# The Formula is Everything: Costing and Pricing in the Telecommunications Industry

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## EXECUTIVE SUMMARY

- Folks love to spread the idea that the prices of products or services are tied to the costs of those goods, but it ain't necessarily so. In actuality, prices sometimes have little to do with costs. At other times, the two are tightly linked. Which happens when has more to do with politics than with parochial preferences about how the world ought to work.

- Telecommunications exchange service costing and pricing, ranging from the U.S. Supreme Court's <u>Lindheimer</u> decision that decoupled prices from costs in the 1930s to the vogue of cost-based pricing in the early 1980s, illustrate the relevance of that theme to today's decision makers.

- Costing and pricing are tools: What costing methods and what pricing methods are most likely to serve which policy objectives? What costing methods and what pricing methods lend themselves how well to practical administration? At their best, costing and pricing methods are the means to policy ends, not ends in themselves. A key question is how each policy shift between the 1930s and the 1980s did or did not bring costing or pricing means into harmony with the policy ends of the times.

- To begin with, there is much discretion in service definitions -- exchange service, for example, and then further in the definition of access -- and there is yet another layer of discretion in defining their costs and setting their prices. The thing being costed or priced often will differ tomorrow from what it is today, and it often differs today from what it was yesterday.

- Notable among the many disjunctions between costing and pricing philosophies is the fact that much pricing for access is tied to traffic volume although the costs said to underlie the prices are said to be insensitive to traffic volume.

- The shifting connection between costs and prices is significant only in terms of before-and-after comparisons of <u>relative</u> losses or gains from a change as perceived by stakeholders. It is historical fact that in the 1940s, more than a decade after its <u>de jure</u> canonization as a cost standard in the law, a decade of <u>de facto</u> irrelevance to daily living especially to any perceptible pricing, the vague idea of "actual uses" enunciated by the U.S. Supreme Court began its transmogrification. The ensuing station-to-station philosophical piling, although shaky by the late 1980s, still held up over the swirling waters of a changing world the piers of actual costing and actual pricing practices.

- For both telephone companies and their regulators, a beauty of the pricing practices of the station-to-station heyday was that, except for a rough equality of costs to revenues at the "costs = revenue requirements" level, neither the costing method nor the pricing method implied the other. The resulting latitude permitted flexibility in adjusting prices to local political variations. The formula is everything: Where there was demand for relating prices to costs, suitable costs were invented to justify prices.

- After divestiture, what many in the formerly traditional industry hoped might be a "flash-cut" to a new deregulated order unfolded instead as a typically slow-motion political adjustment designed to smooth out shocks on the way to some still unseen hence unformulated and unformulable consensus. The new, somewhat more competitive and much more regulated world of the late 1980s retained key elements of a since-deceased political consensus as well as retaining a still-potent rear guard.

- In the mid-1980s it had been more fashionable to seek a more direct tie between prices and costs than in the fashion of other times, more because of the rhetoric of some increasing competition than because of the realities of competition. But even in the sectors of the American economy that are the most competitive and the least subject to government intervention, workaday prices have little relation to hypothetical and unmeasurable economic costs.

- In the late 1980s the discretionary elements remain the object of controversy, mainly within the state and federal administrative agencies but also in the courts and the Congress as the political process, along with the marketplace, continues the evolution of products and of services, of costs and of prices.

## I. RECKONING COSTS AND DEVISING PRICES

> *The formulas were the key. That is to say, the ways under which the benefits of various Federal programs are calculated. Invariably, these formulas favor some sections of the country over other sections. ... Senator Hill of Alabama was a kind and courtly man, properly concerned about his region of the country. Hence the formula for Hill-Burton funds [for hospital construction]. Programs still going compensate low-income states in proportion to the <u>square</u> of their distance from the national average. In 1977, in a commencement address at the Kingsborough Community College, I suggested the square root. The formula is everything.*
>
> U.S. Senator Daniel Patrick Moynihan
> <u>Letter to New York</u>, September 19, 1987

This paper is about inventing ways of reckoning costs and ways of devising prices, ways that match up with the consensus of the times. From an angle whence the very definitions of products and of services along with the definitions of their costs and of their prices all look discretionary, such questions as "what are the true costs?" and "what are the associated cost-based prices?" amount to hunting the Unicorn.

Consider, instead, costing and pricing as tools. What costing methods and what pricing methods are most likely to serve which policy objectives? To convey what messages to suppliers and to customers? What costing methods and what pricing methods lend themselves how well to practical administration?

Rather than dealing in absolutes -- unless you're blindly committed to your own beliefs as unique and infallible, or committed by professional duty to a cause or a party line -- there is a more productive way. Instead, consider cost and price definitions as fairy tales whose merit lies in how well they meet the needs or the goals of various stakeholders -- companies, customers, regulators, politicians, and so on.

Whatever contending theologies or party lines are in vogue, in practice the prevailing costing and pricing methods reflect more or less faithfully and with greater or lesser time lags the prevailing political balances of their day. At their best, costing and pricing methods are the means to policy ends, not ends in themselves.

What policy ends? Those in harmony with whatever consensus or compromise is acceptable to the stakeholders and to the referees involved in the battle: providers, customers, competitors, regulators, legislators, the courts.

Drawing on the past as well as on the present for its foundations, my framework is meant to help stakeholders cope with the protracted uncertainties that accompany continuing guerilla warfare -- a guerilla warfare not only within the telecommunications industry but also at the borders between the telecommunications industry and other information industries such as the computer industry and the newspaper industry.[1]

Anchoring the big picture on some concrete details, I highlight, at each step, where substantial discretion was or could have been exercised. I refer to data from work in progress at the Harvard Program on Information Resources Policy to give sharp illustrations of what remains an inherently fuzzy situation.[2]

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[1] See, for instance, the September 10, 1987, decision of the United States District Court for the District of Columbia in U.S. v. Western Electric Co., Inc., et al. In Part VIII (Transmission of Information Services) Section F (Necessary Infrastructure Components), the Court proposes a compromise between newspaper and telecommunications interests. But this compromise meanders into the no man's land between telecommunications and computer industry interests, where battles are fought mainly in the Federal Communications Commission's Computer Inquiries I, II, III, (to infinity), and before state commissions. This compromise also makes excursions across the exchange/interexchange boundary (see especially Note 308 of the decision) which, elsewhere in the decision, is presented as the centerpiece of controversy within the telecommunications industry. U.S. v. Western Electric Company, Inc., et al., U.S. District Court for the District of Columbia, 673 F. Supp. 525; 1987 U.S. Dist. LEXIS 10003; 1987-2 Trade Cas. (CCH) P67,815, September 10, 1987, Decided and Filed. See also, U.S. v. Western Electric Co., Inc., et al., U.S. District Court for the District of Columbia, 1988 U.S. Dist. LEXIS 6332; 1988-1 Trade Cas. (CCH) P68,094, June 22, 1988, Filed; and U.S. v. Western Electric Co., Inc., et al., U.S. District Court for the District of Columbia, 1988 U.S. Dist. LEXIS 3066, March 7, 1988, Decided and Filed.

[2] For a fuller background, see Weinhaus, Carol L. and Anthony G. Oettinger, Behind the Telephone Debates. Norwood, NJ: Ablex Publishing Corp., 1988.

Under way at the Harvard Program on Information Resources Policy

## II. DISCRETION IN COST/PRICE RELATIONSHIPS

### A. Milestones of telecommunications cost/price relationships

Folks love to spread the idea that the prices of products or services are related to the costs of those goods, but it ain't necessarily so.

In actuality, prices sometimes have little to do with costs. Sometimes prices and costs are tightly bound together. Mostly, however, the relationship between prices and costs is somewhere between extremes as it swings back and forth like a pendulum in a clock.

The degree of linkage between prices and costs depends more on the political consensus of the moment than on some absolute reality.[3] That consensus is called the prevailing philosophy or the accepted policy by those who like it. That same consensus is dirty politics to those who don't like it. Either way, various policy objectives may be served by tools designed for other, usually antecedent, purposes.

The broad discretion in linking prices and costs is not unique to the telecommunications industry. Most American business, indeed most business, sets its prices in relation to many factors, cost -- however defined -- being only one of them. How tightly or not prices are linked to <u>any</u> of these factors is simply more accessible in industries such as telecommunications where there is regulatory supervision on the public record than where there is not, even though the regulatory process is not exactly transparent.[4]

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are detailed studies of alternatives to current costing methods and to current approaches to price regulation: Silberberg, Jay L., <u>Alternative Telecommunications Costing Methods</u> (Project Plan); Masoner, Jeffrey A., <u>Alternatives to Rate of Return</u>: Stakeholders and Positions (Project Plan).

[3] For one orthodox economic viewpoint, see Gerald R. Faulhaber, <u>Telecommunications in Turmoil</u>: Technology and Public Policy, Cambridge, MA: Ballinger, 1987.

[4] For accounts of sweeping actual observations to contrast with the cramped wish lists of economic theorists see, for example, James R. Beniger, <u>The Control Revolution:</u> Technological and Economic Origins of the Information Society, Cambridge: Harvard Univ. Press, 1986; and

For telecommunications, Figure 1 highlights some of the major philosophical (read "political") shifts of the last half-century. We are in the midst of another major shift right now.

In the remainder of this paper, I sketch how each of these shifts did or did not bring costing or pricing means into harmony with the policy ends of its time. A picture emerges in which outcomes reflected political consensus more than wishful thinking, special interest, or professional dogma.

To put the cost-price relationship story in focus, I use a snapshot of one of the many issues in the telecommunications industry. The name of the snapshot is "exchange access charges: 1986".

Focusing on exchange access charges lights up a well-blazed trail through the events sketched in Figure 1.[5] It helps interpret how these events defined and redefined exchange costing and pricing methods -- and telecommunications costing and pricing in general -- in accord with the politics of the day.

First, I look at the definition of exchange service itself to highlight how much discretion there is in its very definition. There is then further discretion in the definition of access. And, whatever _it_ is, there is yet another layer of discretion in setting its price.

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Alfred D. Chandler, _The Visible Hand:_ The Managerial Revolution in American Business, Cambridge: Harvard Univ. Press, 1977.

[5] Figure 1 is just a sketch. Among the subtleties that it fails to portray is the fact that the plant segments to which SPF (Subscriber Plant Factor) applied and the plant segments to which the 25% allocator applies are not the same (see Section IV.B.1). In part this is merely the matter of the water in the river, which today is never what it was yesterday. But in part it is also a redirection of the river's tributaries. For instance, so-called Inside Wiring, which was included in the plant subject to SPF, is not included in the plant subject to the 25% allocator.

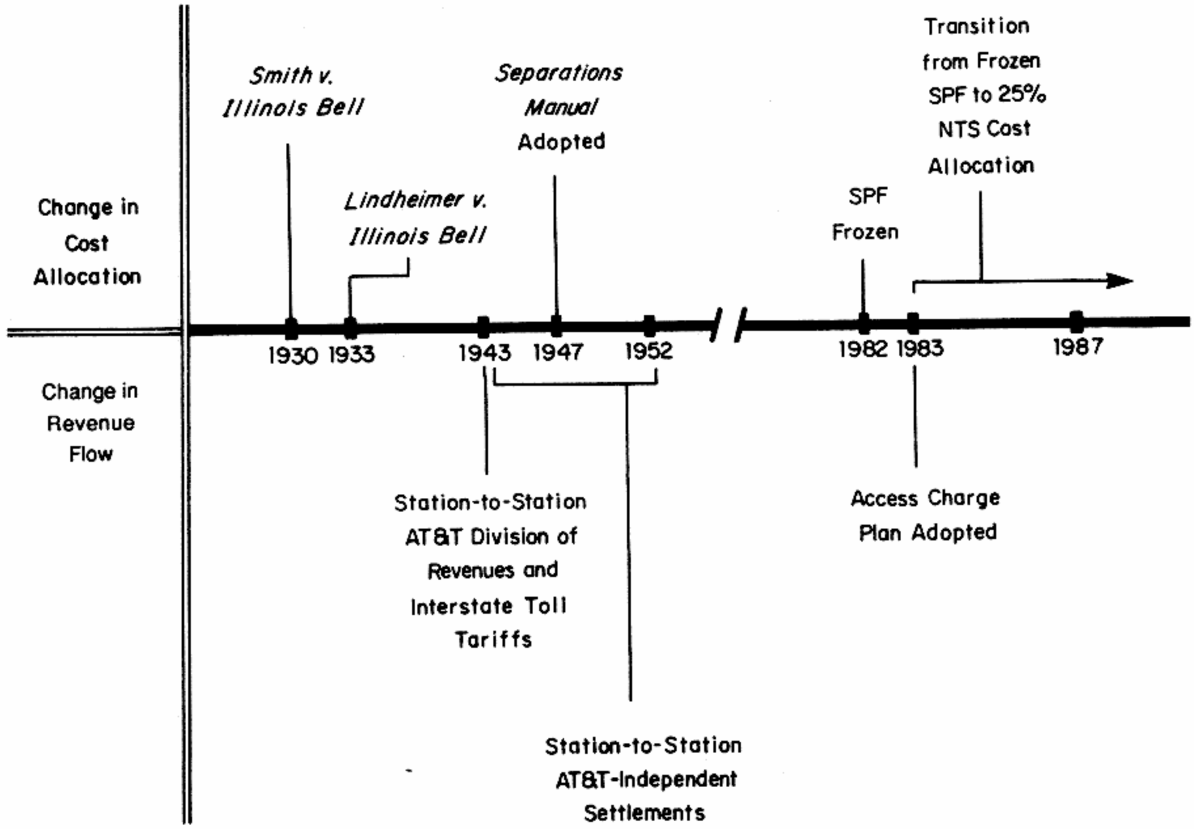




**Figure 1**

**Milestones in Cost/Price Relationships 1930-1987**

B. The scope of discretion: What you see depends on who you are and when you see it

> *"When I use a word," Humpty Dumpty said, in rather a scornful tone, "it means just what I choose it to mean -- neither more nor less."*
>
> Lewis Carroll, Through the Looking-Glass, Chapter VI.

1. What is exchange service?

Access charges are the price paid to so-called "local operating companies" or "local exchange companies" (LECs) for what the 1982

Modification of Final Judgment (MFJ) calls access services[6], namely "the provision of exchange services for the purpose of originating or terminating interexchange telecommunications."[7]

Every object in the MFJ's definition, including exchange service itself, is discretionary and not an immutable natural object or an immutable law of nature. The discretion may be individual or social, immediate or realizable only over generations, but it is discretion nonetheless.

Much discretion runs counter to the commonly held notion that a price is the price of something definite and that a cost is the cost of something definite. Mostly, however, that something is not at all definite, but in constant flux. The thing being costed or priced often will differ tomorrow from what it is today. The thing being costed or priced often differs today from what it was yesterday.

What, for instance, is local or exchange service for which there may be access charges? The Communications Act of 1934 defines it flexibly, even circularly:

> "Telephone exchange service" means service within a telephone exchange, or within a connected system of telephone exchanges within the same exchange area operated to furnish to subscribers intercommunicating service of the character ordinarily furnished by a single exchange, and which is covered by the exchange service charge.[8]

Exchange service, in plain English, is that which is charged for as exchange service. The letter of the law has stayed put since 1934, but what is charged for keeps changing with passing time, as in the growth of Extended Area Service (EAS) which expands the geographic

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6 U.S. v. AT&T, Modification of Final Judgment, 552 F. Supp. 131 (D.D.C. 1982), aff'd mem., 103 S.Ct. 1240 (1983).

7 U.S. v. AT&T, Modification of Final Judgment, op. cit., Section IV(F). A detailed discussion of how exchange and interexchange services are defined is given in Chapter 12 of Behind the Telephone Debates, op. cit. Historically, interexchange services were called "toll services" and exchange services "local services", but "interexchange" and "exchange" are used exclusively throughout this paper.

8 Communications Act of 1934, Title I, Section 3(r), 48 Stat. 1066; codified in 47 USC 153(r).

scope of exchange service and reduces the scope of interexchange service. The juxtaposition of "local" with "exchange", as in "local exchange carrier", is therefore at best an anachronism. For instance, the metropolitan Atlanta area "covered", in the words of the Communications Act of 1934, "by the exchange service charge" is about the same size as the whole state of Rhode Island.

The precise location of the exchange/interexchange boundary might or might not make a difference in the concept of access, the cost of access or the price of access. For example, without changing either cost or price one penny, one can hold that access is a feature of interexchange service or a part of exchange service. The official view sees access as interexchange, but most customers view the Subscriber Line Charge[9] as part of what they pay for exchange service. There are many layers of discretion.

The concept of access resembles a man-made fairy tale concept like Snow White more than it resembles an eternal and immutable mathematical concept like the number pi (the factor that relates the area of a circle to the radius of the circle). There is lots of maneuvering room within which mortal entrepreneurs, mortal judges, and mortal commissioners can define access to mean whatever in their eyes suits the needs of the day.[10]

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[9] By the end of 1987, "Subscriber Line Charge" or "SLC" had become the prevalent term for the flat rate end-user access charge. Earlier terms for the same concept include "customer access line charge" or "CALC" and "end user charge" or "EUC".

[10] The specifics of access charges have been laid down in a series of decisions of the Federal Communications Commission, mostly within the FCC's MTS and WATS Market Structure Inquiry, CC Docket No. 78-72. Details are given in Weinhaus and Oettinger, op. cit., and in Lemler, Mark L., The FCC Access Charge Plan: The Debates Continue. Cambridge, MA: Harvard Program on Information Resources Policy, P-87-8, 1987. The U.S. Congress has also inquired into the matter. See, for example, Access Charge Impact. The Impact of the FCC's Telephone Access Charge Decision: Hearings Before the Subcommittee on Government Information of the House Committee on Government Operations, 98th Cong., 1st Sess., May 18, June 22, September 21 and 27, 1983.

## 2. Discretionary distinguishing features of products and services

But even accepting some generic notion of access into and out of some accepted notion of exchange, there remains further discretion in defining precisely what access is, what access costs, and what price to charge for access. And stakeholders disagree over how to exercise that discretion.

Table 1 suggests the scope of discretion. One product or service is distinguished from another by its features, its cost to its supplier, its price to its buyer, and other categories. Preferences about features, costs and prices usually vary among different stakeholders.

In the late 1980s there was very little agreement among stakeholders over desirable product or service features. Table 2 shows differences among various stakeholders' perceptions of even such a neutral-seeming question as features. These differences reflect the application of modern digital technologies to voice, data, and broadcasting products and services.

Belief in distinctions between digitized voice, digitized data and digitized broadcast products and services is optional for <u>scientists</u>. For scientists it's take it or leave it, depending on what does or doesn't matter to them at any moment about the statistics of zeroes and ones or any other aspect of the digital representation of information.

The distinctions are giving way among <u>technologies</u>, as more devices and systems go digital. But much of the world's technology is embedded along analog voice telecommunications, digital data processing, and analog broadcasting lines. Careers hang on preserving these boundaries, so the distinctions may remain even without a technical difference remaining.

Although the boundaries between the voice and the data <u>industries</u> are showing signs of crumbling here and there (in the late 1980s IBM owned ROLM and part of MCI; AT&T sold computers; The Travelers insurance company used some combined voice/data facilities), there's nary a crack in the wall between broadcasters and the computer and telecommunications industries.

| | Elements of Product or Service | | | |
|---|---|---|---|---|
| **Supplier Stakeholders** | **Features** | **Cost** | **Price** | **Other Categories** |
| CEO<br>Production<br>Sales<br>Legal<br>Accounting<br>Engineering<br>Economists | | | | |
| Other Categories | | | | |
| **Other Stakeholders**<br>Customers<br>Competitors<br>Governments | | | | |
| Other Categories | | | | |



**Table 1**

**Varying Views of Discretionary Elements**

| | Stakeholders' Views of Stability of Feature Boundaries in the Digital World | | |
|---|---|---|---|
| **Stakeholders** | **Voice** | **Data** | **Broadcast** |
| Customers | firm | firm | firm |
| Lawyers | wobbly | wobbly | firm |
| Suppliers | crumbling | crumbling | holding |
| Engineers | going | going | going |
| Scientists | optional | optional | optional |



**Table 2**

**Stability of Features:
Disagreeing Stakeholder Views**

The firm wall around the broadcasting business reflects the state of the law and also reinforces the state of the law. Title III of the Communications Act of 1934 separates over-the-air and cable 'casters from the communications people of Title II of the Act. Cynics see this as no accident, given that politicians see their re-election to office as depending more directly on available air time than on the prices of telephones or of personal computers.

Title II holds the telecommunications industry firmly in its grip but it reaches the computer and other electronic industries only with an "ancillary to" hand. Hence the "bright line" of Computer Inquiry II never really shone. Instead, you have the foggy concept of Open Network Architecture, as computer inquiries march from I through II to III and on toward infinity.

As of the late 1980s the mass of customers, who know what they like when they see it, stuck to tradition. In most companies, the MIS manager and the communications manager were still worlds apart. The voice communications manager, who knew telephone companies and belonged to the International Communications Association, was in one world. The data communications manager who knew Local Area Networks (LANs), and who belonged to a computer users' association like IBM's Guide, was in another world.

With all these differing perceptions, it is not at all surprising that there is disagreement over what products and services even are (never mind what are their costs to suppliers and their prices to customers). The economists' rock-solid conception of products or services does not even apply to the real world.

To see what I mean, you have only to look at the history of the numerous redefinitions of the sizes and of the overlaps of local service areas or of the mid 1980s shift of responsibility for maintaining in-premises telephone wiring from the supplier to the customer. Since divestiture in 1984, AT&T and the Regional Holding Companies (RHCs) even disagreed over what it means to make a product. Does manufacturing include research and development, design, and so forth? Or is manufacturing only the building and aggregating of physical parts? In December 1987, the U. S. District Court for the

District of Columbia ruled that it meant to include design in manufacturing, but the border wars continued.

What follows, however, ignores the plasticity of products and services themselves and assumes that we really know what _it_ is when we talk about _its_ cost or _its_ price.

## III. OUTCOMES OF DISCRETION: A SNAPSHOT OF ACCESS CHARGES 1986

This section sketches the size and the significance of the access charge piece of the stakes in 1986. The next section then sketches how discretionary answers, changing over the years in response to changes in the burning questions of the day, eventually mutated into the access charges of 1986.

As mentioned before, the concept of access charges occupies but one position in the swing of the pricing pendulum. Other stakes, such as the nature and extent of government intervention, swing on their own pendulums, sometimes in step, sometimes not. But my focus remains on the example of exchange access charges. The following discussion considers access charges in the context of total operating revenues.

### A. What 1986 access revenues amounted to

In 1986, the Local Exchange Carriers (LECs) of the United States charged others approximately $26 billion for access to their exchange services. Subject to some incompleteness in my data and subject to some fuzziness of corporate discretion at the edges of the reckoning of the amount, that much is hard fact. This hard fact, however, rests on a discretionary foundation that was shaped and continues to be shaped by the forces sketched in the next section.

Of the $26 billion that LECs received in access charges, about $22 billion was paid to LECs by three interexchange carriers (IXCs): AT&T, MCI, and US Sprint. The remaining $4 billion was paid to the LECs either by smaller IXCs or by their non-carrier customers. These payments were either for Subscriber Line Charges (federal or state mandated) or for other access charges.[11] The breakdown of the $4

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[11] As of early October 1987, our work-in-progress has enabled us to break down the $4 billion into roughly $3 billion for Subscriber Line Charges and $ 1 billion for other access charges. The latter include charges paid by such IXCs as Alltel, charges for inter-LEC interLATA corridor traffic, payments under BOC-Independent arrangements that succeed state settlement agreements, and the charges for special access services to businesses. Special access includes services that carry high-volume traffic directly from the businesses to an IXC's point of presence (POP) -- one form of so-called service bypass -- and

billion and its relationship to the total is an artifact of a possibly arrested transitional process outlined in Figure 13 (Section IV).

Somewhat fuzzier -- but still hard enough -- is the fact that the 1986 operating revenues of the LECs amounted to between $80- and $90 billion. Included in the $80-90 billion are revenues from activities such as directory advertising and sales and from unregulated ventures. These revenues amount to some $10-12 billion.

What you see as the <u>telecommunications</u> revenues of LECs (or their parents) depends on whether you count revenues like those from directory advertising in or out. This is a matter on which practices differ among LECs.[12] It is subject to continuing review by the U. S. District Court for the District of Columbia which, in 1987, retained and actively exercised authority over the structure of the divested pieces of the former Bell System.

B. What customers paid in 1986 to IXCs and to LECs

Figures 2 and 3 put the $80-90 billion total LEC operating revenues in the context of the pieces of the traditional industry.[13]

Figure 2 shows the aggregate of what end-user customers in 1986 paid to the three largest interexchange carriers (IXCs) and what end-user customers (and some others) in 1986 paid to local exchange carriers (LECs). In aggregate, the customers who buy interexchange service between LATAs, both interstate and within states, generate some

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services by LECs directly to businesses, the so-called customer-ordered-LEC-access or COLA.

[12] Following divestiture, six of the RHCs each created a separate subsidiary for directory services. Bell Atlantic alone retained directory services within its regulated telephone companies. In the late 1980s this matter was under review in the courts of several states, Arizona among them.

[13] Further disaggregation and categorization of certain non-telephone revenues of both IXCs and LECs would alter both the totals and the proportions in Figures 2, 3, and 4. The overall static impression would not change materially since the amounts in question add up to less than 10% of the total. The flux in that 10% is important, however, to understanding the dynamics of costing and pricing strategies.

50% of the total revenues. The customers who buy exchange service (and interexchange service within LATAs) pay the other half of the total revenues. Some of what end-user customers pay to the major interexchange carriers is then paid by those carriers to the LECs. This brings the LEC revenues from the level in Figure 2 to the $80-90 billion level (Figure 3).

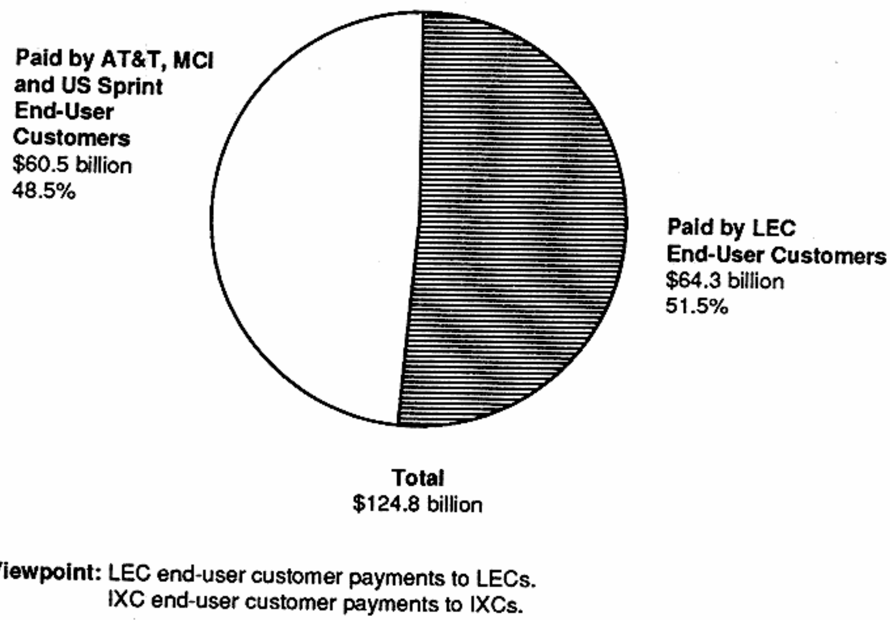




**Figure 2**

**1986 LEC and IXC Operating Revenues as Paid by End-User Customers**

With all the changes in industry structure and in service definition that happened in the 1970s, there is a remarkable stability in the overall proportions of Figure 2. From 1976 to 1980 roughly 50% of the total bill was paid by the buyers of what was then still mostly called toll service (interexchange service, both interstate and intrastate) and the other 50% of the total bill was paid by the buyers of exchange service.[14]

The LEC revenues of Figure 2 do include some revenues from intraLATA interexchange service alongside the exchange service revenues. But how many local service areas make up a LATA, hence the proportions of exchange and interexchange communication, are as discretionary within the LATAs as they were within whole states before LATAs were defined in response to the 1982 Modification of Final Judgment. Essentially, in the late '80s as in the late '70s, the proportions of total payments for calls between down home and way out there and for calls between down home and down home held in the 50-50 neighborhood.

The next section suggests how the lingering of a waning consensus supported this stability.

C. Who kept which access revenues in 1986

Figure 3 shows the aggregate of what the three largest IXCs and the LECs kept for themselves. Approximately 30% of the total revenues are kept by the IXCs and about 70% are kept by the LECs.

The 20% difference between Figure 2 and Figure 3 is made up of the payments that the three largest IXCs make to the LECs for access to the LECs' exchange services. The aggregate amount was about $22 billion in 1986. In effect, the users of interexchange service pay this access charge (levied by the LECs) as part of the price charged by the IXCs for interexchange service. As indicated in note 19 further on, this is mostly but not entirely for service between exchanges in different LATAs, the Local Access and Transport Areas defined pursuant to the Modification of Final Judgment.

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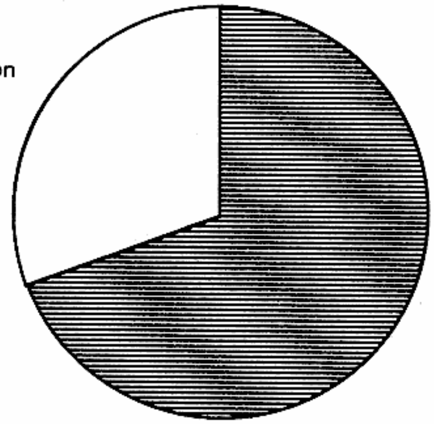
[14] For details, see Weinhaus and Oettinger, Behind the Telephone Debates, Figure 8.6, p. 60. For a 1980 baseline, see also Sichter, James W., Profits, Politics and Capital Formation: The Economics of the Traditional Telephone Industry. Cambridge, MA: Harvard Program on Information Resources Policy, P-87-7, 1987, especially Figure 3.7(a), p. 107.




**Viewpoint:** LECs as receivers of their end-user customer payments plus IXC and other access customer payments. IXCs after access payments to LECs.



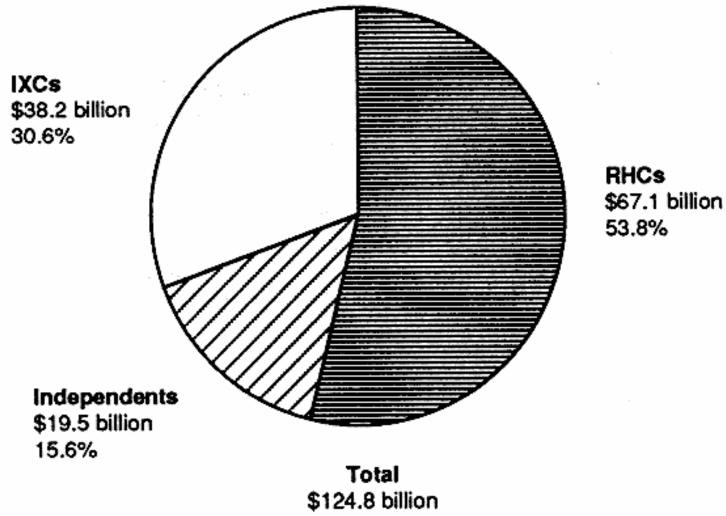
**Figure 3**

**1986 LEC and IXC Operating Revenues as Kept by Companies**

With the $4 billion or so in other access payments to the LECS by customers other than AT&T, MCI, and US Sprint, the total access charge revenues of the LECs totalled about $26 billion in 1986. The amounts and the proportions of these revenues reflect the 1986 balance between the politics of universal service and the politics of cost-causation. The dynamics of this situation are sketched in the description of Figure 13 (Section IV).

In a rough and ready way, then, the $80-90 billion consists of revenues from more or less traditional telephone services rendered by the LECs with their intraLATA networks. This includes local access for both inbound and outbound interLATA traffic as well as local access for intraLATA interexchange traffic handled by carriers other than the local LEC itself. It mainly includes the LECs' own exchange services and intraLATA interexchange services, a pricing distinction based on differences whose technological significance at the end of the 1980s continued to diminish toward the vanishing point.

Figure 4 shows how the total LEC revenues are distributed between the RHCs and the Independent companies.




**Viewpoint:** LECs (Independents and RHCs) as receivers of their end-user customer payments plus IXC and other access customer payments. IXCs after access payments to LECs.



**Figure 4**

**1986 RHC, Independent, and IXC Operating Revenues as Kept by Companies**

Table 3 details the access revenues and the operating revenues company by company. The High and Low figures roughly bracket the uncertainty.[15]

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15 Notes 11 and 13 above explain the sources of the fuzziness.

| | Access Revenues ($Millions) | Operating Revenues ($Millions) Low | High |
|---|---|---|---|
| Ameritech | $2,487 | $8,077 | $9,326.0 |
| Bell Atlantic | $2,685 | $8,224 | $9,921.0 |
| BellSouth | $3,452 | $9,735 | $11,444.0 |
| NYNEX | $2,984 | $9,897 | $11,342.0 |
| Pacific Telesis | $2,695 | $7,540 | $8,867.0 |
| Southwestern Bell | $2,797 | $6,838 | $7,902.0 |
| USWest | $2,595 | $7,570 | $8,308.0 |
| TOTAL RHCs | $19,694 | $57,880 | $67,110 |
| Centel | $397 | $833 | $1,370.0 |
| Cincinnati Bell | $104 | $430 | $492.0 |
| Contel | $982 | $1,835 | $3,074.0 |
| GTE | $3,357 | $11,277 | $15,112.0 |
| SNET | $317 | $1,433 | $1,433.0 |
| United Telecom | $924 | $2,372 | $2,372.0 |
| Other Independents | $698 | $849 | $1,237.0 |
| TOTAL Independents | $6,779 | $19,029 | $25,090 |
| TOTAL LECs | $26,473 | $76,909 | $92,200 |



**Table 3**

**1986 Local Exchange Company Access and Operating Revenues**

D. Sensitivities to changes in access revenues

Although the Independents as a group get less total revenue from access charges than do the RHCs, some of the Independents are more dependent than the RHCs on access charges. They are therefore more sensitive than the RHCs, and more vulnerable, to changes in the level of access charge revenues. This phenomenon reflects historical cost patterns and a diminishing but still lingering rural political power (as sketched in the next section).

1. Sensitivities in the large

For the local exchange carriers as a whole, revenues from access charges in 1986 amounted to about one third of their operating revenues (Table 4). But there is no such thing as an average LEC any more than there is an average person.

| | Access Percent of Op.Revs | Operating Revenues ($Millions) | Effect on Access and Other Operating Revenues of Shifting 1% of Total Revenues from Access to Other | | |
|---|---|---|---|---|---|
| | | | Percent change in access revenue level | Percent offset in other operating revenue level | Magnification (>1) or Reduction(<1) of swing |
| Other Independents | 69% | $1,043 | 1.4% | 3.3% | 2.3 |
| Contel | 43% | $2,455 | 2.3% | 1.7% | 0.7 |
| United Telecom | 39% | $2,372 | 2.6% | 1.6% | 0.6 |
| Centel | 38% | $1,102 | 2.6% | 1.6% | 0.6 |
| Southwestern Bell | 38% | $7,370 | 2.6% | 1.6% | 0.6 |
| Pacific Telesis | 33% | $8,204 | 3.0% | 1.5% | 0.5 |
| BellSouth | 33% | $10,590 | 3.0% | 1.5% | 0.5 |
| USWest | 33% | $7,939 | 3.1% | 1.5% | 0.5 |
| TOTAL RHCs | 32% | $62,495 | 3.2% | 1.5% | 0.5 |
| TOTAL LECs | 32% | $84,555 | 3.2% | 1.5% | 0.5 |
| TOTAL INDEPENDENTS | 31% | $22,060 | 3.2% | 1.5% | 0.5 |
| Bell Atlantic | 30% | $9,073 | 3.3% | 1.4% | 0.4 |
| Ameritech | 29% | $8,702 | 3.5% | 1.4% | 0.4 |
| NYNEX | 28% | $10,619 | 3.5% | 1.4% | 0.4 |
| GTE | 26% | $13,195 | 3.8% | 1.4% | 0.4 |
| Cincinnati Bell | 23% | $461 | 4.4% | 1.3% | 0.3 |
| SNET | 22% | $1,433 | 4.5% | 1.3% | 0.3 |



**Table 4**

**1986 Local Exchange Company
Sensitivity to Changes in Access Revenues**

At one extreme, revenues from access charges amounted to only 22% of the total operating revenues of Southern New England Telephone (SNET). At the other extreme, the thousand or so very small Independent companies in the aggregate depended on access charges for 69% of their revenues. Clustered around the average are the former Bell Operating Companies (held since their 1984 divestiture under the umbrella of the seven RHCs) and the larger Independents.[16]

In 1986, then, the total income of all LECs depended fairly heavily on the aggregate of access charges. The collection of a

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16 It can be argued that the numbers in Table 4 somewhat understate dependence on access revenues: intrastate intraLATA toll prices include an element justified as compensation for local access costs.

substantial portion[17] of these access charges was then still enforced by federal authority over a portion of telecommunication supplier costs. In 1986, this portion of costs was still jurisdictionally separated in accordance with processes designed to support an earlier consensus which still commanded political respect (Section IV).

### 2. Sensitivities in the small

Table 4 also highlights the LECs' widely spread sensitivity to small changes in the level of the access charge revenue stream.

At one extreme, for the small Independents as a group, a shift of 1% of total operating revenues from access charges to other operating revenues would amount to a reduction of 1.4% in access revenues. To compensate for this shift these companies would need to increase other operating revenues by 3.3%. The effect is a larger recovery from other services (read greater increase in prices). The shift from access is magnified by a factor of 2.3.

Factors that might shift revenues from access to other services include changes in jurisdictional separations and a repricing of intrastate services that would reduce intrastate inter- and intraLATA access prices or interexchange prices and increase exchange prices. Such changes might be triggered by increases in bypass, changed definitions of what constitutes access, and other regulatory changes.

At the other extreme, the effect would be opposite. The shift of 1% of total operating revenue amounts to shifting 4.5% of access revenues for SNET, with only a 1.3% change in other operating revenues required to offset this shift. Here, the offsetting shift is less than one third of the shift in access charge revenues.

Figure 5 graphically portrays the relationship between how many dollars a company collects in access charges and how sensitive it might be to changes in that amount.

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17 Data as of early October 1987 suggest that "substantial portion" means about 75%. Gartner Group, Point-to-Point. Stamford, Conn. October 2, 1987, p. 6. This understates total dependence on access revenues.

In the left-hand column of Figure 5 the shading gets darker as total access revenues decrease. In the right-hand column, companies are ranked by their sensitivity to changes in access revenues. However, these companies retain their shading from the left-hand column. For instance, the shading of Other Independents in the right-hand column indicates that although they are the most sensitive to changes in access revenues, the absolute amount of those revenues is among the least. At this stage we have only speculations to offer about what accounts for the patterns in Figure 5.

| LEC Access Revenues ($ millions) | Rank | Access as Percent of Total Operating Revenues |
|---|---|---|
| Bell South | 1 | Other Independents |
| GTE Telephone | 2 | Contel Telephone |
| NYNEX | 3 | Centel Telephone |
| Southwestern Bell | 4 | United Telephone |
| Pacific Telesis | 5 | Southwestern Bell |
| Bell Atlantic | 6 | US West |
| US West | 7 | Pacific Telesis |
| Ameritech | 8 | Bell South |
| Contel Telephone | 9 | GTE Telephone |
| United Telephone | 10 | Bell Atlantic |
| Other Independents | 11 | Ameritech |
| Centel Telephone | 12 | NYNEX |
| SNET | 13 | SNET |
| Cinncinnati Bell | 14 | Cinncinnati Bell |



**Figure 5**

**Relation between Sensitivity to Access Charge and Total Access Revenues**

E. Sources and distribution of 1986 access revenues

Table 5 shows the sources and the distribution of revenues generated by access charges. In anticipation of Section IV, note that the numerous and geographically scattered small Independents received only 2.6% of the 1986 LEC access revenues.

| | Percent of Total Industry | Access Revenues ($Millions) |
|---|---|---|
| | PAYERS | |
| Access charges to AT&T, MCI and US Sprint | 84.4% | $22,351 |
| Subscriber line and other access charges | 15.6% | $4,122 |
| TOTAL | 100.0% | $26,473 |
| | RECEIVERS | |
| BellSouth | 13.0% | $3,452 |
| GTE | 12.7% | $3,357 |
| NYNEX | 11.3% | $2,984 |
| Southwestern Bell | 10.6% | $2,797 |
| Pacific Telesis | 10.2% | $2,695 |
| Bell Atlantic | 10.1% | $2,685 |
| USWest | 9.8% | $2,595 |
| Ameritech | 9.4% | $2,487 |
| Contel | 3.7% | $982 |
| United Telecom | 3.5% | $924 |
| Other Independents | 2.6% | $698 |
| Centel | 1.5% | $397 |
| SNET | 1.2% | $317 |
| Cincinnati Bell | 0.4% | $104 |
| RHCs | 74.4% | $19,694 |
| INDEPENDENTS | 25.6% | $6,779 |
| TOTAL LECs | 100.0% | $26,473 |



Table 5

**Payers and Receivers of 1986 Local Exchange Company Access Revenues as Percentage of Total Industry Access Revenues**

Also of continuing political significance for exchange pricing are the relationships between LEC access charges to the major interexchange carriers and other factors. One of these factors is the total of LEC access revenues, which includes revenues from Subscriber Line Charges (SLC). Another is the level of total IXC charges to their customers.

The high dependence by the LECs on access revenues from the three largest IXCs, especially AT&T, sets up a major customer/major competitor relationship that manifests itself in continuing political tensions between AT&T and the LECs. The high proportion of their total revenues that IXCs spend on access charges is an incentive for the IXCs to bypass the LECs and to push for government intervention to prevent others, such as end-users, from engaging in bypass. But there are countervailing incentives. One is the desire not to antagonize major customers, LECs and end-users among them. Another is that a small amount of bypass would make no difference: the practices of the late 1980s would simply spread the same costs over fewer minutes of use of their plant by interexchange carriers. And, below some large volume of usage, bypass is unattractive and the LEC the only supplier. As of mid-1988, there were many guerilla skirmishes along the periphery of the access charge structure, but no one was seriously threatening to nuke the major elements of that structure.

Table 5 shows that in 1986 most of the access charges collected by LECs were paid by the largest IXCs. These access charge payments of $22 billion amounted to over 50% of the $42 billion of revenues that AT&T, MCI, and US Sprint collected from their customers as revenues mostly but not exclusively for interLATA interexchange services.

Table 5 also shows that no more than $4 billion or 16% of LEC access revenues in 1986 came from the phase-in of access charges paid by end-users, the so-called SLC, and from other charges not flowed through AT&T, MCI, and US Sprint. Both the IXCs and the LECs have favored a more rapid shift of access cost recovery from indirect charges to end-users through usage-sensitive access charges to IXCs to direct non-usage-sensitive charges to end-users like the SLC. The latter offers greater stability, a broader base of customers providing the revenue, and less incentive for large users to bypass. Consumer advocates, including such influential legislators as Edward J. Markey, Chairman of the Subcommittee on Telecommunications and Finance of the U.S. House of Representatives, have been vocal in their opposition to that shift.

From work still in progress (see note 11), our best estimate is that approximately $3 billion, or some 12%, of LEC access revenues in 1986 came from the SLC. The remaining $1 billion or 4% of LEC access revenues came from a mix of:

- IXCs other than the three largest; and
- a variety of end-users and intermediate users of special access and other access services.

Hence 84 to 88% or so of LEC access revenues comes from payments to LECs by interexchange carriers (IXCs). The indications in note 17 above suggest that about 75% of those payments by IXCs is for interstate access according to federal policy. The remainder of the payments by IXCs is for intrastate access according to the policies of 50 states and the District of Columbia.

LEC access revenues from IXCs include payments by IXCs for the Carrier Common Line Charges (CCLC) for access plant said to have non-traffic-sensitive costs, including the local loops, CPE, embedded inside wire, and station equipment.

Notable among the many disjunctions between costing and pricing philosophies is the fact that much pricing for access is tied to traffic volume although the costs said to underlie the prices are said to be insensitive to traffic volume. These apparent logical disjunctions, common in the events of Figure 1, are based on a logic that is sketched in Section IV. They are as important in understanding the ways of international telecommunications as they are in understanding U.S. domestic policies and practices.[18]

The rest of the payments by IXCs includes charges for so-called traffic-sensitive costs (including switching, intercept, information, and transport) and special access charges.

Although the bulk of access charges paid by interexchange carriers are for interstate and intrastate interLATA access, "interexchange" and "interLATA" are not synonymous.[19] Some intrastate interexchange carriers may also pay intraLATA access. Independent companies may buy access from LECs (and vice versa) in states where pooling has been

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[18] For details on the international aspects, see Aulik, Jaak. Financial Structures in Competitive Telecommunications: An International Overview. Cambridge, MA: Harvard Program on Information Resources Policy, P-87-2, 1987.

[19] Some confusion in the terminology has been injected by the courts. The text of the 1982 consent decree of the Court in U.S. v. Western Electric (also referred to as the Modification of Final Judgment or MFJ) uses the term "interexchange" in a way that the parties and the Court defined to be synonymous with "interLATA". The LATA is a concept that was itself tailored to the exigencies of the MFJ. The older usage of "interexchange" by the industry is broader. This usage holds interexchange services in contrast to exchange services defined as in the Communications Act of 1934 (see note 8 above). It therefore makes sense to refer to intraLATA interexchange services. In late 1987 intraLATA interexchange services were authorized by 18 states, including Florida and South Carolina where authorization had a more limited scope than in the others.

replaced by an access arrangement. In the "corridors" around New York City and Philadelphia, and in a few anomalous instances of -- hold your hat -- interstate intraLATA interBOC interexchange service, such as in Illinois east of St. Louis, BOCs may buy access from other BOCs. Still others, such as value-added networks (VANs) like Tymnet, Telenet, and so on, also buy access.

Moreover, not all buyers of access are carriers. For example, some large, sophisticated business customers may buy access, especially if they have their own physical network. Further wrinkles include variations in the disposition of access revenues. By the end of 1987 almost all states let the LECs in their state keep the intrastate interLATA access charges that they bill. Only North Carolina clung to the formerly prevalent state pooling of these revenues. But practices differed more for intraLATA toll revenues. Several other states were with North Carolina in continuing pooling. Florida, Kansas and Missouri were about to switch to "bill and keep" effective at the start of 1988. "Bill and keep" was already in place in most.

In 1986 these exotic-seeming variations accounted for at most $1 billion or 4% of access revenues and likely less than half of that. To some, however, they stand for the wave of the future. Hence they account for more controversy than their small relative size at the end of the 1980s would suggest.

Figure 6 focuses on where most of the access money actually came from in 1986, namely the three largest IXCs. A glance back at Figures 2 and 3 (pages 14 and 16) then gives a graphic sense of what portion of prices paid by the end-users of interexchange services flows through the interexchange carriers to pay for costs of plant belonging to the local exchange carriers and for related expenses. And, about half of the payments by customers to the IXCs flow on to the LECs as payments for access.

There can be and indeed there have been and there continue to be numerous controversies over how to look at the costs of "local" plant. How these costs are viewed may or may not have an impact on what prices which end-users pay. Shifts in how stakeholders view costs of "local" plant is the main topic of the next section.

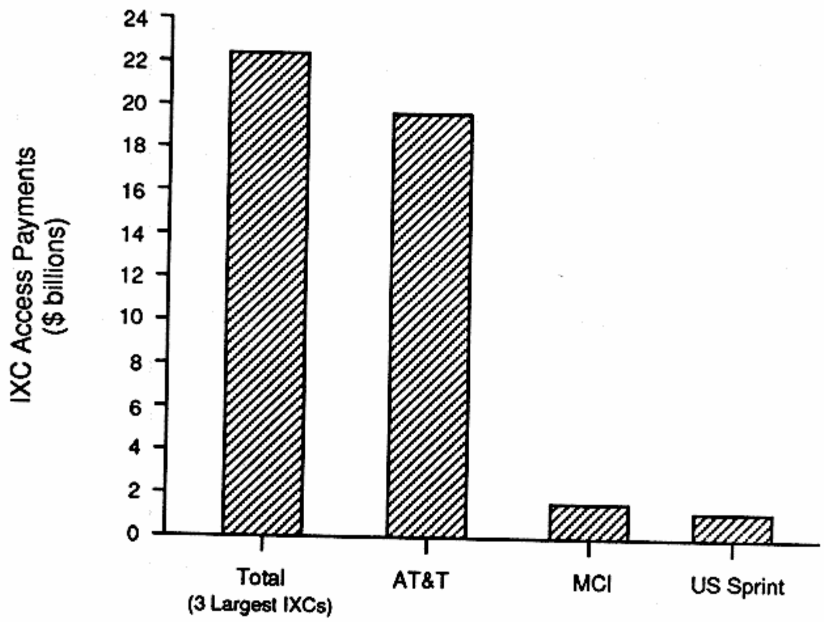




**Figure 6**

**1986 Largest IXC Access Payments**

## IV. EXERCISING DISCRETION: ACCESS CHARGES BY OTHER NAMES

> *"Would you tell me, please, which way I ought to go from here?"*
>
> *"That depends a good deal on where you want to get to," said the Cat.*
>
> *"I don't much care where ----" said Alice.*
>
> *"Then it doesn't matter which way you go," said the Cat.*
>
> *"---- so long as I get somewhere," Alice added as an explanation.*
>
> *"Oh, you're sure to do that," said the Cat, "if you only walk long enough."*
>
> Lewis Carroll, Alice in Wonderland,
> Chapter VI.

To understand where access charges might be going as the 1980s give way to the 1990s, let's consider what access charges were in 1986. To get there from here not only must you know where you want to get to, but also where you are starting from.

If, besides, you have some idea of the forces that steered you where you are now, there is an off chance that this idea will help you see in what direction you might go if you do nothing about it.

It is with the aim of discerning some of the key forces and trends that this section reviews some history of what balanced with what over the years in defining prevailing views of costing and pricing; it also reviews how that balance responded to some key forces and trends.

### A. The board-to-board religion

In the beginning, at least of this story, was board-to-board[20] as practiced through the 1930s. The traces of this beginning remain embedded in the structure of the telecommunications industry of the late 1980s. The political forces that acted on the industry in the

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20 For details on the history up to the 1930s, see Sichter, James W., Separations Procedures in the Telephone Industry: The Historical Origins of a Public Policy. Cambridge, MA: Harvard Program on Information Resources Policy, Publication P-77-2, 1977. See also: Gabel, Richard, Development of Separations Principles in the Telephone Industry. East Lansing: Michigan State University, 1967.

1930s are the political forces that acted on it in the late 1980s, albeit with changed strengths, alongside the attraction of the possibilities opened by new technologies.

1. Orthodoxy defined

The justifying philosophy for the board-to-board view of the world was remarkably straightforward (one is tempted to say unconvoluted) by the standards of the 1980s. Figure 7 illustrates this philosophy.

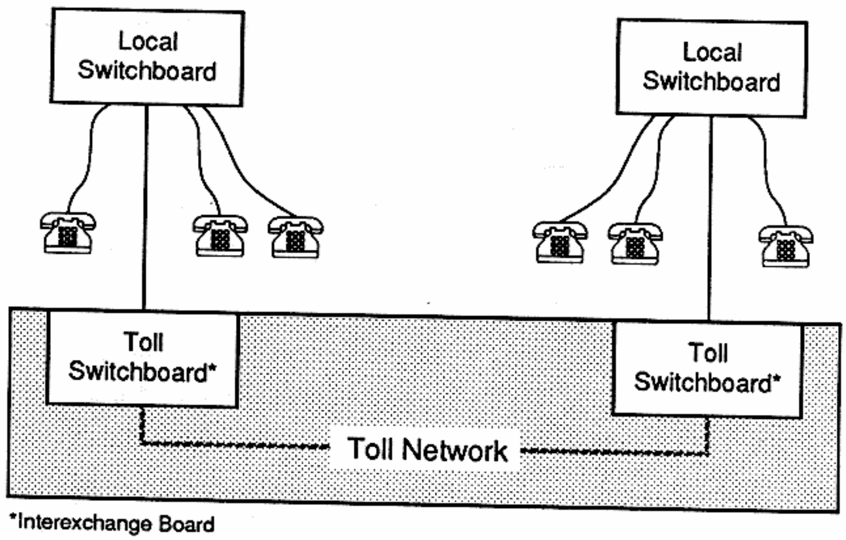




**Figure 7**

**The Board-to-Board View**

An ordinary local call went through the local switchboard, period. An originating interexchange or long-distance call also went through the local switchboard. Only, instead of being routed to another local telephone, it was routed to literally another board which switched the interexchange call toward some distant destination where this process was reversed. The distant interexchange board would route the incoming call to the appropriate local board. Finally, the local board would route the incoming call to the intended telephone.

What could be simpler under these idyllic conditions of yesteryear than to think of costs as being neatly sliced in two at the local edge of the interexchange board?

From the local standpoint, the interexchange board is just another station and the circuit to the interexchange board just another local loop with a switchboard instead of a telephone at the end. So, the costs of local service naturally include the costs of every piece of telephone equipment up to the edge of any interexchange board but not including that interexchange board.

The costs of interexchange boards and of everything that connects them among themselves are costs of interexchange service. Hence the name "board-to-board" for this approach to defining the costs of interexchange service. Naturally, during the time when this outlook held sway, it was regarded as entirely natural and logical. Anyone who thought there might be alternatives had to be a nut, a heretic, or worse.

It is easy to construct a pricing philosophy in harmony with this costing philosophy. There are three parts to pricing an interexchange call: the price of the two local calls at either end and the price of the interexchange call in between. The whole price of a long distance call to the customer is then similar to the price of getting from one's home to a hotel in a distant city. You make separate payments to the cabbies at each end and to the airline. What machinations there might be among the cabbies and the airlines and how all this gets on the customer's bill are "details" not to get into in this brief sketch of the way it was.

Costing and pricing went hand in hand, to all appearance in natural and indissoluble harmony.

## 2. Smith v. Illinois Bell: the actual uses heresy

American courts are like Venus fly traps. Their power is nearly absolute over any who put themselves within their reach. But until you're within their reach, the courts -- like the fly traps -- just sit there. Without a case put before them, they are powerless.

A dispute among stakeholders is what brought costing philosophy before the United States Supreme Court in the early 1930s. The most memorable case was Smith v. Illinois Bell (Figure 1). One aspect of the dispute covered the relative scope of federal and state jurisdiction over the telephone industry.

The court took the view that costs must be appropriately divided between state and federal jurisdictions. That finding would have meant little if the envisaged jurisdictional division had followed the three-part cut of the board-to-board costing method. But the court was seen as prescribing another method for the jurisdictional separation of costs, that is for tagging costs according to whether they applied to services under federal jurisdiction or to services under the jurisdiction of one of the states.

The court's language was suitably oracular: "While the difficulty in making an exact apportionment of the property is apparent, and extreme nicety is not required, only reasonable measures being essential, it is quite another matter to ignore altogether the actual uses to which the property is put."[21]

Eventually that broad language was used as a legal underpinning for what some today call a "joint and common cost" view of local costs. True believers hold it to be obvious to anyone of sound wit and good will that local facilities are used for both exchange calls and (both intrastate and interstate) interexchange calls, not for local calls only as in the classical board-to-board way. For example, the statements in the September 1987 issue of Management Accounting[22] that under board-to-board "all common costs of providing telephone service were charged to local rates" and that "toll prices recovered only the incremental direct costs of providing long distance services" imply the prevailing wisdom that viewing costs as common is a matter of natural law rather than a discretionary convention.

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[21] Smith v. Illinois Bell Telephone Company, 282 U.S. 150-151 (1930).

[22] Cardullo, J. Patrick, and Richard A. Moellenberndt. "The Cost Allocation Problem in a Telecommunications Company," Management Accounting, September 1987, p. 40.

Within that convention, the costs of local facilities are joint or common costs of exchange (and state interexchange) and of interstate interexchange services. Or, putting it another way, both interexchange costs and exchange costs run from station to station. In the practice of the 1980s this would translate into the costs incurred in linking one interface with CPE to another interface with CPE. In the 1930s, of course, the CPE was called a station, belonged to the phone company, and was part of the company's network -- not outside it.

From this perspective the board-to-board view erred in treating the costs at the two local ends as strictly local costs strictly under state jurisdiction. Instead, since interstate interexchange calls travel over local lines, some local costs properly fall under federal jurisdiction.

The new Smith view could immediately have been just as serviceable as board-to-board. From an impartial viewpoint the argument between board-to-board and station-to-station looks much like the quarrel over where to open boiled eggs between Jonathan Swift's big enders and little enders. With hindsight and impartiality, it's pure preference. Vague court or legislative language can be translated into whatever outcome you want if the stakeholders agree. Then as now, fundamental choices about costing are entirely discretionary. Once made, they may have the force of law and hence be very real. A myth turned into law is reality unless and until supplanted by another.

In the 1930s, however, the Smith philosophy had no serious muscle backing it. That came only later when new practices needed justification and saw it in the new philosophy. Although articulated in 1930, the joint or common cost philosophy that was eventually tagged "station-to-station" and that ultimately supplanted board-to-board had no immediate practical consequences. It was only later that the vague judicial exhortation to pay some attention to "actual uses" was turned into specific administrative cost allocation practices summed up by the code words "relative use".

### 3. The Lindheimer case: heresy suppressed

Lindheimer v. Illinois Bell[23] quintessentially stands for prices and costs that, as far as any customer might know, have nothing noticeable to do either with him or with one another.

The Lindheimer case was brought to settle interpretations of the earlier Smith. Lindheimer is held to have said that in practice the needs of federalism could be met by putting a federal tag on some appropriate piece of the costs of exchange service and a similar federal tag on corresponding revenues from exchange service. The ingenuity of this reasoning becomes evident: the net effect of Smith plus Lindheimer is word magic, or just relabeling.

Meeting the letter of the law made no difference in many another realm. The customer's bill didn't change. The company just renamed the reason for collecting the money: certain costs of local plant attributable to the carriage of interstate interexchange calls were recognized as being under federal jurisdiction and likewise an exactly equal amount of revenues. Specifically, customers of interexchange services paid exactly what they paid before, as did customers of exchange services. All that had changed of the earlier ways was the justification for both costs and prices.

Somewhere, on the books of each company for each state, there was inscribed a number standing for the portion of local costs "separated" from total local costs to become the cost of carrying outbound and inbound interstate interexchange calls. Only when it became politically expedient did station-to-station become the new cost orthodoxy and also manifest in prices and on bills.[24]

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23 Lindheimer v. Illinois Bell Telephone Co., 292 U.S. 151, 1933.

24 In a personal communication, William R. Malone, Esq. summarized the technical legal situation as follows: "... the Supreme Court in Smith did not require relative use, and it certainly didn't say how costs were to be allocated. Its holding was confined, as the Court itself later noted in Lone Star Gas Co. v. Texas, 304 U.S. 224, 241 (1938), to requiring the separation of 'intrastate and interstate property, revenues, and expenses' of a carrier's business as 'essential to the appropriate recognition' of the separate Federal and state competencies. 282 U.S. at 148. See also Louisiana PSC, 476 U.S. at 375. In that sense Smith made no law beyond Smyth v. Ames, 169 U.S.

B. The station-to-station religion: relative use triumphant

1. Smith v. Illinois Bell: apotheosis

*The Department of Justice's consultant's report on competition in the telephone industry, submitted to the divestiture court, stated that "Allocating truly common costs among the activities they support is a mysterious and fundamentally arbitrary process."*

U. S. General Accounting Office, 1987[25]

Was it good or bad that the judicial cost allocation scheme of Smith was for a time made nil in pricing effect by Lindheimer?

I think that fielding questions such as this, although widely practiced, is playing the wrong game. In costing and in pricing there are no absolutes. Rather than dealing in absolutes, there is a more productive way. Instead, consider cost and price definitions as adaptable policy tools. They are means not ends. Neither are there mysteries. In the past and in the present costing and pricing methods reflect more or less faithfully and with some time lags the prevailing political balances.

That one among all fairy tales then prevails as the law of the land for a time becomes an intelligible outcome of a nation's political processes -- including, in the United States, the checks and balances among the branches of governments, between states and their

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466, 541 (1898), and The Minnesota Rate Cases, 230 U.S. 352, 435 (1913). As for Lindheimer, ... , the Court approved an allocation that in fact violated these undisputed principles, suggesting that precision was never very important to the Court." More detailed legal background is in Ellen S. Friedenberg, Judicial Requirements for the Apportionment of Joint Costs, Cambridge, MA: Program on Information Resources Policy, Incidental Paper I-81-3, June 1981.

[25] United States General Accounting Office, Telephone Communications: Controlling Cross-Subsidy Between Regulated and Competitive Services. Washington, DC, GAO/RCED-88-34, October 1987, p.27. Quotation cited as: The Geodesic Network, 1987 Report on Competition in the Telephone Industry, Consultant's Report to the U.S. Department of Justice, January 1987, p. 6.38.

federations, and between government and governed. This routine phenomenon is neither the holy mystery that true believers have tended to proclaim nor the devilish perversion that detractors have claimed to have ferreted out.

The question, therefore, is not is something good, but who are the stakeholders and which of them benefit from a change.[26] The shifting connection between costs and prices is significant only in terms of before-and-after comparisons of losses or gains from a change as perceived by stakeholders. The netting out of these gains and losses is a political question in the best sense of the word.

It is historical fact (see Figure 1) that in the 1940s, more than a decade after its de jure canonization as a cost standard in the law, a decade of de facto irrelevance to daily living especially to any perceptible pricing, the vague idea of actual uses enunciated by the United States Supreme Court in Smith began its transmogrification. The ensuing station-to-station philosophical piling, although rotting and shaky by the late 1980s, still held up over the swirling waters of a changing world the piers of actual costing and actual pricing practices subsumed under the code words "relative use".

In the early 1940s the political, economic, technological, marketplace, and other constellations of the day came into a conjunction that found handy justification in substituting the joint-and-common cost ideas of Smith for the local-is-local-and-interexchange-is-interexchange-and-the-twain-meet-only-at-the-interexchange-board ideas of board-to-board.

By the early 1950s the essentials had come into place with the promulgation of the first Separations Manual following the sign-on of the Independents to the settlements process. Not until 1970, with the adoption of the modifications (known as the Ozark Plan) to the Separations Manual[27], did the joint-and-common costing principles

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[26] Sichter has examined these issues in his Separations Procedures in the Telephone Industry, op. cit.

[27] In the late 1980s, actions on the Separations Manual and on Part 67 of the FCC's rules, which legitimated the manual, were taken mainly under the FCC's CC Docket No. 80-286. See Behind the Telephone Debates for earlier history. The process was not without people and

achieve their apotheosis when state and federal separations and settlements were harmonized by the acceptance of a common costing and pricing scheme.

Although embodied in several formulas, the costing principles were epitomized within the industry by two notorious factors in one of the formulas. The first of these factors was the Subscriber Plant Factor (SPF). The SPF was calculated from other factors, including the Subscriber Line Usage (SLU), whose own definition was many-layered.

The associated pricing system hardly nodded to the costing system except that in the aggregate total costs equal total revenues within each state and within the federal jurisdiction. Once a suitably sized chunk of costs had been moved to the federal jurisdiction by the separations process, pricing in the states generally went as sketched in Figure 8.

The industry and the regulators achieved consensus on a process of residual ratemaking. That meant that when an intrastate price increase loomed up, the first line of defense was to shift costs to the federal jurisdiction. Within a state's jurisdiction, state interexchange or vertical services were the pricing target of first choice. Second choice was directory advertising. Only as a last resort was an exchange price hike considered.

Ironically but not uncommonly, when the Ozark Plan started in 1970 the underpinnings of the order that supported the costing practices blessed by the Separations Manual and the pricing built on them had already been thinned out.

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their passions about "cost causation" as an allocative principle. Richard Gabel, in a personal communication, recalls that "AT&T vice president Mert Lish ... was the principal author of the Ozark Plan." He recollects that "the SPF equation was Lish's own, but the underlying rationale did not enter the public domain. By 1970 it was clear that the local network costs were being overwhelmed by design and operating considerations dictated by the message toll requirements. Today [early 1988], it is the requirements of the data/information market which is altering network design. But the power -- now unified -- of all the carriers and the relative ignorance of the regulators suppresses any acknowledgment of the condition."

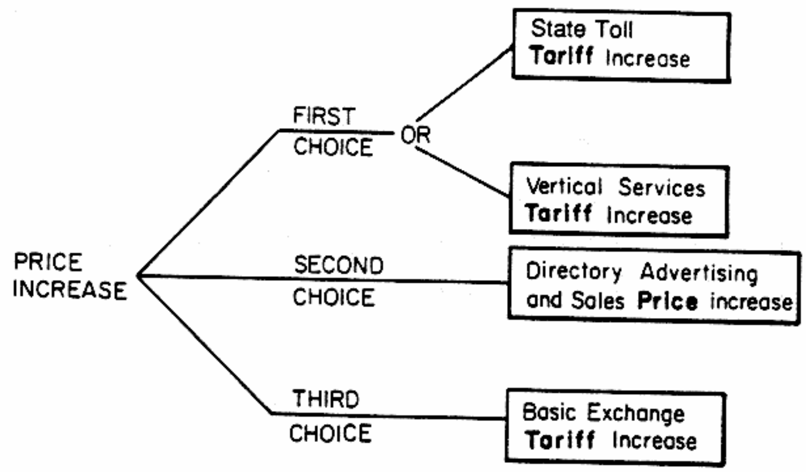




**Figure 8**

**Pre-Competitive Pricing Method within States**

In 1957 the Hushaphone[28] decision had pulled some supports out from under the telephone industry's ban on what it called "foreign attachments" to its network. In 1960, Above 890[29] allowed any large customer to build his own facilities along patterns that the Communications Act of 1934 had reserved for privileged "public service" entities such as railroads, airlines and brokerage houses. And, in 1970, the FCC's first MCI[30] decision allowed MCI to begin competing with AT&T with what was said to be a limited service, designed to meet the interoffice and interplant communications needs of small businesses.

The business of the largest interexchange customers and the use of the highest volume routes of the traditional industry could no longer

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28 Hush-A-Phone Corp. v. AT&T Co. et al., FCC Docket No. 9189, Decision and Order, December 21, 1955; Decision and Order on Remand, 22 FCC 112, 1957.

29 Allocation of Frequencies in the Band Above 890 Mc., FCC Docket No. 11866, Report and Order, 27 FCC 359, 1959; Memorandum Opinion and Order, 29 FCC 285, 1960.

30 Microwave Communications, Inc. (MCI), FCC Docket No. 16509, Decision, 18 FCC 2d 953, 1969, Memorandum Opinion and Order, 21 FCC 2d 190, 1970.

be taken for granted by either the industry or its regulators. The entry of competitors not tied to the separations-and-settlements process threatened the stability of the process.

### 2. From SLU to SPF under politics and policy supporting monopoly

Smith enshrined station-to-station theory in 1930. Lindheimer nullified any practical consequences of the new theory in 1933. The shift from board-to-board practices to station-to-station practices began only in the 1940s; it peaked by 1970; and it continues with much more vitality than the Cheshire Cat's grin well into the late 1980s, decades after its own theoretical (or judicial or economic) pilings had begun to rot. First now we chronicle this shift, then the gains it brought for some and the losses it brought for others.

Figure 9 shows secondary shifts that occurred within the prevailing station-to-station costing method. An increasing shift of costs from state to federal jurisdiction had become automatic and accelerated as growth in SLU accelerated, amplified by growing multipliers.

Milestones in Figure 9 mark the progression from SLU to SPF as one important measure defining the "relative use" actualization of the "actual uses" concept of Smith. SLU is itself a discretionary choice.[31] SPF was once justified as a necessary reflection into costs of the deterrent effects, on buyers, of usage-sensitive interexchange prices.[32]

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[31] Cunningham, William J., "The Separation of Railroad Operating Expenses Between Freight and Passenger Services," Quarterly Journal of Economics, Vol. XXXI, 1917, p. 238.

[32] In prose not inconsistent with a straight face, the FCC put on record that its purpose was "to compensate for the deterrent effect on actual use in each State of the nationwide interstate toll rate schedule." The idea was that usage would have been higher had not people had to pay prices tied to distance. The FCC did admit that "the deterrent effects on toll use of subscriber plant resulting from the structure of toll rate schedules cannot be quantified with exactitude. We are, thus, required to use our best judgment ... as to the weight that should be accorded to these effects." These specimens are from

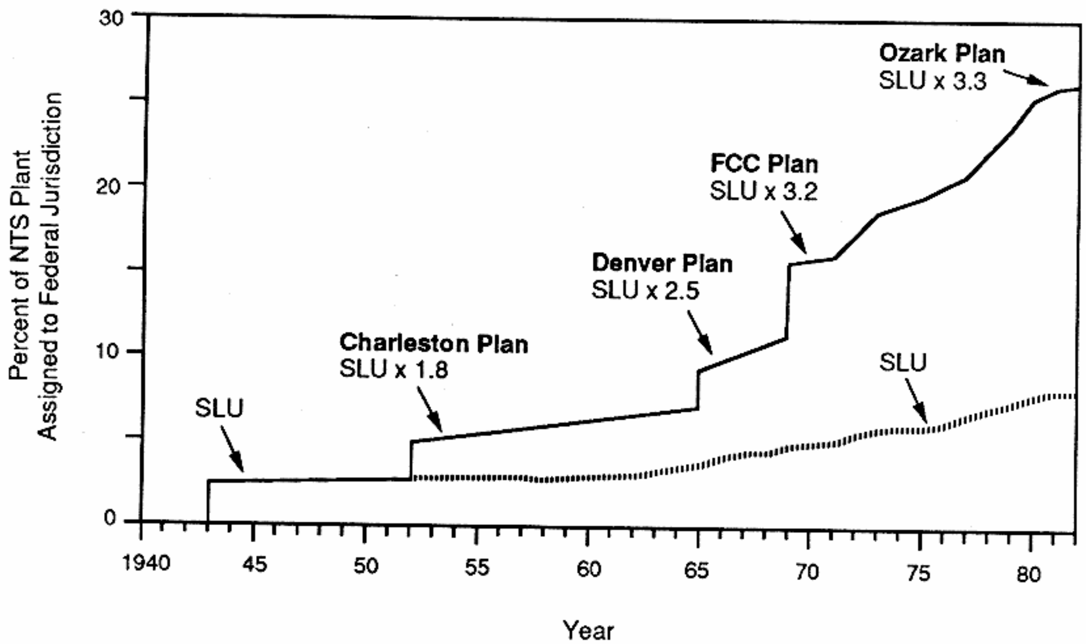




**Figure 9**

**The Road from SLU to SPF**

There is, I think, little disagreement as to the effects of the practices supported by the station-to-station philosophy and expressed in a variety of administrative mechanisms.

Costs that hitherto had been reckoned among the costs of exchange service were henceforth reckoned among the costs of interstate interexchange service. In and of itself, this would have been neither new nor significant; witness the immediate aftermath of Lindheimer.

What was significant was that on this occasion costing practice made a real difference for one simple, good, and sufficient reason: politically, there was enough of a supporting consensus favoring the policies that the costing practice was meant to support and not enough opposition against those policies. Administrative and technical practice was, as it should be, the servant of its political policy-setting masters.

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FCC Docket No. 16258, the first at 9 FCC 2d 960 (1967), the second at 9 FCC 2d 30 (1967).

This was, in brief, the outcome of the politics of rural and populist political dominance, with maneuvering room left for more subtle shadings, within those broad terms, of urban and business politics.

In the aggregate, the shifted costs began to appear on the bills of the customers who bought interstate interexchange services. An equivalent aggregate amount failed to appear on the bills of those customers who bought intrastate services. Within states, there was a general tendency to flow more of this pricing benefit to prices for exchange services rather than to the prices for intrastate interexchange, according to the procedures of Figure 8.

In their heyday, these practices were, if not enthusiastically supported by an explicit political consensus, at least without muscled detractors.

The interexchange users who paid for the shifted costs originally were a small subset of exchange users -- business and especially large business. Granted, the customers or the owners of these businesses ultimately paid for these shifted telephone company costs, but these costs were (and in many instances remain to this day) such a small portion of the total costs of the end-user businesses as to be perceived as unimportant if perceived at all. By the 1960s, in contrast, interexchange usage had begun to acquire an increasingly widespread, growing, and more enfranchised household constituency.

In this period, the unit cost for long-haul facilities declined with a robustness apparent in any reasonable cost measure. The resulting margin allowed making everybody happy or, if sullen, then at least not rebellious. The margin was applied not only to decreasing, or at least to not increasing, long-haul (read interstate, federally regulated) prices. The margin was also applied to covering costs shifted from intrastate services to interstate services. This shift in turn could help to avoid or at least to reduce price increases for intrastate services.

Ultimately, the communications managers of the Fortune 500 began to weigh in for organizations whose top managements remained as oblivious of largely invisible telecommunications costs as before. The political action of these telecommunications managers helped to destabilize the station-to-station-under-monopoly order of things in an environment where no one else, except the monopoly suppliers, either cared much or could do much. Rural populations had by then migrated into the cities and the U. S. Supreme Court's one person one vote decision in Baker v. Carr (1962)[33] had grown teeth.

The foregoing facts are, I think, generally accepted. There were -- and are -- vehement disagreements over the interpretation of these facts.

Some hold that the shift to station-to-station costing was a long overdue recognition of the true costs of services. Others hold that it was, pejoratively speaking, an unfair cross-subsidy of exchange services by interstate interexchange services. Still others argued that, to the contrary, exchange services were cross-subsidizing interexchange services.

None of the above arguments makes any sense. All presuppose that there is some ideal, correct, true cost. Such arguments fail, however, to recognize the stubbornly discretionary character of practical costing and pricing. The formula is everything.

For many of the stakeholders, administrative agencies and telco managements among them, a beauty of the pricing practices of the station-to-station heyday was that, except for a rough equality of costs to revenues at the "costs = revenue requirements" level of the prevailing rate-base-rate-of-return (RBROR) method of regulation, the costing method was not seen to imply any particular pricing method.

The resulting latitude permitted flexibility in adjusting prices to local political variations. Where there was demand for relating prices to costs, suitable costs were invented to justify prices. Economic theory in the service of one side or another of rate cases merely put a veneer of economic "truth" over the wood of political compromise.

One took his professional life in his hands in those days for suggesting that the exercise was valuable for building political smoke screens but intellectually empty. Smoke screens are seen as more respectable and maybe more effective when they are also grounded in

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33 Baker v. Carr, 369 U. S. 186, 1962.

"sound principles". Hence the bull market for compliant philosophies in changing times.

When pleas for favorite orthodoxies are abandoned in favor of examining the match between the instruments for administering policy and the policy of the day as defined by the political system, many layers of clouds dissipate and otherwise lunatic-seeming rituals fall into place.

SLU and SPF emerge as the earthly incarnations in "relative use" of the United States Supreme Court's ethereal reference to "actual uses" in Smith. Relative-station-to-station-use joint and common cost allocation rules make perfectly good sense in this light. In the context of a consensus for monopoly -- or at least only unsuccessful assaults on it -- and a consensus for increasing telephone penetration into U. S. households from 45% in 1943 to 95% and more in the 1980s, the administrative tool served the policy masters well.

Once the masters had changed their minds, small wonder that the tools of the old order became suspect as the 1970s waned into the 1980s. It may therefore seem all the more remarkable how little has changed in practice over the last decade, rather than how much.

But that is the norm. In achieving compromise, American political, administrative, and judicial processes typically introduce change gradually, with an initially almost imperceptible shading of the old into the new.

Table 6 illustrates that point and more. It displays the rationale for the SPF formula, frozen and discredited by the late 1980s, in the warm glow of its birth at the end of the 1960s. Each element is accounted for by the policy objective that it served, just as the squaring of state income deviations from national norms in the Hill-Burton Act for hospitals reflects who had political muscle at enaction time.

And, specifically, the factor .85 (5th line of Table 6), so mysterious and so technical in appearance, made the transition from one costing method to another an unobtrusive and painless event. The .85 factor produced so close a match with preceding practice that nothing at all happened at the moment of transition. The changes came later. Such are the ingredients of a masterpiece of the administrative arts.

Figure 9 shows how smooth the transition to SPF was compared to earlier, clumsier transitions.

| MEANS | ENDS |
|---|---|
| SPF = (.85 + 2 x CSR Ratio) x SLU | Sets up a well-run and honest program. Single formula used for federal cost allocation, for federal settlements, and for state settlements. |
| (.85 + 2 x CSR Ratio) | The SLU multiplier, by replacing the SLU additive of earlier formulas, was proclaimed as marking the end of the cycle of continuous revisions of federal cost allocation method. As use (SLU) increases, the cost allocation (SPF) increases. |
| 2 | Replaces the additive of the previous cost allocation plans which essentially doubled SLU. |
| CSR Ratio | Adjusts cost allocation (state-by-state, company-by-company) based on the relationship of prices and lengths of haul. Favors some states over others relative to earlier federal settlement plans. Enables state settlements to use same formula as federal settlements. |
| .85 | Provides a smooth transition from the previous separations plan. Also provides a straight SLU additive. |
| SLU | Satisfies the court requirement to tie cost allocation to "actual uses". Adjusts cost allocation by each company's interexchange traffic. |



**Table 6**

**Policy Ends Met by Means of the SPF Formula**

The masterpiece was seen as junk, of course, once the policy it served had died. In the turmoil of the late 1980s, with a greater number of active stakeholders than before, especially among suppliers, and with no consensus in sight, small wonder that the search for satisfactory tools continued. But the junking process was just as smooth as the earlier polishing process. No sudden death for SPF: At the moment of truth the live allocator with wide LEC-by-LEC swings around an average value of 26% was tranquilized into a gradual transition toward a fixed 25% allocator for every LEC.

C. Cost-based pricing: occult for the '80s

1. From SPF back toward SLU under politics and policy supporting competition

*"All right," said the Cat; and this time it vanished quite slowly, beginning with the end of the tail, and ending with the grin, which remained some time after the rest of it had gone.*

*"Well! I've often seen a cat without a grin," thought Alice; "but a grin without a cat! It's the most curious thing I ever saw in all my life!"*

Lewis Carroll, Alice in Wonderland,
Chapter VI.

As Figure 1 shows, the principal elements of the old costing order are in transition -- toward we know not where.

Not only are more supplier stakeholders in the field than before, but government intervention in the late 1980s is also more varied, more extensive, and more Byzantine than when the vogue for competition and deregulation began in the 1960s.

The traditional players in the telecommunications game were the Bell System and the Independents. Then one Bell System abruptly became eight players on January 1, 1984. Numerous other carriers entered the field, each vocal even if not potent. The computer and the consumer electronics industries patrolled the no man's land at the shifting borders. The newspaper industry, scared by the potential it saw for incursions by electronic Yellow Pages into its classified advertising field, unfurled the First Amendment banner over the astonished "common carriage" field. And, reminiscent of the shippers who became railroaders in the late 1800s, end-users with excess capacity on their private networks to sell had also come into the market.

Small wonder, then, that what many in the formerly traditional industry hoped might be a "flash-cut" to a new deregulated order unfolded instead as a typically slow motion political adjustment designed to smooth out shocks on the way to some still unseen hence unformulated and unformulable consensus.

It is therefore a fact of life that the new, somewhat more competitive and much more regulated world of the late 1980s retained key elements of a since deceased political consensus. It is also a fact of life that the deceased political consensus remained alive in the minds of a still potent rear guard exemplified by men like Representative Jamie L. Whitten, a Democrat from Mississippi, chairman of the House Committee on Appropriations, chairman of the House Subcommittee on Rural Development, Agriculture and Related Agencies and a long-time champion of the Rural Electrification Administration (REA), the guardian angel of the smallest Independents.

Of course, since the U. S. Supreme Court's 1962 decision favoring "one person, one vote,"[34] political power has moved toward the urban concentrations which produce high-volume traffic and away from sparsely settled rural areas where the "higher costs" are.

What "higher costs" means leads to another set of wheels within wheels. "Higher cost", "rural" areas include places like New York City, Chicago and Los Angeles suburbs and exurbs, Florida's retirement, amusement, and space communities, and not just Appalachia and Western ranches or deserts. Real boonies may entail higher expenditures or maybe even costs per subscriber line; but they may also entail older plant that is fully depreciated hence whose costs may be almost fully recovered. Or new plant may have been built with low-cost capital such as REA loans. Under such circumstances local service prices might be lower in those "high-cost" areas than in "lower cost" areas.

Meanwhile, as Figure 1 shows, the SPF was frozen in 1982. During the debate over the freeze, passionate stakeholders could be seen sporting buttons with the slogan "SPF to SLU in '92". The SPF was slated to phase down to 25% over eight years that began on January 1, 1986, except that no company's SPF can go down more than 5% in a year. Since the maximum SPF is 85%, some companies or, more accurately, some study areas or states, may take 12 years to reach 25%. None of the 12-year companies are former Bell System companies. The spreading out of relative pains and joys over a decade or so is a classical technique of

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34 Baker v. Carr (see note 33).

political compromise.[35] The closeness of the 25% figure to the national average of 26% also means that the effect of this change on AT&T was, for better or worse, close to nil.

The very costs apportioned by SPF were not, in the late 1980s, any more stable than the frozen and evaporating SPF itself. The "wiring diagram" of Figure 10 mirrors how costs were invented, not discovered, according to the rules in place during the heyday of the SPF's Ozark Plan. Of the several categories of jurisdictionally separated costs, only those associated with so-called Subscriber Line Outside Plant[36] are shown in Figure 10.

Costs as recorded according to the rules governing the Uniform System of Accounts (USOA), shown in line A of Figure 10, were the foundation of the system. The rules for jurisdictional separation laid down in the Separations Manual and in Part 67 of the FCC rules were then applied to those entities to produce the costs subject to federal jurisdiction (cross-hatched in Figure 10). The investment costs further had a rate-of-return factor applied to them in a final step of discretionary definition (line C, Figure 10).

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35 Borchardt, Kurt, Toward a Theory of Legislative Compromise. Cambridge, MA: Harvard Program on Information Resources Policy, P-76-4, 1976.

36 These analytical categories are detailed in Behind the Telephone Debates. See index entry for Costs, derivation of analytical cost categories.

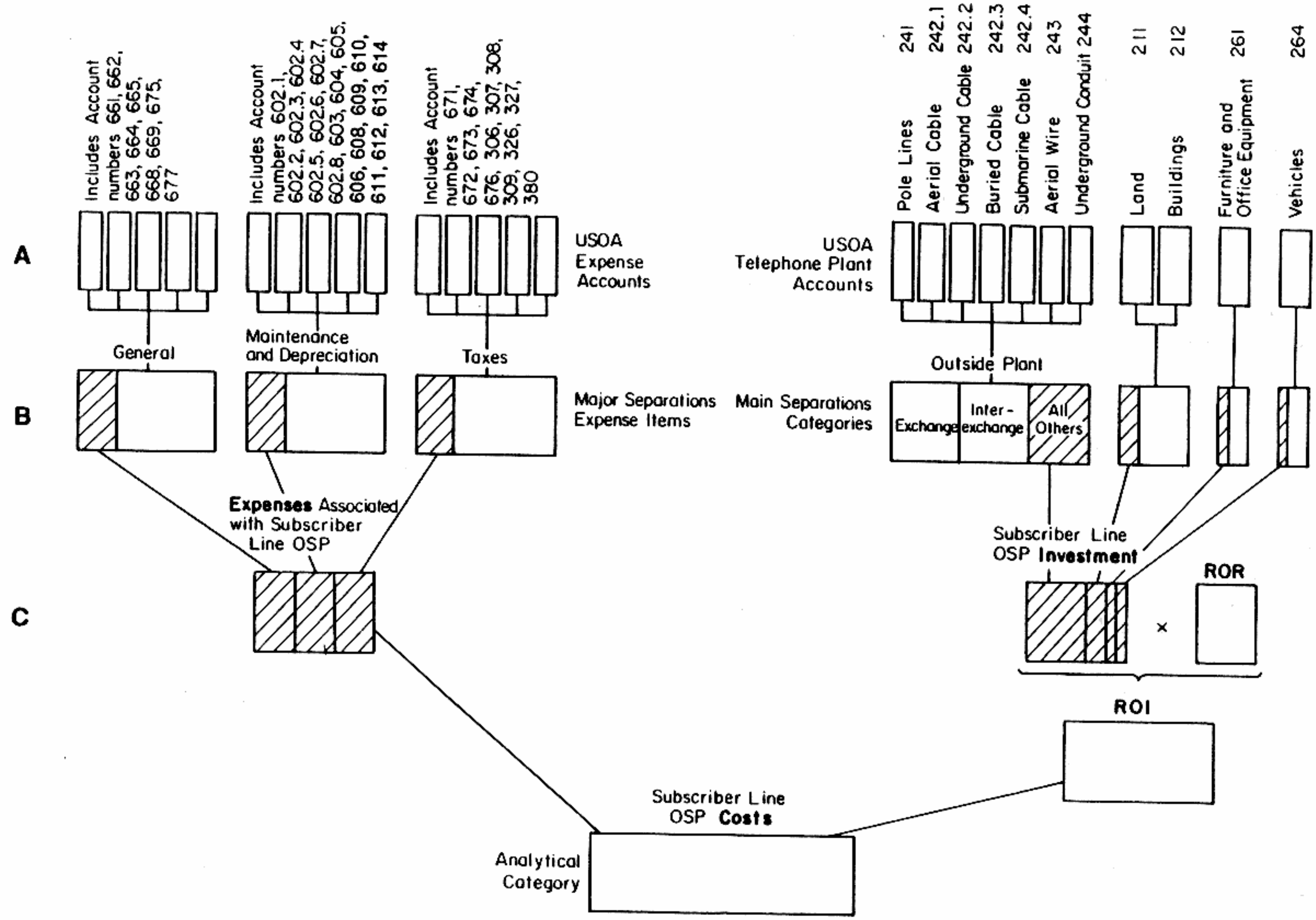
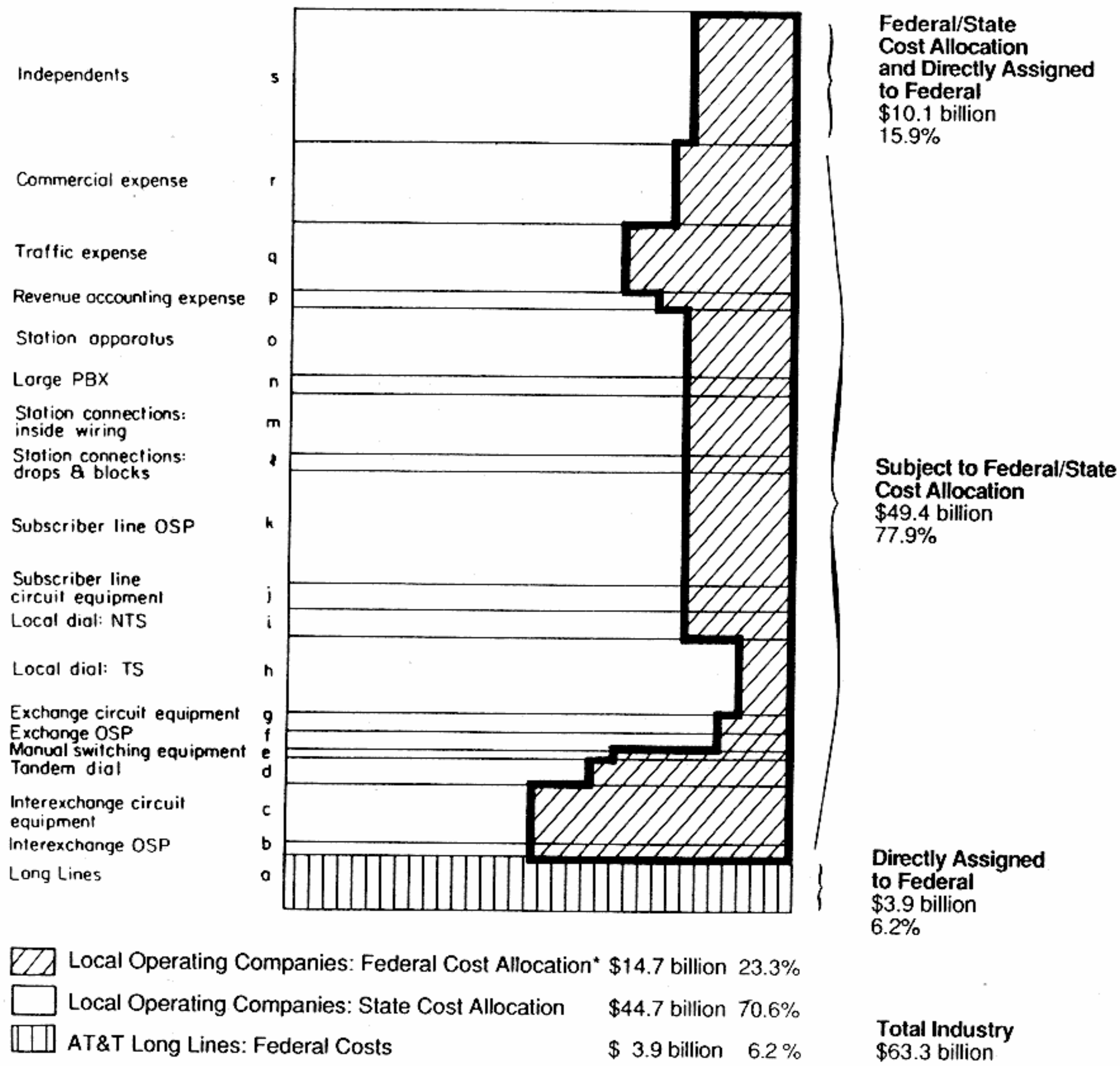





**Figure 10**

**Cost Definitions in the Heyday of the Ozark Plan**

Similar processes are applied to USOA accounts to construct the other types of costs shown as horizontal bands in Figure 11. The height of each band is proportional to the amount of costs of that type. The actual amounts in Figure 11 are for the year 1980.




* Note: The independent category (s) includes the federal cost allocation plus the federal costs for interstate services since the equivalent category-by-category breakdowns were unavailable for the independents.



**Figure 11**

**Jurisdictionally Separated Costs in 1980**

Under the Separations Manual, each band was then split into state and federal costs according to some formula. The Ozark Plan SPF formula of Table 6, when applied to bands (i) through (o) in Figure 11, yielded the cross-hatched amounts as the federal share of the costs.

These costs, built by very human hands, are a monument to the discretion in determining federal costs.

That discretion continues to be exercised, altering the very foundations of the costing process. In the late 1980s, the USOA was being reworked while the house it supported continued to be lived in.[37] Also reworked were the rules in the Separations Manual and in Part 67 of the FCC rules[38] which defined how costs as recorded in the accounts of the USOA were to be picked out and eventually recombined to lead to entities like those shown in line C of Figure 10.

Since 1980 other discretionary moves have combined with these to alter the bands in Figure 11. Some of these have been structural.[39] For instance, the NTS local dial band, shown as band (i) in Figure 11, was slated for oblivion on January 1, 1988. This move is one among several changes considered in a proceeding on central office equipment separations rules.[40] There is no concomitant physical change in any network, just in the way costs and indeed functions are defined for separations and for interstate access charge purposes. Meanwhile, the SPF has been frozen and other formulas are under continuous alteration.

In all this the basic political process remains: In the 1980s, as before and most likely afterwards, the formula is everything.

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[37] The Uniform System of Accounts is prescribed in Part 31 of the FCC's rules (47 CFR Part 31, 1982). Proceedings to amend the system were under way in the late 1980s in CC Docket No. 78-196. The revised system (USOAR) is in Part 32, hand-in-glove with conformed separations Part 36.

[38] See note 27.

[39] The transition is examined in Weinhaus and Oettinger, op. cit., and, in much greater detail, in Epstein, Samuel M., Behind the Telephone Debates - 4: A Conceptual Framework for Pre- and Post-Divestiture Telecommunications Industry Revenue Requirements. Cambridge, MA: Harvard Program on Information Resources Policy, P-85-7, 1985.

[40] See Appendix.

2. Lindheimer lives!: heresy triumphant in the SLC

*The grand old Duke of York,*
*He had ten thousand men.*
*He marched them up to the top of the hill,*
*Then he marched them down again.*

Folk song

The political foundation that aligned station-to-station costing practices with pricing practices began to erode when Above 890 enfranchised large and concentrated end-users to build their own networks if they chose (and later even to resell excess capacity to others), or to give their business to others enfranchised by MCI and its successors. Simultaneously, small but concentrated urban end-users were increasingly enfranchised by the slow but steady implementation of Baker v. Carr and the concomitant reduction in the power of rural interests.

With increasing interexchange competition and with divestiture, the residual AT&T lost some of its incentive to play the settlements side of the station-to-station-justified pricing game: In the old days, the settlements process had passed to the BOCs the separated-cost-justified revenues that AT&T collected, on the basis of cost separations, from its interstate interexchange customers (see Figures 2 and 3, Section III(B)). These revenues settled in what amounted to the left-hand pocket instead of the right-hand pocket of one family. After divestiture the pockets belonged to strangers who might become competitors. And payments to the BOCs and to the Independents put an upward pressure on interexchange pricing which, unless offset by other factors, disadvantages an IXC making those payments relative to IXCs not required to make them or required only to pay less.

Settlement payments by the Bell System to Independents had always been a highly controversial area. The Bell System acquiesced in them as part of the political compromises that drove the transition from board-to-board to station-to-station methods.

The continual rise in interstate SLU, already noticeable in the years spanned by Figure 9, further accelerated in the 1980s.

Multiplied by SPF, this increase was leading toward the situation, cited in Section III(E), where AT&T paid about 50% of its revenues over to other companies, the LECs, who had come to be described as its suppliers of access services.

More important in the overall political balance, perhaps, was the fact that by the 1980s this revenue came from a broad base of end-users. These had come to include not only the traditional business users, but new metropolitan-area dwellers apt to use interexchange service to keep in touch with the folks back home. The political perception had shifted toward a sense that interexchange users, not exchange users, were paying more than a "fair share" of the costs.

Besides, the goal of universal service within the United States had been reached in terms of the practical political standards of the time, at least for voice services, the services that old telephone hands used to call POTS, for plain old telephone service. Although revered by some, the idea of universal digital, data, or voice/data services was ahead of its time in practical market or political terms.

The outlook had become favorable, in short, for a reversion to the board-to-board religion which would sanctify interexchange customers' paying only for what had by then become comparatively negligible investments in long-haul plant (see band (a) of Figure 11 for a rough sense of relative magnitudes). But this was not to be, at least not by the late 1980s, given the residual political strength of the beneficiaries of station-to-stationism and the professional respectability meanwhile acquired by concepts of joint and common costs.

Return to full bore board-to-board costing and pricing was not in the political cards of the 1970s and the early 1980s. The result was a kind of reverse <u>Lindheimer</u>. In this swing of the pendulums, the costing philosophy and practice both stayed put, but the failure to succeed in changing the costing practice was partly compensated for by a real switch in pricing methods.

As the FCC's Access Charge Plan gradually went into effect in the face of vocal Congressional objections but no legislative action, the enemies of station-to-station thinking were luckier than the enemies of board-to-board had been in the early 1930s. <u>Lindheimer</u> had essentially nullified the practical pricing effects of an anti-board-to-board change in costing theory and practice by keeping the older ways alive in pricing practice although dead in costing theory. The Access Charge Plan essentially nullified the practical pricing effects of no anti-station-to-station change in costing philosophy by killing some of the older ways dead in pricing practice although sparing their lives in costing theory.[41]

The Access Charge Plan in essence aimed at grafting a board-to-board era pricing method onto the pre-existing station-to-station costing practice. Hence the continuing presence of a station-to-station costing grin simultaneously with the disappearance of part of the station-to-station pricing cat. That this succeeded even in part is as much a tribute to consummate political, administrative, and judicial artistry as Lindheimer and the Ozark Plan were in their heydays.

In the mid-1980s it had been more fashionable to seek a more direct tie between prices and costs than in the fashion of other times, more because of the rhetoric of some increasing competition than because of the realities of competition. But even in the sectors of the American economy that are the most competitive and the least subject to government intervention, workaday prices have little relation to hypothetical and unmeasurable economic costs. Fairy tales abound for internal incentive, Internal Revenue, and other diverse purposes; in those realms, too, the formula is everything.

Stuck with both the station-to-station costing grin and the competition-induced fashion of tying pricing more directly to costs than under residual pricing, the access charge planners simply carved suitable costs from the grin in the ways shown in Figure 12 and then developed ties to pricing.

As the top of Figure 12 shows, the starting point of access charge pricing was separated costs as defined by existing station-to-station

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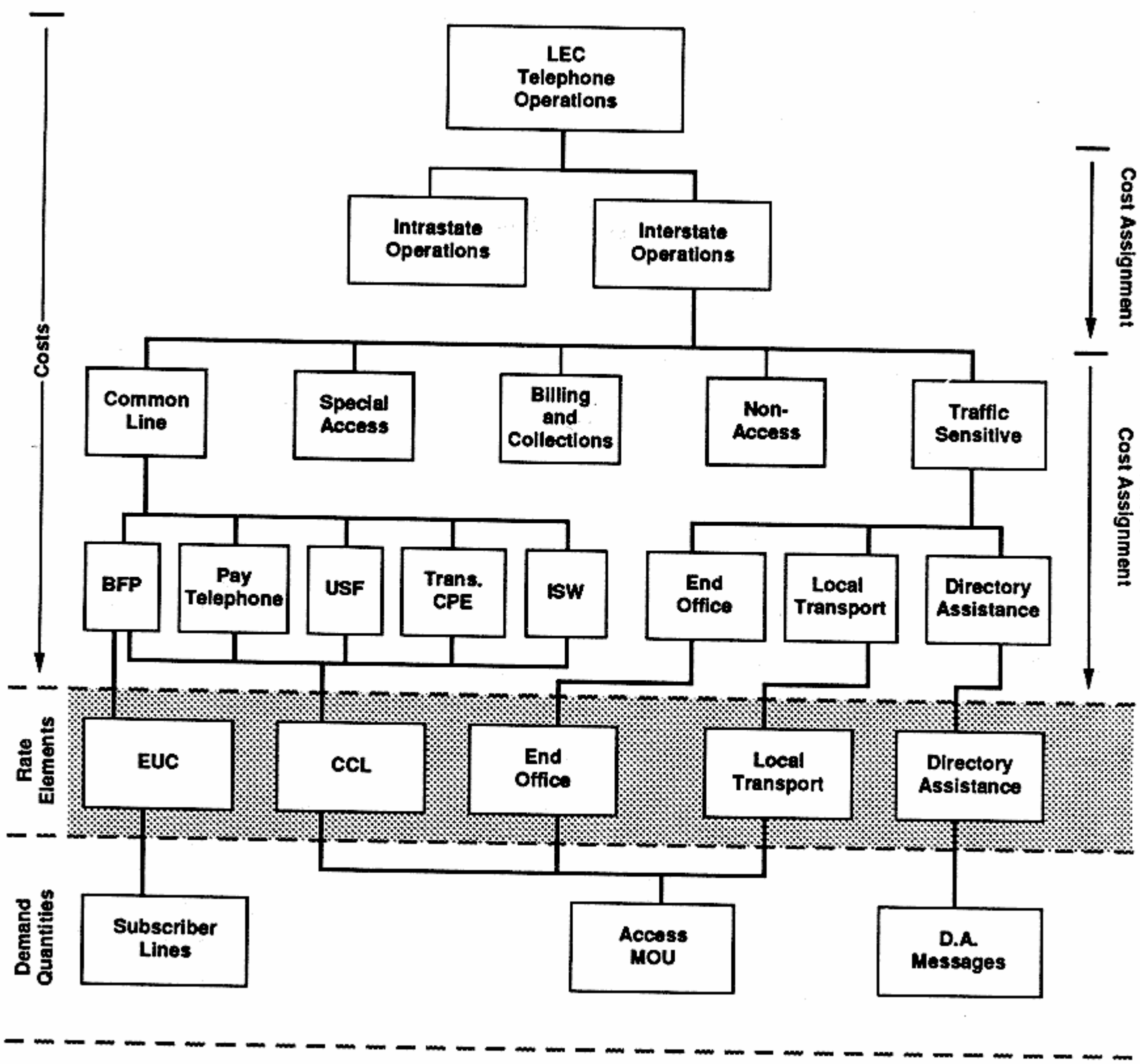
41 Details are in Weinhaus and Oettinger, op. cit. and, in greater depth, in Lemler, Mark L. The FCC Access Charge Plan: The Debates Continue. Cambridge, MA: Harvard Program on Information Resources Policy, P-87-8, 1987.

cost separations (including the USOA and the other elements of Figure 10 and a frozen but evaporating SPF).

The process then assigns costs based on old-fashioned methods to categories with new-fangled access names negotiated in proceedings with new-fangled stakeholders in them. Access pricing is based on these re-labeled and re-grouped costs. As before, economists protest about politicization, but they work with these costs just the same.




Source: Mark L. Lemler, The Access Charge Plan: The Debates Continue. Cambridge, MA: Harvard Program on Information Resources Policy, 1987, Figure 2-8, p. 38.



Figure 12

To Access Charge (Part 69) Pricing Elements
from Separations (Part 67) Costs

The pricing method favored by the access charge planners in the FCC would have resulted in a pricing process remarkably like the Lindheimer-era pricing method. End-users would have paid for the interstate part of the wires connecting them to the nearest switch[42], whatever actual use they might make of them, on the ground that these wires all served exchange purposes, including occasional access to the interexchange network.

This view accomplishes in pricing terms what board-to-board accomplished in costing terms and what Lindheimer maintained by nullifying the pricing consequences of a change in costing. In the FCC's Access Charge Plan certain costs remained colored federal, thereby satisfying the Smith strictures as to cost allocation. But a federal mandate that these costs be paid by all end-users assures, in a reverse-Lindheimer twist, that the federal costs once again be paid by all end-users and no longer by the users of interstate services only. A pricing change here nullifies a non-change in costing.

Of course the Congress understood as well as the FCC and perhaps even better that the formula is everything. And so, under pressure from the Congress, the Access Charge Plan as originally formulated got modified and, as of the late 1980s, stalled between station-to-station-style and board-to-board-style practical effects on which end-users pay for what.

Figure 13 shows the projected transition for recovery of non-traffic-sensitive costs from station-to-station-style pricing to board-to-board-style pricing.[43]

In 1986, the process had stalled with only $2.00 of an originally proposed $4.00 in effect as the board-to-board-style SLC for residential customers and single-line business customers. $6.00 was the ceiling for multi-line business customers with actual prices linked to a costing formula. The station-to-station-style carrier common line charge (CCLC) also remained in effect. Combined with the effects of

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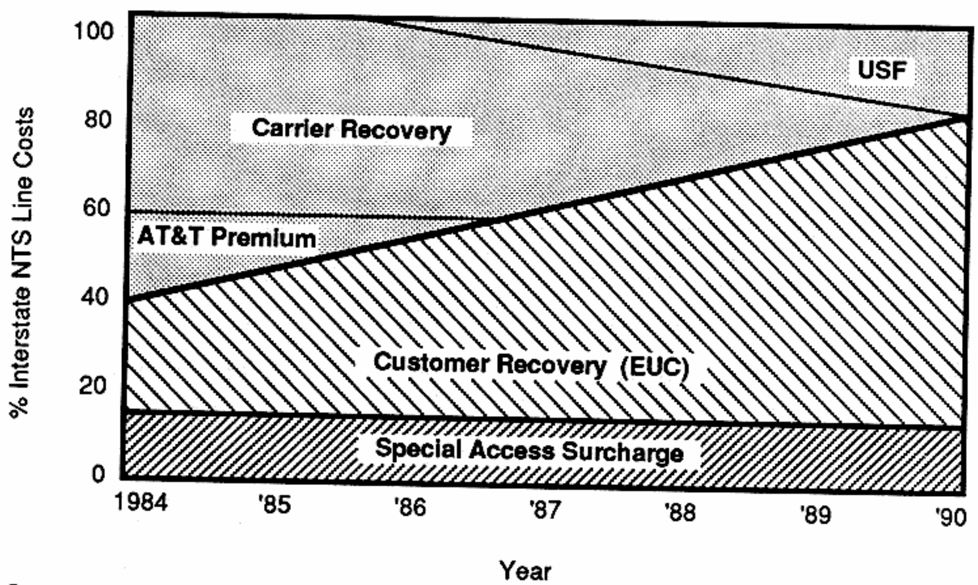
42 See Section IV.A.1.

43 Details are in Lemler, op. cit.

other costs not detailed here, the result is the snapshot of Section III.




**Source:** Provided by AT&T.

**Figure 13**

**Original FCC Access Charge Plan: Recovery of Interstate Subscriber Line NTS Costs**

By late 1987, the residential SLC had moved to $2.60 and been slated to go to $3.50 by April 1, 1989. And, in the continuing evolution of the "new board-to-board" pricing, the idea that the IXCs might "always" have to continue to pay for access to subscriber lines had, for the moment, gained explicit recognition by the FCC.

All of the other discretionary elements discussed in this paper, along with many more not touched on, remain controversial, mainly within the state and federal administrative agencies but also in the courts and in the Congress as products and services, along with their costs and their prices, continue to evolve within both the political process and the marketplace.[44]

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44 See Appendix.

## APPENDIX

As of late 1987 the entire discretionary costing and pricing structure was continuing to undergo review, and not only the smaller details within specific formulas. Some notable examples:

<u>Carry-over of Computer Inquiries I, II, III</u>:

> Docket 86-111: Specification of Part 64 of the FCC rules (once known as Part X) defining the accounting separation of total RHC costs between regulated and unregulated activities. This has the potential for major redefinition of total costs of regulated activities.
>
> Docket 85-229: Definition of Open Network Architecture (ONA). This has the potential for redefinition of all cost elements and related pricing practices.

<u>Access Charges</u>:

> Docket 78-72: Although the SLC battle appeared to have stabilized, there remained open questions: How to fund the Universal Service Fund (USF)? How to fund life-line service? The latter is only one example of controversies whose federal manifestation is accompanied by significant manifestations in state forums.

<u>National Exchange Carrier Association (NECA) Pool</u>:

> The Unity 1-A agreement is slated to go into effect when the SLC reaches $3.50 on April 1, 1989. Participation in the Common Line Pool becomes optional. Will large companies bail out?

<u>Integrated Services Digital Network (ISDN)</u>:

> Whatever may or may not eventuate in ISDN in the narrow sense of the adoption and implementation of 2B+D as a loop standard or in the broadest sense of digital nirvana with universal optical fiber connectivity, such basic elements of current costing and pricing as a subscriber line are likely to undergo major revisions as technology erodes the equivalence of subscriber line and physical wire pair and makes the idea of channel more and more a virtual rather than a physical one.
>
> While the multiplexers necessary to bundle multiple virtual channels on one physical path were in the RHCs' domain under FCC rules, as of the end of 1987 network channel terminating equipment (NTCE) was considered customer provided equipment (CPE). Hybrids like Pacific Telesis Project

Victoria equipment therefore were seen as straddling the boundary where guerilla warfare over turf was going on among the RHCs, the computer industry, the consumer electronics industry and others.

Meanwhile, the entire electronic and optical distribution system was being bypassed by the brown paper bags in which people ferried their rented videocassettes home from the video stores in their neighborhood shopping mall, thereby crimping both the growth of cable television and one major rationale for laying optical fibers as subscriber lines.

Jurisdictional Separations:

The Docket 80-286 Federal/State Joint Board marches on. What kind of allocator to use for a new category (Central Office Category 3) which covers exchange switching in place of the dial-equipment-minutes allocator? Treatment of Feature Group A and B costs? How to separate joint use special access, i.e access which is both interstate and state? (A private line running to an IXC point of presence (POP) may serve both functions.) Evaporation of SPF toward uniform 25%: effect on the small Independents? on others? on the High Cost Fund?

Revisions of the USOA:

Docket 78-196, if and when fully consummated, changes formulas for costs (revenue requirements) so that net income looks different even though cash expenditures are exactly the same. Influence on pricing in theory? in practice?

Bypass:

Paper tiger or accelerating reality? Local transport a mutable concept. Per-minute pricing a factor in making IXCs and large interexchange customers look for alternatives such as more POPs. LEC concern over stranded investment and other losses.

Antitrust:

Continuing jurisdiction by District Court over structure of the industry and possible conflict with administrative agencies. Uncertainty over fate of information services one example.

## ACRONYMS

| | |
|---|---|
| BOC | Bell Operating Company |
| CALC | customer access line charge |
| CCLC | carrier common line charge |
| COLA | customer-ordered LEC access |
| CPE | customer premises equipment |
| EAS | Extended Area Service |
| EUC | end-user charge |
| ISDN | integrated services digital network |
| IXC | interexchange carrier |
| LAN | local area network |
| LATA | local access and transport area |
| LEC | local exchange carrier |
| MFJ | Modification of Final Judgment |
| MIS | management information system |
| NCTE | network channel terminating equipment |
| NECA | National Exchange Carrier Association |
| NTS | non-traffic sensitive |
| ONA | open network architecture |
| POP | point of presence |
| POTS | plain old telephone service |
| RBROR | rate base rate of return |
| REA | Rural Electrification Administration |
| RHC | regional holding company |
| SLC | Subscriber Line Charge |
| SLU | Subscriber Line Usage |
| SNET | Southern New England Telephone |
| SPF | Subscriber Plant Factor |
| USF | Universal Service Fund |
| USOA | Uniform System of Accounts |
| USOAR | Uniform System of Accounts, revised |
| VAN | value-added network |