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The costs of competition

FCC Telecommunication Orders of 1997

A Michael Noll

This article summarizes and discusses the FCC orders for reforming universal service (FCC Order 97-157) and access charges (FCC Order 97-158) that were issued in May, 1997. Also included in the article is a summary and discussion of FCC Order 97-159 which makes some changes in price cap regulation. The article starts with a short tutorial on access charges. It then summarizes the FCC Orders and analyzes their financial impact. The article concludes with some personal observations on the course, thus far, of telecommunications reform in the United States. © 1998 Elsevier Science Ltd. All rights reserved.

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The Telecommunications Act of 1996 ordered the Federal Communications Commission to issue the specific rules for facilitating competition in the provision of telecommunications service in the United States. Specifically, these rules when issued were to treat three major areas: (1) local interconnection; (2) universal service; and (3) access charges. The FCC's rules for local interconnection (FCC Order 96-325), the first portion of the trilogy, were issued in 1996. The FCC's rules for universal service (FCC Order 97-157) and for access charge reform (FCC Order 97-158) were issued in May 1997.

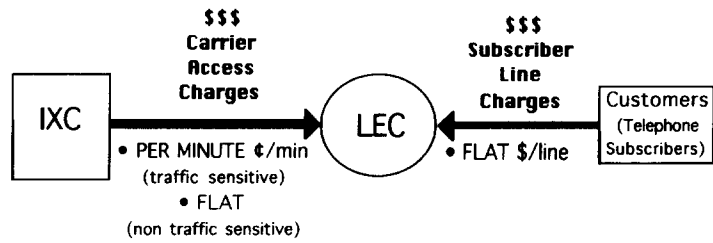
The article starts with a short tutorial on access charges. It then summarizes the FCC orders and analyzes their financial impact. The article concludes with some personal observations on the course of telecommunications reform in the United States.

Access charges: a brief review

Long distance companies, called interexchange carriers (IXCs), provide long-distance service by connecting their callers over the local facilities of the local exchange carriers (LECs). The LECs are reimbursed for the use of their local facilities to originate and to complete each long-distance call. These reimbursements are known as access charges.

The use of long-distance rates to subsidize local service has a long history. Such subsidization, as a form of 'separations' of revenues, was first imposed after World War II. This was a time when the technology for long-distance service was developing very rapidly so that costs were decreasing dramatically. Rather than decrease the price for long-distance service, the price was held constant and the excess profits were used to subsidize local service, under the rationale that lower local-service prices would stimulate more people to have telephones, thereby fostering universal service. As much as 80 cents of each long-distance dollar subsidized local service.

Figure 1. Access charges consist of those charges (called carrier access charges) paid by IXC to the LECs and flat per line charges (called subscriber line charges) paid by telephone subscribers to the local exchange carriers.



This universal-service subsidy and its avoidance created an opportunity for a form of contrived long-distance competition. This competition and the need for a formal distancing between the provision of local service and long-distance service then became a major factor that led to the breakup of the Bell System in 1984. The universal service subsidy became formalized in the form of access charges to reimburse the LEC for local access to their network and also to subsidize local rates.

As depicted in Figure 1, access charges have two components: flat charges paid directly by telephone subscribers to the LECs; and mostly usage sensitive charges paid directly by the IXCs to the LECs. The charges paid by the telephone subscribers are called Subscriber Line Charges (SLC). The charges paid by the IXCs are called carrier access charges.

Carrier access charges include:

- interstate access (Federally regulated);
- intrastate interLATA access (regulated by the states); and
- special access (Federally and state regulated), mostly for private-line networks.

For year-end 1995, these three access charges amounted to \$12 billion for interstate access, \$7.4 billion for intrastate interLATA access, and \$3 billion for special access. The combined total of carrier access charges is about \$23 billion, of which about \$15 billion is subject to Federal regulation.

Interstate access charges consist of three components, or baskets: common carrier line charges (CCLC) for the use of the local loop; local and tandem switching; and interoffice transport, or trunking. For year-end 1995, these three components were about \$3.7 billion for CCLC, \$4.2 billion for switching, and \$4.0 billion for trunking.

Most interstate carrier access charges are usage sensitive and are billed on a per-minute basis, about 6 cents per conversation minute as a national average. A conversation minute consists of an originating and a terminating minute taken together in total. The originating and terminating access charges would be half the 6 cents figure, or about 3 cents per minute.

Telephone subscribers pay a flat charge for local access, as mandated by the FCC. This flat SLC is paid directly to the LECs. It was capped at \$3.50 per month for residential and single-line business subscribers and at \$6.00 per month for multi-line business subscribers. At year-end 1996, the subscriber lines charges paid to LECs amounted to about \$7.9 billion.

Universal service: FCC Order 97-157

Universal service defined

The Telecommunications Act of 1996 stated that everyone—rural, urban, high-cost areas, different states—shall have access to the same services

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The various FCC Orders are very lengthy and complex, and their content is subject to much varying interpretation and opinion. The summary and analysis presented in this article represent the views and opinions of the author.

and be charged the same rates. Any inequities shall be compensated from a universal service fund to which all carriers contribute. Health care providers in rural areas shall be charged the same as providers in urban areas. Elementary schools, secondary schools, and libraries shall be charged less for universal service 'to ensure affordable access'. A Federal-State Joint Board was formed by the FCC to recommend the specific rules, most of which were adopted by the FCC in its Order 97-157.

The clear intent of the Telecommunications Act and the FCC Order is to make all subsidies explicit and visible and supported equitably by all telecommunications carriers.

Universal service will be funded financially by *all* carriers providing any form of interstate services, including LECs, payphone aggregators, and even non-common carriers. The level of funding will be assessed on end-user revenues, including SLCs in some cases.

Only eligible telecommunications carriers shall receive Federal support for providing universal service. The actual level of support is to be based on forward-looking economic costs. To be eligible, a carrier must offer the universal services to be supported throughout its service area "using its own facilities or a combination of its own and resale of another carrier's services" and must advertise the availability of such services.

The National Exchange Carriers Association (NECA) will be the temporary administrator of the universal service program, until a permanent administrator has been chosen. The highcost-LEC and low-income-subscriber support mechanism is to be assessed only on interstate revenues.

The FCC has adopted the following definition of universal service:

- voice grade access (500-4000 Hz) to the public switched network;
- dual tone multifrequency (DTMF) signaling, or digital equivalent;
- single-party service;
- access to the following services:
 - emergency, eg 911 and E911,
 - operator,
 - interexchange, and
 - directory assistance; and
- toll limitation services for qualifying low-income consumers.

To receive universal service support, eligible carriers must offer each of the elements of universal service.

Support for high-cost and small lecs and for low-income consumers

High-cost LECs and low-income subscribers have been receiving support through a flat charge of 53 cents per month imposed on all IXCs for each presubscribed line. The funds collected are administered and distributed by NECA. Of each 53 cents, about 45 cents supports high-cost LECs and 8 cents supports Lifeline service for low-income telephone subscribers. High-cost areas include rural areas, insular areas, and Alaska.

Carrier access charges have included subsidies to small LECs in the form of long-term support and dial equipment minutes (DEM weighting). These subsidies to small LECs amount to about \$800 million. These subsidies are now made explicit and are included in the universal service fund.

Lifeline support for low-income people is to be made available in all states. All providers of interstate services are required to contribute to the support of Lifeline services. All eligible carriers are to receive Federal

support for offering Lifeline and Link Up services to low-income consumers. The amount of Federal support is to be increased from today's \$170 million to an FCC estimated total of \$500 million.

Low-income subscribers are to have the following: voice-grade access to the public switched network; DTMF signalling; single-party service; and access to emergency, directory, operator, and interexchange services. Lifeline service should include toll-limitation services, at the customer's request. Disconnection of local service is prohibited for non-payment of toll charges. Service deposits are prohibited from Lifeline customers who elect toll blocking.

These support mechanisms are to be assessed only on the interstate retail revenues of *all* telecommunications carriers.

Schools, libraries, and rural healthcare providers

Elementary and secondary schools are to be offered discounts on telecommunications services, Internet access, and internal wiring connections. The discounts will vary from 20% to 90% depending upon indicators of poverty and high cost. Although mostly eligible telecommunications carriers will most likely be the major providers of the services to schools and libraries, other non-carriers are not excluded from providing the services.

The support for rural healthcare providers is intended to eliminate disparities between comparable rural areas and between the rates charged to rural healthcare providers compared with urban areas. Any telecommunication service up to and including 1.544 Mbps is included. Support will also be provided for limited toll-free access to an Internet service provider (either 30 hours or \$180 per month).

School and libraries are allowed to participate in consortia with other schools and libraries, eligible healthcare providers, and ineligible governmental members to aggregate demand.

The support for schools, libraries, and rural healthcare providers is to be assessed on interstate and intrastate end-user revenues, but is to be collected from interstate revenues only. An annual cap of \$2.25 billion has been placed on the amount of funds to be available for schools and libraries. An annual cap of \$400 million has been placed on the amount of funds to be available for rural healthcare providers.

Access charge reform: FCC Order 97-158

Access charge reform will make explicit any universal service support and will create a separate mechanism for its support, thereby decreasing access charges. Per-minute, usage-sensitive carrier access charges are to be levied only for those network elements that are truly usage sensitive. Accordingly, common line charges for use of the local loop are to be eliminated over time and replaced by flat charges. The long-term objective is to make all access charges closer to real economic costs as shaped by a competitive market, but until then forward-looking cost analyses are to be used as a guide.

The SLC are allowed to increase. The cap on the non-primary residential SLC increases from its old \$3.50 per month to \$5.00 per month and finally to the same cap as multi-line business (\$9.00 per month). The cap on primary residential and single-line business SLC remains at \$3.50

per month. The cap on multi-line business SLC increases immediately to \$9.00 per month. Non-primary residential and multi-line business caps are subject to increases for inflation.

A new Primary Interexchange Carrier Charge (PICC) is imposed on the IXC's. This new flat charge will ultimately replace the per-minute carrier common line charge. For primary residential lines and single-line business, the PICC is capped at 53 cents per month, with annual increases of 50 cents plus inflation in this rate. For non-primary residential lines, the PICC is capped at \$1.50 per month, with annual increases of \$1.00 plus inflation in this rate. For multi-line business, the PICC is capped at \$2.75 per month, with annual increases of \$1.50 plus inflation in this rate.

The increases in SLC and in the new PICC are to continue until they together cover all price-capped common line costs. The intent is to eliminate all usage-sensitive charges for common line access and replace these charges with flat SLC and PICC.

Price cap changes: FCC Order 97-159

Price caps: a brief review

Before price caps, telecommunication carriers were regulated based upon their profitability as measured by their rate of return on investment. Rate-of-return regulation did not reward carriers for improvements in productivity and acted as an incentive for overinvestment in physical facilities. Price-cap regulation was intended to remedy these problems by placing a cap on the prices charged to users and to allow any level of profits to occur as a reward for increases in productivity. The price-cap formula is relatively simple:

Price Cap Index = Inflation – X – factor ± Exogenous Cost Changes.

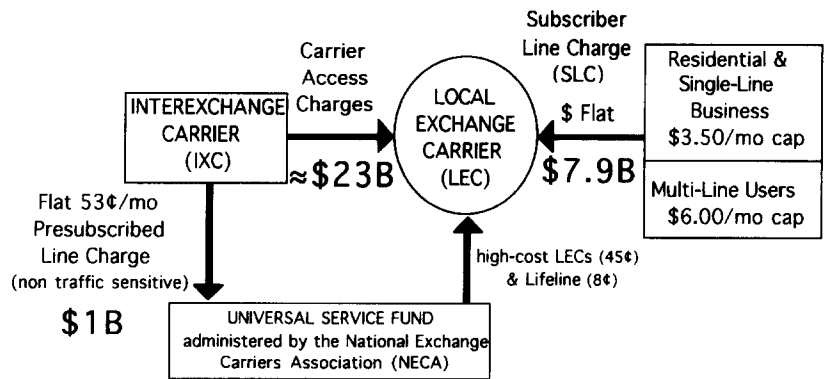
The price cap index (PCI) is calculated as inflation less an X-factor. Adjustments can be made for various 'exogenous' factors that are not in the control of the regulated carrier. The X-factor consists of a measure of telecommunication carrier productivity to which an additional consumer productivity dividend (CPD) is added. Inflation is specified as the gross domestic product price index (GDP-PI), currently about 2.5%.

The PCI is applied to various 'baskets' of services whose prices are averaged together. The three carrier access baskets are common line, switching, and trunking charges. The common-line basket includes both CCLC and SLC. These three baskets amounted to about \$12 billion, \$4 billion, and \$7 billion, respectively, for a total of \$23 billion.

Price cap changes

The old price cap regulation of interstate carrier access charges offered LECs options in which they could choose a reduced X-factor in return for sharing 'excess' profits with their customers. This sharing has been eliminated and replaced by a single X-factor.

Figure 2. The various charges for universal service and for access being paid before the FCC reforms of 1997, with estimates of their total amounts.



The old X-factor for those LECs not opting for sharing was 5.3%. The new X-factor is 6.5%—a change of 1.2%. Both the old and the new X-factors include a CPD of 0.5%.

Financial impact

About \$23 billion of carrier access charges are subject to Federal price caps. The increase in the X-factor will result in an additional decrease in access charges of 1.2% per year, or an additional decrease of roughly \$300 million. This additional decrease is added to the normal price-cap reduction of about \$650 million to create a total reduction of about \$1 billion.

With network usage increasing at a rate of 7% per year, this additional decrease and even the overall decrease in access charges mandated by price caps would probably be offset by the increase in network usage and in access lines.

The changes in price caps might seem inconsequential, but from the perspective of an IXC, the changes are positive. IXC usage and revenue are growing, but the changes in price caps mean that the costs of access will most likely remain constant, which is a good deal for IXCs. There also could be some longer term benefits to IXCs as per minute charges are eliminated and became flat charges.

Some additional one-time reductions of about \$0.5 billion in access charges occurred in 1997 because of changes in the price caps.

Overall financial effects

The old, pre-reform situation

The various charges for universal service and for access being paid before the FCC reforms of 1997 are depicted in Figure 2. These and the following estimates of financial impact are based on FCC data for 1995, extrapolated to 1/31/96, with various corrections to accommodate growth and non-reporting companies.¹ Although the changes actually occur in stages over a one-year period, the analysis presented here is the steady-state effect of all the changes.

The flat SLC paid directly by telephone subscribers to the LECs amounted to about \$7.9 billion at year-end 1996. Nearly \$1 billion was paid into the Universal Service Fund administered by NECA and distributed to high-cost LECs and to support Lifeline service for

¹FCC Data for 1995, extrapolated to 1/31/96, with various corrections to accommodate growth and non reporting companies:

- (1) Residential Access Lines: 96 million primary, 18 million additional;
- (2) Business Access Lines: 5 million single-line, 45 million multi-line;
- (3) Presubscribed Access Lines: 94% of access line.

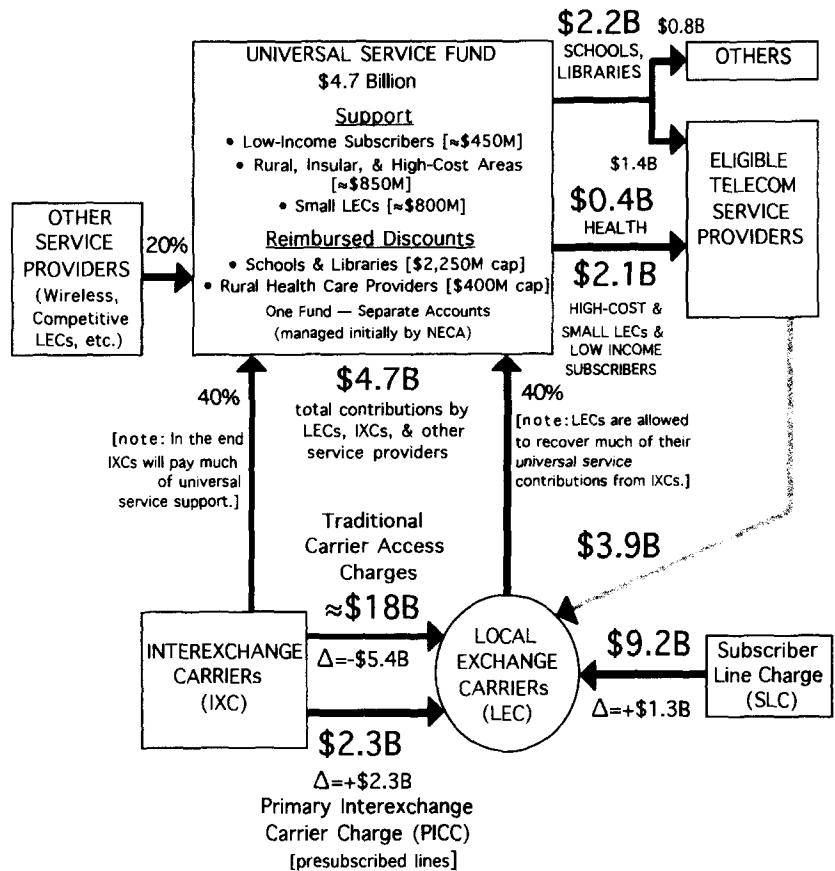


Figure 3. The situation after the FCC reforms of 1997, with estimates of their short-term financial impacts.

low-income telephone subscribers. IXCs paid about \$23 billion in carrier access charges to the LECs. How does all this change under the reforms mandated by the FCC?

The reformed situation

The reformed situation is shown in Figure 3. The SLC increase \$1.3 billion to an amount of \$9.2 billion, although further increases to as much as \$10.5 billion are possible if the maximum caps are reached. The new Primary Interexchange Carrier Charge (PICC) amounts to \$2.3 billion. The increase of \$1.3 billion in SLC and the imposition of the PICC of \$2.3 billion reduce traditional carrier access charges by \$3.6 billion. Carrier common line charges, which were about \$3.7 billion, are nearly eliminated by the increase in SLC and the imposition of the PICC. The net effect of the changes in the SLC and the imposition of the PICC is that nearly no change in access receipts occur for the LECs.

There is an additional decrease of about \$0.3 billion in total carrier access charges from an increase in the PCI, but this decrease is small compared to the order of magnitudes of access charges. The total decrease caused by price caps is about \$1 billion. About \$800 million of access charges was used to subsidize small LECs. This \$800 million is removed from access charges and is made an explicit component of the universal service support mechanism.

In summary, the total reduction in traditional carrier access charges comes from the \$1.3 billion increase in SLC, the \$2.3 billion PICC,

Table 1. Net financial effects of access charge and universal service reform in terms of changes from the old to the reformed situation. The final net effect is that the IXCs are behind \$0.3 billion and the LECs are ahead \$1.7 billion. If one-time changes in price caps are not included, the IXCs would be behind \$0.8 billion and the LECs ahead \$2.3 billion.

	IXCs	LECs	Customers
Access charges:			
Increase in price cap x-factor	+\$0.3 billion	-\$0.3 billion	
One-time price cap changes	+0.5 billion	-0.5 billion	
Small LEC subsidy	+0.8 billion	-0.8 billion	
PICC and SLC reductions	+3.6 billion	-3.6 billion	
SLC payments		+1.3 billion	-\$1.3 billion
PICC payments	-2.3 billion	+2.3 billion	
Universal service:			
Contribution (40% of \$4.7 billion)	-\$1.9 billion	-\$1.9 billion	
Charge back as exogenous factor	-1.3 billion	+1.3 billion	
Universal service receipts		+3.9 billion	
Final net effect	-\$0.3 billion	+\$1.7 billion	

the \$0.8 billion subsidy for small LECs, and the \$1 billion price-cap reduction. These reductions are a total of \$5.4 billion.

A new \$2.6 billion is mandated for the support of universal service for school, libraries, and rural healthcare providers. This amount is assessed on the interexchange and intraexchange retail revenues of IXCs, LECs, and other telecommunication service providers (such as wireless and competitive LECs). The interexchange and intraexchange retail revenues of these three categories of suppliers are about 40%, 40%, and 20% respectively of the total. This means that 40% of the \$2.6 billion, or roughly \$1 billion, will be assessed directly on ICXs. However, the support is to be collected from interexchange revenues, which for LECs are access charges, both SLC and carrier access charges. About two-thirds of these access charges come from ICXs. The LECs will be allowed to obtain reimbursement of two-thirds of their \$1 billion contribution as an exogenous addition to carrier access charges. Thus, in the end, the ICXs will pay about \$2 billion of the \$2.6 billion.

The actual final contributions to universal service have yet to be determined. But an estimate can be made. The old amount was about \$1 billion for high-cost areas and Lifeline support. There will be an increase of about \$300 million in Lifeline support. The support for small LECs is about \$800 million. Hence, a fair estimate of the total universal service support would be about \$4.7 billion, including the \$2.6 billion for schools, libraries, and rural healthcare providers.

Most universal service support will be paid to ‘eligible telecommunications carriers,’ who mostly will be LECs. The exception is support for schools and libraries, which can be supplied through firms other than eligible telecommunications carriers. If it assumed that about two-thirds of this support for schools and libraries will be paid to eligible carriers, then the total payments to eligible carriers is about \$3.9 billion, which will mostly flow to LECs.

Balance sheet

Another way of summarizing the financial effects of the access charge and universal service reforms is as a balance sheet, see Table 1, showing ‘minuses’ for financial losses and ‘pluses’ for financial gains. In many cases, a gain by LECs is at the loss for ICXs, or *vice versa*, with not much net effect.

The universal service program for schools, libraries, and rural health-care providers has a large impact on the balance sheet in favor of the

LECs. However, the benefits would be mitigated because costs are incurred in supplying telecommunication services and the subsidies are in the form of discounts. But new business which otherwise would not be there would be generated by this program, and thus the benefits are real.

It would seem that the ICXs are ahead about \$3.1 billion from access charge reform. However, these apparent financial benefits are consumed by the direct and indirect charges for universal service. Although the ICXs will be assessed about \$1.9 billion for universal service support, they end up paying more like \$3.2 billion because the LECs can recover most of their contribution back from the ICXs. Since most universal service is provided by the LECs, nearly all the contributions to universal service ultimately benefit the LECs.

The final net effect is that the ICXs are out \$0.3 billion, while the LECs are ahead about \$1.7 billion. If the one-time changes of \$0.5 billion in price caps are not included, the ICXs would be behind \$0.8 billion and the LECs ahead \$2.3 billion. Telecommunication customers are out the \$1.3 billion increase in subscriber access charges and could be out even more to the extent that telecommunications carriers attempt to recover through price increases their increased contributions to universal service.

Personal observations

The mandated support for school, libraries, and rural healthcare providers is, in effect, a new direct tax on the revenues of telecommunication carriers. The bulk of the \$2.6 billion will ultimately come mostly from ICXs. Since the LECs are most strongly situated to supply local access and local wiring, they will most likely receive most of the funding in the end. We thus have a new mechanism for transferring funds from the ICXs to the LECs.

One can only wonder whether the schools and libraries would chose to spend this support on telecommunications if they were given a choice. My suspicion is that if an additional \$2.2 billion were made available to schools and libraries, the money would be spent on more teachers and books.

The support is currently capped at \$2.6 billion. Will this cap be increased as the beneficiaries invent new needs? Will the support continue in perpetuity? Will the support be expanded to include teacher training and the purchase of computers? At a broader level, the wisdom of using the telephone bill as a means to support social programs must be questioned. History tells us that Federal pork barrels have a way of growing and can rarely be closed once opened.

The entire universal service fund is to be funded by 'contributions' based on retail telecommunication revenues. Since the size of the fund is about \$5 billion, this is, in effect, a revenue tax of about 2.5% on the telecommunication service industry's total revenues of roughly \$200 billion.

The intent of the Telecommunications Act of 1996 was to foster competition. However, the result of the Act is to create new subsidies and to make explicit all the old subsidies. But subsidies are inconsistent with competition. If all the subsidies had been eliminated, then prices would be closer to real costs and new competitors might be induced to supply

service to areas and customers in higher cost areas, ultimately leading to reduced prices. Low-income subscribers should be subsidized through existing social welfare programs and not by a tax on telecommunication revenues.

The Internet and Internet access providers are specifically excluded from paying access charges and from contributing to universal service support. This does not make sense. The Internet is a packet-switched, common-carriage, data network and hence is the provision of a telecommunication service. The bits carried over the Internet are no different than the bits carried over the circuit-switched telephone network. Clearly, the Internet will need ultimately to be included in the various regulations and orders covering telecommunication. Otherwise, the Internet is given an unfair competitive edge compared to the telephone network.

Title V of the Telecommunications Act of 1996 mandated regulatory reform and ordered the FCC to reduce regulation to promote competition. But it is all too clear that the FCC Orders issued thus far create more rules and regulations. Perhaps there is a need for more rules during the period of transition to competition, but history tells us that few rules once created are ever rescinded. In addition to all these rules, the FCC has greatly extended itself into the regulation of the local exchange. Here too Federal intervention was probably needed to foster competition. But again history tells us that once the government enters an arena, it is nearly impossible to extract it.

And so we wonder where is telecommunication policy in the United States going? In the name of competition, choice in long-distance service was created which only led to confusion on the part of many consumers. Contention and conflict between competitors led to chaos and charges of collusion and conspiracy. It all seems crazy at times and that a comedy of some kind is being inflicted on consumers. One can only wonder whether it will all in the end lead to a cataclysm and catastrophe of some kind. Are these the real costs of competition? The beneficiaries thus far of competition appear to be counselors and consultants—most certainly not yet consumers.