for 1990 to 1991 would appear to move Sprint's price-cost margins from slightly below AT&T's to approximately the same level as AT&T. With this change Sprint and AT&T would have near identical price-cost margins as early as 1990, rather than beginning mid-1991 as with the current version of Figure Thirteen. These two large carriers have near-identical margins, which increase by close to twenty percentage points over the 1990s.

13. *"Because of these differences, AT&T's per-unit access charges are lower than those of its competitors."* (Banks, p. 18.) Ms. Banks asserts that because of its higher volumes, AT&T's per-unit access charges are lower than those of its competitors. She offers no evidence on how much lower. Moreover, her proposed correction would not change the trends in price-cost margins shown in my Affidavit.

14. *"MacAvoy's analysis appears to suggest that competition is absent from the long-distance industry because price-cost margins have not been driven to zero."* (Banks, p. 18.) This is an incorrect statement of my test for competitiveness. Nowhere do I use the level of the margin as a test. Her statement also contradicts other numerous statements elsewhere that appear to acknowledge an understanding of the appropriate test of competition. Banks continues on with an assertion that "the need to recover these significant fixed costs necessarily means that profit margins will not be driven to zero, even in a fully competitive environment." (Banks, p. 18.) This is also an incorrect statement; in a fully competitive environment, price will be driven down to the point where marginal costs equal average total costs (where average total cost is minimized).

15. *"Most especially . . . promotional and marketing costs reflecting vigorous competition for market share have increased."* (Banks, p. 19.) In Appendix A of my Affidavit (pp. A-8 to A-9), I discussed in detail the well-known "Dorfman-Steiner"

condition that characterizes firms' advertising expenditures.⁷ This condition suggests that the higher the price-cost margin, higher the advertising outlay per dollar of sales. Thus, as firms' price-cost margins increase, so should advertising expenditures as a percent of sales revenues. Since the leading carriers' price-cost margins have increased, it is not surprising that their advertising expenditures have increased. Rather than, as Ms. Banks asserts, the advertising outlay trend reflects "vigorous competition," it reflects declining competition. Ms. Banks also suggests that governmentally imposed costs, including payments to the Universal Service Fund program, have increased threefold over the relevant time period. These government fees are taxes that do not affect price-cost margins, nor do they have a role in competitiveness analysis.

16. *"It is unclear why competition would not be evidenced by share losses suffered by one or more of the 'leading carriers' at the hands of market competitors that are not classified as leading carriers."* (Banks, p. 21.) It is well recognized that fringe firms can behave competitively without forcing the dominant firms to do the same. While "non-leading" carriers may be competitive, in the sense that they expand their operations out to the point where their marginal costs equal market price (as price takers), the "leading carriers" can still be price makers. "Leading carriers" are synonymous with tacitly collusive suppliers in a market dominated by few very large carriers. Ms. Banks makes a number of related and unsubstantiated statements. (Banks, pp. 21-23.) On AT&T's loss of market share as inconsistent with collusion, substantiation is required because loss to fringe firms only can be explained by a number of other strategic factors, including decisions by the large carriers to increase retail margins to levels in excess of the costs of

⁷ See Dorfman R. and Steiner, P. (1954), *Optimal Advertising and Optimal Quality*, 44 AMERICAN ECONOMIC REVIEW 826; Telser, L. (1964) *Another Look at Advertising and Concentration*, 18 JOURNAL OF POLITICAL ECONOMY 85; and Martin, S. (1993), *ADVANCED INDUSTRIAL ECONOMICS*, Cambridge, UK: Blackwell Publishers, p. 137.

reselling. Ms. Banks claims WorldCom is a large player whose rapid growth should cause it to be included with the leading carriers; in fact WorldCom gained its share by merger, not by internal growth. She suggests that Sprint has not cooperated with the leading firms because (1) it gained share over the last seven years; (2) even when Sprint's share was stagnant "for a number of years" it grew in size due to overall market growth; and (3) Sprint increased market share in the last year. Ms. Banks' description of Sprint's performance reinforces my assessment that Sprint's conjectural variation coefficient is very high. Sprint's strategy clearly has been to maintain market share and set its MTS prices and other tariff offerings to mirror AT&T's.

17. *"No public interest analysis of BOC entry can fairly rely upon MacAvoy's skewed conclusions."* (Banks, p. 24) No economist uses the term "fairly" in such a context. Ms. Banks' makes no attempt to critique my analysis of the consumer benefits from Ameritech's entry into in-region, long-distance markets. This analysis has indicated that Ameritech's entry would reduce price and generate significant consumer welfare gains. She offers in response to this analysis that Ameritech's entry would not lower prices to the benefit of all consumers without explaining how she knows that.

Summary of Affidavit

2. Ameritech's performance standards were the subject of intense negotiation and debate during the arbitrations. These arbitrations resulted in exacting performance measurements and reporting requirements for interconnection, unbundled elements, resale, and access to operations support systems ("OSS"). In addition, each of these standards was approved by the MPSC and found to be "consistent with federal law" as well as "in the public interest." See MPSC April 4 Order, Doc. No. U-11151/11152, p.5.

3. Ameritech's overall performance is strong, and even where Ameritech's performance is criticized, the parties that do so fail to demonstrate that the alleged shortcomings in Ameritech's performance is service affecting. For example, several parties cry foul on account of the five- to ten-second differential between the time required for CLECs to obtain pre-ordering information and the time required for Ameritech to obtain such information. No party, however, avers — let alone demonstrates — that it affects their ability to attract and serve customers with equal effectiveness. Indeed, the objective facts establish that Ameritech's competitors are not only entering the local services marketplace in Michigan in increasing numbers, but are rapidly expanding their presence in that marketplace. These facts refute any claim by those competitors that the quality of Ameritech's performance is insufficient in any relevant sense, i.e., that it somehow prevents them from effectively competing for local services customers. In addition, there are times where Ameritech's performance appears to be at a slightly lower level for CLECs than for itself, but the disparity is attributable to the CLEC or a misreading of the relevant data. With respect to trunk blockage, for example, Ameritech should not be held responsible for performance issues arising from a CLEC's failure to provide

information to Ameritech regarding where to provision the trunk on its part of the network — especially when Ameritech has taken measures to re-route calls over interLATA trunks. Moreover, the most recent trunk blockage data establishes that Ameritech's competitors in Michigan are receiving more favorable treatment than Ameritech's retail operations. I also should emphasize that Ameritech's performance continues to improve in the limited areas where CLECs have received slightly lower quality service, and there are as many or more areas where CLECs receive better service than Ameritech.

4. Finally, while there will be performance issues and disputes for as long as there are BOCs and BOC competitors, Ameritech continues to work vigorously to address performance issues as they arise. A prime example is Ameritech's relationship with TCG. When TCG raised numerous complaints about trunk blockage in recent months, Ameritech responded quickly and conducted operational meetings with TCG to address and resolve these issues in a cooperative fashion. As a result, there is no significant blockage of calls from Ameritech's network to TCG's network. Ameritech is committed to the same type of cooperation with other requesting carriers as well.

II. PERFORMANCE MEASUREMENTS

A. General Background and Overview

5. As I explained in my initial affidavit (¶¶ 9-11), Ameritech's performance measurements were arbitrated and found by the Michigan Public Service Commission ("MPSC") to comply fully with Sections 251 and 252 of the 1996 Act. More specifically, on November 26, 1996, in its initial order approving the AT&T Agreement, the MPSC directed the parties to resume negotiations on the performance standards issue and to resubmit proposals within thirty

days.^{1/} The parties did so and subsequently submitted an agreement containing the renegotiated performance measurements. The MPSC approved these measurements, along with the rest of the agreement, on April 4, 1997, stating that "the agreement is consistent with federal and state law, and is in the public interest."^{2/} Accordingly, the AT&T Agreement contains MPSC-approved performance measurements for interconnection (Schedule 3.8), unbundled network elements (Schedule 9.10), resale (Schedule 10.9.2), and operations support systems ("OSS") (Schedule 10.13.2). By way of example, I have attached as Reply Schedule 1 to this affidavit a chart that maps the various performance benchmarks contained in Ameritech's interconnection agreement with AT&T and approved by the MPSC.

6. I should also note at the outset that, in addition to arbitrations before the MPSC, the issue of Ameritech's performance measurement and reporting has been extensively litigated in Section 252 arbitrations and other proceedings before the Illinois Commerce Commission ("ICC"). In those proceedings, Ameritech's competitors raised the same arguments and objections that they raise in their comments here. After weighing all of the parties' positions, the Hearing Examiner in the ICC's currently pending Section 271 investigation of Ameritech Illinois rejected the positions of those competitors. Specifically, in his Second Revised Proposed Order, the Hearing Examiner concluded:

These issues have already been addressed in negotiations between the parties and in the AT&T and MCI arbitrations. Moreover, even assuming AT&T's proposals

^{1/} MPSC Docket No. U-11151/11152, November 26, 1996 Order, p. 22.

^{2/} MPSC Docket No. U-11151/11152, April 4, 1997 Order (hereinafter, "MPSC April 4 Order"), p. 5.

were properly raised in this proceeding, we find that they lack merit and should be rejected.^{3/}

7. Even these contractually required measurements, however, do not represent the full range of Ameritech's performance measurements. Ameritech has voluntarily and publicly committed to measuring and reporting several other items to ensure that requesting carriers can fairly monitor Ameritech's performance and detect any conceivable "backsliding" that those carriers allege may occur if Ameritech's 271 application is granted. For example, while Ameritech's interconnection agreements require Ameritech to provide the percentage of resale repairs completed within 24 hours, Ameritech has also agreed to provide "mean time to repair" information for both unbundled elements and resale. Likewise, while not required by Ameritech's interconnection agreements, Ameritech has publicly committed to provide geographically disaggregated performance information upon request, so that carriers that serve a discrete geographic area may compare their performance with Ameritech's performance in the same area. The extent of performance measurements that Ameritech has publicly committed to report is detailed in Reply Schedule 1.

8. Notwithstanding these facts, some commenters suggest that there are insufficient performance standards by which to judge Ameritech's performance, particularly for access to its OSS. The MPSC, for example, suggests (at 24) that there is an absence of "agreement on what should be judged in regard to OSS functions," concluding (at 25) that "the standards [Ameritech] utilizes to judge the operation of its OSS are not generally included in executed

^{3/} Ill. C.C. Docket No. 96-0404, Hearing Examiner's Second Proposed Order, p. 101.

interconnection agreements but were developed according to Ameritech's judgment of what an appropriate standard should be."

9. Given the size of the record in the Michigan compliance docket, the broad scope of Ameritech's interconnection agreements, and the primary focus of the MPSC's May 28, 1997 OSS hearing (which was OSS itself, not performance standards specifically or the interconnection agreements), it is understandable that Ameritech's OSS contractual performance obligations might be overlooked. Whatever the reason, however, I must respectfully disagree with the MPSC's stated conclusion. For example, Section 10.13.2 of the AT&T agreement specifically addresses the central aspects of OSS interface performance. With respect to resale pre-ordering, ordering, and provisioning, that section provides:

The electronic interface to be provided by Ameritech will provide system to system communications on a real-time basis (response in seconds), with built-in error recovery and built in operations, administration, and maintenance functionality, at a ninety-five percent (95%) network reliability level.

Although Section 10.13.2 does not address maintenance/repair or billing, Ameritech's performance reports for its OSS interfaces reflect the primary emphases of this provision: providing electronic responses on a real-time basis (with a response in seconds), and maintaining interfaces that are up and running effectively at least 95% of the time. The ability of Ameritech's interfaces to provide responses on a real-time basis is monitored by Ameritech's "cycle time" measurement, and their ability to satisfy the 95% percent network reliability standard is monitored by Ameritech's "availability" and "reliability" measurements. Thus, I disagree with the MPSC's conclusion that Ameritech lacks sufficient performance measurements for access to OSS.

10. The MPSC-approved standard of 95% network reliability was not arbitrarily chosen by Ameritech. Ameritech's network reliability is a function of the collective reliability of its respective systems, most of which have independent, somewhat more stringent, reliability standards. Because, in a typical transaction, requesting carriers must interact with several of these systems (although not nearly as many as Ameritech's retail operations must typically interact with), the reliability of the network as a whole is a composite of the standards for these various systems.

11. That is not to say that, in addition to the objective standards found in the contract, there is no place for the exercise of "judgment" in setting goals or standards to govern Ameritech's relationship with its wholesale customers as they become accustomed to using Ameritech's OSS interfaces. Where Ameritech sets such goals or standards, however, they are not arbitrary. Rather, they are arrived at on the basis of a considered determination about what levels of performance are necessary for requesting carriers to serve their own end-users at least as well as Ameritech serves its own end-users.

12. For example, the ability of Ameritech's OSS to process a transaction correctly is dependent upon, among other things, whether the submitted order contains accurate and complete information. Obviously, the accuracy and completeness of orders submitted by requesting carriers is not something that Ameritech can control. All that Ameritech can do is to provide such carriers with the information and guidance necessary to submit complete and accurate orders. If Ameritech has provided such information and guidance, and a particular type of order that formerly was being rejected consistently is now regularly flowing through Ameritech's OSS, there comes a point at which it is appropriate to conclude that the issue has