NRRI 97-14

# DEREGULATION-RESTRUCTURING: EVIDENCE FOR INDIVIDUAL INDUSTRIES

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May 1997

This report was prepared by the National Regulatory Research Institute (NRRI) with funding provided by participating member commissions of the National Association of Regulatory Utility Commissioners (NARUC). The views and opinions expressed herein do not necessarily state or reflect the views, opinions, or policies of the NRRI, the NARUC, or NARUC member commissions.

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# INTRODUCTION

Several studies have measured the effects of regulation on a particular industry.[1] These studies range widely in sophistication, from simple observation (comparison) of "pre-transformation and post-transformation" actual industry performance to econometric analysis that attempt to separate the effects of deregulation from other factors in explaining changes in an industry's performance. The major problem with "observation" studies is that they are unable to measure the effect of one particular event, such as deregulation, on an industry's performance. For example, at the same time that the United Kingdom privatized its electric power industry, it also radically restructured the industry to encourage competition and instituted a price-cap mechanism to regulate the prices of transmission, distribution, and bundled retail services. Subsequent to these changes in 1991, real prices for most U.K. electricity customers have fallen.[2] We cannot say with high certainty, however, which of these factors was most important or even contributed to the decline in price. In any event, one must be cautious in interpreting the results of studies that attempt to measure the effect of deregulation *per se* for a specific industry.

The summary that follows highlights major outcomes for five industries undergoing deregulation or major regulatory and restructuring reforms. These include the natural gas, transportation, U.K. electric power, financial, and telecommunications industries. Particular attention was given to the historical development of events in the telecommunications industry, which has long been regulated by state public utility

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[1] This report cites the more scholarly studies in its discussion of the evidence for individual industries. Other "data" on deregulation, including those from media accounts and anecdotal evidence, are omitted from our summary.

[2] Nigel Evans, "UK Electricity: the Criticisms, the Changes, the Challenges," paper presented at the 1996 EPRI Conference on Innovative Approaches to Electricity Pricing, LaJolla, California, March 28, 1996.

commissions and has already undergone major restructuring. Table 1 lists the major initiatives underlying deregulation of these industries. Generally, deregulation has successfully eliminated most of the inefficiencies under the old, heavily regulated regime (see Table 2).

## NATURAL GAS

The U.S. natural gas industry has undergone a major transformation over the past two decades. Prior to the enactment of the Natural Gas Policy Act in 1978, the industry was comprehensively regulated from the wellhead to the burnertip. Federal regulation of the industry took a major step in 1938 with the passage of the Natural Gas Act. This legislation provided for the federal regulation of transportation and sales of gas in interstate commerce. In 1954, the *Phillips* decision by the U.S. Supreme Court extended federal authority to the regulation of wellhead gas prices. By the mid-1970s, the "old" natural gas industry started to encounter major shortages in the interstate gas market. Earlier in the 1970s, proven gas reserves began to decline. The apex of the gas-shortage problem occurred during the 1976-77 winter when severe curtailments disrupted thousands of businesses and led to the temporary unemployment of hundreds of thousands. A political consensus began to emerge in Washington, paving the way for wellhead price deregulation.

The Natural Gas Policy Act of 1978 provided for the phased deregulation of wellhead prices of most interstate gas drilled after October 1978. Later, the Natural Gas Wellhead Decontrol Act terminated all price controls beginning on January 1, 1993.

*TABLE 1*

*MAJOR DEREGULATION INITIATIVES*

| *INDUSTRY* | *INITIATIVES* |
|---|---|
| *Natural Gas* | • *Natural Gas Policy Act (1978)*<br>• *FERC Order 436/500 (1985-87)*<br>• *Natural Gas Wellhead Decontrol Act (1989)*<br>• *FERC 636 Orders (1992)*<br>• *Expanded Retail Service Unbundling (1995-current)* |
| *Transportation* | • *Airline Deregulation Act (1978)*<br>• *Motor Carrier Reform Act (1980)*<br>• *Staggers Rail Act (1980)* |
| *U.K. Electric Power* | • *Privatization (1991)*<br>• *Restructuring (1991)*<br>• *Price-Cap Regulation (1991)* |
| *Financial* | • *Securities Acts Amendments (1975)*<br>• *Depository Institutions Deregulation and Monetary Control Act (1980)*<br>• *Garn-St. Germain Depository Institutions Act (1982)*<br>• *Riegle-Neal Interstate Banking and Branching Efficiency Act (1994)* |
| *Telecommunications* | • *FCC Carterfone Decision (1968)*<br>• *AT&T Settlement (1982)*<br>• *FCC Computer III Decision (1986)*<br>• *Telecommunications Act (1996)* |

*TABLE 2*

*INEFFICIENCIES IN OLD REGIME*

| *INDUSTRY* | *INEFFICIENCIES* |
|---|---|
| *Natural Gas* | • *Below-market price for wellhead gas*<br>• *Market power exhibited by pipelines*<br>• *Closed access to gas delivery systems* |
| *Transportation* | • *Cross-subsidies*<br>• *Entry/exit barriers*<br>• *Rigid pricing, service-provision and operation rules*<br>• *Disincentives for productivity growth and operation/planning innovations* |
| *U.K. Electric Power* | • *Disincentives for productivity growth*<br>• *Distorted prices*<br>• *Highly monopolistic industry structure*<br>• *Decisionmaking heavily influenced by politics* |
| *Financial* | • *Lack of price competition in brokerage services*<br>• *Restrictions on the availability of banking services*<br>• *Restrictions on interstate banking operations*<br>• *Below-market ceilings on deposit interest rates* |
| *Telecommunications* | • *Rate averaging*<br>• *Barriers to entry in long-distance market*<br>• *Cross-subsidies between interstate rates and local service rates*<br>• *Noncompetition in "equipment" markets* |

During the early 1980s, severe take-or-pay contract problems started to come to the surface. The market price for wellhead gas was frequently far below existing contract prices but pipelines were legally obligated to pay the contract prices. Take-or-pay provisions in producer-pipeline contracts were the product of wellhead price regulation that positioned producers favorably in negotiating nonprice terms and conditions with pipelines. Take-or-pay provisions placed most pipelines in a financial bind in addition to driving up the price of gas throughout the natural-gas network. Matters grew worse with the collapse of oil prices in 1985. As a consequence of these events, the demand for natural gas plummeted.

Pipeline reform began in 1985 with the Federal Energy Regulatory Commission (FERC) issuance of Order 436. This order was in response to a judicial interpretation of pipelines' Special Marketing Plans as unduly discriminatory. It provided a "carrot" to pipelines for open access by offering them an "optional" expedited certificate for new facilities.[3] Within months after the order, all the major pipelines applied for open-access status. The FERC permitted pipelines to convert contract-demand (CD) service to transportation-only service.[4]

In 1987, after judicial remand, the FERC issued Order 500.[5] This order addressed the take-or-pay problem by (a) requiring gas producers to credit against a pipeline's take-or-pay liability any gas transported for them, and (b) allowing pipelines to collect gas inventory charges for the provision of firm gas service.

As of that time, the FERC fell short of requiring pipelines to unbundle their services. Yet, for the first time, it gave pipeline customers the right to contract separately for gas supplies and transportation service. Although FERC actions in the 1980s helped to open up natural gas markets to competitive services, several problems emerged that the FERC later addressed in its 636 Orders. These problems included

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[3] "Regulation of Natural Gas Pipelines After Partial Wellhead Decontrol," Order No. 436, *FERC Statutes and Regulations*, 30,665 (1985).

[4] A contract demand refers to the level of firm service in terms of the maximum (daily or annual) volumes of natural gas sold (or moved) by the pipeline to the customer holding the contract.

[5] Order No. 500, *FERC Statutes and Regulations*, 30,761 (1987).

the "unfair" position of pipelines as gas merchants, inefficient transportation rate design, discriminatory storage access and upstream pipeline capacity access, and a nonfunctioning resale market for pipeline capacity rights. In response to these problems, the FERC issued the 636 Orders in 1992.[6]

The Order prohibited pipelines from offering bundled sales service, established a capacity releasing program, redesigned pipeline rates on the basis of the straight fixed-variable (SFV) methodology,[7] and generally gave transportation customers nondiscriminatory access rights to the pipeline network. In return for required unbundling of pipeline services, pipelines are able to resell gas on an unbundled basis at market-determined prices.

State public utility commissions (PUCs) have now begun to allow the unbundling of gas services to small retail customers.[8] Service unbundling, and rebundling of services, for a broader group of retail customers will be an important issue for state regulators in the coming years. One lesson we have learned is that once competition penetrates one sector component it is difficult to prevent it from spreading to other components. Retail gas unbundling exemplifies this phenomenon for the natural gas industry.

The "old" natural gas industry featured a rigid three-tier structure with long-term contracting as the dominant form of gas transactions. Three distinct markets (wellhead, citygate, and local distribution) existed. Under this industry structure, gas was provided as a delivered bundled service from wellhead to burnertip. Interstate pipelines played a critical role in the delivering process. Strong technical and economic reasons underlaid

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[6] Order 636 was issued on April 8, 1992, Order 636-A on August 3, 1992, and Order 636-B on November 27, 1992.

[7] Under SFV, all fixed costs are assigned to the reservation component of bills and all variable costs to the usage component.

[8] See, for example, Kenneth W. Costello and J. Rodney Lemon, *Unbundling the Retail Gas Market: Current Activities and Guidance for Serving Residential and Small Customers* (Columbus, OH: The National Regulatory Research Institute, 1996), Chapter 2.

the prevalence of this particular market structure.[9] Under this three-tier structure, the natural gas industry performed satisfactorily over several decades. But, as noted earlier, this market structure led to major distortions and performed poorly during the mid-1970s' supply shortage and the early to mid-1980s' gas surplus.[10]

Over the last ten years, a four-market (commodity gas, interstate transportation, core distribution, and noncore distribution) structure centered around direct gas purchases and spot contracts with flexible supply and take provisions has evolved. This four-market structure will likely remain over the next several years.

We observe widely different changes in prices across customer groups since the inception of wellhead deregulation in 1979 and pipeline reform in 1985 (see Table 3). The nominal price of wellhead gas declined by 27 percent over the period of 1985 to 1994. Over the same period, prices to industrial customers declined by almost 23 percent, prices to electric utilities declined by almost 36 percent; in comparison, prices to commercial customers decreased by a little over 1 percent, while residential prices actually increased by almost 5 percent.[11] Two explanations for the large declines in prices to large retail customers are: (1) these customers have had direct access to wellhead gas at market-based prices, and (2) a larger proportion of the price of delivered gas to large customers is made up of the wellhead price, which has declined more than the price of other gas services. If one adds up the decline in natural gas bills across all retail customers since 1984, however, the cost savings have been significant.[12]

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[9] One economic reason was the existence of economies of scope — that is, the cost savings resulting from one entity providing interrelated services or performing interrelated functions.

[10] A serious distortion of the mid-1980s was that gas supplies were plentiful but gas prices were rising.

[11] Historical prices for wellhead gas and individual retail customer classes can be found in United States Department of Energy, Energy Information Administration, *Monthly Energy Review* (Washington, D.C.: Energy Information Administration, November 1995), 125. It should be added that all retail customers have experienced large declines in gas prices when measured in real dollars.

[12] These cost savings have been estimated to be as high as $100 billion, assuming, perhaps simplistically, that gas prices would not have fallen in the absence of regulatory reform, namely FERC Order 436/500 and Order 636. During the 1984 to 1994 period, retail gas prices averaged across all

*TABLE 3*

*SELECTED NATURAL GAS PRICES: 1985-1994 (Percentage Change)*

| | |
|---|---|
| *Wellhead* | *-27.1%* |
| *Citygate* | *-17.9%* |
| *Residential* | *4.7%* |
| *Commercial* | *-1.3%* |
| *Industrial* | *-22.8%* |
| *Electric Utilities* | *-35.8%* |

**Source: United States Department of Energy, Energy Information Administration, *Monthly Energy Review* (Washington, D.C.: Energy Information Administration, November 1995), 125.**

Other major outcomes since the mid-1980s include major downsizing and productivity improvements by pipelines and distributors,[13] the entry of new marketeers engaging in various market functions, the introduction of new unbundled gas services, the sharing of transition costs,[14] no decline in the reliability of firm-gas service.[15]

Overall, the combination of wellhead deregulation starting in 1979 and pipeline reform starting in 1984 has engendered, as hoped for, a more dynamic competitive and less-regulated natural gas industry. Prior to this period, the natural gas industry was

customers declined by 42 percent in real dollars.

[13] See American Gas Association, "Efficiency Gains in Natural Gas Transmission and Distribution," *Energy Analysis* (Arlington, VA: American Gas Association, 1996). Between 1984 and 1993, for example, operating and maintenance expenses of local gas distributors and gas pipelines collectively declined by 35 percent in real dollars.

[14] A more detailed discussion of transition costs follows later in this paper.

[15] Firm service refers to the provision of gas service on demand.

plagued with the twin problems of deficient wellhead price leading to severe gas shortages and excessive monopoly power exhibited by interstate pipelines in selling bundled sales service to local gas distributors. It should be pointed out that wellhead price regulation illustrates an example where regulation initially designed to benefit a particular group (consumers) ultimately ended up hurting them.[16] Contrary to what many people had predicted or advanced for self-serving reasons, open access in gas transportation has not jeopardized service reliability.

While the natural gas industry has undergone major changes over the last ten years, it has not completed its transformation process. Competition in wholesale (interstate) gas markets has existed now for a number of years; while broad-based competition in retail markets is just now starting to emerge. Future activities will center on the retail gas market, where consumers will have more choices as local gas distributors unbundle their services. These activities will give a greater number of gas consumers the opportunity to directly benefit from competitive forces in the natural gas industry.[17] Marketeers/brokers and aggregators will play a vital role in delivering natural gas as well as other services to small retail consumers, at competitive prices.

## TRANSPORTATION

Over the last twenty years, major deregulation reforms have taken place in the transportation industry. In 1978 Congress deregulated commercial air carriers; the Staggers Rail Act of 1980 deregulated most of the rail market;[18] also in 1980, Congress passed the Motor Carrier Reform Act, which led the way in lifting barriers for new

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[16] Evidence in support of this outcome is contained in Stephen G. Breyer and Paul W. MacAvoy, *Energy Regulation by the Federal Power Commission* (Washington, D.C.: The Brookings Institution, 1974).

[17] See Kenneth W. Costello and Daniel J. Duann, "Turning Up the Heat in the Natural Gas Industry," *Regulation* 19, 1 (1996): 52-9.

[18] Regulation by the Interstate Commerce Commission still remained in markets where railroads exercised "market dominance." Railroad deregulation actually started with the Railroad Revitalization and Reform Act of 1976.

carriers and in deregulating the trucking industry. Because these industries were regulated for different reasons, deregulation could be expected to have a diverse effect on the direction of prices, profit, and other performance indicators.

Several pieces of evidence warrant discussion. Most important, aggregate welfare gains from deregulation of the transportation sectors have been significant. One study estimated the annual economic cost of trucking regulation alone to be as high as $20 billion (in 1988 dollars).[19] Another study estimated that airline deregulation benefited consumers by roughly $10 billion annually (in 1977 dollars).[20] In the case of railroads, one study estimated that deregulation has produced efficiency gains as high as $17 billion annually (in 1988 dollars).[21]

These large welfare savings originate from various sources. For trucking, prices were set above marginal cost and regulation stifled productivity growth, technological change, and management ingenuity.[22] Additional sources of inefficiency include entry barriers and restrictions on certain truckers to carry specific commodities and to follow designated routes. Deregulation allowed truckers to better tailor their services to accommodate the demands of individual shippers. A major benefit resulted from guaranteed delivery service that saved companies significant amounts of dollars in inventory costs.[23]

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[19] Hahn and Hird, "The Costs and Benefits of Regulation." The Motor Carriers Act of 1935 exempted agricultural commodities from regulation.

[20] Steven A. Morrison and Clifford Winston, *The Economic Effects of Airline Deregulation* (Washington, D.C.: The Brookings Institution, 1986). These savings derive from lower fares, more convenient flights, and shorter waiting times between flights.

[21] Christopher C. Barnekov and Andrew N. Kleit, "The Costs of Railroad Regulation: A Further Analysis," *Bureau of Economics Working Paper No. 164* (Washington, D.C.: Federal Trade Commission, 1988). Much of the efficiency gains derived from timelier and more reliable service. Another source is the increase in labor productivity, which has averaged over 7 percent annually since 1980.

[22] Trucking rates, in real dollars, decreased by 10 to 25 percent during the period 1975 to 1982. See Thomas Gale Moore, "Rail and Truck Reform—The Record So Far," *Regulation* 6, 4 (1983): 33-41.

[23] See, for example, Thomas Gale Moore, "Clearing the Track: The Remaining Transportation Regulations," *Regulation* 18, 2 (1995): 77-87.

The effects of airline deregulation have been more provocative. Some critics have argued that airline service has deteriorated, safety has fallen, discriminatory pricing has become rampant, and the financial condition of the industry has become unstable.[24] Although some of these allegations cannot be ignored, the most serious studies strongly suggest that airline deregulation has benefited passengers and society as a whole.[25] As an important factor, new entrants (e.g., Southwest Airlines) have contributed significantly to reducing the industry's costs.

Studies on the deregulation of the airline industry contain other major conclusions. First, deregulation has not jeopardized airline safety.[26] Second, price discrimination has become a dominant practice in the industry.[27] Some debate still exists over whether price differentiation in fares reflect outright price discrimination or cost differences in serving different passengers or different routes. Although deregulation has resulted in competition-driven price discrimination, less cross-subsidies have occurred. Prior to deregulation long-haul markets were subsidizing short-haul markets largely to encourage air service to low-density routes.[28] Third,

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[24] Price discrimination and market power in the airline industry, for example, are examined in Severin Borenstein, "Hubs and High Fares: Airport Dominance and Market Power in the U.S. Airline Industry," *Rand Journal of Economics* 20 (1989): 344-65.

[25] See Douglas Caves et al., "An Assessment of the Efficiency Effects of U.S. Airline Deregulation via an International Comparison," in *Public Regulation: New Perspectives on Institutions and Policies*, Elizabeth E. Bailey, ed. (Cambridge, MA: MIT Press, 1987); Thomas Gale Moore, "U.S. Airline Deregulation: Its Effect on Passengers, Capital, and Labor," *Journal of Law and Economics* 29 (1986): 1-28; Morrison and Winston, *The Economic Effects of Airline Deregulation*; and Elizabeth E. Bailey and Jeffrey R. Williams, "Sources of Economic Rent in the Deregulated Airline Industry," *Journal of Law and Economics* 31 (1988): 173-202.

[26] See, for example, A. Kanafani and Theodore E. Keeler, "New Entrants and Safety," in *Transportation Safety in an Age of Deregulation*, Leon N. Moses and Ian Savage, eds. (Oxford: Oxford University Press, 1989); and Richard B. McKenzie and Norman K. Womer, "The Impact of the Airline Deregulation Process on Air-Travel Safety," Working Paper 143 (St. Louis, MO: Washington University Center for the Study of American Business, 1991). Some observers would dispute this conclusion in light of the recent ValuJet crash and personnel changes at the Federal Aviation Administration.

[27] See, for example, Alfred E. Kahn, "Deregulation: Looking Backward and Looking Forward," *Yale Journal on Regulation* 7, 2 (Summer 1990): 325-354.

[28] To address the concern of small communities being harmed by airline deregulation, Congress enacted a program that subsidized these communities during a ten-year transition period.

deregulation allowed airlines to compete on the basis of price. Prior to deregulation, airlines competed vigorously with regard to service quality and other nonprice factors.[29] Although deregulation has arguably caused the quality of airline service to decline, this should not necessarily be interpreted as a loss in society's or passengers' welfare. In fact, it can be argued that passengers generally have been willing to sacrifice some frills (e.g., a full-course meal) in return for lower fares. Given the freedom to choose among different fare-quality of service menus, it can be inferred that the observed menus are more compatible with consumer preferences.

The implication for restructuring of the electric power industry is that the pertinent issue is not whether quality of service would decline (which may happen) but whether the *net benefit* of any change would be positive or negative. One lesson from airline deregulation is that, as long as consumers have choices, they may be willing to accept lower quality of service in return for a lower price.

As is the case in some industries, deregulation may cause an increase in the quality of service. For example, a firm (e.g., Federal Express) could profit from offering higher quality service by charging a high price, which may not have been permitted under regulation. Further, as in the case of railroads, deregulation led to higher profits, which helped to fund long-neglected maintenance and capital improvements.[30] The staff of the Federal Trade Commission estimated that these activities have saved shippers a substantial amount of dollars from timelier and more reliable railroad service.[31]

Improvements in the performance of railroads since deregulation come from several sources. A major one was lifting the restrictions imposed upon the railroads to enter or exit specific routes. Railroads, for example, previously could not abandon

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[29] Some analysts have argued that, by the time of deregulation, most of the industry's economic rents had been expended on promoting service quality.

[30] Robert D. Willig and William J. Baumol, "Railroad Deregulation: Using Competition as a Guide," *Regulation* 11 (1987): 28-35. Railroad deregulation was largely motivated by the dismal financial condition of railroads, including a wave of bankruptcies in the industry (e.g., Penn Central in 1976). Prior to deregulation most railroads were earning less than their cost of capital.

[31] Barnekov and Kleit, "The Costs of Railroad Regulation: A Further Analysis."

unprofitable routes. A second problem under regulation was the inability of the railroads to negotiate bilateral contracts with individual shippers or to quickly vary their rates in response to changed market conditions. Third, regulation placed the railroads in a financial pinch that affected their ability to offer high quality service.[32]

Railroad deregulation has affected shippers differently. Those shippers who were able to negotiate contracts have benefited the most.[33] Others who were still captive or price inelastic with respect to railroad transportation, such as electric utilities who had limited options in transporting coal, did not initially benefit as much from deregulation or from relaxed regulation. Regulation continued in circumstances where railroads were able to exercise "market dominance" by charging supercompetitive prices.

Overall, deregulation has greatly improved the economic performance of the railroad industry. Productivity and profits in the industry have increased.[34] Along with greater rate freedom, which has helped to enhance the railroads' financial situation, for a few years came higher rates to those shippers who lack market choices. Taken together, however, shippers as a group have reaped large benefits from railroad deregulation.[35]

## U.K. ELECTRIC POWER INDUSTRY

Much has been written on the experiences of the privatized U.K. electric power industry. The consensus is that, while privatization and restructuring of the industry has

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[32] These three sources of performance enhancements are discussed in Moore, "Clearing the Track: The Remaining Transportation Regulations."

[33] During the 1980 to 1990 period, railroad rates for commodities collectively (excluding primary forest products) fell by 34 percent. (See Ann F. Friedlaender et al., "Governance Structure, Managerial Characteristics, and Firm Performance in the Deregulated Rail Industry," *Brookings Paper on Economic Activity* [1992]: 95-169.)

[34] For example, during the period 1980-1992 labor productivity in the railroad industry increased by 156 percent (see annual publications of the Bureau of Labor Statistics).

[35] Willig and Baumol, "Railroad Deregulation: Using Competition as a Guide."

benefited electricity consumers and the U.K. as a whole, it could have been done better.[36] Since privatization of the industry in March 1991, inflation-adjusted electricity prices have fallen for all customer classes (except for the largest industrial customers who, under the old regime, were being subsidized).[37] The industry has also experienced a dramatic increase in productivity in all aspects of its operation.[38] Productivity gains resulted from the combination of private ownership, the strong incentives provided by price-cap regulation for cost cutting, and the competition in generation and power supplies to the nonfranchised retail (e.g., industrial) sector.[39]

The quality of service in the industry has improved greatly.[40] For example, since privatization, service disconnections fell by 95 percent. (Consumers are compensated by the utility for service failing the Guaranteed Standards of Service.)[41] The regulator,

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[36] See Stephen Littlechild, "The 'New' Electricity Industry: A Vision of the Role for Regulation in the 21st Century," paper presented at the "Carrots and Sticks" Conference: Innovative Incentive Rate Regulation for a Competitive Electric Utility Industry, Chicago, Illinois, April 28, 1994; Gordon MacKerron, "Problems of Regulation and Competition in the England and Wales Electricity System," paper presented at the Meeting of Harvard Electricity Policy Study Group, Dallas Texas, January 25, 1996; Derek W. Bunn, "Electricity Re-Structuring and Market-Based Pricing in the UK Electricity Industry During 1990-1995," paper presented at the 1996 EPRI Conference on Innovative Approaches to Electricity Pricing, LaJolla, California, March 28, 1996; and Vernon L. Smith, "Regulatory Reform in the Electric Power Industry, *Regulation* 19, 1 (1996), 37-40.

[37] Alex Henney, "Winners and Losers in Restructuring the Electricity Supply Industry in England and Wales," paper presented at the 1996 EPRI Conference on Innovative Approaches to Electricity Pricing, LaJolla, California, March 28, 1996.

[38] Ibid. For example, since privatization fuel, labor, and other operating costs have declined significantly in real British pounds. Noteworthy is the almost 50 percent decline in the number of employees in the British electric power industry since privatization. It should also be noted that the capacity factor of nuclear power plants has increased by over 30 percent since privatization.

[39] The evidence suggests that competition in generation was the most powerful force in improving productivity in the U.K. electric power industry.

[40] The outcomes of increased productivity, lower prices in real terms, and higher quality of services have also occurred in the privatized Chilean and Argentinean electric industries. See R. Peter Lalor and Hernan Garcia, "Reshaping Power Markets—Lessons from Chile and Argentina," *Public Policy for the Private Sector*, Quarterly No. 6 (March 1996): 29-32. In the U.K., congestion occurrences on the transmission network, however, have resulted from poor pricing practices.

[41] Littlechild, "The 'New' Electricity Industry: A Vision of the Role for Regulation in the 21st Century."

the Office of Electricity Regulation (OFFER), annually monitors and reports on the technical performance of the transmission and distribution system. The number of customer complaints has also fallen dramatically since privatization.[42]

On the negative side, much recent criticism has rightly been directed at the disproportionate benefits of privatization accruing to utility shareholders. Since privatization, Regional Electricity Companies (RECs) have enjoyed, as the analyst Alex Henney phrases it, a "feast for shareholders." Between 1990/91 and 1994/95, operating profits have almost doubled, the return on capital has gone up from 15.7 percent to 25.7 percent and dividends have increased by over 300 percent.[43] In comparison, over the same period, electricity prices to domestic users decreased by about 5 percent (in real British pounds).

One analyst[44] identifies four major criticisms of the U.K. electric power industry experience: (1) excessive market power was initially granted to two generation companies, National Power and PowerGen (in 1991 their share of the generation market was around 74 percent),[45] (2) the terms of privatization were overly generous to the new owners, (3) regulation was excessively lax in controlling the prices of the distribution companies, and (4) customers have benefited too little.[46] Most observers of the U.K. electric power industry would not disagree with these criticisms.

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[42] Ibid. For example, since 1992 the number of complaints received by OFFER from dissatisfied customers has fallen by 50 percent.

[43] Henney, "Winners and Losers in Restructuring the Electricity Supply Industry in England and Wales," 3.

[44] Evans, "UK Electricity: the Criticisms, the Changes, the Challenges."

[45] One study concluded that dividing the generation sector into five firms would have significantly increased competitive forces. See Richard J. Green and David M. Newbery, "Competition in the British Electricity Spot Market, *Journal of Political Economy* 100, 5 (October 1992): 929-53. The duopoly structure of generation has, unsurprisingly, led to prices moving above marginal cost.

[46] The instituted price-cap regulation, especially during the initial years, allowed the distributors to retain most of the significant efficiency gains that were realized.

## FINANCIAL

Major reforms in the financial industry include the abolition of fixed brokerage fees in 1975, the passage of the Depository Institutions Deregulation and Monetary Control Act in 1980, the Garn-St. Germain Depository Institutions Act in 1982, and the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994.[47] The transformation of the banking industry over the last two decades can be attributed to both major regulatory changes and innovations in technology and applied finance.[48]

Brokerage fees fell quickly and dramatically after deregulation. Soon after deregulation, for example, fees on average fell by 25 percent and fees for orders in excess of 10,000 shares fell by more than 50 percent. Prior to deregulation, fixed brokerage fees eliminated any price competition. Since deregulation, productivity in the brokerage industry has improved substantially, evident by the sharp drop of employees in the industry.[49]

Federal banking legislation in 1980 established the phase-out of regulation of all deposit rates except business demand deposits. Prior to this period, market interest rates rose far above the regulated rates on time deposits (as much as 500 basis points).[50] This divergence created a strong incentive for bank depositors to look

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[47] The 1980 legislation abolishes interest rate ceilings and permits savings and loans to offer interest-bearing checking accounts (the Banking Act of 1933 prohibited banks from paying interest on checking accounts); the 1982 legislation lifts restrictions on savings and loans in making loans; and the 1994 legislation allows bank holding companies to acquire banks in other states.

[48] See Allen N. Berger et al., "The Transformation of the U.S. Banking Industry: What a Long, Strange Trip It's Been," *Brookings Papers on Economic Activity* 2 (1995): 55-218.

[49] An *ex post* assessment of the deregulated brokerage industry is contained in Gregg A. Jarrell, "Change at the Exchange: The Causes and Effects of Deregulation," *Journal of Law and Economics* 27, 2 (October 1984): 273-312. One result of deregulation was the elimination of cross-subsidization favoring small transactions.

[50] Peltzman, "The Economic Theory of Regulation After a Decade of Deregulation," 34.

elsewhere to place their money and for financial intermediaries to supply alternatives to bank deposits.[51] As early as the late 1960s, it became obvious that interest-rate ceilings on bank time deposits were not sustainable.[52] Consequently, in 1970, the interest rates on time deposits were deregulated.

As with most other deregulated or less regulated industries, productivity in the banking industry grew dramatically. For example, between 1984 and 1993 the number of jobs in the industry fell by more than 20 percent, and more impressive, revenues per employee grew by more than 300 percent.[53]

Less government control also lifted restrictions on a bank's asset investments, on the kinds of services it could offer consumers, and on interstate banking operations. For example, federal legislation enacted in 1994 allows bank holding companies to acquire banks in any state. This should have a major effect in intensifying competition in the banking industry.[54]

Discussion of deregulation of financial markets cannot end without mentioning the Savings and Loan (S&L) fiasco of the 1980s. One school of thought argues that deregulation was the culprit by giving S&L managers free rein to act irresponsibly. Another line of argument is that given the continuance of the Federal Deposit Insurance Corporation, S&L managers had strong incentives to deal in highly risky ventures. In such an environment, the government should have been more forceful in overseeing the S&Ls, in enforcing capital requirements that would mitigate against large financial losses, and in closing down insolvent S&Ls.[55] Some analysts have argued that many

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[51] Much of the outflow from bank deposits went into money market accounts and mutual funds.

[52] Ibid.

[53] For a detailed analysis of the effects of banking deregulation, see Berger et al., "The Transformation of the U.S. Banking Industry."

[54] Ibid.

[55] Catherine England, "Banking on Free Markets," *Regulation* 18, 2 (1995): 32-39; and Kahn, "Deregulation: Looking Backward and Looking Forward."

S&Ls were already insolvent by the late 1970s, although not declared so by the federal regulators, prior to the period of financial deregulation.[56] Their insolvency, it is argued, can be traced to regulation itself, namely the interest-rate ceilings on savings deposits. When inflation and interest rates started to skyrocket in the mid-1970s, depositors in large numbers withdrew their deposits, placing the S&Ls in a financially distressed position.

## TELECOMMUNICATIONS

A qualitatively useful description of the history of the telecommunications industry is a cycle of regulation and deregulation running in parallel with a cycle of monopolization and competition. This history begins in 1876 with the issuance of U.S. Patent No. 174,465. This patent is associated with Alexander Graham Bell's invention of the telephone set. It and another patent issued in 1877 generated the property rights that sustained the industry's first monopolization. The actual property rights were not secured by AT&T until 1879, however. In that year, AT&T and Western Union reached a settlement of AT&T's patent suit, wherein AT&T voluntarily terminated the suit after Western Union conceded the priority of AT&T's telephone patents and the companies agreed to license their patents to each other.[57] AT&T's ensuing patent monopoly in the telephone industry lasted until 1894 when the two patents expired. During this fifteen- to sixteen-year period, AT&T established its local telephone companies by leasing telephone instruments to companies and individuals that it had licensed to operate them.[58] In fact, by 1879, AT&T had inked 185 contracts that gave it control over local

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[56] Ibid., England. In 1980, for example, only forty-three S&Ls (according to the author, a deficient number) were declared insolvent by the federal regulators, while 434 S&Ls were declared insolvent in 1988.

[57] Federal Communications Commission, *Investigation of the Telephone Industry in the United States*, 76th Cong., 1st sess., 1939, H. Doc. 340, 123-5.

[58] Charles F. Phillips Jr., *The Regulation of Public Utilities* (Arlington, VA: Public Utilities Reports, Inc., 1993), 750.

telephone service in the more lucrative areas of the United States.[59]

Coterminous with the patent awards that laid the foundation for AT&T's monopoly, the Supreme Court released its 1877 decision on *Munn v. Illinois*.[60] The specific issue was whether state of Illinois had the right to question and alter the rates that monopolistic grain operators charged for their elevator and warehousing services. The larger public policy issue was: when is it appropriate for the government to intervene in the operation of an economic market, monopolistic or otherwise? The majority of the justices decided that intervention is proper and in the public interest when private property is put to use in a profit-making activity that has consequential effects on the economic well-being of the community. This decision established that the commonality of an economic effect affecting a large number of consumers is a necessary condition for regulation.

It is important to note that *Munn v. Illinois* does not state that the monopolization of a market guarantees its regulation. However, its monopolization certainly makes it easier for the government to conclude that the firm's profit-making activity has consequential effects on the economic well-being of the community. Therefore, AT&T's monopoly over local communications made it a target for regulation as soon as the government decided that the price and availability of telephone service had consequential economic effects on the community. Massachusetts was the first and only state government to reach this conclusion during the time period covering AT&T's monopoly. In 1885, Massachusetts decided to regulate telephone services and other public utility services such as electricity.[61]

In the midst of AT&T's patent monopoly, the Congress of the United States decided to investigate the operation of a national market that it perceived as crucial to

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[59] Irston R. Barnes, *The Economics of Public Utility Regulation* (New York: F.S. Crofts & Co., 1942), 8.

[60] *Munn v. Illinois*, 94 U.S. 113 (1877).

[61] W. Kip Viscusi, John M. Vernon, and Joseph E. Harrington, Jr., *Economics of Regulation and Antitrust*, 2d ed. (Cambridge, MA: The MIT Press, 1995), 313. These authors note that the wave of state regulation of telephone services did not begin until 1907. It crested in 1916, and it ran its course by 1930.

the country's economic well-being. During the 1870s and 1880s, the railroad industry was at the center of the United States economic growth and geographic expansion. The competition process, however, was simultaneously, extremely rivalrous and discriminatory. The industry was characterized by stable prices interspersed with episodes of price wars distinguished by price discrimination against customers with the more inelastic demands for railroad services.[62] The price wars certainly did not promote the economic well-being of railroad owners or railroad workers. Obviously, they did not promote the economic well-being of the railroad users with the more inelastic demands for railroad services. Such wars did, however, improve the well-being of railroad users with the more elastic demands for services and the consumers of goods transported by rail.

When Congress concluded its investigation of the railroad industry, it decided to pass the *Interstate Commerce Act of 1887*, which allowed the federal government to assist in maintaining the stability at the industry and minimizing the discrimination in the prices of railroad services. These decisions were consistent with the theory of *Munn v. Illinois*. The community of consumers directly affected adversely by the unregulated operation of the railroad industry was larger than the community directly experiencing positive economic effects. Arguably, it was, therefore, acceptable to legislate the federal regulation of interstate railroad rates by the Interstate Commerce Commission (ICC).

In 1887, Congress apparently did not believe that the operation of the national telephone service was harming the economic well-being of the United States. This belief is not unreasonable. AT&T was aggressively deploying local telecommunications facilities in an effort to take maximum advantage of its patent monopoly. Additionally, it was expanding the availability of long-distance telephone service in its efforts to compete with Western Union's telegraph services.[63] Obviously, the pricing of telephone service was a strategic variable for AT&T. Competitive prices made its local telephone

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[62] Ibid., 312.

[63] Robert W. Garnet, *The Telephone Enterprise: The Evolution of the Bell System's Horizontal Structure, 1876-1909* (Baltimore, MD: Johns Hopkins University Press, 1985).

services comparable to local mail and face-to-face visits. Similarly, a competitive long-distance price made this service comparable to telegrams. Therefore, in 1887, the economic regulation of the monopolistic telephone industry did not appear to be necessary to promote the public interest.

A competitive period for the telephone industry was ushered in when AT&T's two patent expired in 1894. This period lasted until 1907. Its defining characteristic was that non-Bell companies entered various local markets.[64] Sometimes, these firms were in direct competition with AT&T's local companies. Other times, they settled into service territories that did not have a prior AT&T market presence. Presumably, the Congress was not disturbed by the competition in the local telephone markets, and it must have been happy to see the expansion of local service into areas not served by AT&T. These positive aspects of the end of AT&T's patent monopoly surely could have overshadowed the negative effect of AT&T's refusal to interconnect non-Bell firms to its long-distance network.[65]

Although AT&T did not help its competitors after the expiration of its patents, AT&T did not try to eliminate its competition until 1907. Beginning in 1907 and lasting to 1913, AT&T aggressively sought to buy out the non-Bell companies.[66] This market strategy may have given the Congress a cause for concern. Perhaps, it feared that AT&T would raise the price of telephone services after it cornered the local and long-distance markets. Whatever the reason, Congress looked into the operation of the telephone industry. Its investigation resulted in the passage of the *Mann-Elkins Act of 1910* that gave the responsibility for the regulation of some telephone services to the ICC. In particular, it allowed the ICC to regulate rates and control entry into the market for interstate telephone services.

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[64] John R. Meyer et al., *The Economics of Competition in the Telecommunications Industry* (Cambridge, MA: Oelgeschlager, Gunn & Hain, Publishers, Inc., 1980), 26.

[65] Ibid. The non-Bell companies tried to enter the long-distance market in 1899 by building their own long lines, but this effort failed.

[66] Ibid.

Perhaps fearful of the threat of regulation or the penalties associated with newly passed antitrust laws, AT&T agreed in 1913 to stop its acquisition program and to interconnect non-Bell local companies to its long-distance network.[67] One interpretation of this agreement is that it eliminated most incentives to build an alternate long-distance network.[68] An opposing interpretation is that it prompted the ICC to use its authority over market entry to create a *de jure* long-distance monopoly for AT&T.[69] Whichever is correct, the ICC did not do much economic regulation under the Mann-Elkins Act.[70]

The ICC exercised its authority over the telephone industry until the Congress passed the *Communications Act of 1934*. This law created the Federal Communication Commission (FCC) with the charge to achieve universal and affordable telephone service.[71] Practically speaking, universal service means that every individual or family that wants "basic" telephone service will have access to this service. Affordability means that these individuals and families have a reasonable chance of paying for the service that is universally available. Economic circumstances in the 1930s suggest that the time was right for these public-policy objectives. Telephone service was part of the commerce of the United States. Influential money managers, corporate leaders, and private investors relied on it for quick and private transfers of information. At the same time, the Great Depression was taking its toll on the universality of telephone service. After a period of growth in subscribership during the 1920s, there was a 6 percent decline in subscribers from 1930 to 1933.[72] Consequently, the regulation of telephone

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[67] Ibid., 27.

[68] Ibid.

[69] Viscusi et al., *Regulation and Antitrust*, 487.

[70] Meyer et al., *Competition in Telecommunications*, 27.

[71] The Congress limited the FCC's authority to interstate telephone services and services ancillary to the production of interstate telephone services. One ancillary service was the interconnection of an interstate transmission network with local distribution networks for the purposes of originating and terminating an interstate telephone message.

[72] Meyer et al., *Competition in Telecommunications*, 27.

service certainly appeared germane to the economic well-being of the United States.

The dire circumstances of the 1930s also precipitated a departure from the nondiscrimination objectives of the *Interstate Commerce Act*. Viscusi et. al. suggest that the ICC may have achieved price stability at near monopoly prices.[73] If true, their suggestion indicates that the regulation of price levels was not a primary focal point for the ICC. However, price levels were a focal point for the courts in 1934. The Supreme Court addressed the issue of price regulation in the public interest when it decided *Nebbia v. New York*.[74] In this case, the state of New York was regulating the price that retailers could charge for milk. Although the 1934 retail market for milk was more competitive than monopolistic, the majority of the Supreme Court concluded that a state government has the right regardless of market structure to enforce any reasonable economic policy that it believes will improve the well-being of a large block of consumers.[75]

The FCC did not disturb AT&T's interstate monopoly until 1959 when it released its decision on the use of frequencies above 890 megacycles in its *Above 890 Decision*.[76] This decision allowed the construction of point-to-point private microwave networks that could be used only to transmit the interstate message of the network's owner. It recognized that the commercialization of World War II microwave technologies had reduced the cost of interstate telephone services and the minimum efficient size of a point-to-point interstate common carrier.[77] Commercialized microwave technology is an important watershed in the history of telecommunications because it is an

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[73] Viscusi et al., *Regulation and Antitrust*, 312.

[74] *Nebbia v. New York*, 291 U.S. 502 (1934).

[75] *Nebbia v. New York* is an extension of *Munn v. Illinois*. Two majorities of Supreme Court justices, separated by the passage of approximately fifty years, opted to allow state governments to wade in on the side of consumers when the state has a reasonable basis for believing that a large block of consumers requires its assistance.

[76] *In re Allocation of Microwave Frequencies Above 890 Mc.*, Docket No. 11866, 27 FCC 359 (1959), aff'd on reh'g, 29 FCC 825 (1960).

[77] Viscusi et al., *Regulation and Antitrust*, 489.

"economies-of-scale-busting" technology. Its deployment is not associated with the high fixed and low variable costs that suggest the declining average costs of production that have been estimated for the period 1947 to 1976[78] and the possibility of economies of scale that were found to exist during the 1960s.[79] Consequently, it would have been difficult for two or more interstate common carriers to coexist using land-lines.

AT&T responded to the commercialization of microwave technology. In 1961, AT&T introduced Telpak in an apparent effort to stop the substitution of private networks for its private line services.[80] Telpak was a volume-discounted service that did not substantially affect AT&T's overall revenue and profit performance. It was introduced during a forty-seven-year period when the average growth rate in the number of Bell telephones was 4.6 percent.[81] Additionally, Bell revenues were growing at an annual real rate of 5.3 percent between 1959 and 1968.[82] These data suggest that the primary effect of Telpak was to provide private-network customers with comparable options. Circumstances changed after the introduction of Telpak, however.

In 1963, MCI requested permission to sell point-to-point private line service as a common carrier.[83] Telpak immediately became a thorn in MCI's side. Volume discounts made it harder for MCI to succeed in this market. The FCC responded to MCI's complaints by considering the legality of Telpak. It rejected Telpak cost

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[78] M. Ishaq Nadiri and Mark Schankerman, "The Structure of Production, Technological Change, and the Rate of Growth of Total Factor Productivity in the U.S. Bell System," in *Productivity Measurement in Regulated Industries*, Thomas Cowing and Rodney Stevenson, eds. (New York: Academic Press, 1981). See also, Laurtis Christensen, Diane Cummings, and Philip Schoeth, "Econometric Estimation of Scale Economies in Telecommunications," in *Economic Analysis of Telecommunications*, Leon Courville, Alain DeFontenay, and Rodney Dobell, eds. (Amsterdam: North-Holland, 1983).

[79] Leonard Waverman, "The Regulation of Intercity Telecommunications," in *Promoting Competition in Regulated Markets*, Almarin Phillips, ed. (Washington, D.C.: The Brooking Institution, 1975).

[80] Ibid., 492.

[81] Meyer et al., *Competition in Telecommunications*, 30.

[82] Ibid., 37.

[83] Viscusi et al., *Regulation and Antitrust*, 492.

justification.[84]

MCI actually became a common carrier in 1969.[85] Almost immediately thereafter, other companies requested the same status in the private-line market. In 1971, the FCC extended this carriage status to all companies in its *Specialized Common Carrier Decision*.[86] AT&T responded in 1973 with the HI-Lo tariff.[87] Another tariff battle ensued.[88] It came to some form of closure when AT&T introduced multiple schedule private line rates in 1977.[89]

The two largest specialized common carriers, MCI and Southern Pacific Communications Company, competed with AT&T exclusively in private line services from 1974 to 1976. Their competitive efforts were not profitable.[90] More than likely to stem these losses, they offered switched services over the same facilities that they used to provide private line services. Subsequently, in 1976, MCI presented the FCC with its Execunet tariff, which governed its sale of switched services. The FCC rejected this tariff on the grounds that Execunet was not a private line service. The D.C. Circuit Court concluded that, because Execunet was not a private line service, there was not sufficient reason for the FCC to foreclosure this service to the public, and therefore, it reversed the FCC's rejection of Execunet.[91] The basis of the appeals court decision

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[84] Ibid.

[85] *In re Applications of Microwave Communications, Inc.*, Docket No. 16509, 18 FCC2d 953 (1969).

[86] *In re Specialized Common Carrier Services*, Docket No. 18920, Notice of Inquiry, 24 FCC2d 318 (1970), First Report and Order, 29 FCC2d 870, 920 (1971), reconsideration denied, 31 FCC2d 1106 (1971), aff'd *sub nom. Washington Utilities and Transportation Commission v. Federal Communications Commission*, 513 F.2d 1142 (9th Cir. 1974), cert. denied, 423 .S. 836 (1975).

[87] Meyer et al., *Competition in Telecommunications*, 25.

[88] Viscusi et al., *Regulation and Antitrust*, 493, 516 n13.

[89] Meyer et al., *Competition in Telecommunications*, 25.

[90] Phillips, *Regulation*, 806 n126.

[91] *In Re MCI Telecommunications Corp.*, 60 FCC2d 25 (1976), rev'd 561 F.2d 365 (D.C. Cir. 1977), cert. denied *sub nom. U.S. Independent Telephone Ass'n v. Federal Communications Commission,* 434 U.S. 1040 (1978).

was that the FCC had never concluded that the competitive supply of switched services was not in the public interest, and consequently, MCI could not be denied the use of its facilities for the purpose of providing such services to the public. The D.C. Circuit indicated, however, that the FCC could convene a hearing on the matter of whether the competitive supply of switched access services is in the public interest. The FCC did not shun this offer.

Shortly after the *Execunet I Decision*, the FCC opened a docket in 1978 to determine whether interstate toll service is a monopoly.[92] This docket remained open for two years, and the FCC concluded in 1980 that the sale of interstate toll services on a competitive basis was in the public interest.[93] During this two years, however, the FCC tried to limit the public's access to Execunet by ruling that AT&T did not have a current obligation to interconnect its competitors' toll services to its local distribution facilities. The D.C. Circuit Court rebuked this decision, and it ordered interconnection without any further ado.[94] The public was becoming accustomed to competition in interstate toll services, and the appeals court had signaled quite clearly that it would not make any decisions that would limit the availability of competitive alternatives. Perhaps, the FCC's only politically feasible conclusion was to find that the competitive supply of these services was in the public interest.

Whatever the reason, the close of the docket on market structure for interstate toll services began the reseller era. These companies made money because of "capped" WATS tariffs and the packing of their leased WATS lines with interstate and intrastate toll calls. Not surprisingly, AT&T responded by proposing a restructuring of its interstate WATS rates. Once again, tariff battles ensued. During these fights, MCI and

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[92] *In re MTS and WATS Market Structure*, CC Docket. No. 78-72, Notice of Inquiry and Proposed Rulemaking, 678 FCC2d 757 (1978), Supplemental Notice, 73 FCC2d 222 (1979), Second Supplemental Notice, 77 FCC2d 224 (1980).

[93] *In re MTS and WATS Market Structure*, Report and Third Supplemental Notice, 81 FCC2d 177 (1980).

[94] *In re American Telephone and Telegraph Company Petition for Declaratory Relief,* 67 FCC2d 1455 (1978), rev'd *sub nom. MCI Telecommunications Corp. v. Federal Communications Commission*, 580 F.2d 590 (D.C. Cir., 1978), cert. denied, 439 U.S. 980 (1978).

GTE Sprint began to deploy their own interstate telecommunications facilities. In 1984, United Telecommunications planned a large-scale entry into the interstate market using digital and fiber optic technologies. These activities marked the beginning of facilities-based competition in the interstate market.

A significant event in the history of telecommunications occurred before United Telecommunications' large-scale entry into the interstate market. AT&T settled a long-running antitrust suit.[95] The government's suit involved the business practices and relationships between AT&T's manufacturing company and AT&T's long-distance and local exchange companies. The government contended that AT&T was improperly excluding other companies that manufactured telecommunication equipment from making sales to AT&T's long-distance and local exchange companies. The suit was settled in 1982 when AT&T proposed the divestiture of its local exchange companies and, further, to obligate these companies to provide "equal access" to AT&T's facilities-based competitors.[96] The equal access condition opened a Pandora's Box of access and interconnection issues to be discussed subsequently.

The overriding issue associated with any antitrust suit is the promotion of competition. In 1974, the United States government wanted to promote competition in the manufacturing and sale of telecommunications equipment. This is not surprising because competition in the interstate private line services market was just getting underway. Consequently, the government initially sought to require AT&T to divest itself of Western Electric, subsequently including the divestiture of a portion of Bell Laboratories.[97] During the late 1970s and early 1980s, MCI and other alternative interexchange carriers wanted to enhance their competitive chances in the interstate market for voice-grade telecommunications services. At the same time, competition was becoming more robust in the equipment market. However, *inferior access* at

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[95] *United States v. Western Electric Company, 1982-2 Trade Cases*, sec. 64,900, 552 F. Supp. 131 (D.D.C. 1982), aff'd *sub nom. Maryland v. United States*, 460 U.S. 1001 (1983).

[96] *Modification of the Final Judgment*, 47 *Fed. Reg.* 4166 (1982).

[97] Phillips, *Regulation*, 774. *Ibid.*, 810 n154.

negotiated rates characterized the alternative interconnection market.[98] Consequently, the government's priorities in terms of reaching a settlement of the antitrust suit had to change once again. It could promote competition in the interstate market if it settled its antitrust suit in return for the divestiture of AT&T's local exchange companies and equal access for the alternative interexchange carriers.

An equal-access tariff was based on the cost of providing this service to AT&T's competitors.[99] However, no one knew this because the service did not exist. With the support and assistance of all interstate carriers, the FCC used the lack of this cost information to shift the responsibility for the recovery of nontraffic sensitive costs from interstate toll calls to intrastate toll and local calls. Their all out cost-shifting effort began with the claim that the cost of nontraffic sensitive facilities *not directly assignable* to interstate toll calls should be recovered from the rates for local basic service. The counter claim put forth by state regulatory commissions and consumer groups was that the mere implementation of equal access should not change the responsibility for the recovery of nontraffic sensitive costs. Not surprisingly, a heated and vigorous debate and jurisdictional battles ensued. In the end, as expected, neither side was able to uphold its initial claim. The best that the FCC could do was to shift some of the responsibility for the recovery of nontraffic sensitive costs to local callers. This "victory" for the FCC guaranteed price reductions for long-distance callers during the years immediately succeeding AT&T's divestiture. However, these price reductions actually represented nothing more than a rate redistribution. As the price per unit of interstate calling fell, the monthly fee for local basic service rose.

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[98] *In re Exchange Network Facilities for Interexchange Access*, 71 FCC2d 440 (1979).

[99] This access service was never really equal. A long-running debate arose over providing an equal-access 800 number interconnection arrangement to AT&T's competitors. AT&T's competitors complained about the "equality" of adjunct devices as substitutes for Feature Group D in geographic areas when the supply of Feature Group D was not economically feasible. The AT&T-instigated differences in call set-up times between Feature Group C and Feature Group D were a constant source of annoyance to AT&T's competitors and the regulators that had to hear their complaints. Feature Group C was the equal-access service that was available only to AT&T immediately after the divestiture. Feature Group D was the equal-access service that was available to AT&T's competitors immediately after the divestiture. The call set-up time for a Feature Group C call was slightly faster than the call set-up time for a Feature Group D call.

The availability of equal access service did not immediately affect the regulation of AT&T. Conventional regulation in the tradition of the FCC continued until the emergence of plans for large-scale entry on a facilitates basis into the interstate telecommunications market. AT&T's profits were regulated using the principles of slow-moving ratebase/rate-of-return regulation. Its rates for interstate services were reviewed and approved by the FCC. These rates were set using cost-of-service principles. Changes to these rates were justified in terms of average embedded costs, while the competitive implication of not changing these rates was placed in a subordinate role.

The character of AT&T's rate regulation by the FCC changed around 1984. Prior to that time, many important regulatory decisions were based on an analysis of the average cost of producing an interstate service. In 1984 and thereafter, the basis for most federal regulatory decisions was an analysis of AT&T's average incremental cost of producing a service. This change meant that AT&T's rates had to cover at least the incremental cost of producing a service. However, meeting this requirement was only a threshold test of regulatory sufficiency. AT&T's new rates also had to pass a "net revenue" test, which was designed to ensure that all of AT&T's customers benefited in some sense from a price decrease.

The first two tariffs approved under the new tariff regime were the "Reach out America" and "Pro-America" tariffs. These tariffs were characterized by volume discounts for residential customers. The innovation of the Pro-America tariff was that the volume discounts were conjoined with a monthly access fee. The new regime also produced Tariff 12 and Tariff 16. Tariff 12 is available only to very large business users with seemingly special needs. It allows AT&T to offer custom-designed volume discounts to specific customers without the requirement that similar discounts be offered to other customers. Tariff 16 is a competitive-necessity tariff that permits AT&T to respond on a targeted basis to the marketing efforts that its competitors undertook to win over medium-to-large-volume business customers. All four of these tariffs were vigorously opposed by AT&T's competitors on the grounds that they were anticompetitive. In effect, the competitive implications of tariff proposals took on the

primary role, while the cost justification of these proposals played the subordinate role.

This abbreviated historical analysis of the telecommunications industry provides many lessons for state regulators who are now dealing with the transition to a more competitive electricity market. First, it shows that *proactive and long-term* government intervention is required to diminish the market power of a incumbent regulated monopolist. The FCC adopted a pro-competition policy for the interstate telecommunication market in 1969 with the initiation of a series of long-running proceedings culminating in the entry of MCI into the market in 1982. Subsequently, long-distance competition was institutionalized when AT&T, the Department of Justice, and a federal district court reached an agreement that resulted in AT&T's divestiture of its local companies. The pro-competition policy was extended to enhanced information services in 1986 with a regulatory decision to implement open network architecture.[100] The passage of the *Telecommunications Act of 1996* extends the FCC's pro-competition policy to local telecommunications.[101]

Second, the deregulation of AT&T was not a prerequisite for the implementation of competition-enhancing policies. There was no change in the regulation of AT&T after the authorization of private microwave networks in 1959. Average embedded cost pricing principles survived the emergence of MCI as a specialized common carrier in 1969 and then as a common carrier in 1975. The demise of average embedded cost

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[100] *In re Amendment of Sections 64.702 of the Commission's Rules and Regulations*, Report and Order, 104 FCC2d 958 (1986).

[101] A pro-competition policy started to emerge in the electricity industry circa 1978 with the passage of the *Public Utilities Regulatory Policies Act* (PURPA). PURPA's support for conservation and energy efficiency created competition behind the meter at the electric wall plug. The extension of PURPA's conservation principles to support cogeneration and qualifying facilities created competition in the generation market. In a sense, PURPA furnished the groundwork for competition in the generation market. The *Energy Policy Act* (EPAct) represented the next extension of pro-competition public policy for electricity. It heralded an era of wholesale competition and open access to transmission services. The FERC contributed to the pro-competition movement with the release of FERC Orders 888 and 889. They anticipate robust retail competition in the future. See Federal Energy Regulatory Commission, *Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities: Order 888 — Final Rule*, (hereafter called, "The Final Rule") 75 FERC 61,080 (April 24, 1996); and Federal Energy Regulatory Commission, *Open Access Same-time Information System (formerly Real-Time Information Networks) and Standard of Conduct*, 75 FERC 61,078 (April 24, 1996).

pricing in the early to mid-1980s was not associated with the destruction of rate-of-return regulation. AT&T's profits remained regulated, and it still had to conform to the tariff procedures adopted in an earlier industry era. The major change in the regulation of AT&T up until the implementation of price-cap regulation was that it was given the flexibility to change its prices more rapidly.

Third, rapid and flexible price changes by a traditionally regulated firm is made possible by either an explicit or implicit grant of permission for it to engage in market segmentation. In practice, market segmentation is merely price discrimination for competitive purposes. As shown as early as the 1870s for the railroad industry, market segmentation means that customer classes with elastic demand schedules experience rapid price reductions, while those with inelastic schedules experience price increases or less rapid price reductions. AT&T's pattern of volume discounting during the first half of the 1980s conforms to the discrimination pattern associated with the railroad industry..

Fourth, the regulation of a dominant former monopolist did not change until the FCC was convinced that facilities-bases competition was firmly established in the interstate market. US Telecom, the long-distance subsidiary of United Telecommunications, and GTE Sprint, the long-distance subsidiary of GTE Telephone Companies, had mergered to form US Sprint before the FCC adopted price-cap regulation for AT&T. In addition, US Sprint was nearing the completion of the digital/fiber optic network planned by US Telecom and its predecessor company—United Telecommunications Communications Incorporated. Furthermore, other regional facility-based carriers, such as Litel, were establishing themselves. Finally, MCI was in the process of upgrading its network.

Fifth, the former monopolist should not be expected to take the introduction of competition agreeably. Throughout its history, AT&T has never backed down from an opportunity to stop, slow down, or elimination the competition that was emerging in its markets. When its patent monopoly expired, AT&T tried to renew its patents. When that failed, it tried to modify its telephone equipment just enough to gain a new patent monopoly. When that failed, it refused to interconnect non-Bell local-exchange

companies to its long-distance network. Then AT&T began a vigorous acquisition program after the non-Bell companies' efforts to build an alternate long-distance network failed. In fact, AT&T continued to buy up its local exchange competitors for at least three years after Congress passed the *Mann-Elkins Act*, which provided explicitly for the regulation of telephone service by the ICC. AT&T stopped these activities only after the Congress passed new antitrust laws that threw into question the legality of AT&T's acquisition program. When the next round of competition began with the *Above 890 Decision*, AT&T introduce Telpak to stop or retard the construction of private microwave networks. It introduced the Hi-Lo tariff to stop or retard the growth of specialized common carriers. Finally, it introduced "Reach-Out America," "Pro-America," and other volume-discounted tariffs designed explicitly to stop the growth of facilities-based interexchange carriers.

Sixth, the divestiture of bottleneck and essential facilities by the former monopolist does not guarantee the removal of all competitive problems in the market that relies on the nondiscriminatory availability of bottleneck and essential facilities. As part of the settlement of the antitrust suit filed against it, AT&T chose to divest its local exchange companies and obligate them to provide AT&T's competitors with an access service that was *approximately* equal to the access service available to AT&T. Problems with access services persisted for many years after the initial equal-access service was available to AT&T's competitors.

Seventh, a former monopolist is in the position to behave anticompetitively even if it does not control bottleneck and essential facilities. It was repeatedly argued by AT&T's competitors that AT&T's series of volume-discounts tariffs were predatory at worst and anticompetitive at best. These arguments were not completely specious, and they resulted in the institutionalization of the net revenue test. In addition to ensuring that all consumers benefited, in perhaps different ways, from the availability of volume discounts, the net revenue test greatly increased the probability that the volume discounts would not be predatory under normal operating conditions. When the FCC decided to remove its structural separation requirement for AT&T's enhanced and basic telecommunications services, non-affiliated enhanced services providers and others

argued that it would not be possible to police AT&T's incentive and capability to shift unregulated costs into regulated markets as it sought to expand into unregulated telecommunications services. A U.S. Appeals Court agreed with these arguments.[102]

Eighth, it is possible to control the pace at which a new public policy is implemented. It is often heard that the interstate telecommunication industry is undergoing the transition to deregulation. History indicates that this transition began in the mid-1980s for the interstate market with the change in the focus of the FCC's review of AT&T's pricing. It is now 1997, and AT&T still is not completely deregulated with respect to its production and sale of interstate telecommunications services. AT&T's sale of telecommunications equipment and inside wiring was actually deregulated in about the same number of years. This deregulation effort began with the *Carterfone Decision* in 1968.[103] It overturned those elements of AT&T's tariffs that prevented the attachment of non-Bell devices to telephone sets and those portions of the tariffs that did not allow AT&T's customers to interconnect their communications systems directly to the Bell System network. Deregulation of customer premises equipment was finalized in 1980 when the FCC released its *Second Computer Inquiry Decision*.[104] These two decisions and the subsequent judicial reviews show that a public utility industry can be deregulated on a piece-meal basis. However, they also indicate that the first pieces of the industry to be deregulated are peripheral to the transmission and distribution of the regulated services.

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[102] *In re Amendment of Sections 64.702 of the Commission's Rules and Regulations*, CC Docket No. 85-220, Notice of Proposed Rulemaking, 50 Fed. Reg. 33,581 (1985), Report and Order, 104 FCC2d 958 (1986), Supplemental Notice of Proposed Rulemaking, FCC 86-253 (1986), on reconsideration, 2 FCCR 3035 (1987), on further reconsideration, 3 FCCR 1135 (1988), on second further reconsideration, 4 FCCR 5927 (1989), *Phase II*, 2 FCCR 3072 (1987), on reconsideration, 3 FCCR 1150 (1988), on further reconsideration, 4 FCCR 5927 (1989) vacated *sub com. California v. Federal Communications Commission*, 905 F.2d 1217, 113 PUR4th 92 (9th Cir. 1990).

[103] *In re Use of the Carterfone Device in Message Toll Telephone Services*, 13 FCC2d 420, 423, 426 (1968), reconsideration denied, 14 FCC2d 571 (1968).

[104] *In re Amendment of Section 64.702 of the Commission's Rules and Regulations,* Docket No. 20828 77 FCC2d 384, 35 PUR4th 143 (1980), modified on reconsideration, 84 FCC2d 50, 39 PUR4th 319 (1980), modified on further reconsideration, 88 FCC2d 512 (1981), aff'd *sub nom. Computer & Communications Industry Association v. Federal Communications Commission*, 693 F.2d 198 (D.C. Cir. 1982), cert. denied 461 U.S. 938 (1983), modified, 3 FCCR 22 (1988).

Ninth, qualitative and quantitative data have to be considered jointly when examining the effects of changes in regulatory formats and focal points. The need for the dual consideration of both kinds of data is illustrated by the following examination of post-divestiture interstate toll prices. The analysis begins with the equal-access service that was provided to all interstate common carriers after AT&T's divestiture.[105] The rates for these tariffs were set using traditional cost-of-service principles, which required the identification and separation of interstate and intrastate access costs. Since the FCC had never set access rates, it was able to start this exercise with a clean slate.

The major cost classifications in the years preceding the divestiture were local service, intrastate toll service, and interstate toll service. Each of these classifications made contributions to the recovery of traffic sensitive and nontraffic sensitive costs. Traffic sensitive costs, by definition, vary primarily with increases and decreases in the volume of telecommunications traffic that is carried by the firm. Nontraffic sensitive costs vary primarily with the number of customers that are served by the company in question. Nontraffic sensitive costs are associated with each of the three service classifications. However, they are heavily concentrated in the distribution facilities that connect individual homes and business to the rest of the world. This fact did not go unnoticed in *Smith v. Illinois*, where it was established that the recovery of some of these nontraffic sensitive costs should be the responsibility of the interstate callers.[106] Prior to this Supreme Court decision, the rates for local service had been the tool for the recovery of all nontraffic sensitive costs. This court decision also indicated that a usage-based allocation of nontraffic sensitive costs to local and long-distance services is acceptable, even though nontraffic sensitive costs, by definition, do not vary with telephone usage.

*Smith v. Illinois* set in motion a sequence of events that consistently resulted in the long-distance callers having more and more responsibility for the recovery of nontraffic sensitive costs. The cost burden laid on interstate rates was not a problem

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[105] *In re Investigation of Access and Divestiture Related Tariffs*, FCC 84-106, March 28, 1984.

[106] *Smith v. Illinois Bell Telephone Company*, 282 U.S. 133 (1930).

before the *Above 890 Decision*. AT&T had a complete monopoly over the long-distance market, and the FCC routinely approved interstate rates that would recover the nontraffic sensitive costs that were deemed to be the responsibility of its long-distance subsidiary. The legalization of private microwave networks, however, indicated that AT&T could not indefinitely use the rates for private line services to recover nontraffic sensitive costs. Further increases for these rates might induce one or more large corporations to build their own telecommunications networks. In fact, the current rate levels for private-line service had already caused this to happen.

Private-line competitors set in motion the process of "rebalancing" AT&T's rates for private-line and message-toll service. Telpak was the first move in this direction. Its volume discounts implied that the large-volume users of private line services would contribute less to the recovery of nontraffic sensitive costs. This strategic move to keep corporations on its network, however, created another problem for AT&T. The principles of traditional regulation required that the unrecovered (actually unsupported) nontraffic sensitive costs had to be supported elsewhere. The support role fell to the remainder of the interstate users.

A subset of the remaining interstate users included those private line users whose usage levels were not large enough to justify the construction and ownership of private microwave networks. Consequently, AT&T with the approval of the FCC could raise the rates for these customers to just below the level that would induce these customers to build their own networks. MCI's 1983 application to sell private line services as a common carriers, however, put this population at risk as a source for the recovery of nontraffic sensitive costs. The switch-over rate for these customers was no longer the per unit cost of constructing a private network for their own use. Instead, it was the lower per unit cost of constructing a private network for the shared use of multiple private line customers. Therefore, traditional regulation once again forced AT&T to rebalance its interstate rates after the FCC approved MCI's application to be a common carrier of private line services.

After the *Specialized Common Carrier Decision*, competitive options became increasingly available to interstate private line users. Consequently, the interstate

message toll service callers became the primary source for the recovery of nontraffic sensitive costs. Sufficient increases in the prices of interstate message toll services, however, would induce some of these users to switch to an alternative common carrier. MCI moved to take advantage of this opportunity because its private line service was not doing very well. After providing alternative voice-grade services for some time under its Execunet tariff, MCI petitioned to be an alternative common carrier. It was granted its petition in 1975. It also was provided with the right to resell AT&T's WATS lines, which meant that MCI did not have to build interstate transmission facilitates before it could sell a substitute for AT&T's interstate toll message service. With MCI and others selling private line and toll services, AT&T and the FCC had no other place to go in the interstate market for the purpose of rebalancing the responsibility for the recovery of nontraffic sensitive costs. Perhaps, it was at that time that the FCC decided that it had to reduce the amount of nontraffic sensitive costs that were subject to its jurisdiction.

Although it is not clear when this decision was made, the FCC elected to use the implementation of the equal-access tariff as the vehicle for reducing its cost recovery responsibility in the area of nontraffic sensitive costs. Traditional regulation and *Smith v. Illinois* required that the FCC find a way to separate nontraffic sensitive costs in a manner that reduced the allocation to the interstate jurisdiction. It took this problem to a Joint Board that consisted of state and federal regulators who were experienced in the regulation of telephone services. The Joint Board decided to change the means that were used to separate nontraffic sensitive costs. The new means, called the Gross Allocator, reduced the amount of nontraffic sensitive costs that came under the responsibility of the FCC. This decision reduced the cost of producing long-distance service. Of course, the long-distance cost reduction had to be reflected on the intrastate side of the ledger as an increase in interstate toll and local basic service costs.

The FCC did not stop with the positive results that it achieved after the introduction of the Gross Allocator for the separation of nontraffic sensitive costs. The FCC with the support of AT&T and other telephone companies proposed a uniquely

structured two-part access tariff. The usage-sensitive component of the tariff would be paid for by the interstate common carriers. The lump-sum monthly fee component of the tariff — the Subscriber Line Charge (SLC) — would be paid for by all subscribers to local basic service. The usage-sensitive rate would recover all usage-sensitive access costs. The SLC would recover the interstate nontraffic sensitive access costs. State regulatory commissions and consumer advocates vigorously opposed this proposal. Both groups viewed the FCC's plan for the recovery of interstate nontraffic sensitive costs to be equivalent to an increase in the price of local basic service. After all, the SLC had to be paid even if a subscriber did not make any long-distance calls.

Despite the opposition, the FCC implemented its proposed two-part access tariff, but it was not successful in using the SLC to recover all of the interstate nontraffic sensitive costs. Instead, the FCC had to settle for recovery of half of these costs through the SLC. Still, the amount of nontrafffic sensitive costs that had found its way into the prices of interstate message toll services had been reduced further.

Neither the SLC nor the Gross Allocator was implemented on a "flash-cut" basis. Consequently, it took time for the full impact of these regulatory changes to be reflected in the prices of interstate toll service. This time lag meant that the prices of interstate toll services would fall steadily without any changes or improvements to the process used to produce these services. Conversely, it meant that the price of local basic service would rise over the same time period if there were not any cost-saving changes to the process used to produce this telephone service.

The impact of the SLC was first felt by residential customers on interstate toll rates in June of 1985. Table 5.10 of the Joint Board's *Monitoring Report* indicates the SLC was $1.00 per month for the first twelve-month period after June of 1985.[107] The SLC for the next thirteen-month period was $2.00 per month. This fee for the next sixteen months was $2.60 per month. A SLC of $3.20 was charged for the following four months. The transition was complete in April of 1989 when a fee of $3.50 per month was charged until the end of the year. In all, it took fifty-three months to fully

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[107] Joint Board, *Monitoring Report*, Common Carrier Docket No. 87-339, mimeo, May, 1996, 473.

implement the SLC for residential customers. During the same time period, the SLC was increasing for multi line business customers and Centrex customers.[108] The transition to the Gross Allocator took approximately the same length of time. Consequently, the "phase-in" of two important regulatory decisions concerning the recovery of nontraffic sensitive costs was complete by the end of 1989.

Table 4, a partial reproduction of Table 5.4 in the Joint Board Monitoring Report, shows the annual change in two price indices for interstate long-distance service from 1978 to 1996. The CPI index represents changes in prices for households. The PPI index represents price changes for residential and business customers. Both price indices considered show a substantial decline and reversal of trend in 1984. For the years 1984 through 1989, the data in the table trace a single-peak hilltop with the largest decline in both indices occurring in 1987. They generally continue their decline at a much slower pace until 1992. Both indices reversed trend and returned upward substantially in 1993. This upward trend in prices persists through 1996.

The data for 1984 and 1985 indicate that the phase-in of the Gross Allocator and the SLC cannot be the sole cause of the substantial price declines experienced in 1986 and 1987. Perhaps, part of the explanation lies in the voluntary retirements that AT&T offered its employees during this period. Another part of the explanation of these price declines might be the investment "write-offs" and "write-downs" that AT&T took to better its competitive position. Still, another part of the explanation might be productivity increases from those workers and managers that remained with AT&T. Finally, there were the optional calling plan, special needs, and competitive necessity tariffs that were introduced during this period.

Clearly, the phase-in of the SLC, the Gross Allocator and innovative tariffs cannot explain the price declines that occurred from 1988 forward. All of their effects had petered out by that time. However, the FCC introduced price-cap regulation in 1988. The dominant incentive of this alternative regulatory format is cost reduction.

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[108] Ibid.

*TABLE 4*

*ANNUAL PERCENTAGE CHANGE IN PRICE INDICES FOR LONG-DISTANCE TELEPHONE SERVICE (Interstate Service)*

| Year | CPI: Interstate Toll | PPI: Interstate MTS |
|---|---|---|
| 1978 | -0.8 | 0.0 |
| 1979 | -0.7 | -0.9 |
| 1980 | 3.4 | 5.5 |
| 1981 | 14.6 | 15.9 |
| 1982 | 2.6 | 3.9 |
| 1983 | 1.5 | 0.0 |
| 1984 | -4.3 | -5.1 |
| 1985 | -3.7 | -3.0 |
| 1986 | -9.4 | -10.0 |
| 1987 | -12.4 | -11.8 |
| 1988 | -4.2 | -2.1 |
| 1989 | -1.3 | -1.7 |
| 1990 | -3.7 | -0.1 |
| 1991 | 1.3 | -1.3 |
| 1992 | -1.3 | 1.0 |
| 1993 | 6.5 | 3.8 |
| 1994 | 5.4 | 6.1 |
| 1995 | 0.1 | |
| 1996 | 4.1 | |

Nothing else occurred that could be expected to substantially alter the competitiveness of the interstate toll market from 1988 to 1992. Consequently, the explanation for the more modest price reductions experienced during this period appears to be productivity increases, lay offs, and pricing responses to competitive pressures.

The upsurge in interstate toll prices in 1993 and thereafter has been more substantial than the general increase in prices during the period 1993 through 1996. Table 5, a modified reproduction of Table 5.2 from the Joint Board Monitoring Report, shows the annual rate of changes in the more general price indices applicable to the telephone industry. The data show increases for these years in the price index for all items of around 2 to 3 percent. The data also show increases for the same year in the price index for all telephone services of around 0 to 2 percent. Meanwhile, the data (in Table 4) show increases in the CPI for interstate toll services for these years of around 4 to 6 percent.

The prices of interstate toll services have been increasing at one and one-half to two times the increases in the prices of all items. This trend suggests that the price increases in interstate toll services are being used to partly compensate for price reductions that are being offered to large-volume interstate customers that use services other than interstate toll.[109] They also suggest the possibility that interstate toll services are being used to support unregulated businesses that are owned or controlled by all of the three large domestic interstate carriers. These hypotheses are plausible because it is unlikely that AT&T and the other interstate carriers have exhausted all of their transmission. AT&T's second liberalization of its interconnection policies was part of a package designed to settle an antitrust suit. AT&T agreed to divest its local companies more to obligate then to provide "equal access" to it and its competitors.

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[109] Joint Board, *Report*, 448.

*TABLE 5*

*ANNUAL RATE OF PERCENTAGE CHANGE IN THE CPI AND TELEPHONE SERVICES*

| Year | CPI: All Items | PPI: Telephone Services |
|---|---|---|
| 1978 | 9.0 | 0.9 |
| 1979 | 13.3 | 0.7 |
| 1980 | 12.5 | 4.6 |
| 1981 | 8.9 | 11.7 |
| 1982 | 3.8 | 7.2 |
| 1983 | 3.8 | 3.6 |
| 1984 | 3.9 | 9.2 |
| 1985 | 3.8 | 4.7 |
| 1986 | 1.1 | 2.7 |
| 1987 | 4.4 | -1.3 |
| 1988 | 4.4 | 1.3 |
| 1989 | 4.6 | -0.3 |
| 1990 | 6.1 | -0.4 |
| 1991 | 3.1 | 3.5 |
| 1992 | 2.9 | -0.3 |
| 1993 | 2.7 | 1.8 |
| 1994 | 2.7 | 0.7 |
| 1995 | 2.5 | 1.2 |
| 1996 | 2.9 | -0.2 |

Eleventh, a former monopolist enters into interconnection agreements for a variety of reasons. Some interconnection agreements occurring in the history of telecommunications have been win-win outcomes. Others have been more zero-sum in nature. There are no reported "horror stories" associated with AT&T's interconnection of independent telephone companies and rural cooperatives that started in 1913 after the "Kingsbury commitment." Similarly, the initial implementation of the Modification of Final Judgment, the "1 + dialing" equal-access provision, came off without any major glitches.[110] Both were win-win types of agreements. In the first case, AT&T avoided any government scrutiny under then existing antitrust trust and simultaneously assured itself of a long-distance monopoly then perceived to be in the public interest. In the second case, AT&T extracted itself from an antitrust suit and freed itself to compete vigorously in various unregulated telecommunication markets.

Things did not go as well for those agreements required of telecommunications companies that also compete in the markets to which they are providing access. The implementation of open network architecture (ONA) has gone very slowly. The enhanced service providers and information service providers that are unaffiliated with the Bell Regional Holding Companies have encountered little difficulty in gaining access to ONA services that are also useful to the affiliated enhanced and information service providers. The unaffiliated companies find it tough going, however, to get ONA services that do not fit into the business plans of the affiliated companies.[111] For example, the unaffiliated companies have been seeking access to the local companies' operating and support systems for almost ten years.

Twelfth, the development of interconnection arrangements to solve the competitive-access problem occurs in fits and starts. This erratic approach to interconnection exists for a variety of reasons. It is never exactly clear on logical grounds that the owner of the interconnection facilities will encourage efficiency in either

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[110] Gerald W. Brock, *Telecommunication Policy for the Information Age: From Monopoly to Competition* (Cambridge, MA: Harvard University Press, 1994).

[111] Robert J. Graniere, *Implementation of Open Network Architecture: Development, Tensions, Strategies* (Columbus, OH: The National Regulatory Research Institute, 1989).

upstream or downstream competitive markets.[112] On practical grounds, efficient interconnection agreements would probably not be forthcoming when the "vertical foreclosure" of competition in either upstream or downstream markets through inefficient interconnection arrangements yields economic gains.[113] Furthermore, there is a long-standing public-interest worry associated with the solution of the competitive-access problem through unrestricted open access. Open access in the presence of fixed costs undermines regulatory options designed to protect captive customers. The reason for this is that the customers with options attempt to shift the responsibility for the recovery of these costs to customer classes without options.[114]

Thirteenth, interconnection arrangements spawn jurisdictional battles between federal and state regulators over the right to regulate the use of access facilities. Typically, the federal regulators have the stronger hand at the inception of the battle. Federal regulators can rely on the "interstate commerce clause" of the Constitution as a sturdy support for their policies.[115] In fact, the *Communications Act of 1934* gives the

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[112] The argument against vertical foreclosure of either upstream or downstream markets by the owner of interconnections facilities is presented by Posner. See Richard A. Posner, "The Chicago School of Antitrust Analysis," *University of Pennsylvania Law Review* 127, (1978-1979): 925. Criticisms of this argument are presented by Blair and Kaserman, and Kaplow. See Roger D. Blair and David L. Kaserman, *Law and Economics of Vertical Integration and Control* (New York, NY: Academic Press, 1983); and Louis Kaplow, "Extension of Monopoly Power through Leverage," *Columbia Law Review* 23, 1 (1985): 515.

[113] J.A. Ordover and R.D. Willig, "The 1982 Department of Justice Merger Guidelines: An Economic Assessment," *California Law Review* 71 (1983): 571; and J.A. Ordover, A.O. Sikes, and R.D. Willig, "Nonprice Anticompetitive Behavior by Dominant Firms Toward Producers of Complementary Products," in *Antitrust and Regulation*, Franklin Fisher, ed. (Cambridge, MA: MIT Press, 1985).

[114] Charles G. Stalon, "Some Thoughts and Concerns About FERC Wheeling Policies," address to the Federal Energy Bar Association, Washington, D.C., January 10, 1985; and William B. Tye et al., *The Transition to Deregulation* (New York, NY: Quorum Books, 1991).

[115] The interstate commerce clause has already reared its head in the electric power industry. EPAct gives control to the FERC over the rates, terms and conditions of wholesale sales. The right to regulate retail services is reserved for the states. EPAct did not draw a distinction between interstate and intrastate wholesale and retail services, however. EPAct gives control to the FERC over the rates, terms and conditions for transmission service used in both bundled and unbundled wholesale-sales service without any direction as to jurisdiction over transmission used in unbundled retail sales. The FERC leapt on this omission in "The Final Rule" by asserting jurisdiction over transmission service used in interstate commerce to complete an unbundled retail sale when the unbundled retail sale is offered voluntarily by the utility or mandated by the state regulatory commission.

FCC the authority to regulate interstate communications and the ancillary services associated with interstate communications. Meanwhile, the state regulators often have to rely on statutory constructions which reserve for them everything that is not expressly given to the federal regulators.

Fourteenth, federal regulators can push forward their pro-competition policies without the cooperation of the state regulators. The interstate commerce clause provides a presumption that the FERC has the right to act unilaterally in the area of interstate transmission services. Furthermore, the federal courts in an important telecommunications case have decided that federal policies take precedence over state policies when state policies frustrate or impede the progress of a federal policy.[116]

Fifteenth, competition is initially a transition to dominance. Monopoly is the pre-transition market structure, and the dissolution of the monopoly is not equivalent to the dissolution of the former monopolist. Typically, the former monopolist remains in the market as a formidable competitor with a relatively large market share.[117] Its pre-existing ties with customers provide it with several advantages, such as the benefits of customer inertia and name recognition. In addition, the former monopolist possesses market power over prices that it can exercise against large segments of its customer base because of the uneven introduction of competition across customer classes. Factors along these lines were sufficiently strong to cause AT&T to be a dominant firm for some time after it had relinquished its control over bottleneck facilities.[118]

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[116] *Louisiana Public Service Commission v. Federal Communications Commission*, 106 S. Ct. 1890, 74 PUR 4th 1 (1986).

[117] William G. Shepherd, "Deregulation From Monopoly Only to Dominance? Telecommunications, Railroads and Electricity," *NRRI Quarterly Bulletin* 17, 2 (1996): 149.

[118] Pursuant to FERC Order 888, electric utilities are not required to divest themselves of their transmission and distribution facilities. These facilities constitute bottlenecks with respect to unbundled wholesale and retail electricity services. The electric utilities also are highly recognizable in the wholesale and retail markets; and they can exercise market power over large segments of their retail customers. Consequently, it is virtually certain that electric utilities will be dominant in the retail market regardless of whether they divest themselves of their generation assets.