3-1983

# Deregulation of the Telecommunications Industry and the Bell System Divestiture - Impact on the Universal Service Concept

Edward H. Hancock

# DEREGULATION OF THE TELECOMMUNICATIONS INDUSTRY AND THE BELL SYSTEM DIVESTITURE - IMPACT ON THE UNIVERSAL SERVICE CONCEPT

Submitted in partial fulfillment of
the requirements for the degree
of Master of Science
The Lindenwood Colleges.

March 30, 1983

Submitted by: Edward H. Hancock

Faculty Sponsor: Dr. Russell Johnson

Faculty Administrator: Patrick Land


ABSTRACT: The Communications Act of 1934 established the principle that our nation's future telecommunications policy was to be structured on the concept of "Universal Service", i.e. that telephone service is essential, and as such, should be made available and affordable for all. Deregulation of the telecommunications industry and the soon to be accomplished Bell System divestiture will have a significant adverse impact on the universal service concept. The rationale for this premise is presented as follows. First, a theoretical analysis is made of the changes in the regulated utility revenue requirement which will result from deregulation and divestiture. An explanation of why an increased revenue requirement must be allocated to basic exchange service rates is forwarded. Following this discussion, an empirical analysis is presented which addresses the effect of price on demand for residence basic exchange service. The study utilizes data on growth in residence main telephones for the state of Texas over a five year period. The study results indicate a statistically significant interaction between price and demand for such service. The findings of this study are discussed and a relation to other studies in this area is made. In the summary discussion, the future of the universal service policy is examined and a recommendation for further study is forwarded.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

Introduction

The most recent AT&T estimate is that approximately 96 percent of households in the United States have telephone service (source: 1982 AT&T Annual Report). Considering the fact that some portion of our population will not want a telephone under any circumstances and others will not be able to afford it at any cost, complete availability of telephone service in our nation has been accomplished. "Universal service", which can be defined as making telephone service available and affordable to all who want or need it, has been established as the goal of our nation's telecommunications policy for the last half century. Deregulation of the telephone industry and the Bell System divestiture will have a significant impact on the way telephone service in our nation is provided in the future. The issue I will be addressing here is what impact deregulation and divestiture will have on the universal service concept.

The concept of universal service has its origin in the Communications Act of 1934 which established a national telecommunications policy based on the principle that the provision of telephone service in the United States could best be accomplished through the existence of a natural monopoly. It was felt that the telephone, as an essential public service, could be provided at lower cost with higher quality and greater efficiency by one entity, rather than by fostering

duplication of effort through competition. The stated intent of the legislation was to "make available, so far as possible, to all the people of the United States, a rapid, efficient, Nation-wide and world-wide wire and radio communication service with adequate facilities at reasonable charges."[1]

The outcome of this legislation which established the telephone industry (principally AT&T and the Bell System) as a "natural monopoly", was to make the industry virtually free from competitive pressures. The provision of telephone service became subject to both state and federal regulation. The state utility commissions and the Federal Communications Commission (FCC) were to oversee the telephone company operations to insure that the rates established for telephone service were reasonable and affordable to the general public; while at the same time guaranteeing a fair rate of return on the investment associated with the provision of such service.

This paper is intended to demonstrate the probable effect of deregulation and divestiture on the concept of universal service. This will be accomplished through the following structure. First, a theoretical analysis will be presented to explain how the revenue requirement of the remaining telephone industry after deregulation and divestiture

---

[1] Communications Act of 1934, sec. 1, 50 stat. 189.

will place a large burden for recovery of revenue deficiency on basic telephone service rates. A study of the regulated telephone industry presented by Averch and Johnson (1962) indicated that firms operating under rate of return regulation have an incentive to base their operations on large amounts of capital investment.[2] With this in mind, I will look at how the regulatory process operates and how revenue requirement and rate development is determined. How deregulation and divestiture will affect basic service rates is ascertained through analysis of their impact on the components which make up the capital structure and regulatory process. The transfer of assets pending between the operating telephone companies and AT&T is explained and the implications of under-valuation of such assets are examined. How increased cost of debt and equity for the post-divestiture telephone companies will mean an increased rate of return requirement is discussed. Next, I will look at how recent changes in FCC depreciation practices will necessitate an increase in annual revenue requirement. Finally I will explain why the remaining market rate structure will precipitate recovery of the revenue requirement through an increase in the rate for basic telephone service.

The second part of the paper will present an empirical

---

[2] "Behavior of the Firm under Regulatory Constraint," by H. Averch and L. L. Johnson, American Economic Review, Vol. 52, December, 1962, pp. 1053-1069.

study which examines the relation of price to demand for local telephone service. A two part study on demand for basic residence exchange service wes prepared for the Bell System by Lewis J. Perl, Vice-President of National Economic Research Associates, Inc.. The first part of the study is a demographic analysis which reports on the characteristics of people who do and do not have telephone service available (as determined from 1970 Census data). The second part is a demand analysis which explores the question of whether the availability of basic residence exchange telephone service is influenced by the rates charged for that service.[3]

In an effort to determine if empirical data will substantiate these findings, I have examined the growth in residence main telephones in the state of Texas over the most recent five year period. The results of this study indicate a direct relation between rate stability and growth in telephone service. A large increase (45%) in the rate for basic residence telephone service was associated with a statistically significant negative change in demand for such service. The procedure utilized in this study is explained and its findings are compared to those of Perl and other studies on this subject.

---

[3]"Analysis of Demand for Basic Residence Exchange Service and Associated Demographic Analysis," by L. J. Perl, FCC Docket No. 2003, Bell Exhibit 21, April 21, 1975.

The third portion of this paper draws a correlation between the preceeding parts and presents certain implications for the future of universal service as it relates to the provision of local telephone service in a deregulated and post-divestiture era. A history of the events leading to the FCC decision to deregulate the telephone industry is presented in Appendix A. The Justice Department Vs. AT&T antitrust action and settlement is outlined in Appendix B.

## I. An Analysis of the Effect of Deregulation and Divestiture on Basic Telephone Service Rates

Hypothesis: Deregulation of the telephone industry and the Bell System divestiture will result in higher rates for basic telephone exchange service.

The following excerpt is from a Southwestern Bell internal publication intended to address questions regarding the recent $254 million rate increase proposal in the state of Missouri.

> ...the revenue would replace local service subsidies from both long distance and terminal equipment that it will lose in 1984 when Southwestern Bell is split off from the Bell System. The subsidy revenues the company will lose are those which historically have been used to subsidize basic local telephone service. As a result of this lost subsidy to local service and increased operating costs, most of the company's 1984 revenue needs must come from local telephone customers.[4]

A major contribution to the study of regulated industries was made by Averch and Johnson (1962) in a leading article in which they indicated that firms under rate of return regulation would use higher capital-labor ratios in their production processes than if they were unregulated because profits of regulated firms are constrained only by the magnitude of their rate base or invested capital. Employing a geometric and mathematical framework, the authors

---

[4] "Telecommunications Industry Restructuring," Southwestern Bell Management Report, February 1, 1983, p. 2.

attempted to demonstrate how the allowed rate of return for the regulated utility industry affects the makeup of its capital structure. If the rate of return allowed by the regulatory agency is greater than the cost of capital but is less than it would be if the regulated firm were free to maximize profits without any regulatory constraint, than that regulated firm will substiture capital for labor and operate at a level where cost is not minimized.[5] Smith and Magot (1974) have extended the Averch-Johnson hypothesis to indicate that, under rate of return regulation, a regulated firm would adopt labor saving (capital-intensive) technological innovations.[6]

Averch-Johnson contend that since a regulated utility is allowed to earn an established rate of return on the investment they have made in order to provide the service, the utility's capital investment, that there will exist a natural tendency towards a capital-intensive production as opposed to labor intensive. The assertion is made that the result of this

---

[5] "Behavior of the Firm under Regulatory Constraint," by H. Averch and L. L. Johnson, American Economic Review, Vol. 52, December, 1962, pp. 1053-1069.

[6] "The Implication of Regulation for Induced Technical Change," by V. K. Smith, Bell Journal of Economics, Vol. 5, No. 2, Autumn, 1974, pp. 623-632; "Regulation and the Rate and Direction of Induced Technical Change," by W. A. Magot, The Bell Journal of Economics, Vol. 7, No. 2, Autumn, 1976, pp. 478-496.

tendency is that the utility does not operate in such a way as to minimize market cost for output. For each additional unit of capital input the firm is permitted to earn a profit equal to the difference between the market cost of capital and rate of return allowed by the regulatory agency, that it otherwise would have to forego. To state the premise in another way, the regulated utility firm will choose its path of production that will best enable it to maximize total profits given the regulatory constraint on its rate of return. The following table (I-1) illustrates the growth in AT&T capital investment in land, buildings and equipment (telephone plant) and the corresponding growth in the Gross National Product over the most recent twenty year period.

Illustration I-1

| YEAR | AT&T CAPITAL INVESTMENT* ($BILLIONS) | GROWTH(%) | GNP# | GROWTH(%) |
|---|---|---|---|---|
| 1963 | $30.064 | --- | 91.7 | --- |
| 1964 | 32.543 | 8.2 | 92.9 | 1.3 |
| 1965 | 35.334 | 17.5 | 94.5 | 3.0 |
| 1966 | 38.354 | 27.5 | 97.2 | 5.9 |
| 1967 | 41.475 | 37.9 | 100. | 9.0 |
| 1968 | 44.974 | 49.5 | 104.2 | 13.6 |
| 1969 | 49.244 | 63.7 | 109.8 | 19.7 |
| 1970 | 54.813 | 82.3 | 116.3 | 26.8 |
| 1971 | 60.567 | 101.4 | 121.3 | 32.2 |
| 1972 | 67.082 | 123.1 | 125.3 | 36.6 |
| 1973 | 74.004 | 146.1 | 133.1 | 45.1 |
| 1974 | 81.146 | 169.9 | 147.7 | 61.0 |
| 1975 | 87.620 | 191.4 | 161.2 | 75.7 |
| 1976 | 94.167 | 213.2 | 170.5 | 85.9 |
| 1977 | 101.859 | 238.8 | 181.5 | 97.9 |
| 1978 | 111.125 | 269.6 | 202.9 | 121.2 |
| 1979 | 121.950 | 305.6 | 229.9 | 150.7 |
| 1980 | 133.585 | 344.3 | 258.4 | 181.7 |
| 1981 | 143.265 | 376.5 | 281.5 | 206.9 |
| 1982 | 152.398 | 406.9 | 292.4 | 218.8 |

*Source: AT&T Annual Reports, 1963-1982
#Source: The Handbook of Basic Economic Statistics, Economic Statistics Bureau, Washington, D.C., January, 1983

The Averch-Johnson concept begins to take on increasing importance as we examine the issue of rate base valuation as it relates to determination of the rate of return for a regulated utility. This discussion will of necessity include analysis of how depreciation accounting for the telephone utility is changing and what the effect of a loss in available markets will have on the remaining regulated telephone industry. It will be shown that the combination of these circumstances can only result in higher rates for basic telephone service.

The Regulatory Process

Rate development as performed by the regulated telephone industry is accomplished through a two step procedure. Through the regulatory process an authorized revenue requirement (in dollars) is determined. This is figured by applying an authorized rate of return against the investment of the company. Once this figure is determined the rate design portion of the regulatory process is accomplished. Any revenue deficiency, that difference between what the telephone company is authorized to recover on its investment and what it has been recovering, is applied in the form of rate increases to the product and services of the company. The telephone company has historically utilized what it calls a "residual pricing" policy in rate development. Services and equipment which are considered as premium, meaning not

essential to the provision of basic telephone service, received the largest percentage increase. After these services and equipment received an increase the remaining revenue deficiency (if any) was applied against basic telephone service rates. Before competition in the telecommunications market, what generally happened was that long distance service and business telephone systems such as PBX and Centrex along with what were considered optional services received the bulk of any increase. Throughout the Bell System for the last half century basic telephone service rates have been set at levels significantly below the cost associated with providing the services.

The composition of the total revenue requirement for the regulated telephone company can be illustrated as such:

$$TR=OE+d+t+r(A-D)$$

Where:

TR=total authorized revenue
OE=allowable operating expence
d=annual depreciation expense
t=taxes
r=authorized rate of return
A=gross value of the assets
D=accumulated depreciation
(A-D)=the rate base

The rate design portion of the regulatory process involves assigning a share of the revenue deficiency (total authorized revenues — actual revenues) among the products and services of the company (market) in the form of rate increases for those products and services.

Deregulation of the telecommunications industry and

divestiture of AT&T and the Bell System has had or will have a direct impact on the following components of the regulatory process: annual depreciation expenses and accumulated depreciation, asset valuation, the authorized rate of return and the available markets. What I will do now is examine how each of these variables are affected and what the impact of their interaction will be on the rate level for basic telephone service.

Asset Valuation

The Averch-Johnson effect previously mentioned can possibly account for the immense amount of capital investment ($150+ Billion) which AT&T and the Bell System has expended on the provision of telephone service in our nation. Even after divestiture we can anticipate that the trend in capital investment by the remaining telephone companies will continue. Of immediate concern to those remaining operating telephone companies (OTC) and ultimately to the telephone service consumer is the transfer of assets that will take place between the OTC's and AT&T at the time of divestiture.

The separation of local exchange services from other AT&T operations is to be accomplished by having AT&T divest itself of the twenty-two local Bell System operating companies while retaining the Long Lines Department, Bell Telephone Laboratories and Western Electric Company. Prior

to divestiture, however, the OTC's will be required to transfer to AT&T that portion of their assets which includes all interexchange facilities, customer premises equipment and related wiring, and any unregulated activities. The transfer of these assets is rapidly becoming one of the most controversial issues of the divestiture plan. The source of the controversy stems from the fact that the interests of AT&T and the OTC's are directly opposed.

In a normal transaction between a buyer and a seller, purchase price is usually determined by fair market value. In the case of a regulated utility asset fair market value is more difficult to determine. AT&T would obviously prefer to pay the lowest possible price for the OTC assets while it would be in the OTC's interest to receive the highest possible price in order to strengthen their financial positions, improve their future competitive postures, and lessen the anticipated rate increases. An important point that must be recognized, however, is that until the time of divestiture the OTC's will continue to be owned and operate under the direction of AT&T.

AT&T has indicated that they intend to pay no more than depreciated book value for the assets it receives from the OTC's. As a matter of fact, current asset assessment is presently proceeding under this assumption. However, it is quite possible that state regulatory agencies which govern

the financial operations of the OTC's may determine that there is an excess of market value over current book value associated with the transfer of assets and that a confiscation of the public utility property which they regulate has occurred. For example, if it were ultimately determined that the OTC assets conveyed to AT&T had been undervalued, the state regulatory agencies could possibly deny some portion of the OTC's rate base and revenue requirement in order to avoid penalizing the ratepayers for any presumed failure by the OTC management to protect their own interests. This would have an immediate adverse affect on the OTC shareholders, who would have to make up such a difference. In addition, it could impair the ability of the OTC to make required interest and principal payments on existing debt which would be reflected in future higher prices for such debt financing.

Present and potential competitors of the restructured AT&T will also have a direct interest in insuring that AT&T pays full value for the assets conveyed by the OTC's. If AT&T were able to acquire such assets at less than market value, it could derive a significant advantage over its competitors, who presumably would have acquired their assets at the prevailing market values. As a result, AT&T might be in a position to undercut the prices charged by its competitors, and thereby perpetuate its dominant market position.

The potential exists that the current asset valuation will result in the OTC's giving up a portion of their assets for which they will not receive a fair compensation. This shortfall will have to be passed on to either the ratepayers, the shareholders or both. If all or a portion is recovered from the ratepayer the result will be an increased revenue deficiency and increased rates. If the shortfall is to be borne by the shareholders there will be a significant impact on the rate of return required by the telephone company. The implications of this are explained in the following discussion on rate of return.

Rate of Return

The rate of return as authorized by the regulatory agency which has jurisdiction over the operations of the public utility company must by set at the minimum level necessary to allow that company to maintain its financial integrity. This means that the company must be allowed to protect its credit rating so that it can attract capital and sufficiently compensate the investors in the company (shareholders) for the risk they assume.

As part of the state regulatory process, i.e. rate case, the telephone company operating within that state is required to make a recommendation to the state utility commission regarding the rate of return which must be applied to its investment in property used in providing telephone

service to the state, and provide rationale and evidence to support that recommendation. Such rationale and evidence is provided regarding both the cost of equity and cost of debt. The cost of equity is higher than the cost of debt at any given time because the debtholder has priority over the equity holder with regard to the earnings and assets of the company. The cost of equity is generally derived from research and market analyses, while the cost of debt is contractual and can be easily identified. At the present time Southwestern Bell along with all other OTC's are Triple A rated utilities (with the exception of Pacific Telephone and Telegraph wich is AA primarily because of state regulatory decisions regarding tax liabilities).

It has long been recognized that the risk and capital costs for the individual subsidiaries (OTC's) within the Bell System have been reduced by virtue of their inclusion as part of the Bell System. The Bell System "umbrella" has been an integral part of the high bond ratings in the past. Under the planned divestiture this "umbrella" will no longer be in place. Its discontinuance along with an increasing reliance of the OTC's on state regulatory decisions has resulted in the post-divestiture operating companies being placed on a "Creditwatch" list by the credit rating agency Standard & Poor's. This agency has indicated that the statistical benchmarks for the Triple A rating that it will

apply to divested companies include such criteria as a no more than 40 percent debt ratio, an internal cash flow equal to 85 percent of capital spending and pretax earnings equal to 4.5 times fixed annual revenues. As indicated in Appendix B following, the plan for the divested companies makes provision for a 45 percent debt ratio at divestiture (an even higher ratio will apply to Pacific Telephone and Telegraph). In addition, 1983 projections for Southwestern Bell indicate cash flow levels and earnings considerably short of those objectives.[7] These indications coupled with the fact that the operating telephone companies will have no relevant historical track record upon which they can be judged, would indicate that a reduction in credit rating is imminent.

Besides the fact that cost of debt may soon be increased for the remaining OTC's, the equity investment risk as perceived by potential investors in the OTC's must also be affected. To put it simply, investors can be expected to view the OTC's as a more risky investment after divestiture and will demand a greater return on their investment than in previous times. AT&T stock has historically been perceived as "widows and orphans" stock. While its price of common

---

[7] Southwestern Bell Management Report, "Financiers Begin Size-Up of SWB for Credit Terms", November 1, 1982, pp. 1-6.

stock has not risen as dramatically as some investments, it has been steady. Meanwhile, every quarter a dividend is declared like clockwork. It is interesting to note that since the day divestiture was announced on January 8, 1982 to March 1, 1983, the price of AT&T common stock has increased by approximately 27%. It is obvious that the investment community sees an AT&T unencumbered by its twenty-two regulated subsidiaries as a better investment opportunity.

It is certain that the cost of debt and cost of equity for the remaining telephone companies operating outside the previous Bell System umbrella will be at least as high after divestiture as it was prior to divestiture. If the bond ratings for these companies is lowered, as seems quite likely in at least some cases, and if the investment risk associated with the companies is indeed higher, the result will be an increase in required rate of return on investment for these regulated telephone companies.

Depreciation

As noted previously, an integral part of determining that portion of telephone company investment which must be recovered by ratepayers involves an analysis of how depreciation expenses are accounted for. Divestiture has not had a significant impact in this area. However, the emergence of competition in the telecommunications market and the resulting deregulation certainly has.

The term "depreciation" as applied in the telephone industry refers to a "system established by regulatory and tax provisions to equitably distribute the cost or other basic value of capital assets over the life of the assets."[8] Depreciation allows the telephone company to recover a portion of its invested capital each year as an operating expense. Depreciation thus becomes a method of internal financing for a major portion of the company's construction program. It allows for the replacement of telephone plant retired from service because of inadequacy, changes in customer requirements, technological demands, physical deterioration and regulatory requirements. The depreciation reserve represents the amount of plant investment which has already been recovered as a depreciation expense less the original cost of plant retired and its associated net cost of disposal.

I will now examine how depreciation accounting in the telephone industry has changed over the years with the result that a higher level of annual depreciation expense must now be included in the rate base as an operating expense. This in turn means a larger revenue requirement to be recovered from the telephone service ratepayers.

The Communications Act of 1934 extended to the Federal

---

[8]American Telephone and Telegraph Company, Engineering Economy, 3rd ed. (New York: McGraw-Hill Book Company, 1980), p. 311.

Communications Commission (FCC) the authority to "prescribe for such carriers the classes of property for which depreciation charges may be properly included under operation expenses, and the percentages of depreciation which shall be charged with respect to each of such classes and property."[9]

The telecommunications industry, operating under virtually total monopolistic conditions, was initially directed by the FCC to utilize capital cost recovery techniques which had the effect of deferring recognition of actual costs of operation into the future. What occured was that economic lives for plant and equipment were extended to hold down annual depreciation expenses which meant less revenue to be recovered and in turn resulted in lower rates being charged for services provided. This method for handling depreciation was considered adequate by both the FCC and the industry for times characterized by a stable market, very little competitive pressure, and predictable technological advancement.

In 1956, the first major decision allowing competition in the telecommunications market was issued. The U. S. Court of Appeals for the District of Columbia in Hush-A-Phone corporation vs. United States stated that "a system whereby intervenors (telephone companies) may market equipment until such time as the commission orders a halt, while

---

[9] Communications Act of 1934, sec. 1, 50 stat. 189.

petitioners (non-regulated distributors) may not market competitive equipment until the Commission gives them an authorization, seems inherently unfair."[10] The FCC later adopted this decision as policy, which in effect opened the communications industry to competition. Subsequent court decisions favoring a more competitive market, together with rapid advances in technology, led the FCC to begin reviewing their position on allowable depreciation methods.

Since 1946, the FCC had ruled that the Straight Line Vintage Group method of depreciation was to be utilized. Under this method, all of the same type equipment which was introduced into service in the same year (vintage) was depreciated at the same rate in equal annual installments (straight line). This resulted in an average economic life being utilized, regardless of when individual equipment was actually retired from service. The mathematical formula is expressed as follows.

$$\text{Annual Depreciation Rate} = \frac{100\% - \text{Average Net Salvage*}\%}{\text{Average Service Life}}$$

*Net salvage is defined as gross salvage less cost of removal.

The contention of the FCC in establishing this method was that current and future customers were to be charged

---

[10] Hush-A-Phone Corporation vs. United States, 238 F.2d 266, D.C. Cir. (1956).

only that portion of an asset's cost incurred during the time they used that service. This, of course, was contingent upon the accuracy of the service life forecast. The premise was that when different groups of equipment were included in the same accounting class, it meant that errors which resulted in underestimating the lives of some assets might be counterbalanced by errors which overestimated the lives of other assets.

The problem with this method of depreciation was that it assumed stable consumption and fixed investment roll-over and tended to defer the recovery of capital until the end of an investment's service life and not allow a timely recovery of that capital while the investment was being consumed.

In the regulated telecommunications industry, a piece of equipment must be fully depreciated when it is removed from service. In addition, the objective of depreciation accounting is to "charge to depreciation expense 100% of the net cost of an asset, neither more nor less, over its service life."[11] As a result, an individual item with a shorter than average service life, under the straight line vintage group method, will recover more capital, sooner, than an item of similar value with a longer than average service

---

[11] Federal Communications Commission, "Primer and Overview of Depreciation and Capital Accounting", sec. 1, (1980).

life. This means that some items are forced to recover a greater percentage of their net cost in the latter part of their service life. Capital recovery, therefore, may not match consumption. This point is illustrated on the attached graphic (illustration I-2). When confronted with a marketplace that is highly sensitive to advances in technology, this inequity creates an unacceptable burden.

The FCC, recognizing this fact, in November, 1980, approved the Equal Life Group (ELG) methodology for use in setting depreciation rates on new investment, beginning in 1981. In its order, the FCC stated that

> If the public is to realize the benefits of advances in communications, it is necessary that accounting and depreciation rules not stifle innovation and inhibit the introduction of new technology. It is important that the companies, their customers, and their investors, as well as the regulators, all have an accurate and objective financial picture of the companies' operations and capital requirements. The seeming attraction of stretching out lives to hold down depreciation expenses may impose longer-term costs on our society that far outweigh the short-term advantages.[12]

The Equal Life Group system of depreciation is basically a straight-line depreciation methodology that groups items to be depreciated not only by type and vintage, but also by expected service life. The total depreciation expense will

---

[12] Federal Communications Commission, Report and Order, Doc. No. 20188, Para. 49 (1980).

Illustration I-2

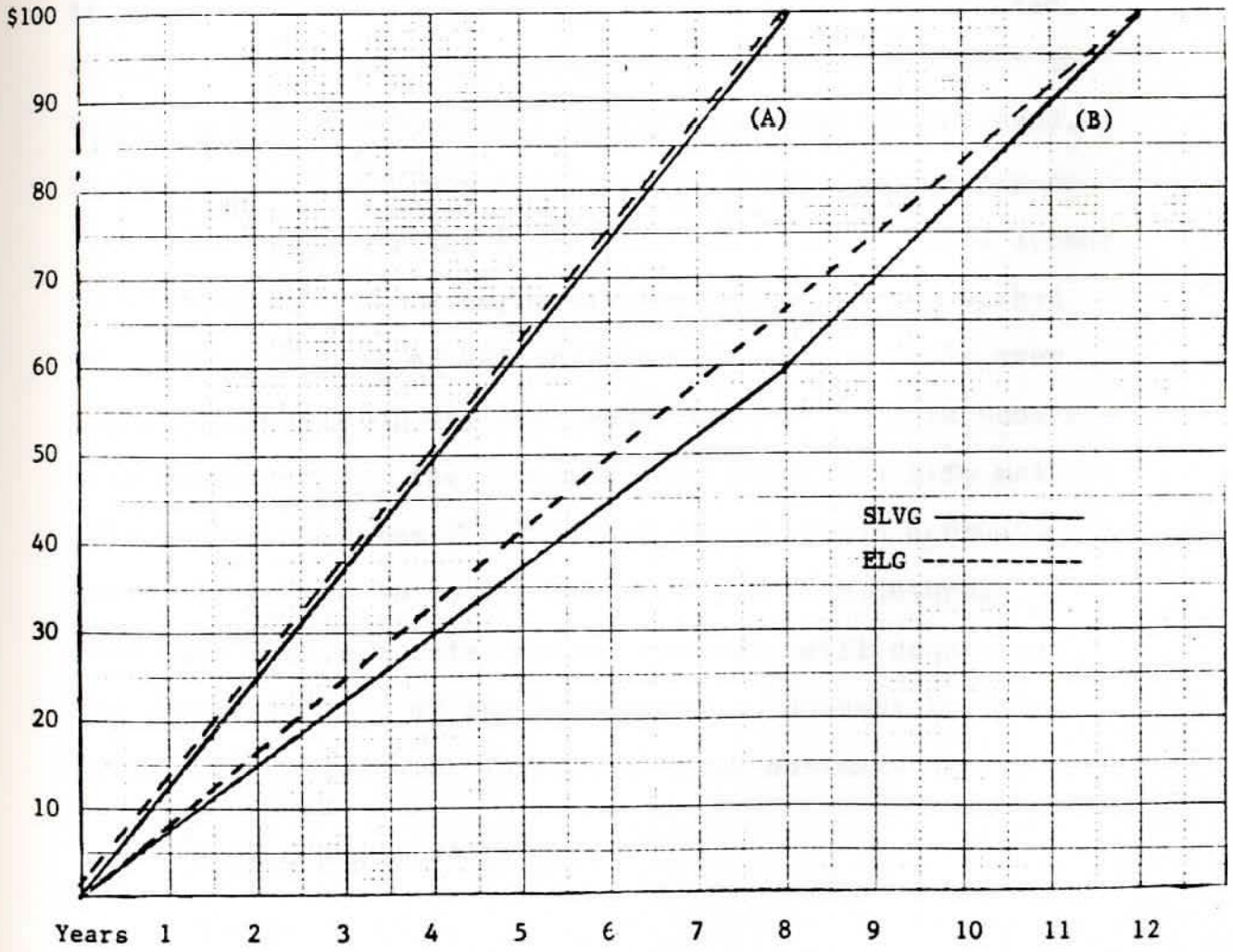
## Illustration of Capital Recovery Methods

Straight Line Vintage Group (SLVG) vs. Equal Life Group (ELG)

Item A has an economic life of 8 years and a cost of $100,000.
Item B has an economic life of 12 years and a cost of $100,000.

Under the ELG method, Items A and B would be depreciated independently of one another because of their different economic lives.

Under the SLVG method the two items would be grouped together and their total cost ($200,000) would be depreciated over the average economic live of the group (10 years). $200,000 ÷ 10 years = $20,000 per year. After 8 years ($160,000) the capital investment of item A ($100,000) must be fully recovered. This means $40,000 must still be recovered by item B over the remaining 4 years of its economic life. Thus 40% of the cost for item B must be recovered over the last 1/3 of its economic life.



still equal the original cost of the capital facilities (minus their net salvage value), but it will eliminate the practice of deferring recovery on items with longer service lives. This system of depreciation is now being phased in over three years, beginning in 1981.

As mentioned above, the Equal Life Group method of depreciation will apply only to new investment beginning in 1981; i.e., the plant and equipment to be put into service in future construction programs. It cannot be applied to the approximately $100 billion (AT&T) embedded investment in the network which presently remains to be depreciated. Changing technology will cause much of this investment to become obsolete before full capital recovery is achieved. Realizing that previous estimates of service lives may no longer be adequate, the FCC stated that "there would appear to be some need for a corrective mechanism if one wished to attain the goal of assigning or allocating costs over the service life of any particular asset."[13] This "corrective mechanism" is the Straight Line Remaining Life method. This method measures the level of depreciation accruals that have taken place up to the present, and then determines a rate such that complete capital recovery will occur over the remaining life of the investment. Inherent in this process is reliance on forecasts which estimate the remain-

---

[13] Ibid., Para. 76 (1980).

ing lives and future net salvage of the investments. The mathematical formula for establishing the Straight Line Remaining Life depreciation rate can be expressed as follows:

$$\text{Annual Depreciation Rate} = \frac{100\% - \text{Reserve \%} - \text{Future Net Salvage \%}}{\text{Average Remaining Service Life}}$$

This formula yields the annual depreciation rate which is applied to the average book cost of a particular account (as designated under Straight Line Vintage Group) to determine the annual depreciation expense. The premise is that the current rate of capital recovery is not sufficient to provide for complete capital recovery by the time the present investment is retired from service. The Straight Line Remaining Life method adjusts the depreciation rate sufficiently so that capital recovery will occur by the end of the service life.

The effect of depreciation accounting should be to repay the invested capital of property in installments derived from current revenues during the life of the related property. The telephone industry is constantly changing and growing as a result of new demand and changing technology. This, in turn, results in depreciation accruals generally being reinvested in new plant. In effect, the capital is transferred in installments from the original, existing, plant in which it was invested, to new plant. Accounting for the cost of an asset too quickly will result in over-

stating expenses, leaving less money to be reinvested. If the cost is spread over too long a period, there is a risk that the asset will be removed from service before its costs are recovered. The effect of the FCC efforts to achieve a more realistic recovery of capital investment over the life of the asset will be an increase in annual depreciation expense recovery in comparison to previous years. This will mean an increased revenue deficiency for the regulated telephone company. This revenue deficiency is recovered through increased telephone rates.

Rate Design

The post-divestiture telephone companies will be operating in a marketplace that is drastically different from what it had been. As detailed in Appendix A and Appendix B the telephone companies will be severely restricted as to available markets. Except for certain intrastate calling, the long distance market will entirely belong to AT&T and other such carriers. Telephone equipment, including everything from toggle switches to telephones to large-user switching equipment will be available only from non-telephone company vendors, at least for the immediate future.

The relevance of these changes to the future rates for basic telephone service can be seen as we examine the cost/revenue picture of the various services offered by the pre-divestiture regulated telephone companies. In other

words, we will look at which services have historically been the money-makers and which ones are the losers.

The tool I will be using to illustrate this point is a Southwestern Bell Embedded Direct Analysis (EDA) study recently completed for the state of Texas. This embedded direct analysis is a study of the cost and revenue relationship of several broad categories of service for the calendar year 1982 in the state of Texas. The total of these categories includes all services provided by Southwestern Bell Telephone Company in that state.

The costs measured by the EDA are direct costs. These are costs which can be identified as being caused directly by the provision of service within a specific category. If the service had not been provided, these costs would not have been incurred. The only exception to this is in the category of "common costs" which are not direct costs, since they are not directly assignable to the provision of any specific group of products or services. They are corporate overhead costs, and as such cannot be assigned on a cost-causative basis. Booked costs and revenues are assigned to the various service categories in the EDA, which balances to the books and records of the company.

The following is a list of the service categories in the EDA and a brief description of how their costs and revenues are assigned.

Access Line.....This category represents costs which are common to both Exchange and Toll Services. Basically, they are the costs of facilities used jointly for access to the telephone network. There are no revenues assigned to this category in 1982.

Exchange.....This category includes the traffic sensitive direct cost generated by Exchange use. All Basic Service Exchange revenues are assigned to this category.

State Toll.....This category contains the traffic sensitive direct cost generated by state toll use. Also included are the cost of intrastate WATS access lines. All state toll revenues, after settlements, are assigned to this category.

State Private Line.....The direct costs of providing intrastate private line service are included in this category. State private line booked revenues are assigned to this category.

Vertical Residence.....The direct costs and revenues of providing additional residence services over and above that required for basic residence exchange service are assigned to this category. The majority of the costs in this category are associated with providing extensions and premium sets.

Vertical Business.....Included are the differential costs and revenues of key equipment and PBX and the direct costs and revenues of Centrex Service.

Other.....This category primarily consists of the direct cost and revenues for Yellow Pages and leased facilities.

Interstate Toll.....This category contains the traffic sensitive direct cost generated by interstate toll use. The costs of interstate WATS access lines are also included. The interstate toll revenues booked after settlements are assigned to this category.

Interstate Private Line.....The direct costs of providing interstate private line service is included in this category. Revenues booked to interstate private line are also included in this service category.

Common.....This category includes costs which are common to all categories and which are not directly assignable to specific services on a cost causative basis. Executive, Legal, Financial, and Personnel expenses are included.

Illustration I-3 provides a synopsized economic picture of the services provided by the existing regulated telephone company. We will now look at what happens after January 1, 1984, the date that AT&T will divest itself of the operating telephone companies.

The direct costs and revenues associated with all interstate toll, the majority of state toll, all interstate private line, a portion of state private line, and for the most part vertical residence and vertical business will go away. The direct costs and revenues from exchange, a portion of state toll and state private line, along with a majority of the "other" category (Yellow Pages) will remain. The access line direct costs will be to some extent accounted for through an FCC plan for access charges to be recovered from the interexchange carriers for interstate calling, such as AT&T, MCI, etc.. However, a portion of these costs will also be passed on to residence and business customers in the form of a surcharge for such access. Of principle concern to the regulated telephone companies is the fact that revenues from state and interstate toll will no longer be available to subsidize basic telephone service rates, thus eliminating the residual pricing approach.

The effect of an increased revenue requirement and the loss of residual pricing in rate design will mean an increase

SOUTHWESTERN BELL TELEPHONE CO.

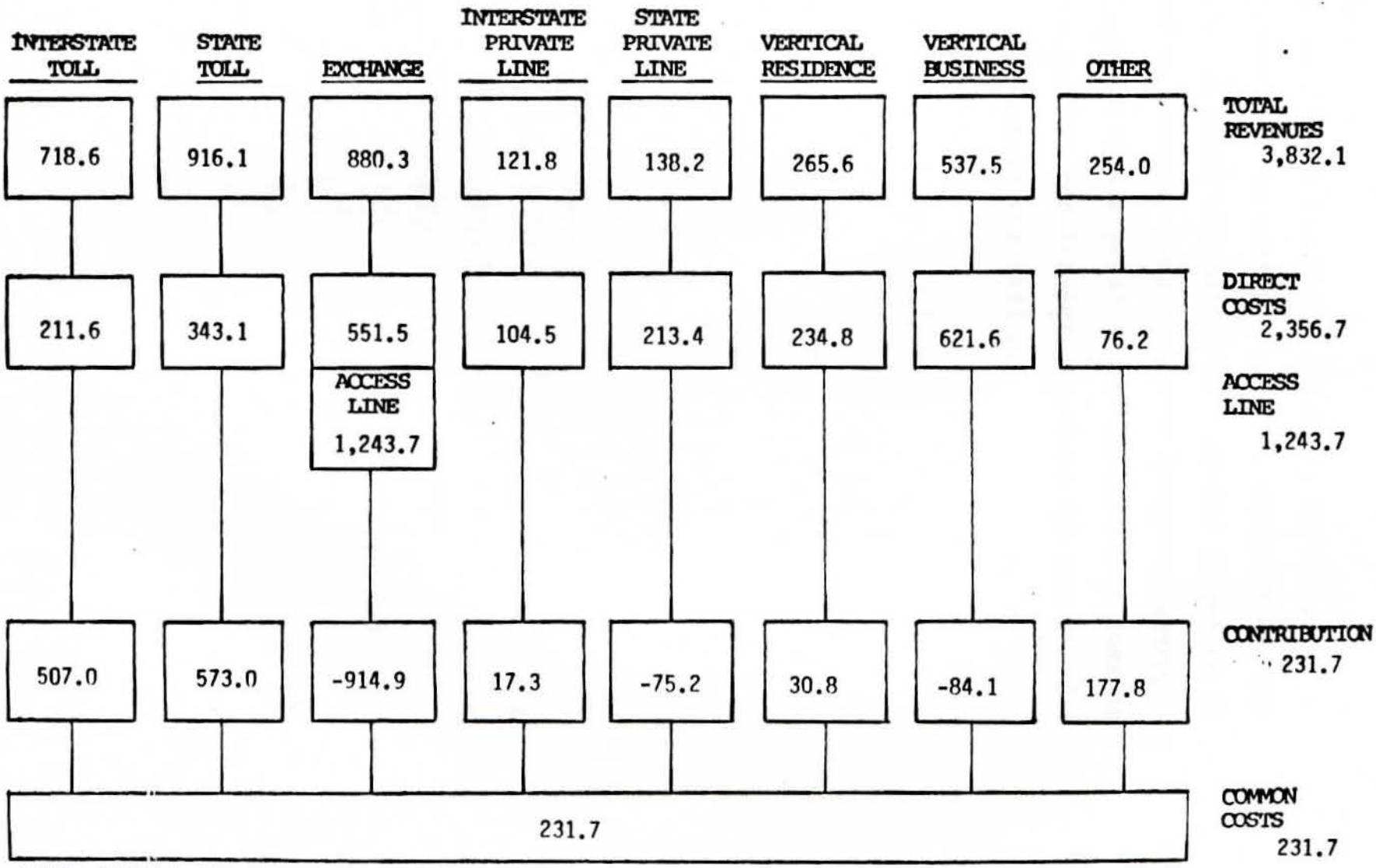
# EMBEDDED DIRECT ANALYSIS

STUDY PERIOD 1981

DATE ISSUED February 17, 1983

STATE Texas*

(000,000)




*With Official Spread



(Illustration I-3)

in the rates charged for basic telephone service. What I will determine in the next part of this paper is whether or not such an increased rate will have any effect on demand for telephone service among residence telephone users. If it can be shown that a price/demand relationship does exist, we can derive some conclusions regarding the future of universal service in our nation.

## II. An Empirical Study to Ascertain the Price/Demand Relationship of Basic Residence Exchange Service.

The traditional pricing rules under which the regulated telephone industry has historically operated in establishing rates for services and equipment have always differed somewhat from the most economically efficient pricing standards. The conflict is particularly acute when one compares economically efficient pricing to residual pricing in the market for telecommunications service. Residual pricing has led to the substantial cross subsidization of basic service, primarily by long distance rates and terminal equipment rates. Economically efficient pricing, on the other hand, would call for pricing all of these services above their marginal costs with the percentage deviation between price and marginal cost inversely proportional to the price elasticities for the services.

The conflict between efficient economic pricing and residual pricing becomes critical when examining the price elasticity of basic exchange service. For example, if the price elasticity for basic exchange service were zero, then the state regulators with jurisdiction over the rates to be established for basic exchange service could follow efficient pricing rules without sacrificing any loss in the number of individuals subscribing to the service. On the other hand,

if basic exchange service is highly price elastic, any attempt to raise current basic exchange prices will lead to a large reduction in number of subscribers. For example, with a price elasticity of -1, if basic exchange prices were increased by 50%, a 50% reduction in subscribers would occur.

The question of whether or not the demand for basic exchange service is dependent to any extent on the price for such service has profound implications for the future of universal service in light of the anticipated results of deregulation and divestiture. As explained in part I of this paper, an increasing revenue requirement and a loss of those markets from which subsidy under residual pricing for basic exchange service has historically been found, means that the basic exchange rates must increase. If it can be shown that this increase in rates will have an adverse affect on demand for basic exchange service, then the impact of deregulation and divestiture on universal service becomes evident.

Previous Literature

There has not been a great deal of empirical research done on the question of demand for basic exchange service. The interesting fact about the research which has been done is that it all appears within the period from 1970 on. I would attribute this to a large extent to the fact that the impact of competition in the telecommunications industry has not made itself evident until such recent times. Another

related factor is that state and federal regulatory commissions are becoming increasingly aware of the effects of demand repression. Some portion of the increased annual revenues granted a utility through the rate case process is never recovered because of such repression. In order to better understand this process, both the utilities and regulators have begun to commission demand analysis research projects which allow them to anticipate and account for the repression in their rate awards.

Such a project was initiated by the U.S. Department of Commerce Office of Telecommunications in 1972 to ascertain the effect which a large increase in installation rates for basic exchange service would have upon demand for such service in the state of Colorado. Their concern was that the Colorado area was the first Bell System jurisdiction to experience such an increase. AT&T, however, had indicated that because of anticipated changes in FCC depreciation practices which called for expensing rather than capitalizing the labor and materials associated with such installations, the same occurrence of increased installation rates would soon take place throughout the entire Bell System. In response to the 1972-1973 Colorado rate case, a study called "Increased Telephone Installation Rates: A Statistical Analysis of Colorado's 1972 Rate Change" was published by Sharon Black and Peter Tryon in June, 1976. In this report the authors stated that

because of the rate increases given Mountain Bell, some 4800 customers a month did not connect a phone to the system. They contend, with a 95% confidence level, that the increase in installation rates accounted for a loss of approximately 9.4% in total customer inward movement for the twelve month period following the rate change. The report recognized that inward movement could have been changed significantly by the skid in housing starts in 1973-1974, but felt that the price increases were also significant factors.[14]

A more extensive study was conducted by Dobell et al. in 1972, which dealt with telecommunications demand in Canada. The demand analysis in this study is divided into two categories. The first includes all telephone companies in Canada in which they estimated total revenue, local service revenue and long distance revenue. The second includes an analysis of Bell Canada using data to separate residence and business into local service and long distance. The measure of output in their analyses, the dependent variable, was price deflated revenue. The independent variables included Canada's GNP and a relative price variable. The paper, however, was concerned primarily with price and income elasticities, which they determined on a short and long-run basis.

---

[14]U.S. Department of Commerce Report No. 76-90, authored by Sharon K. Black and Peter V. Tryon, "Increased Telephone Installation Rates: A Statistical Analysis of Colorado's 1972 Rate Change," (Washington, D.C.: U.S. Government Printing Office) June, 1976, pp. 8-12.

With respect to the demand equations for telecommunications, and in particular price and income elasticities, the authors' principal conclusions were as follows. Habit formation is an important characteristic of demand for telephone service. This is reflected in small responses to a change in income or price in the short-run versus the long-run effects. There is a substantial long-run price elasticity in the demand for local service and long distance by residence households. The authors did note a small response to a change in income or price for local service demand in the short-run, but felt the elasticity was statistically weak and not varifiable.[15]

Similar findings to those of Dobell et al. were published in a demand study conducted by AT&T. In this study, the demand for telecommunications services is a function of demography, prices, consumer tastes, and the state of the national economy. Demand equations for local service, toll, private line, and Wide Area Telephone Service (WATS) were estimated. The dependent variable was a value index measure of output for each service. This value index was derived by dividing revenues from the service in question by a price index for that service, both for the same time period.

---

[15] A. R. Dobell, L. D. Taylor, L. Waverman, T. Liu and M. Copeland, "Telephone Communication in Canada: Demand, Production and Investment Decisions," Bell Journal of Economics, Spring 1972, pp. 175-219.

The results of the study indicate a short-run price elasticity for local service of -.21. The authors indicated that communications services have a strong level of habit formation which seems to be quite independent of current income and relative prices. They suggested that the habit variable could significantly affect long-run elasticity.[16]

Another study closely alligned to the two preceding studies was presented by Dr. Noel Doherty, an economist at St. John's University, on behalf of New York Telephone Company at a state regulatory proceeding. Dr. Doherty prepared testimony to evaluate the effect of price elasticity of demand for basic exchange service, as well as other services, through an aggregate intrastate demand model. The measure of output, the dependent variable, was derived by dividing total intrastate telephone revenue by a weighted price index of telephone service. The independent variables in the aggregate model were price, income, and telephones.

In addition to the aggregate demand model, there were three other demand models developed. In each of these, the demand for telephone service was explained in terms of four major variables: habit, real price of the telephone service being examined, real price of other telephone services, and

---

[16] B. E. Davis, G. Caccappolo, and M. A. Chaudry, "An Econometric Planning Model for American Telephone and Telegraph Company," Bell Journal of Economics, Spring 1973, pp. 35-39.

real income. As in the previous studies, it was determined that the demand for telecommunications is strongly influenced by habit formation. The results of this study indicated that the short-run price elasticity of demand for basic telephone service was a -.076 and the cross elasticity of demand was -.016, whereas the income elasticity was .136.[17]

The most comprehensive and widely publicized study regarding the effect of price and income on demand for basic exchange service was prepared for AT&T by Lewis J. Perl, Vice-President of National Economic Research Associates Inc. (NERA). This study, "Analysis of Demand for Basic Residence Exchange Service and Associated Demographic Analysis", uses data for individual households from the 1970 Census to analyze the economics and demographic determinants of telephone availability in the residential sector. The first part of the study reports on the characteristics of people who do and do not have telephones available. In particular, this part of the report examines the separate effects on the availability of telephone service of income, age, urbanism, education, race, region of residence, family type and welfare status. The second part is a demand analysis which explores the question of whether the availability of basic residence exchange

---

[17] Based on the testimony of A. N. Doherty for New York Telephone Company, New York Public Service Commission, Docket No. 26775 (November 21, 1974), Exhibit 13.

service is influenced by the rates charged for that service.

The general approach and some of the conclusions of the demand analysis portion of this study will be briefly summarized. The general approach taken was to map Bell System rate areas on to the 1970 Census Regions. A sample of 36,671 households was identified by county from the Census data and assigned to Bell System Revenue Accounting Offices (RAO) using data from AT&T Market Research Information System (MRIS). Rates for each Census area were determined from the MRIS in the form of data on annual average billing charges for local service by Revenue Accounting Office. Charges for vertical service (extension, touch-tone, color telephones, etc.) were excluded as were message unit charges in measured rate areas.

It was observed that a positive correlation existed between household income and price, apparently reflecting the choice of an enriched grade of basic service by higher income households. In order to reduce the effects of this relationship, an income adjusted price was computed which reflects the author's estimate of the minimum price for basic telephone service in each Revenue Accounting Office.

After assigning each household in the Census sample an income adjusted price, the data on telephone availability was cross-tabulated by price, income and some selected household characteristics. Three price classifications were examined. They included households in areas where the income

adjusted price is less the $5.00, $5.00 to $6.49, and above $6.50. It is the variation of availability with these price classifications for the various household categories that constitutes the central premise of the study.

The analytical approach employed to develop indications of price elasticity of demand was a cross-sectional analysis. This study also attempted to identify those sub-populations for which demand was particularly price sensitive. The results show that elasticities vary by income, age and household type. Illustration II-1 provides a summary of the arc elasticities of demand for telephone availability according to selected household characteristics. These elasticities measure the percentage change in telephone availability associated with a 1% change in price for each household category. For example, line 1 in this table shows that for all households with incomes less that $3,000, a 1% higher basic telephone rate would be associated with a .29% lower telephone availability; for households with incomes of $6,000 to $9,000 the assumed 1% change indicates a .15% lower availability; and for households with incomes over $12,000 the indicated availability is .03% lower. Thus, lower elasticities are associated with higher income levels. Further, the price responsiveness of demand also varied with age, i.e., greater for younger than older household heads. In addition, price sensitivity also varied with family type, i.e., stronger for

Illustration II-1

ARC Elasticities of Demand for Telephone Availability by Selected Household Characteristics (In 1970)

| Household Characteristic | Household Income | | | | |
|---|---|---|---|---|---|
| | Less than $3,000 | $3,000-$5,999 | $6,000-$8,999 | $9,000-$11,999 | $12,000 and Above |
| | (1) | (2) | (3) | (4) | (5) |
| All Households | -0.290 | -0.347 | -0.154 | -0.092 | -0.030 |
| White Households | -0.272 | -0.332 | -0.152 | -0.097 | -0.025 |
| Negro Households | -0.317 | -0.170 | -0.417 | -0.127 | 0.000 |
| Urban Households | -0.272 | -0.332 | -0.152 | -0.097 | -0.025 |
| Rural Households | -0.339 | -0.413 | -0.129 | -0.068 | -0.081 |
| Age of Head 14-24 | -0.679 | -0.267 | -0.024 | -0.254 | -0.143 |
| Age of Head 25-44 | -0.624 | -0.634 | -0.219 | -0.082 | -0.048 |
| Age of Head 45-64 | -0.218 | -0.333 | -0.118 | -0.092 | +0.010 |
| Age of Head 65 and Above | -0.086 | -0.111 | -0.089 | -0.066 | -0.070 |
| Husband-Wife Households | -0.131 | -0.353 | -0.194 | -0.081 | -0.038 |
| Female Head | -0.640 | -0.462 | -0.209 | -0.057 | +0.090 |
| Other Male Head | -1.003 | -0.565 | -0.300 | -0.074 | +0.065 |
| Female Individual | -0.151 | -0.105 | +0.049 | -0.031 | -0.128 |
| Male Individual | -0.465 | -0.520 | +0.096 | -0.461 | 0.000 |

Source: F.C.C. Docket No. 2003, Bell Exhibit 21, "Analysis of Demand for Basic Residence Exchange Service and Associated Demographic Analysis" (April 21, 1975) Table 13, p. 64.

male individuals for other male-headed households and for female headed households as compared to husband-wife families or female individuals.[18]

Hypothesis

The hypothesis of the present study is based upon an attempt to replicate certain findings of the studies presented in the preceding discussion, particularly the Perl study, dealing with the relation of price to demand for residence basic exchange service. The hypothesis at test can be formally stated in its null form as follows.

> There will be no significant interaction between the change in growth of demand for residence basic exchange service and the price charged for residence basic exchange service.

The null hypothesis of no correlation will be rejected at the level of significance of 0.05 if the value of r calculated for the set of data in the sample size for this study (N=54) exceeds r .025 = .268 or if it is less than -r .025 = -.268.[19]

---

[18]Lewis J. Perl, "Analysis of Demand for Basic Residence Exchange Service and Associated Demographic Analysis," submitted as Bell Exhibit 21, F.C.C. Docket No.2003, April 21, 1975, pp. 10-26.

[19]As determined from R. A. Fisher and F. Yates, Statistical Tables for Biological, Agricultural, and Medical Research, reprinted in J. Freund and F. Williams, Elementary Business Statistics, Table VI "Critical Values of r, (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1964), p. 444.

Method

Of the previous studies discussed, the one which has most significance for the future of universal service would be the Perl study. In order to determine whether historical tracking data specific to telephone subscribers would match the results which Perl found in his analysis of 1970 Census data, a simple correlation analysis was performed.

The sample for this study includes the growth in residence main line telephones for the most recent five year period in the state of Texas. The following factors were considered in determining the sample. Tracking data was available for the five states served by Southwestern Bell Telephone Co. which include Arkansas, Kansas, Missouri, Oklahoma and Texas. Of these five states only Texas has experienced a major increase in the rates for basic exchange service. In addition, Texas has a very large residential customer base of some seven million plus subscribers and is characterized by a very stable growth pattern. I elected to limit the study to residence customers since this is the class of customers normally considered as relevant to discussion of the universal service concept and in order to better equate my findings to those of Perl who considered residence households. Number of residence main line telephones was used as the criteria for determining change in growth pattern since this number equates on a one to one basis to number of residence

telephone service access lines. The five year study period encompasses that period from August of 1977 to June of 1982. The data after June of 1982 includes the county of El Paso, Texas which was taken over under Southwestern Bell billing at that time. Efforts to back out the El Paso data were unsuccessful because problems associated with the billing conversion made the associated tracking information unreliable.

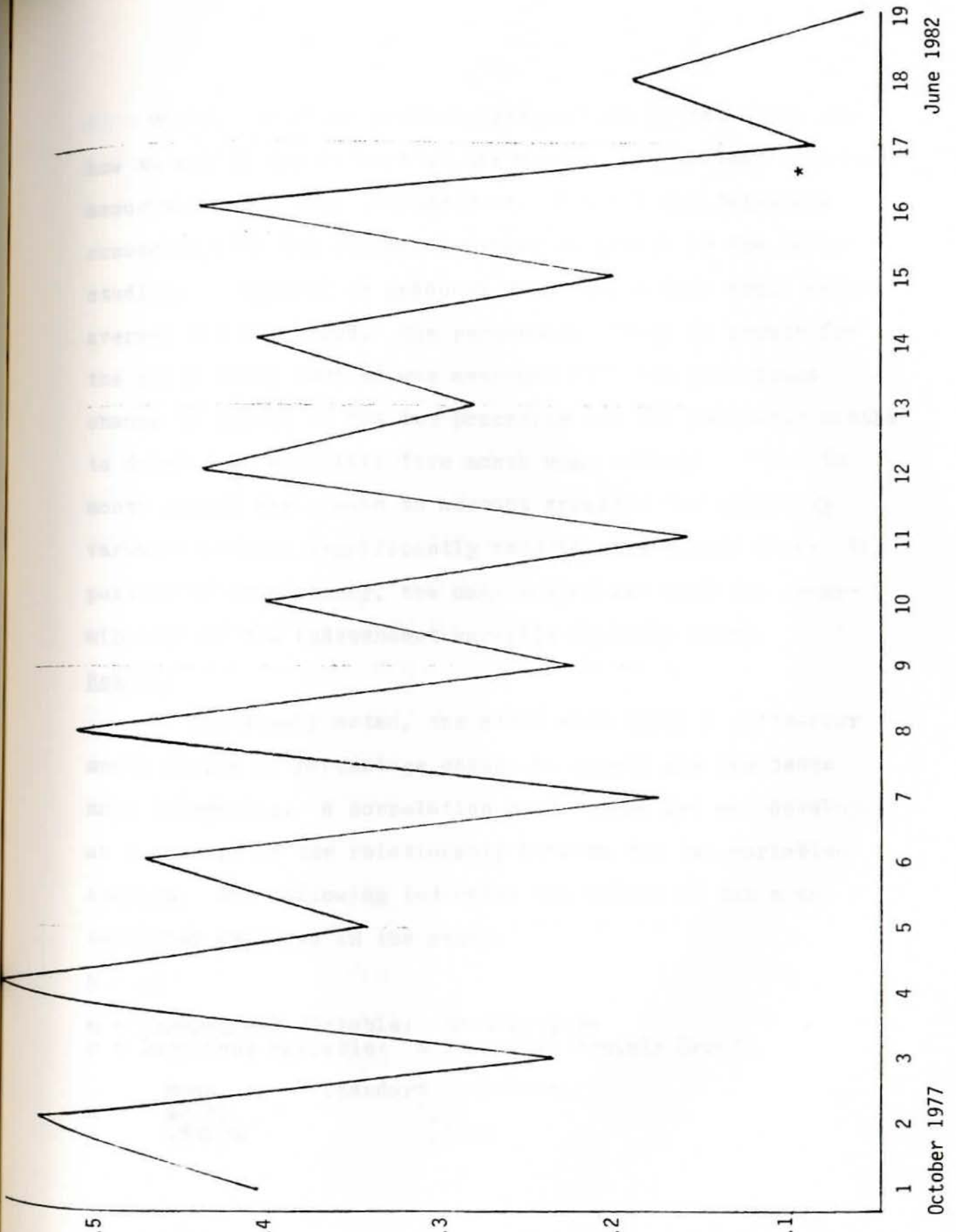
The rate levels associated with basic exchange service, both installation rates and monthly service charges, remained constant throughout the five year period with one exception. In November of 1981, the Texas Public Utility Commission granted an across-the-board 45% increase for both monthly and installation rates for residence exchange service. There are a total of eight separate residence exchange groups in Texas including both individual line and multiline (partyline) usage. In order to determine the average rate for a residential customer, the number of residence main telephones for each category of service was determined and a single weighted average was developed. Texas has measured service available only on a limited area experimental basis. For purposes of this study, no measured service message unit charges were figured into the average monthly charge. In most areas, the only service option available to the residence customer is a choice of single line or two-party service. There was no significant crossover from one service to the other during

the period studied.

The independent variable used in this study was the single weighted average of the monthly service charge associated with residence basic exchange monthly service. The dependent variable was the percentage change in growth from one month to the next of residence main line telephones as determined from official Southwestern Bell Telephone Co. tracking reports. Illustration II-2 is a graphic representation of the growth pattern experienced on a quarterly (three month) basis for the five year period studied. As seen on this graph, there appears to be a small decline in overall yearly growth from year to year. The pattern of growth within any one year is very consistent. There is an increase in the first quarter of the year followed by a decrease in the second quarter, probably due to student disconnects of service. There is an increase in the third quarter of each year (student reconnects) and a decline in the fourth quarter. The percentage change in growth, however, sharply declined in the fourth quarter of 1981 (noted by *) coincident with the increase in basic exchange service rates effective November, 1981. The growth pattern appears to remain consistent from that point on, although at a markedly reduced level.

The ordinary least squares technique is the model employed in this study to explain the action of the independent variable (rate) on the dependent variable (% growth).

Illustration II-2




Main Telephones: % Change in growth (Quarter Year)

One of the chief problems encountered in the study was how to negate the effects of the seasonal variations in growth associated with each quarter year. Since I was primarily concerned with the overall behavior of growth in the period studied, as opposed to seasonal variance, a five month moving average was developed. The percentage change in growth for the month being studied was averaged with the percentage change in growth of the two preceding and two following months to develop an effective five month mean average. The five month period was chosen to account somewhat for quarterly variance without significantly reducing the sample size. For purpose of consistency, the same method was used for determination of the independent variable (monthly rate).

Results

As previously noted, the study considered a fifty-four month sample of percentage change in growth for residence main telephones. A correlation coefficient (r) was developed as a measure of the relationship between the two variables studied. The following indicates the values of the x and y variables employed in the study.

N = 54

x = Independent Variable: Monthly Rate
y = Dependent Variable: % Change in Monthly Growth

| | Mean | Standard Deviation |
|---|---|---|
| x | $8.40 | 1.04 |
| y | .3309% | .1026 |

$\Sigma x = 453.6$ , $\Sigma y = 17.8686$ , $\Sigma xy = 146.6266$

$\Sigma x^2 = 3868.97$ , $(\Sigma x)^2 = 205,752.96$ ,

$\Sigma y^2 = 6.4968$ , $(\Sigma y)^2 = 319.28$

The following computation was used in the development of a correlation coefficient (r).

$$r = \frac{n\,(\Sigma xy) - (\Sigma x)\,(\Sigma y)}{\sqrt{n\,(\Sigma x^2) - (\Sigma x)^2}\ \sqrt{n\,(\Sigma y^2) - (\Sigma y)^2}}$$

Solving this calculation for the values indicated previously, the value of r is identified as -.5923. The results of the study were as expected, permitting rejection of the null hypothesis of no interaction.

Having developed the coefficient of correlation, we can now estimate the value of any dependent variable for a specific level of the independent variable using the computation $y = a + bx$ from the least squares method. In order to determine the fit of any such calculation, the standard error of estimate as a measurement of variation on the line of regression must be determined. The calculation for this at a 95% level of confidence can be shown as such:

$$Sy = \sigma y \sqrt{1-r^2} = .0826$$

This figure indicates that for any specified value of x we can determine that the value of y will fall within a range of .0826% change in growth from the predicted line of regression.

Since we are primarily interested, however, in establishing

the extent of relationship between price and demand for basic exchange service, our concern is more with the proportion of the variance in y that is explained by x. This measure is termed the coefficient of determination and is a relative measure of the degree of association between two variables. In other words, it provides an indication as to the extent which a variation in one variable is related to variation in the other variable and how much of the change is due to chance. The calculation for this is $r^2$; for this study the coefficient of determination equals .35. This figure indicates that 35% of the change in growth for basic exchange service can be attributed to a change in rate for that service; while the remainder would be attributed to some other variable or variables.

Discussion of Results

The results of this study indicate that there is a statistically significant relation between the price charged for basic exchange residence service and the demand for that service. The following limitations to this study should be noted. Since this study is particular to the state of Texas, the specific results obtained cannot be said to apply to all jurisdictions. While some correlation between price and demand for basic exchange residence service would be anticipated, the degree of relationship would be expected to vary depending upon the area being studied. As mentioned pre-

viously, there are few alternative services, such as measured service or a life-line service, available in the state of Texas which may be more readily available in other jurisdictions. This lack of choice would probably precipitate a greater decline in demand than might be the case if some optional services were available at a lower price.

There are many variables which possibly might affect the growth in basic exchange residence service. The general state of the economy, unemployment and inflation obviously impact on the money which a family can budget for telephone service. As pointed out in the Perl study, the degree to which telephone service is perceived as a necessity also enters into play. An elderly individual would probably consider telephone service as more essential to their well-being than a young person.

The fact that demand for telephone service is not inelastic to price has serious implications for the future of universal service. There would appear to be a point at which certain existing or potential customers make the economic determination that they cannot afford telephone service. Since the price for telephone service will experience substantial increases as a result of deregulation and divestiture, we can anticipate that this economic saturation point will be reached for a greater number of people as time progresses.

This empirical study for the state of Texas does sub-

stantiate the findings of the Perl study regarding the price/demand relationship for basic residence exchange service. A recommendation for further study is that such empirical research be done for those specific classes of people recognized in the Perl study as being most susceptible to such increases.

## III. Summary Discussion

Telephone service provides to its user the capacity for instantaneous communication with the rest of society. It has become for the most part an integral part of running a household and certainly an essential element for operation of any business. As mentioned previously in this paper, some 96% of households in the United States presently have telephone service. This fact can be directly attributed to the establishment of universal service as our nation's primary national telecommunications goal by order of the Communications Act of 1934.

The Federal Communications Commission and the Justice Department have expressed through their actions that future telecommunications policy will no longer revolve around the promotion of universal service. The following excerpt from a March, 1983 F.C.C. decision regarding development of a post-divestiture access charge plan perhaps best exemplifies the direction future telecommunications policy will be taking.

> We emphasize how difficult and how important has been the task of devising an access charge plan. In this proceeding, we have focused on the present and the future rather than the past. The monopoly telecommunications environment of the past has ended. The approaches taken in the past to balance the four goals of universal service, non-discriminatory, cost-based prices and a viable, efficient telecommunications network - goals which we believe have been the aim of the Communications Act since its passage - are no

> longer appropriate. These past approaches have essentially been nothing more than the development of special, discriminatory rates for different customers making identical use of access plant in interstate service. It is readily apparent that in an era of facilities-based competition and resale such approaches are not viable. Any attempt to insure continued support for local telephone service through the prohibition of bypass systems would lead to a stifling of innovation and, quite probably, to the transformation of the nation's telephone system - currently the best in the world - into an outmoded and technically inefficient system. Such a system would almost certainly be unable to attract sufficient capital to maintain, much less upgrade, the system.[20]

Part I of this paper discussed how the telecommunications deregulation decision of the F.C.C. and the Justice Department ordered Bell System divestiture will result in an increased revenue requirement for the remaining operating telephone companies. The combination of an undervalued rate base after transfer of assets; an increased rate of return requirement resulting from downgrade of the Bell company credit ratings and greater perceived shareholder risk; and an increasing annual depreciation expense because of changes in F.C.C. prescribed depreciation practices will mean that more money must be recovered through the rate case process. The loss of available markets, particularly long distance,

---

[20] "Third Report and Order", In the Matter of MTS and WATS Market Structure, (FCC Docket No. 78-72), February 28, 1983, para. 363, p. 102.

from which to recover this additional revenue requirement will result in an end to residual pricing and increases to basic exchange service rates.

In part II of this paper the question of whether demand for basic residence exchange service is elastic to price was examined. Previous studies indicate that there is not a one-for-one relationship between price and demand; however, some relationship is apparent. A study covering a five year period in the state of Texas was performed to ascertain whether change in growth of residence main stations in that state was related to change in price for basic residence exchange service. The results of this study indicate a statistically significant relationship does exist.

It is not within the scope of this paper to make any moral judgement as to whether the demise of the universal service concept is good or bad or in our nation's best interest. One observation, though, should be made. Findings of the Perl study indicate that the classes of people most susceptible to loss of telephone service because of increased price are the young, minorities, and the poor. These are presumably the same classes of people presently most isolated from the mainstream of society. What effect further loss of their ability to communicate with the rest of society, resulting from not having access to telephone service, will have is one aspect of the deregulation and divestiture process which

has received very little attention. A topic for future research would be to address the sociological implications of the demise of the universal service policy.

# APPENDIX A

## FCC Computer Inquiry - Deregulation

During the time that the Department of Justice was pursuing its antitrust case against AT&T, a separate and distinct course of activity was being pursued by the Federal Communications Commission. The FCC was empowered by the Communications Act of 1934 with regulatory jurisdiction over the interstate operations of the telecommunications industry. The constraints of the 1956 Consent Decree and previous FCC direction in regard to competition in the communications field certainly did not fully comprehend or contemplate the rapid development of an entirely new communications medium - the computer industry.

As technology has advanced in this area the difficulty of trying to determine the fine line between communications and data processing has become increasingly complex. If the term "communications' refers to exchange of information, does technology which allows for two otherwise incompatible computers to "converse" with one another fall under this scope of activity? The sophisticated telephone equipment now available to the public is no longer restricted to exchanging smalltalk. Automatic transfer of calls, automatic dialing capabilities, and the storing and retrieval of information are capabilities which might be considered as computer-type functions. Telephone operated burglar alarm systems and office management systems which perform such varied functions as inventory control, temperature control and

inter-office data communications are examples of services that previously required a separate computer system. The FCC originally attempted to address this problem in 1966 by initiating what was termed the "First Computer Inquiry".

This inquiry was intended primarily to gather information relating to actual and potential computer uses of communications facilities and services. The FCC was making an effort to understand the scope of regulatory and policy problems which had been and would be generated by the advent of computer technology. The major issues they were interested in dealt with the appropriateness of a communications carrier such as AT&T being allowed to market data processing services and the resultant safeguards which would be required to guarantee that no anti-competitive activity resulted.[1]

The FCC concern was that AT&T had developed, under a regulated atmosphere, an enormous switching network designed to meet the communications needs of the nation. This network was now being proposed as a vehicle for AT&T to offer data processing services. Inherent in this siutation was the potential for AT&T to favor their own data processing activities through cross-subsidization of this service line

---

[1] Regulatory and Policy Problems Presented by the Interdependence of Computer and Communications Services and Facilities, 28 F.C.C. 2d 267 (1971) (Final Decision), para. 14-16.

by revenues generated under its regulated monopoly services.

If allowed to enter the data processing market, how was the FCC to prevent AT&T from using the resources accumulated through its role as a regulated utility company, by law a "natural monopoly", in that competitive market place? On the other hand, would it be in the best interest of the nation and national defense to exclude AT&T from the computer field and not allow their vast amount of technological expertise to be fully utilized in this growing industry?

A secondary issue addressed in Computer Inquiry I was whether data processing services should be subject to regulation by the FCC since the link between user terminals and central computers was the public switched network. A review of the FCC regulatory authority as mandated in the Communications Act of 1934 along with specific statutory guidelines indicated that data processing services could not be regulated. In making this determination, the FCC established basic definitions for differentiating between such regulated communications services and unregulated data processing services. This was accomplished with the understanding that there would be "hybrid" services which combine both functions. In effect, the FCC decision on this issue was that where the use of the telephone switching network is an incidental feature of an integrated service offering that is primarily data processing, the entire service would

not be subject to regulation. Conversely, if the data processing function is incidental to the message switching service, the entire offering is subject to regulation.[2]

The importance of such a definition, and the problems inherent in its application, became evident in light of the ruling regarding the issue of AT&T being allowed to enter the data processing market. The FCC, in 1971, maintained that AT&T was prohibited from doing so except through establishment of a completely separate subsidiary data processing company with its own corporate books, personnel, equipment and facilities devoted exclusively to production of data processing services. However, the ambiguity of the FCC definitions and an uncertain regulatory atmosphere, made such an undertaking infeasible at that time.

Recognizing that technological advances had to all intents made their previous ruling in Computer Inquiry I obsolete, the FCC, in August of 1976, once again attempted to resolve the issue of differentiating between data processing and communications by initiating a second Computer Inquiry. The intent of what was termed Computer Inquiry II was to figure out a way to allow the telephone industry and ultimately the consumer to benefit from the advances in the computer industry.

The issues for consideration in Computer Inquiry II

---

[2]Ibid., para. 26.

were essentially the same as had been considered previously with the exception that advancing technology had made the problem of differentiating between data processing and communications even more complex. In recognition of this fact, the FCC took a different approach to the problem. Rather than specifically limiting their concern to regulation of computer-type services, they expanded their scope of inquiry to include the entire universe of telephone network services and equipment presently and potentially offered by AT&T and the Bell System. The FCC determined that all such services could fall under one of two categories - "basic" or "enhanced". All enhanced network services and telephone equipment, with certain exceptions such as public coin telephones, would not be provided as a telephone company offering by AT&T.[3]

The distinction between basic and enhanced network services in based upon the means by which voice and data communication transmissions are sent through the public switched network system. A basic transmission service is the offering of the capacity to transmit information between two or more points over the network. This transmission is subject to certain technical parameters which condition the circuit used to insure porper fidelity and avoid distortion of the information as it is being sent. Memory or storage capabilities in the network may be used only to facilitate the

---

[3] Second Computer Inquiry, 77 F.C.C. 2d 384 (1980) (Final Decision) para. 83-85.

transmission of information from its originating point to its destination. Basic transmission service provides a communications capability to which nothing is added except what is needed to guarantee accurate transmission of information, whether it be voice or data communication.

An enhanced service is, conversely, any offering over the public switched network which performs a function beyond basic transmission. Such services might involve changing the form or content of the transmission as it proceeds within the network so that it might be received in a restructured format at the distant end. Such capability would allow otherwise incompatible computer equipment to exchange data. Another possibility involves storage and retrieval capability for both data and voice information. An enhanced service in effect utilized the public switched network to perform what has traditionally been considered a computer function.

As previously mentioned, the "enhanced" category also includes telephone equipment now being offered by the telephone companies. The contention of the FCC was that since such equipment was now available through suppliers other that the telephone company, it should be subject to traditional competitive pressures. By allowing such equipment to be provided subject to government regulation by one supplier and in a free market environment by other suppliers, the competitive evolution of the market would be artificially

constrained. By removing such equipment from under regulatory control, the FCC intended to create an environment in which all telephone equipment vendors would compete on an equal basis in responding to market conditions.

The FCC ordered AT&T to comply with its directives in Computer Inquiry II through the formation of a fully-separate subsidiary corporation. This corporation, later designated as "American Bell Inc." was to be a non-regulated corporation established to offer enhanced telecommunications services and equipment in the future. That telephone equipment currently on the books of the operating telephone companies was to remain with those companies. The Computer Inquiry II Final Decision was rendered on April 7, 1980 with an effective date for deregulation of March 1, 1982 (later extended to January 1, 1983).[4]

The formation of American Bell Inc., quickly dubbed as "Baby Bell" by the media, involved a massive corporate restructure for AT&T and the Bell System during 1982. The FCC had mandated that there be a total structural separation between American Bell and AT&T. This necessitated separate records and books of account, separate corporate officers and company personnel, the development of new computer facilities, new office locations, as well as new operations

---

[4] Ibid., para. 286-292.

procedures for the company. To understand the magnitude of the effort involved, American Bell Inc., at its inception, is estimated to have 130,000 employees with $19 billion in assets and $8 billion in annual revenues and will operate 1500 Phone Center Stores across the nation. On day one of its existence, American Bell Inc. was to assume its position as the forty-second largest industrial corporation in the United States.[5]

The reaction in the telecommunications marketplace, particularly in the computer industry, to the anticipated entry of what had been termed "Baby Bell" has been immediate and vocal. Following is an example of the viewpoints expressed by various parties with particular interest in this issue.

Alfred Kahn, economist and former chairman of the New York State Utility Commission, gave an indication of how at least some regulators might view potential deregulation in a recent paper he presented at the Annual Symposium of the New England Conference of Public Utilities Commissioners. While repeatedly and in very precise terms asserting the need for close scrutiny of the Bell System during their transition to a competitive position, Mr. Kahn stated his view that "the sooner regulators get out of the business of sub-

---

[5] Southwestern Bell Management Report, "American Bell, Inc." December 23, 1982, pp. 1-3.

stituting their judgements for those of the market about how each piece of equipment should be priced, the better." He concluded his presentation by stating that "the most important thing from the point of view of the public interest is to get over the transition to competition just as quickly as possible."[6]

As might be anticipated, the view expressed by competitors of the Bell System is somewhat more skeptical. Mr. Gus Grant, Vice-Chairman of Southern Pacific Communications Company, expressed his firm's position in recent U. S. Senate hearings on this issue. Mr. Grant alleged that AT&T has consistently abused their current market dominance in telecommunications through "illegal competitive activity". He further stated that "SPCC submits that this (deregulation) is not in the public interest. The relationships of the two businesses cannot be policed adequately. The establishment of a so-called subsidiary will not do the job."[7] Mr. William McGowan, Chairman of the Board of MCI Communications, expressed a similar viewpoint in the hearings. "Deregulation ought not to occur until customers have a real choice in the marketplace. They simply do not have that choice now. In

---

[6]Alfred E. Kahn, "The Pricing of Telephone Terminal Equipment In The Transition To Competition", paper presented at the Annual Symposium of the New England Conference of Public Utility Commissioners.

[7]Gus Grant, remarks made at Senate Hearings on S. 898, July 1981, Transcript p. 275.

my opinion, no structural reform short of divestiture will put a stop to Bell's conduct. Separate subsidiaries are no solution. AT&T already has two dozen subsidiaries, but that has not prevented anticompetitive conduct, but rather has given them the means by which AT&T's competitive practices are carried out."[8]

---

[8] William McGowan, remarks made at Senate Hearings on S. 898, July 1981, Transcript p. 329.

# Appendix B

# Antitrust Litigation - Bell System Divestiture

Department of Justice vs. Western Electric Co.

On January 14, 1949, the Justice Department filed suit in the U. S. District Court of Newark, New Jersey, under the Sherman Antitrust Act, charging that "the absence of effective competition has tended to defeat effective public regulation of rates charged subscribers for telephone service, since the higher the price charged by Western Electric for telephone apparatus and equipment, the higher the plant investment on which the operating companies are entitled to earn a reasonable return." The Justice Department established as their objective in filing this suit that Western Electric, by court decree, be separated entirely from AT&T and that it be split into three separate companies that would then compete with other companies for AT&T's business.[1]

Although the official records of the antitrust case show a sparse amount of court activity, there appears to have been a concerted effort on the part of AT&T to influence the outcome of the case through private lobbying efforts. In February, 1952, the president of Bell Telephone Labs met with the Secretary of Defense and other Defense Department officials in an attempt to enlist their aid to influence

---

[1] United States v. Western Electric Company, Inc. and American Telephone and Telegraph Company, Civil Action No. 17-49 (D. N. J.) filed January 14, 1949 as reprinted in the "Competitive Impact Statement" filed by the Department of Justice in United States of America v. AT&T, et al., (Civil Action No. 74-1698), U. S. D. C., D. C., pp.3-5.

The Department of Justice to suspend the case until the end of the Korean War. It is impossible to really know if this gesture was inspired by self-interest or concern with national defense, but the strong implication is that AT&T probably felt their chances for a favorable outcome of the antitrust action would be better under the auspices of a Republican administration.

It is interesting that the tactic of attempting to influence the Justice Department through intervention of the Defense Department was repeated several times during this case and very possibly was instrumental in the final outcome. At one point, the Secretary of Defense signed and had hand-delivered to the U. S. Attorney General a letter in which it was stated that the divestiture of Western Electric from AT&T would be very detrimental to the "successful carrying forward of these critical defense projects" and "be contrary to the vital interests of the Nation." The letter, as it was later discovered, was actually composed at AT&T Headquarters. This same type of lobbying effort was repeated by AT&T in the most recent antitrust case.[2]

In January of 1956, an agreement between AT&T and the Justice Department was reached. This agreement, termed the 1956 Consent Decree, did not provide for either the divestiture

---

[2]S. Kleinfeld, The Biggest Company on Earth, (New York: MacMillan Co., 1981), p. 142.

of Western Electric or any other restructuring of the Bell System. The settlement, however, did include several injunctions regarding future AT&T activities. AT&T was prohibited from engaging in any business other than the provision of common carrier (referring to the nationwide telephone switching network) communications services; Western Electric could manufacture equipment only for use by the Bell System; and Bell System patents were to be made available to all applicants upon payment of appropriate royalties.[3]

The somewhat surreptitious proceedings in this case were made public in a subsequent investigation conducted by a House of Representatives Subcommittee on Antitrust Activities. The report of that subcommittee expressed serious concern over the actions of the various litigants involved in this case. The "excessive secrecy" involved in the consent decree process, along with the fact that only limited judicial control was involved, appeared to the Congress as contrary to the intent of the antitrust laws and as detrimental to public confidence in their fair enforcement. To avoid this situation in future antitrust activity, Congress enacted the Tunney Act in 1974. This piece of legislation

---

[3] United States v. Western Electric Company, Inc. and American Telephone and Telegraph Company, Civil Action No. 17-49 (D. N. J.) filed January 14, 1949 as reprinted in the "Competitive Impact Statement" filed by the Department of Justice in United States of America v. AT&T, et al., (Civil Action No. 74-1698), U.S. D.C., D.C., pp. 5-7.

was to play a significant role in the next antitrust action involving AT&T.[4]

Department of Justice vs. AT&T

On November 20, 1974, the Justice Department filed another antitrust action. This suit, which was filed in the United States District Court for the District of Columbia, was broader in scope than the 1949 case in that it included AT&T, Western Electric and Bell Telephone Laboratories as co-defendants. The Justice Department complaint alleged monopolization on the part of the defendants in violation of section 2 of the Sherman Act. The basic theory of both cases, however, was the same. As described in the Justice Department's Competitive Impact Statement, the primary allegation was that AT&T, as a rate of return regulated monopoly, has both the "incentive and ability, through cross-subsidization and discriminatory practices, to leverage the power it enjoys in its regulated monopoly markets to foreclose and impede the development of competition in related, potentially competitive markets."[5]

---

[4]"Final Opinion" of Justice H. Greene in United States of America v. AT&T, st al., (Civil Action No. 74-1698), U.S. D.C., D.C., pp.18-24.

[5]"Response of the United States to Public Comments on Proposed Modification of Final Judgement" filed by the Department of Justice in United States of America v. AT&T et al., (Civil Action No. 74-1698), U.S. D.C., D.C., p.6

The Justice Department initially sought the divestiture from AT&T of all the Bell Operating Companies as well as the divestiture and dissolution of Western Electric. This was later modified to also include the provision that AT&T divest itself of portions of Bell Telephone Laboratories. Divestiture of the Bell System was recommended as the key to preventing AT&T from restricting and/or eliminating competition in the provision of telephone service, i.e. long distance, and telephone equipment. Such services and equipment were potentially available through other common carriers, private telecommunications systems, and manufacturers and suppliers of telecommunications equipment other than Western Electric. In regard to the provision of such equipment, it had long been the contention of such manufacturers that AT&T corporate policy effectively prohibited the Bell Operating Companies from purchasing their equipment from any supplier other than Western Electric.

Pretrial discovery began quickly after the case was filed in 1974. AT&T contended that the suit was without merit and that no antitrust laws had been violated. However, in preparation for the discovery process which was to follow, AT&T began to build a separate staff to handle the litigation process. In a related matter, the FCC, in a November, 1975 ruling, authorized direct connection to the telephone network

of customer-provided equipment registered with the FCC. In 1976, the FCC concluded a two year economic impact study regarding competition in the telecommunications industry. Their conclusion was that such competition had not to that time and was not expected in the future to have a significant adverse impact on telephone company revenues or rates for basic exchange service.[6] In August of 1976, the FCC initiated an inquiry into the distinction between data processing and communication. This action, termed Computer Inquiry II, was discussed in Appendix A.

By the summer of 1978, there had been very little progress in the discovery process portion of the antitrust case, owing in large part to disagreement between the Department of Justice and AT&T as to what type of material was to be produced as relevant to the case. Meanwhile, AT&T had appealed the decision of the District Court that the antitrust case was proper to the United States Supreme Court. The Supreme Court, in 1977, declined to review the decision.

The antitrust case was reassigned in 1978 to the court of Judge Harold H. Greene, because of the ill health of the currently presiding judge on the case. Judge Greene initiated the process of stipulation under which AT&T and the Justice Department were to determine the aspects of the case upon

---

[6]American Telephone and Telegraph Co., Bell Telephone Magazine, under "Synopsis of Regulatory Activity", June, 1982, p. 17.

which there was agreement, with the court to make a determination on all other points of contention. The case which had effectively been stalled for four years was once again moving forward.

The actual trial in the case of the Justice Department vs. AT&T began on January 15, 1981. The first witness in the case was called on March 4, 1981, six and one-half years after the suit began. On January 8, 1982, the court was advised of a proposed settlement to the case. Prior to the January 8 agreement, the Bell System had spent $360 million in its defense, according to AT&T. More than 25,000 pages of transcript had been produced, along with an AT&T document base of 500 million pages of information, three million microfiche cards and one million feet of microfilm. During the trial, AT&T had called 258 witnesses in its defense, while the Justice Department had called 45 witnesses for the prosecution.[7]

The proposed settlement to the case was intended to have a dual purpose. It was to be considered as a modification to the 1956 Consent Decree, which would give it effective precedence over that agreement. In addition, the agreement

---

[7] Southwestern Bell Management Report, "Justice Department Files Rationale Behind Modified Decree", February 16, 1982, p. 1.

was to result in dismissal of the antitrust case. The agreement was made up of several sections addressing the varied issues to be decided.

Section I of the proposed settlement would provide for significant structural changes in AT&T. It removed from the Bell System the function of providing local telephone service by requiring AT&T to divest itself of that portion of the Bell System companies involved in providing such service. The geographic area which the Operating Telephone Companies are to service is defined as an "exchange area". This term was defined by the Justice Department to include an area "large enough to comprehend contiguous areas having common social and economic characteristics but not so large as to defeat the intent of the decree to separate the provision of intercity services from the provision of local exchange service." Any such exchange areas which were proposed to cross state boundaries required Court approval. This concept employs the use of Standard Metropolitan Statistical Area (SMSA) designations to determine those communities and areas having common interests. The provision of telecommunications service within such areas falls under the auspices of the Operating Telephone Companies. The provision of service between such exchange areas would be subject to competition and customers are to have a choice in which interexchange carrier

they select. Such interexchange carriers would include AT&T and other carriers choosing to enter the market. The exchange areas, designated as Local Access and Transport Areas (LATA's), were to be configured by the Operating Telephone Companies and presented to the Court for approval.

The proposed settlement set forth general principles which govern the makeup of the Operating Telephone Companies. AT&T is required to ensure that prior to divestiture, such companies have sufficient personnel, facilities, systems, and the rights to technical information which will enable them to provide exchange telecommunications and exchange access services. This provision also requires AT&T to make certain that prior to divestiture, all such companies have a sufficient debt/equity ratio which will enable them to attract new investors and sufficient revenues and assets to enable them to be economically solvent once on their own and out from underneath the AT&T umbrella.

A plan of reorganization complying with these principles was to be filed with the Justice Department within six months after the Court approved the decree. (This provision was later amended to include review of the proposed reorganization by the Court to insure that all criteria had been met.) Reorganization could not be initiated until Court approval was obtained.

In order to provide for national security and emergency preparedness, the Operating Telephone Companies were to maintain a centralized staff to perform such functions as are now handled by AT&T. In addition, this centralized staff would provide those administrative and engineering services which are most efficiently provided by a centralized organization. This centralized staff would be in effect a scaled down version of what AT&T is today.

An additional provision was that until September 1987, AT&T, Western Electric and Bell Telephone Laboratories will "provide on a priority basis all research, development, manufacturing, and other support services necessary to enable the Operating Companies to fulfill the requirements of the proposed decree."

Section II of the proposed settlement is intended to provide safeguards against future anti-competitive activities. The Operating Telephone Companies will be prevented from discriminating against AT&T's competitors through the requirement that services which are provided to interexchange carriers be equal in type, quality and price to those provided to AT&T. This equality of services provided to all carriers encompasses such activities as establishment of technical standards, dissemination of technical information, network planning, and charges for use of Operating Telephone Company facilities.

The second restriction involves the participation of the Operating Telephone Companies in any business area which is considered to be competitive. This restriction is intended to prevent their using control over exchange services to gain an improper advantage over competitors. The Operating Telephone Companies would not be permitted "(1) to manufacture or market telecommunications products and customer premises equipment; (2) to provide interexchange services; (3) to provide directory advertising such as the Yellow Pages; (4) to provide information services; and (5) to provide any other product or service that is not a natural monopoly service actually regulated by tariff." This prohibition does not prevent them from engaging in activities which are incidental or "inherent" to the provision of monopoly services such as procurement, engineering, marketing and management. In effect, they are to be strictly telephone companies and not telecommunications companies.

The remaining sections to the agreement concern issues of legality and jurisdiction. The agreement was not to be construed as an admission of guilt or evidence of any illegal activity on the part of AT&T. Provision is made that AT&T is responsible for informing all Bell System employees of their legal obligations under the decree. The Department of Justice will be given access to the records of AT&T and the Operating Telephone Companies as well as retain the

right to interview employees regarding compliance. They also retain the right to issue orders to ensure that the provisions of the settlement are carried out as was intended by the agreement.[8]

Before a final ruling could be issued regarding the settlement agreement, certain procedures as stated in the Tunney Act had to be initiated. These procedures included a sixty day period during which comments could be provided by affected parties, the requirement for a competitive impact statement by the Department of Justice, an additional sixty day period for the receipt of public comments, and a determination by the Court that the agreement was in the public interest.

Initially AT&T and the Justice Department had expressed the position that since this agreement was a modification to an already existing agreement, the 1956 Consent Decree, the provisions of the Tunney Act as previously stated were not applicable. An apparent attempt to circumvent this procedure was made on the part of AT&T and the Justice Department but was quickly countered by Judge Greene, who made the following observation regarding the proposed settlement.

> In the opinion of this Court, that reasoning may most charitably be described

---

[8] "Final Opinion" of Justice H. Greene in United States of America v. AT&T, et. al., (Civil Action No. 74-1698), U. S. D. C., D. C., pp.13-18.

> as disingenuous. If that reasoning were deemed acceptable, the parties here - and in similar antitrust actions - could subvert the clearly expressed will of Congress by a mere act of labelling. The Tunney Act was designed to expose to public interest determination the settlement negotiated between the Department of Justice and the various antitrust defendants. The instant agreement, whatever the label the parties chose to affix, settled two such lawsuits. That settlement, moreover, not only disposed of what is the largest and most complex antitrust action brought since the enactment of the Tunney Act but the settlement itself raises what may well be an unprecedented number of public interest questions of concern to a very large number of interested persons and organizations.[9]

The Department of Justice received over six hundred separate comments on the proposed agreement, totalling over 8500 pages. The comments, which included a number from private citizens, expressed both interest and concern over such issues as regulatory jurisdiction of state and federal government, the impact the proposal will ultimately have on basic exchange rates, effect on the over one million current Bell System employees, the viability of the Operating Telephone Companies after separation from AT&T, how the public was to be informed, etc.. The Department of Defense also expressed a critical concern with how the interests of national security and emergency preparedness would be affected by the proposed divestiture.

---

[9]Ibid., pp. 20-21.

On August 11, 1982, Judge Greene entered his order and opinion regarding the proposed settlement in a one hundred and seventy-eight page document. Judge Greene advised that on provision that AT&T and the Justice Department agreed to certain modifications which he proposed, he would approve the agreement as being in the public interest and subsequently dismiss the antitrust case. In his final comments, Judge Greene states that "the antitrust laws seek to diffuse economic power in order to promote the proper functioning of both our economic and our political systems." Although he notes that up to this point the men and women of the Bell System have been careful not to abuse the power inherent in the telephone monopoly, it is, nevertheless, "antithetical to our political and economic system for this key industry to be within the control of one company."[10]

Divestiture Plan

On December 16, 1982, AT&T filed with the Department of Justice and the Federal District Court of Washington, D. C. a 471 page comprehensive plan for reorganization of the Bell System under the conditions prescribed in Judge Greene's directive. Final court approval of the plan is anticipated by mid-year 1983, to have an effective date of January 1, 1984. In essence, the plan calls for the formation of seven

---

[10]Ibid., p. 67.

regional holding companies which will incorporate the area of service presently furnished through the twenty-two Operating Telephone Companies. These seven regional holding companies will be entirely separate entities distinct from one another and AT&T. A central organization will be created to provide centralized technical and management services for the seven regional companies as well as provide the central point of contact required by the settlement agreement in the interest of emergency preparedness and national defense. On the local level, the regional companies will develop subsidiary organizations based on how services and facilities are provided, whether within a Local Transport and Access Area or between such exchanges. The subsidiary having responsibility for inter-exchange services will be transferred to AT&T. The remaining subsidiary will be retained to provide local exchange telephone service. Approximately 75% of the total assets of the present Bell System, primarily contained in the telephone switching network, will be retained by the seven regional companies - this equates to a transfer of approximately $40 billion in assets. Between one and two hundred thousand employees in the Bell System will change corporate affiliation. At the time of divestiture, each regional company will have an estimated 2.7 million share owners. To put these numbers in perspective, the next largest domestic corporation behind AT&T and the seven regional companies

in terms of number of share owners is General Motors with 1.1 million. To say that this divestiture involves the most extensive corporate restructure in our nation's history is an understatement; no other such corporate undertaking has ever been attempted.[11]

There are many questions resulting from the settlement agreement which have not yet been answered. It will be somewhat ironic if the settlement causes the cost of communications to increase since a basic premise upon which the Justice Department based its eight year case was that such cost has been artificially maintained at a high level by AT&T. Another point of controversy concerns whether the settlement will make the telecommunications industry truly more competitive. At the time of divestiture, AT&T will still control the majority of intercity communications traffic. Representative Tim Wirth, chairman of the House of Representatives Telecommunications Committee, argued in a recent speech to state utility regulators that "AT&T still controls over 90% of the long distance market and it will be many years - because of the cost of plant and other factors - before true competition will exist."[12]

There has been considerable argument over whether or

---

[11] "The Odds In a Bell/IBM Bout" Business Week, January 25, 1982, pp. 22-23.

[12] W. Brooke Tunstall, "The Shape of Things To Come," Bell Telephone Magazine, July 1982, p. 15.

not U. S. Assistant Attorney General William Baxter should have held out for more. Critics of the agreement contend that it was becoming increasingly obvious that AT&T was desparate to get out from under the constraints of the 1956 Consent Decree. The contention is also made that previous rulings by Judge Greene had indicated that the Justice Department stood an excellent chance of winning the case. Another criticism is that by accepting something less than complete divestiture, the role of the FCC has been expanded. The problem this represents is best illustrated in a pretrial brief submitted by the Justice Department itself which asserted that "the FCC's inability to control AT&T's pricing is due to their inability to develop an adequate method of preventing (AT&T) from cross-subsidizing services that are subject to competition."[13]

There was, however, considerable pressure being exerted for a quick resolution to the case. The White House was concerned with cutting Bell Telephone Labs and Western Electric from AT&T because it would have reduced drastically the nation's ability to exploit computer communications technology. This could be a critical factor for increasing future domestic productivity and decreasing the foreign trade deficit.

---

[13] "U. S. Drops IBM Suit, Settles with AT&T" Computer-World, January 18, 1982, pp. 22-23.

As previously mentioned, the position of the Defense Department also could have had some bearing on the decision to settle the case. But very possibly, the primary reason for accepting the settlement was simply the Justice Department view, as expressed by Mr. Baxter, that by eliminating the basis for AT&T's long distance monopoly, the foundation for fair and open competition in the telecommunications industry has been established.

SELECTED BIBLIOGRAPHY


Averch, H. and Johnson, L. "Behavior of the Firm Under Regulatory Constraint." American Economic Review (December, 1962): pp. 1053-1069.

Black, Sharon K. and Tryon, Peter V. "Increased Telephone Installation Rates: A Statistical Analysis of Colorado's 1972 Rate Change." Washington, D.C.: Government Printing Office, June, 1976.

Davis, B., Caccappolo, G. and Chaudry, M. A. "An Econometric Planning Model for American Telephone and Telegraph Company." Bell Journal of Economics (Spring, 1973): pp. 35-39.

Dobell, A. R., Taylor, L., Waverman, L., Liu, T. and Copeland, M. "Telephone Communications in Canada: Demand, Production, and Investment Decisions." Bell Journal of Economics (Spring, 1972): pp. 175-219.

Doherty, A. N., Testimony for New York Telephone before New York Public Service Commission in Docket No. 26775. Bell Exhibit 13, 21 November, 1974.

Kahn, Alfred E. "The Pricing of Telephone Terminal Equipment in the Transition to Competition". Presented at the Annual Symposium of the New England Conference of Public Utility Commissioners, June, 1980.

Magot, W. A. "Regulation and the Rate and Direction of Induced Technical Change." Bell Journal of Economics, (Autumn, 1976): pp. 623-632.

Perl, Lewis J. "Analysis of Demand for Basic Residence Exchange Service and Associated Demographic Analysis," FCC Docket No. 2003, Bell Exhibit 21, 21 April, 1975.

Smith, V. K. "The Implication of Regulation for Induced Technical Change." Bell Journal of Economics, (Autumn, 1974): pp. 964-970.

Federal Communications Commission. Third Report and Order in the Matter of MTS and WATS Market Structure. Doc. No. 78-72 (1983).

Federal Communications Commission. "Final Decision." Regulatory and Policy Problems Presented by the Interdependence of Computer and Communications Services and Facilities, 28 F.C.C. 2d 267 (1971).

U.S. Congress. Senate. Telecommunications Competition and Deregulation Act of 1981. Transcript of hearings in S. Doc. 898, 97th Cong., 1st Sess. (1981).

Department of Justice. "Competitive Impact Statement" in United States of America vs. AT&T, et al. Civil Action No. 74-1698, U.S.D.C., D.C. (1982).

Department of Justice. "Response of the United States to Public Comments on Proposed Modification of Final Judgement" in United States of America vs. AT&T, et al. Civil Action No. 74-1698, U.S.D.C., D.C. (1982).

Greene, Justice H. A. "Final Opinion" in United States of America vs. AT&T, et al. Civil Action No. 74-1698, U.S.D.C., D.C. (1982).

"Justice Department Files Rationale Behind Modified Decree." Southwestern Bell Management Report, 16 February, 1982, pp. 1-4.

Communications Act of 1934. Washington D.C.: Government Printing Office, 1980.

Federal Communications Commission. "Primer and Overview of Depreciation and Capital Accounting" (1980).

Federal Communications Commission. Report and Order. Doc. No. 20188, (1980).

Federal Communications Commission. "Rules and Regulations". Washington, D.C.: Government Printing Office, 1980.

Federal Communications Commission. "Final Decision". The Second Computer Inquiry. Doc. No. 20828 (1981).

U.S. Congress. Senate. Telecommunications Competition and Deregulation Act of 1981. S. Doc. 898, 97th Cong., 1st Sess. (1981).

American Telephone and Telegraph Company. Engineering Economy. 3rd ed. New York: McGraw-Hill Book Company, 1980.

Kleinfeld, S. The Biggest Company on Earth. New York: Mac-Millan Co., 1981.

Freund, J. and Williams, F. Elementary Business Statistics. New Jersey: Prentice-Hall, Inc., 1964.

Economic Statistics Bureau. The Handbook of Basic Economic Statistics. Washington, D.C.: Government Printing Office, January, 1983.

Southwestern Bell Telephone Company. Policy/Perspective. June, 1979.

Johnson, R. "Justice Department Decides IBM Case Without Merit," Computerworld, 18 January, 1982.

Uttal, Bor. "Life After Litigation at IBM and AT&T," Fortune, 8 February, 1982.

"The Odds In A Bell-IBM Bout," Business Week, 25 January, 1982.

"American Bell, Inc." Southwestern Bell Management Report, 23 December, 1982, pp. 1-6.

"Telecommunications Industry Restructuring." Southwestern Bell Management Report, 1 February, 1983, pp. 2-5.

"Financiers Begin Size-Up of SWB for Credit Terms." Southwestern Bell Management Report, 1 November, 1982, pp. 2-6.

"Synopsis of Regulatory Activity." Bell Telephone Magazine, June, 1982, pp. 16-18.

"AT&T Annual Report." 1963-1982.