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

In the Matter of	)	
	)	
Access Charge Reform	)	CC Docket No. 96-262
	)	
Price Cap Fourth Report and Order	)	CC Docket No. 94-1
	)	

Comments of Communications Workers of America

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The Communications Workers of America ("CWA") represents 630,000 workers who are also consumers of telecommunications services. The majority of our members are employed in the telecommunications industry. In the telecommunications industry, CWA members work for firms providing local, long distance, cable, broadcasting, and wireless communications services. CWA is the leading union in the information age whose members are responsible for building, maintaining, and servicing customers on the information highway. CWA seeks to provide leadership on how the information technology industries will emerge in the years ahead, and is committed to ensuring that the profit motive is balanced with the public interest as this industry develops.

In these comments, CWA updates and refreshes previously filed formal and *ex parte* comments in response to the Commission's October 5, 1998 Public Notice. Our comments make these points:

1. The productivity X-factor of 6.5 percent that the Commission set in the *Price Cap Fourth Report and Order* for determining price cap indices is too high. Annual productivity growth in the industry is closer to 3.0 percent (not 6.0 percent). The result of setting the X-factor at double the rate of industry productivity growth would result in disinvestment in the wireline network, pressure to reduce variable labor costs with resulting deterioration of service quality, or both.

2. The Commission should adopt rules that provide incumbent local exchange carriers greater flexibility to set prices in markets and for services that are competitive. Policies that provide

pricing flexibility in competitive markets and for competitive services, such as those proposed by Bell Atlantic and Ameritech, serve to ensure that incumbent LECs can compete on an equal basis with competitive local exchange carriers.

3. In its May 1997 *Access Charge Reform Order,* the Commission was correct in adopting a market-based framework. The Commission need not reverse that decision by adopting prescriptive access rates. Despite $2 billion reduction in access charges paid by the long distance companies to the local exchange carriers since May 1997, long distance companies have not passed the benefit of these reductions on to consumers in the form of lower rates. There is no evidence that further reductions in access charges would benefit consumers with reduced long distance rates.

We discuss the issues of the X-factor and pricing flexibility in more detail below.

I. The 6.5 Percent Productivity X-Factor Exceeds the Rate of Productivity Growth in the Industry

On September 17, 1997, CWA submitted to the Commission a report prepared by Dr. Dean Baker of the Economic Policy Institute (EPI) entitled "The Consequences of the FCC Price Cap

Decision."[1] The Economic Policy Institute is an independent, non-partisan research institute based in Washington, D.C. A copy of this study is attached to these comments.

In his study, Dr. Baker analyzed the Commission's decision in its May 1997 *Price Cap Fourth Report and Order.* Dr. Baker concluded that the Commission's 6.5 percent productivity factor requires a reduction in access charges that cannot be supported by the expected rate of productivity growth in the industry. As a result, the price cap regime of the *Price Cap Fourth Report and Order* would cause incumbent local exchange carriers (LECs) to receive below market rates of return. This, in turn, would lead to potential disinvestment, with negative implications for service quality. Since the incumbent LECs have the option of investing in other sectors of the industry with higher rates of return, and also entering foreign telecommunications markets, the prospect of large scale disinvestment in the wireline network is real. This is certainly not a desirable result.

Dr. Baker concludes that the Commission's productivity X-factor of 6.5 percent annually is excessive for three reasons:

1) Annual productivity growth in the industry in the period under consideration (1988-1995) was close to 3 percent, not 6 percent;

2) Increased competition is likely to lower the rate of productivity growth for incumbent LECs, not raise it; and

[1] CWA *Ex Parte* Comments, CC Docket No. 96-262 and CC Docket No. 94-1, "The Consequences of the FCC Price Cap Decision," Sept. 17, 1997 ("CWA *Ex Parte* Comments").

3) There have been recent changes to the gross domestic product price index (GDPPI) which lower it relative to the true rate of inflation by approximately 0.2 percentage points annually. This means that the Commission ruling requiring a 6.5 percent annual decline in access prices measured against the GDPPI going into the future actually results in an annual X-factor of 6.7 percent.

Dr. Baker concludes that a productivity factor of 3.1 percent accurately reflects annual industry productivity gains over the study period.

A. Annual Productivity Growth in the Industry was Close to 3 Percent, Not 6 Percent.

In the *Price Cap Fourth Report and Order*, the Commission concluded that recent trends justified a 6.0 percent X-factor, with an additional 0.5 percent added to account for forward-looking annual productivity increases due to the impact of competition. Thus, the Commission mandated a 6.5 percent X-factor.

Dr. Baker's study finds that the Commission's own economist determined that industry productivity for the study period (1988-95) was 3.2 percent. However, the Commission set the X-factor at twice that rate. According to Dr. Baker, the Commission justified its decision because it claims that input prices for LEC carriers had fallen at the rate of 2.8 percent annually relative to prices in the economy as a whole. The Commission projected that this rate of decline in input prices could be expected to continue for the foreseeable future, and therefore incorporated this decline into its X-factor.

According to Dr. Baker, the Commission's analysis recorded that the decline in input prices is entirely attributable to a 2.6 percent decline in the cost of capital. This decline in input prices has already created a situation where the return on capital investment is lower for LECs than for other industries.

Including such projections in the forward-looking X-factor results in a continuing declining rate of return in the LEC industry. According to Dr. Baker

> The projection of a continuing decline in the future will imply that the return will fall further relative to the economy-wide average. If this trend continues to the year 2000, the rate of return for the LECs will be just 5.1 percent. If such a decline actually occurs, it will inevitably lead to disinvestment in the industry, since firms will not be willing to invest at a sub-market rate of return. The fact that these sub-market rates of return are being projected for a period when the industry is being opened to competition should increased the likelihood of disinvestment, since the newly competitive environment will be adding a very substantial degree of risk to new investments in the industry. (EPI, pp 2-3).

In short, if incumbent LECs are required to reduce the price indices for access charges at twice the rate of actual productivity growth, based on a Commission assumption that return on capital will continue to decline below the economy-wide average, the Commission will have created a self-fulfilling prophecy.

B. The Impact of Competition

The Commission added 0.5 percentage points to the annual X-factor because of a presumed productivity premium associated with competition. But Dr. Baker points out that while competition may indeed offer some opportunities for increasing productivity, these are likely to be more than offset by four other factors that will lower productivity. First, the sectors in which the LECs will lose market share are likely to be the sectors with the highest profit margins. Second, as a result of losing market share, the incumbent LECs will see slower demand growth, which will limit the gains from the economies of scale that exist in the industry. Third, the Commission requires incumbent LECs to incur high costs to ensure compatibility with new entrants, including costs associated with number portability, OSS systems, etc. Fourth, competition itself adds substantial sales and marketing costs.

C. Inconsistent Prices Indices

Dr. Baker points out that changes made to the gross domestic product price index (GDPPI) have lowered it relative to the true inflation rate by 0.2 percent over the 1998-95 study period. Had this been incorporated into the Commission's own total factor productivity study, "it would have raised the measured rate of total factor productivity growth in the no-farm business sector by 0.2 percentage points." (EPI, p. 4)

The result, according to Dr. Baker, is that even if the Commission concluded that a 6.5 percent X-factor was warranted in comparing industry productivity to the GDPPI, "an annual 6.3 percent would be warranted when measured against the GDPPI that is currently in place." (EPI, p. 4)

D. The Impact of Setting the X-Factor Too High

Requiring rate reductions that are substantially greater than is warranted by productivity growth in the industry will lead to further reduction in the rate of return in the industry. According to Dr. Baker

> The middle and long-term implications of sustaining rates of return that are below market levels will be disinvestment in the industry. Alternatively, it can lead the LECs to try to extract extraordinary concessions from their employees so that they can maintain reasonable rates of return. (EPI, p. 5)

That in turn would have serious negative implications for quality of service provided to consumers.

II. The Commission should adopt policies that provide incumbent local exchange carriers greater flexibility to set prices for access and other services as markets move to competition.

The Commission must ensure that asymmetrical regulation does not provide competitive advantages to some carriers but not to others. Under current rules, competitive LECs are free to

negotiate volume and term discounts while incumbent LECs must charge the same price for access to all customers. Without this pricing flexibility, incumbent LECs cannot effectively compete for high-revenue customers. As more and more high-revenue customers shift their business to competitive LECs, incumbents with carrier-of-last resort and other universal service obligations will be required to spread their costs across a diminishing revenue base. This in turn will increase pressure on incumbent LECs to raise rates or to cut variable costs, including the costs of maintenance, capital investment, and labor. The result will be a decline in service quality in the public switched network and delay in network investment in new facilities, increased bandwidth, and new services.

Therefore, the Commission should adopt rules to ensure that as competition increases in the local exchange, incumbent LECs have pricing flexibility, including the ability to negotiate term and volume discounts, contract tariffs, and to respond to individual RFPs. This will ensure that incumbent LECs can compete with competitive local exchange carriers. CWA supports rules, such as those proposed by Bell Atlantic and Ameritech that provide increasing pricing flexibility as services or markets become competitive.

III. Conclusion

The Commission acted correctly in adopting a market-based approach to achieve the goals of the Telecommunications Act of 1996 to transition from implicit to explicit universal services subsidies. However, by setting the X-factor at a rate twice that of productivity growth in the

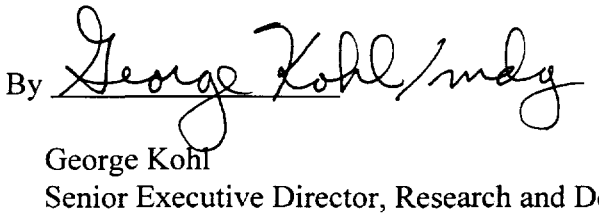
industry, the Commission sets in motion a self-fulfilling prophecy in which reduced returns to capital in the local exchange market would lead to disinvestment, reduced service quality, or both. in the local exchange. The Commission has the opportunity to set an X-factor at a more accurate level during this proceeding. Furthermore, the Commission should adopt policies, such as those proposed by Bell Atlantic and Ameritech, that providing pricing flexibility in markets and services that are competitive.

Finally, the Commission must ensure that its decisions in this Access Charge review are consistent with decisions that it will make soon in its Universal Service proceeding. As the Commission noted in its May 1997 *Access Charge Reform Order,* " the conversion of the existing web of implicit subsidies to a system of explicit support would be a difficult task that probably could not be accomplished immediately" (*Access Charge Reform Order*, p. 9) and that therefore "the Act does not require, nor did Congress intend, that we immediately institute a vast set of wide-ranging pricing rules applicable to interstate and intrastate services provided by incumbent LECs that would have enormously disruptive effects on ratepayers as well as the affected LECs. (*Access Charge Reform Order*, p. 10).

The transition from an implicit to explicit system of subsidies must be accomplished with rules that ensure that we do not do damage to the goals of the 1996 Act of quality, affordable telephony and deployment of advanced services for all Americans.

Respectfully Submitted,

Communications Workers of America

By 

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The Consequences of the FCC Price Cap Decision

The Federal Communications Commission's decision to require that LEC price caps for access charges fall at the rate of 6.5 percent annually will cause serious damage to the local phone industry. The evidence clearly shows that productivity growth in this sector has not been fast enough to support this rate of price decline. This rate of price decline will not allow the industry to earn a rate of return that is remotely comparable to that available in other sectors of the economy. Unless the industry can force large reductions in wages and benefits on its workers, the inevitable consequence will be disinvestment in the telephone industry. A sustained period of disinvestment will diminish the quality of telephone service and may even affect access in some cases. Neither the squeezing of workers in the industry, nor large scale disinvestment from the industry, can be viewed as desirable consequences of FCC regulation.

The basis for the FCC decision was its assessment of recent productivity growth in the industry and trends in input prices. It concluded that these trends warranted 6.0 percent annual reductions in LEC access charges measured against the rate of inflation. Furthermore, it ruled that access charges should fall an additional 0.5 percentage points as a result of further deregulation of the industry. The FCC based this increment on the assumption that increased competition will raise the rate of productivity growth by approximately 0.5 percentage points annually and that this benefit should be passed on to consumers.

The FCC mandated price reduction is excessive for three reasons:

1) Annual productivity growth in the industry has been close to 3 percent, not 6 percent;

2) Increased competition is likely to lower the rate of productivity growth for incumbent LECs, not raise it; and

3) There have been recent changes to the GDPPI, which lower it relative to the true rate of inflation by approximately 0.2 percentage points annually. This means that the FCC ruling requiring a 6.5 percent annual decline in access prices measured against the GDPPI going into the future implies an annual rate of decline of approximately 6.7 percent relative to the GDPPI measure that was in place over the period where the FCC measured productivity in the industry.

These reasons will be examined in turn.

The Record on Productivity Growth

The FCC received a series of studies of total factor productivity growth among LEC carriers from the affected parties and then produced its own study based on this input. To construct its methodology, the FCC relied primarily on a study done by John Norsworthy for AT&T and Christensen Associates for the United States Telephone Association (USTA). The Christensen Associates study estimated that annual total factor productivity growth among LEC carriers was on average 3.0 percentage points higher than in the business sector as a whole for the years 1988-95. The Norsworthy study estimated that productivity growth averaged 7.2 percentage points higher than in the business sector as a whole over the same period. Careful analysis shows that Christensen Associates closely followed the standard economic methodology in carrying through their analysis whereas the Norsworthy study made several important errors (see appendix). As a result, the estimates of productivity growth produced by this study have to be given far more credibility than the estimates from the Norsworthy study. This is a conclusion largely shared by the FCC. It is worth noting in this regard, that the FCC's own estimate of average productivity growth differential for this period, 3.2 percentage points, does not differ significantly from the estimate produced by the Christensen Associates study.

Nonetheless, the FCC ruled that recent trends justified a 6.0 percent annual reduction in access charges, in spite of concluding that the productivity differential was little more than half this much, because it also claimed that input prices for LEC carriers had fallen at the rate of 2.8 percent annually relative to prices in the economy as a whole. The FCC projected that this rate of decline in input prices can be expected to continue for the foreseeable future, and therefore incorporated this decline into its ceiling on access charges.

According to the FCC's own analysis, the recorded decline in input prices is entirely attributable to a decline in the cost of capital. The analysis shows that the price of material inputs for the LECs has risen at the rate of 2.5 percent annually over the period 1988-95, while the price of labor inputs has risen at the rate of 4.2 percent. Neither of these rates of inflation differ significantly from the 3.2 percent rate of inflation in input prices for the non-farm business sector as a whole. (The somewhat more rapid rate of growth of labor input prices than material input prices is typical for the economy as a whole.)

The FCC's conclusion that there has been a 2.8 percent annual decline in the *relative* price of inputs for LECs rests entirely on a 2.6 percent annual *absolute* decline in the price of capital inputs. This decline in input prices has already created a situation where the return on capital investment is substantially lower for LECs than for other industries. The data used in the FCC analysis indicates that the before tax rate of return for the LECs has fallen from 10.7 percent in 1988 to 7.9 percent in 1995. The before tax rate of return in the corporate sector as a whole in this period rose from 7.3 percent in 1988 to 10.8 percent in 1995. (It rose further to 11.4 percent in 1996.)

The projection of a continuing decline in the future will imply that the return will fall further relative to the economy-wide average. If this trend continues to the year 2000, the rate of return for the LECs will be just 5.1 percent. If such a decline actually occurs, it will inevitably lead

to disinvestment in the industry, since firms will not be willing to invest at a sub-market rate of return. The fact that these sub-market rates of return are being projected for a period when the industry is being opened to competition should increase the likelihood of disinvestment, since the newly competitive environment will be adding a very substantial degree of risk to new investments in the industry.

In short, the trend of declining input prices in the FCC's analysis cannot be projected into the future. The implication of projecting this trend into the future is that the rate of return for LECs will be substantially less the return in other sectors of the economy. Firms cannot be expected to undertake new investment in an industry that offers returns that are substantially less than those available elsewhere. The FCC clearly erred when it incorporated this trend into its price cap ruling.

The Impact of Competition

As noted earlier, the FCC added 0.5 percentage points to the annual reduction in access charges because of a presumed productivity premium associated with further deregulation of the industry. While deregulation may offer some opportunities for increasing productivity, these should be more than offset by other factors that will lower productivity. There are four reasons why competition should lead to lower productivity growth for the incumbent LECs. First, the sectors in which they lose market share are likely to be the sectors with the highest profit margins. Second, as a result of losing market share, incumbent LECs will see slower demand growth, which will limit the gains from the economies of scale that exist in the industry. Third, the FCC ruling requires the incumbent LECs to ensure compatibility with new entrants. Fourth, competition itself adds substantial sales and marketing costs.

The FCC ruling does not dispute the validity of either of the first two points. It explicitly acknowledges both that the loss of high margin categories of output will lower measured total factor productivity and that slower output growth due to competition will lead to a loss of scale economies. However, in both cases, the FCC ruling explicitly states it is declining to take into account the negative impact these two factors have on total factor productivity growth in setting its price ceilings. The analysis produced by Christensen Associates for the USTA indicated that the reduction in total factor productivity growth associated with the loss of high margin sectors would be approximately 0.4 percent annually. They also noted the standard estimates of the size of the scale economies in the industry as being between 0.3-0.5 percent. This means that a reduction in output of 1.0 percent would led to a fall in total factor productivity growth of between 0.3-0.5 percent. Both of these are sizable effects which the FCC has explicitly chosen to ignore in setting its rate ceilings.

The costs associated with maintaining compatibility between the systems established by the incumbent LECs and the systems that will be developed by competitors, such as intraLATA toll dialing parity, number portability, and an electronic system for wholesale ordering, provisioning and billing, are also not factored into the calculations of the FCC. These costs can be

substantial, although it is difficult to quantify them with much precision. In addition, introducing competition will require incumbent LECs to engage in marketing and sales efforts that are unnecessary in the current regulatory environment. Again, these costs are difficult to quantify in advance of deregulation, although the expenditures made by the long distance carriers for these activities indicates that the expenses are likely to be substantial. (The discounts given as incentives are not properly counted as costs since these are savings for consumers, but sales personnel and advertising expenditures that are unnecessary in the current regulatory environment do have to be seen as necessary costs in a competitive environment.)

To sum up, the FCC ruling has assumed that the switch to a competitive environment will lead to further gains in productivity, and therefore added 0.5 percentage points annually to the size of mandated price reductions. Although there are some reasons for believing that deregulation will have positive effects on productivity growth, these should be more than offset by the negative impact that competition will have on the productivity growth on incumbent LECs. In some cases, such as the loss of high margin sectors and reduced scale economies, this negative impact can be reasonably well quantified. In other cases, the cost of maintaining compatibility and carrying through sales efforts, the costs are less easily quantified at present, but may nonetheless be substantial. In any case, there is good reason to believe that opening the industry to competition will lead to lower total factor productivity growth in the future than was achieved in the past. Therefore the FCC has erred by increasing the size of the mandated price reductions as a result of deregulation.

Inconsistent Price Indices

There have been changes made to the gross domestic product price index over this period which have lowered it relative to the true inflation rate. Specifically, there have been changes in the treatment of medical care prices in the years 1994-5 that would have the effect of lowering the measured rate of inflation in these areas by approximately 3.0 percent annually. Since these areas comprise roughly 8.0 percent of the GDPPI, these changes should have the effect of lowering the measured rate of inflation by approximately 0.2 percentage points compared with the measure that was in place for the period from 1988-95. This period was the basis for the comparison between total factor productivity growth in the non-farm business sector and the LECs. Had the current methodology been used during the 1988-95 period, it would have raised the measured rate of total factor productivity growth in the non-farm business sector by approximately 0.2 percentage points, thereby reducing the difference in growth between the industry and the broader non-farm business sector by 0.2 percentage points.

This means, that if the FCC concluded that the evidence warranted a reduction in annual access charges by 6.5 percent annually compared to the GDPPI that had been in place through most of the period from 1988-95, an annual reduction of 6.3 percent would be warranted when measured against the GDPPI that is currently in place.

Conclusion

The FCC requirement that LECs lower price ceilings on access charges by 6.0 percent annually is not supported by recent trends in productivity growth. Actual productivity growth in the industry has only been about 3.1 percent in recent years. Furthermore, the introduction of competition to the industry is likely to lower productivity growth for incumbent LECs below its recent trend. In addition, the fact that the price index against which rate reductions are to be measured has been changed to record a lower measured rate of inflation relative to the actual rate means that the required rate reductions are even larger than the FCC intended.

Requiring rate reductions that are substantially greater than is warranted by productivity growth in the industry can have two effects. These rate reductions will lead to a further reduction in the rate of return in the industry, which is already below the average in the corporate sector. The middle and long-term implications of sustaining rates of return that are below market levels will be disinvestment in the industry. Alternatively, it can lead the LECs to try to extract extraordinary concessions from their employees so that they can maintain reasonable rates of return.

A policy that forces substantial wage and benefit cuts on workers in the communications industry or that leads to disinvestment in such a crucial sector of the economy cannot be desirable. It is important that the FCC's ruling be reconsidered and replaced with one that is better supported by the evidence on sustainable rates of productivity growth.

Appendix

Analysis of Multi-factor Productivity Studies

After analyzing the multi-factor productivity studies of the Local Exchange Carriers done by Christensen Associates for the United States Telephone Association (USTA) and by John Norsworthy for AT&T (AT&T) and subsequent exchanges, supporting documents, and rulings by the Federal Communications Commission,[1] I find that on every significant conceptual issue, the arguments advanced by the Christensen Associates are correct. The methodology used in the AT&T study can be shown to be faulty and to led to patently absurd conclusions in other contexts. Therefore I believe that the FCC has erred in using the X factors calculated from the AT&T study as the basis for setting future price caps for Local Exchange Carriers.

USTA notes seven main issues in dispute in deciding between the use of the USTA model and the AT&T model:[2]

1) The use of an interstate-only measure of output,

2) The treatment of miscellaneous services in the measurement of output,

3) The measurement of local and toll output,

4) The measurement of interstate access output,

5) The assumption that total cost always equals total revenue,

6) The correct measurement of input prices and quantities,

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[1] These documents include C. Anthony Bush and Mark Uretsky, "Input Prices and Total Factor Productivity," *In the Matter of Price Cap Performance Review for Local Exchange Carriers, First Report and Order*, CC Docket 94-1 FCC 95-132 (March 30, 1995); Appendix F, "Analysis of TFP Methods for Measuring the X-Factor of the Local Exchange Carriers' Interstate Access Services," Appendix A to Comments of AT&T on Fourth Further Notice of Proposed Rulemaking, CC Docket 94-1, January 16, 1996; "Response to Christensen's Associates' 'Critique of AT&T Performance-Based Model' and to Strategic Policy Research's 'The Depreciation Shortfall'," Statement of Dr. John R. Norsworthy; Lauritis R. Christensen, Phillip E. Schoech, and Mark E. Meitzen, "Total Factor Productivity Methods For Local Exchange Carrier Price Cap Plans." December 18, 1995; and C. Anthony Bush and Lori Huthoefer, "Estimation of TFP Under FCC Rules, FCC Synthesis," FCC 97-159, Appendix D.

[2] "Critique of the AT&T Performance Based Model" Attachment 6, USTA Comments, January 29, 1997.

7) The inclusion of LECs other than the RBOCs.

In each of these cases, the USTA model has applied a conceptually correct approach to the issue in question, whereas the AT&T model has employed a procedure that has serious conceptual flaws.

Addressing these points in turn, the conceptual issue with the largest consequence for the measurement of productivity is the AT&T model's use of an interstate-only measure of output. USTA estimates that this difference in approach leads to a 1.6 percentage point difference in the measure of annual productivity growth for the period 1988-94, and 1.2 percentage point difference for the period 1989-94.[3] Since interstate and intrastate output are produced with a common set of inputs, as has been pointed out by USTA[4], this measure is completely indefensible. USTA correctly pointed out in its example of the production of red and blue paper clips[5], this methodology could lead to a different measure of productivity growth when examining the output of identical products by the same firm.

In this case, it is not even necessary to take the step of constructing a hypothetical paper clip manufacturer to demonstrate the flaw in the AT&T procedure. If the FCC were examining the rate of productivity growth in the provision of local telephone services for intrastate calls, and the AT&T methodology was used, it would be assumed that the inputs for the provision of intrastate calls rose at the same rate as overall input growth. Since the growth rate of intrastate calls has been considerably slower than the growth rate of interstate calls, the resulting calculation would indicate a very low rate of productivity growth.

Clearly, it is wrong to conclude that there has been a rapid rate of productivity growth in the provision of interstate calls, while there has been a slow rate of productivity growth in the provision of intrastate calls, when the two services are being provided through a common system. The only reasonable way to measure productivity is by constructing a measure of output where each output is assigned a weight based on its value. This is the procedure applied consistently by USTA.

The next three issues, the treatment of Miscellaneous Services and the measurement of local, toll, and interstate access output also arise from the failure of the AT&T model to accurately construct a value weighted measure of output on which to base its productivity measures. Miscellaneous Services are a relatively slow growing category of output that has been excluded altogether from the AT&T model. Since these services are provided by the same inputs as long distance access, they must also be included in a comprehensive measure of output. According to USTA's estimates, excluding these services added 0.4 percentage points to the

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[3] USTA Reply Comments 3-1-96, p 30.

[4] "Critique of the AT&T Performance Based Model" Attachment 6, USTA Comments, January 29, 1997, pp 3-5.

[5] USTA Reply Comments 3-1-96, pp 5-7.

measured rate of annual productivity growth in the At&T model over the period 1988-94, and 0.5 percentage points over the period from 1989-94.[6]

The treatment of local, toll, and interstate access output raises the issue of what exactly is being measured. The AT&T model attempts to simplify these measures by combining categories of services and then using measures such as minutes or calls. The USTA model is careful to keep measure the output of each specific type of service separately, noting distinctions such as distance and time-of-day. The approach in the USTA model is correct, since these differences clearly matter to consumers (e.g. consumers are willing to pay higher prices for calls made during business hours), and therefore must be taken into account in measures of output.

An analogy could be made to the measurement of output in the airline industry where consumers are willing to pay large premiums in order to be able to fly during peak business hours or at the height of the travel season. A measure of output that did not differentiate between passenger miles in the off-season and passenger miles at peak periods would not accurately report output in the airline industry. The USTA model constructs a measure of output in each category by dividing total revenue in that category by the appropriate price index. This provides a correct quantity measure for each type of service. These quantity measures are then aggregated using a Tornqvist index.[7] USTA estimates that the combined effect of the differences in measured output for local, toll, and interstate access output leads to a reduction of 1.5 percentage points in the annual rate of productivity growth over the period 1988-94, and a reduction of 1.4 percentage points over the period from 189-94.[8]

The fifth point at issue is the assumption that total revenue must equal total costs in the AT&T model. This point is important because it is the basis for AT&T's measure of capital inputs. AT&T has assumed that the value measure of capital inputs can be obtained simply by summing property income (profits, interest, and depreciation) accruing to the LECs. Since the value measure of capital, calculated in this manner, has declined significantly over the period 1988-94 as a share of total costs, it would imply that either the productivity of each unit of capital inputs has increased greatly, since manner fewer capital inputs are being used, or alternatively, that the price of capital for the LECs has fallen enormously.

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[6] USTA Reply Comments 3-1-96, p 30.

[7] Apparently, the use of a Tornqvist index has been one of the issues in dispute in this case. (see Appendix A to "Comments of AT&T on Fourth Further Notice of Proposed Rulemaking, CC Docket 94-1," January 16, 1996, p 21, p 24 and Attachment A to "Total Factor Productivity Methods for Local Exchange Carrier Price Cap Plan: Reply Comments," March 3, 1996, pp 7-9). This is peculiar, both because Tornqvist indexes are frequently used in multifactor productivity measures, including in the Bureau of Labor Statistics measures, and because the alternative Fisher index has almost identical properties. It is very unusual for a Fisher index to provide a significantly different measure from a Tornqvist index:

[8] USTA Reply Comments 3-1-96, p 30.

However, neither conclusion can follow simply from the fall in the property share of income in a regulated industry. The property share is the residual after covering other costs, which in turn depends largely on the specific price caps set by the regulatory body. In the case of the LECs, this would imply that if the FCC had imposed lower price ceilings through this period, then the property share would be lower, and correspondingly the value of capital inputs would be lower. The AT&T methodology would record this as a larger increase in multifactor productivity. Similarly, the AT&T methodology implies that if regulation had been less stringent and the LECs were allowed to earn higher profits, then the increase in multi-factor productivity would have been less than it actually has been.

It is not reasonable to claim that the FCC's regulatory policies determine the rate of productivity growth in an industry. The alternative to the AT&T approach is to estimate the quantity of capital inputs independently of property income using data on the value of the capital stock and the opportunity cost of capital. This is the procedure used by USTA in its model. The use of an independent measure of capital inputs lowers the measured rate of annual multi-factor productivity growth by 0.4 percentage points in both the period from 1988-94 and 1989-94.[9]

In addition to the extraordinary implications that follow from the assumption that total revenue equals total cost in the AT&T model, it is also worth noting how extreme the implications of its assumption would be if projected into the future. In 1988, the before tax return on capital stock for the RBOCs as 10.71 %. In 1994, the before tax return had fallen to 7.89%.[10] If the return on the capital stock of the LECs continues to fall at this rate, as would be implied by the recommendations based on the AT&T model, it would be just 5.07 percent by the year 2000. Since the economy wide before tax rate return on physical capital has actually risen over the period from 1988 to 1994 from 7.8 percent to 10.2 percent,[11] it is difficult to see how the RBOCs would be able to prevent massive disinvestment. It is also worth noting that this decline in the rate of return for LECs is occurring at a point where the industry is losing the security of operating in a highly regulated environment. This implies that there will be a much higher level of risk in the future than has been the case in the past. Under such circumstances, the average rate of return in the industry should be rising, not falling.

The sixth point at issue between the AT&T and the USTA models is the correct price

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[9] USTA Reply Comments 3-1-96, p 30.

[10] These numbers were calculated by subtracting "depreciation and amortization expenses" (Appendix D of "Estimation of TFP Under FCC Rules, FCC Synthesis" FCC 97-159, Chart D8, column C) from "property income /w depreciation (Appendix D, Chart D9, column G), and dividing by "capital stock quantity" (Appendix D, Chart D9, column D).

[11] See *Getting More For Less? Trends in Corporate Profitability*, Dean Baker, Economic Policy Institute, Washington, D.C.: 1996. The profit rates calculated in this study are not entirely comparable to the profit rates estimated for the RBOCs above, because since they include the value of land, which is not included in the measure of the capital stock for the RBOCs.

index to use to deflate input payments, and thereby determine the rate of increase of input prices and quantities. In this case, USTA uses the overall GDP price index, while AT&T uses an index based on the specific industries that supply inputs to the communications industry. Although in principle it is possible to construct an index that more accurately measures the prices of the inputs to a specific industry than the overall GDP price index, AT&T has not demonstrated that its index meets this test. USTA correctly notes that the communications industry is far broader than just the LECs.[12] The industry includes both long distance carriers and radio and television broadcasting companies. The weights of these other components of the communications industry are quite large is the construction of the price index for the communications industry as a whole, therefore there is no reason to believe that this industry-wide index would give a better approximation of the price of inputs for the LECs than the overall GDP price index.

The AT&T study also erred in its measure of labor inputs in using year end numbers instead of year round averages. Since the measure of output is taken over a whole year, the corresponding measure for inputs must also cover the whole year. USTA estimates that the combined effect of correcting for this err in measuring labor inputs, and the use of erroneous price indexes for deflating purchases of inputs, is to increase the measured rate of productivity growth by 0.7 percentage points above the estimates of the AT&T model for the period 1988-94, and by 1.1 percentage points for the period from 1989-94.[13]

The last point at issue between the two models is the inclusion of carriers subject to rate caps other than the RBOCs in the USTA model. This makes little difference in the actual productivity estimates, [14] but in this case also, the methodology used by USTA has a sounder conceptual basis. The issue being considered is the recent rate of increase in productivity growth of LECs, which is to serve as a basis for projecting rates of increase into the future. The exclusion of carriers other than the RBOCs is reducing the amount of information available for making this projection. AT&T presents no argument as to why this loss of information is desirable.

To sum up the discussion above, it has been argued that in each important area where the AT&T model and the USTA model employed different methodologies, the USTA methodology was more consistent with economic theory and established procedures for estimating productivity growth. In making this assessment, it is important to point out that I have not sought to independently verify the accuracy of the USTA calculations or the extent to which they have correctly employed their stated methodology. I have only examined the appropriateness of their methodology as it has been described.

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[12] USTA Reply Comments 3-1-96, p 20.

[13] USTA Reply Comments 3-1-96, p 30.

[14] The inclusion of other carriers raises the measured rate of productivity growth by 0.1 percentage point in the period from 1988-94, and has no effect in the period from 1989-94. (see USTA Reply Comments 3-1-96, p 30.)