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# THE DEREGULATION EXPERIENCE: LESSONS FOR THE ELECTRIC POWER INDUSTRY

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## INTRODUCTION

On July 3, 1995, the Governor of Maine approved Resolve 48. This Resolve, *inter alia*, requires that the state's Public Utilities Commission address several issues in its report to the Legislature on electric industry restructuring (see Table 1). These issues relate to the "orderly transition to a competitive market for retail purchases and sales of electric energy." This paper summarizes the experiences of five industry sectors that underwent transitions from a highly regulated market to a competitive market.

The "data" on deregulation[1] are abundant and originate from various sources. These sources include media accounts, anecdotal evidence, the activity of industry players, stock market results and activities, and scholarly studies.

The information drawn from most scholarly studies points to two major conclusions. First, deregulation has generally been a successful story. Consumers have benefited greatly and the overall efficiency of the deregulated industries has improved greatly as well. Firms in these industries have reduced their costs, lowered their prices, introduced new services and reconfigured old services to better accommodate consumer preferences, and deployed new technologies and practices.[2] Further, distributional effects have not been dramatic. For sure, shareholders have not grown rich at the expense of consumers. Yet, they have been able to earn adequate rates of return, attributed largely to the greater freedoms firms have enjoyed since deregulation. By far, consumers have gained the most from deregulation.

On the downside, deregulation introduced certain problems. These problems include consumer confusion, stranded costs, market power, and unequal market

[1] Deregulation has many dimensions. This paper focuses on those that liberated both price and entry controls on the firms of a specific industry.

[2] Especially for the naturally competitive industries, such as land transportation, evidence shows that price regulation raised prices and reduced the number of competitors.

Table 1 goes here:  Transitional issues identified in Resolve 48.

opportunities for consumers. Most of these problems were short run in nature; after a period of time they were resolved or at least mitigated as industry players adjusted to the dramatically different market environment. One example is the uneven reductions in prices to customers with varying degrees of supplier-choice opportunities. Other problems appear more permanent; for example, mergers have created large firms that, in some instances, have had the effect of diminishing competitive forces.

Several industries in the United States and elsewhere in the world have undergone major reforms over the last two decades.[3] This paper focuses on those industries that were once tightly controlled by price and entry regulation. Led by a combination of technological, economic, political, and ideological forces, these industries have become more competitive and less influenced by governmental control.[4] Various factors were responsible for the transformation of individual industries. For some, the impetus was the realization that regulation together with limited competition was incompatible with emerging market and technological forces. For others, the driving force was the erosion of benefits to those interest groups who previously supported both regulation and barriers to competition. Some heavily regulated industries were performing so poorly that a political consensus eventually developed for less governmental intervention and more market influence to manage the future structure and performance of these industries.[5]

The post-transformation experience of these industries can assist in predicting the effects on industries currently initiating major reforms. This paper summarizes

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[3] See Robert W. Hahn and John A. Hird, "The Costs and Benefits of Regulation: Review and Synthesis," *Yale Journal on Regulation* 8, 1 (Winter 1991): 233-78; Clifford Winston, "Economic Deregulation: Days of Reckoning for Microeconomists," *Journal of Economic Literature* 31 (September 1993): 1263-89; and Jerry Ellig, "Regulatory Reform in Electricity: Precedents from Other Industries," unpublished paper, November 1994.

[4] Many analysts group these forces into two broad categories, political and economic.

[5] An analysis of driving forces behind industry transformation, particularly toward less regulation and more competition, is contained in Sam Peltzman, "The Economic Theory of Regulation After a Decade of Deregulation," in *Brookings Papers on Economic Activity: Microeconomics 1989*, Martin Neil Baily and Clifford Winston, eds. (Washington, D.C.: The Brookings Institution, 1989), 1-59.

these experiences for a number of industries, namely, transportation, natural gas, telecommunications, financial, and United Kingdom's electric power. What implications they have for the restructuring of the U.S. electric power industry will be addressed. Particularly relevant are the experiences of the U.S. natural gas and telecommunications industries. These industries have already undergone major changes and, since the beginning of the century, have been controlled by state public utility regulation.

## MAJOR QUESTIONS AND ISSUES

Measuring the effect of tight price and entry regulation on the performance of an industry and on the economic welfare of individual stakeholders is a difficult task. For a particular transformed industry, an *ex post* analysis, for example, would require a comparison between actual performance and predicted performance under the previous market structure and regulatory regime.[6] Performance, of course, is multi-dimensional as typically it includes such elements as allocative and productive efficiency,[7] the availability of goods or services with varying attributes, and equity

[6] Such an *ex post* "counterfactual" analysis requires predicting how the industry would have performed under the *status quo*. As an illustration, set $\Delta PER = PER_a - PER_r$, where the predicted change in performance, $\Delta PER$, can be derived from observing actual performance, $PER_a$, and estimating how the industry would have performed under the old regulated regime, $PER_r$. In estimating $PER_r$, the analyst needs to assess the cost and demand conditions for the industry and include the effect of outside (exogenous) factors.

In an *ex ante* analysis, where one would try to predict the future effect of deregulation, a "counterfactual" prediction is also required. For example, the analyst would need to measure the performance of an industry under the condition that deregulation (or less regulation) would take place. A discussion of the methodological problems associated with measuring the effect of deregulation is contained in Hahn and Hird, "The Costs and Benefits of Regulation: Review and Synthesis;" and Paul L. Joskow and Nancy L. Rose, "The Effects of Economic Regulation," in Richard Schmalensee and Robert D. Willig, eds. *Handbook of Industrial Organization* (New York: Elsevier Science Publishers, Inc., 1989), 1449-1506.

[7] Allocative efficiency refers to a firm selling a service or good at the firm's marginal cost (assuming no harmful or beneficial effects on third parties). Productive efficiency refers to a firm providing a service or good with a given level of quality at the lowest possible resource cost.

effects. Different policy-makers and analysts, although they may assign dissimilar weights to these elements, would generally agree that they reflect the major indicators of how well or poorly an industry is performing.

The "economic welfare of the stakeholders" is intertwined with an industry's performance.[8] How an industry conducts its business in setting prices and in enriching equity holders directly affects customers and industry investors. In accordance with standard economic analysis, the performance of an industry should be evaluated on the basis of aggregate consumer and producer welfare. This criterion for assessing the performance of an industry is consistent with the social objective of advancing economic efficiency. The effects on individual stakeholders, such as workers, managers, and investors, are also important considerations in any evaluation of deregulation.

The big question with regard to restructuring of the U.S. electric power industry is, "*How will the industry perform under less regulation and more competition*?" Predicting the direction of prices for individual classes of customers, of profits, and of quality of service is difficult enough.[9] Trying to go farther by measuring the actual impacts is especially difficult in view of the need to predict how the industry would have performed under the old regime.

Although conveying limited information, and requiring careful judgment in interpretation, the experiences of other industries undergoing dramatic transformation can be useful as a parameter in narrowing the expected outcomes of a restructured electric power industry. We should be able to predict more accurately what a more competitive and less regulated electric power industry holds for consumers and utilities

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[8] Most scholarly studies have shown that price regulation of most industries has produced a "deadweight welfare loss," which implies that the gains of regulation to some market players have been exceeded by the losses to others. For some industries, these "others" included producers who supported deregulation.

[9] Analysts have been "generally successful in predicting the direction and size of the effects of regulatory reform on prices and profits," (Winston, "Economic Deregulation: Days of Reckoning for Microeconomists," 1286).

by observing the performance of other industries undergoing major change. At least, that is the underlying premise of this paper.

We will attempt here to summarize "typical" outcomes for industries that, over the last twenty years, became more competitive and less regulated. This endeavor has to acknowledge the fact that industries were both regulated and deregulated for different reasons. For example, trucking was initially regulated to protect the railroads;[10] the wellhead price of natural gas was regulated to hold down the price for consumers.[11] We will therefore expect deregulation and more competition to produce different results.[12] Yet, we do observe a commonality of some major outcomes. For example, most studies show that average prices have fallen sharply after deregulation.[13] This outcome strongly suggests that regulation was instituted to serve interests other than consumers. One classic example of this is the regulation of the trucking industry. The empirical evidence clearly shows that economic gains under regulation accrued largely to trucking firms and labor at the cost of higher rates for shippers.[14]

In trying to predict how reform in the electric power industry or any industry will affect different stakeholders and economic welfare as a whole, we need to know how regulation has affected the industry. Although there is disagreement among analysts on other points, they will generally agree that deregulation will ultimately cause average prices to fall. But even here it is not conceded that this outcome would be true

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[10] Prior to the Motor Carriers Act of 1935, which gave the Interstate Commerce Commission authority over pricing and entry into the bus and trucking industries, truckers had the flexibility to undercut railroads in the pricing of services to price-sensitive shippers.

[11] Paul W. MacAvoy, *The Regulated Industries and the Economy* (New York: W.W. Norton, 1979).

[12] See Joskow and Rose, "The Effects of Economic Regulation."

[13] Prices for individual groups of consumers may increase, however. In this situation, the public-policy question is whether these price increases should be avoided, even if economic efficiency suffers by continuing with certain subsidies.

[14] Nancy L. Rose, "Labor Rent Sharing and Regulation: Evidence from the Trucking Industry," *Journal of Political Economy* 95 (1987): 1146-78.

for *all* consumers. Those consumers who were previously being subsidized or who may not have the ability to take advantage of market opportunities may, at least for a few or several years, endure higher prices.[15]

If one had to predict what will transpire in a restructured electric power industry based on the overall empirical evidence for deregulated industries, the following outcomes seem likely:

(1) the price of electricity averaged across all customer classes will fall;
(2) customers who do not have direct access to generators or marketers will benefit less than other customers or, at least in the short term, may actually be worse off;
(3) most of the benefits from industry restructuring will go to customers (i.e., most of the efficiency gains induced by competition will ultimately flow to customers);
(4) service quality will reflect, to a larger degree, the preferences of individual customers and may actually fall in the aggregate;
(5) price discrimination induced by competition will become more common;
(6) the productivity of the electric power industry will improve;
(7) bilateral contracts for electrical services with specified price and service obligation provisions will become more commonplace;
(8) the unbundling of old and new electrical services will evolve over time;
(9) the financial position of utilities and other firms will become more volatile, with bankruptcies and exiting of firms likely to occur;
(10) mergers and acquisitions will become more common as utilities and nonutilities try to strategically position themselves in the new competitive environment;
(11) electricity prices will be rebalanced to accommodate market forces, with the

[15] For example, this has been the experience in the natural gas, railroad, and telecommunications industries.

phasing out of cross-subsidies (e.g., interclass subsidizations, cost averaging) that previously benefited many customers;

(12) government will assume a new role in assuring that (a) truly competitive ("level playing field") conditions exist and (b) customers have access to information required for making intelligent decisions; and

(13) social objectives and transition costs will continue to be funded through regulatory channels, as long as utilities retain monopoly power for some of their services that remain subject to some form of price regulation.

The above outcomes are compatible with the performance and activities in other restructured industries. They affirm a much more competitive, market-driven electric power industry than what exists today. One important lesson learned from the experiences of transformed industries is that analysts and others tend to understate beforehand the changes in firm's activities and technology. In other words, the responses of firms and other market participants to a new environment are more dramatic than what anyone could ever have predicted. The transitional period to a highly-developed competitive environment may also require a number of years to complete. Analysts would therefore tend to understate, sometimes significantly, the benefits of deregulation by missing the *full* response of different market participants to change over an extended period of time. The experiences of deregulated industries generally show that firms respond quickly in moving their prices toward costs, but take much longer in improving their operation practices.

During the transitional period, the different stakeholders will seek to "game" or strategically use the rules to their advantage. New entrants, for example, will want to handicap incumbent utilities, who in turn have an interest in raising barriers to market entry. Artificial constraints established by legislatures or regulators, either under current rules or new rules, that favor one group over others are likely to harm society at large. Such constraints often hurt those consumers or other groups that have little political clout. As a matter of public policy, legislatures and regulators should avoid showing favoritism toward special interest groups when it results in unfair or inefficient

competition.

## EVIDENCE FROM INDIVIDUAL INDUSTRIES

Several studies have measured the effects of regulation on a particular industry.[16] 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 exogenous factors in explaining changes in an industry's performance. The major problem with "observation" studies is that they cannot 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 sales services. Subsequent to these changes in 1991, real prices for most U.K. electricity customers have fallen.[17] We cannot say, 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 below highlights major outcomes and our observations of events 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. Table 2 lists the major initiatives underlying deregulation of these industries. Generally, deregulation has eliminated most of the inefficiencies under the old, heavily regulated regime (see Table 3).

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[16] This paper 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.

[17] 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.

***TABLE 2***

***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 3***

***INEFFICIENCIES IN OLD REGIME***

| ***INDUSTRY*** | ***INEFFICIENCIES*** |
|---|---|
| ***Natural Gas*** | • ***Below-market price for wellhead gas***<br>• ***Market power exhibited by pipelines***<br>• ***Inaccessibility of gas distributors/ retail consumers to low-priced gas supplies*** |
| ***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*** |

## 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.

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.[18] 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.[19]

In 1987, after judicial remand, the FERC issued Order 500.[20] 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 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.[21]

The Order prohibited pipelines from offering bundled sales service, established a capacity releasing program, redesigned pipeline rates on the basis of the straight

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

[19] 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.

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

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

fixed-variable (SFV) methodology,[22] 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.[23] Service unbundling for a broader group of retail customers will be an important issue for state regulators in the coming years.

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 the prevalence of this particular market structure.[24] 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.[25]

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

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

[23] 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.

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

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

inception of wellhead deregulation in 1979 and pipeline reform in 1985. The nominal price of wellhead gas declined by 29 percent over the period of 1984 to 1994. Over the same period, prices to industrial costumers 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.[26] If one adds up the decline in natural gas bills across all retail customers since 1984, however, the cost savings have been significant.[27]

Other major outcomes since the mid-1980s include major downsizing and productivity improvements by pipelines and distributors,[28] the entry of new marketeers engaging in various market functions, the introduction of new unbundled gas services, the sharing of transition costs,[29] no decline in the reliability of firm-gas service.[30]

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 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

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[26] 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.

[27] 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 customers declined by 42 percent in real dollars.

[28] 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.

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

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

particular group (consumers) ultimately ended up hurting them.[31] Contrary to what

[31] 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).

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 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.[32] Marketeers/brokers and aggregators will play a vital role in delivering natural gas 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;[33] also in 1980, Congress passed the Motor Carrier Reform Act, which led the way in lifting barriers for new 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

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

[33] 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.

high as $20 billion (in 1988 dollars).[34] Another study estimated that airline deregulation benefited consumers by roughly $10 billion annually (in 1977 dollars).[35] In the case of railroads, one study estimated that deregulation has produced efficiency gains as high as $17 billion annually (in 1988 dollars).[36]

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.[37] 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.[38]

The effects of airline deregulation have been more provocative. Some critics have argued that airline service has deteriorated, safety has fallen, discriminatory price has become rampant, and the financial condition of the industry has become unstable.[39] Although some of these allegations cannot be ignored, the most serious

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

[35] 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.

[36] 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.

[37] 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.

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

[39] 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.

studies strongly suggest that airline deregulation has benefited passengers and society as a whole.[40]

Studies on the deregulation of the airline industry contain three major conclusions. First, deregulation has not jeopardized airline safety.[41] Second, price discrimination has become a dominant practice in the industry.[42] 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.[43] Third, 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.[44] 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

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[40] 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.

[41] 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.

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

[43] 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.

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

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 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.[45] 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.[46]

Improvements in the performance of railroads since deregulation come from several sources. A major one was lifting of the restrictions imposed upon the railroads to enter or exit specific routes. Railroads, for example, previously could not abandon 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.[47]

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[45] 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.

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

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

Railroad deregulation has affected shippers differently. Those shippers who were able to negotiate contracts have benefited the most.[48] 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. Along with greater rate freedom, which has helped to enhance the railroads' financial situation, came higher rates to those shippers who lack market choices. Taken together, however, shippers as a group have reaped large benefits from railroad deregulation.[49]

## U.K. Electric Power

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 benefited electricity consumers and the U.K. as a whole, it could have been done better.[50] Since privatization of the industry in March 1991, inflation-adjusted electricity

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[48] 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.)

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

[50] 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.

prices have fallen for all customer classes (except for the largest industrial customers who, under the old regime, were being subsidized).[51] The industry has also experienced a dramatic increase in productivity in all aspects of its operation.[52] 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 power.[53]

The quality of service in the industry has improved greatly.[54] For example, since privatization, service disconnections fell by 95 percent. (Consumers are compensated by the utility for service failing the Guaranteed Standards of Service.)[55] The regulator, 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.[56]

On the negative side, much recent criticism has 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,

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[51] 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.

[52] Ibid.

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

[54] 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.

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

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

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.[57] In comparison, over the same period, electricity prices to domestic users decreased by about 5 percent (in real British pounds).

One analyst[58] 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),[59] (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.[60] Most observers of the U.K. electric power industry would agree with these criticisms.

## 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.[61] The

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

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

[59] One study concluded that dividing the generation sector into five firms would have created much more competitive conditions. 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.

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

[61] 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.

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.[62]

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.[63]

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).[64] This divergence created a strong incentive for bank depositors to look elsewhere to place their money and for financial intermediaries to supply alternatives to bank deposits.[65] As early as the late 1960s, it became obvious that interest-rate ceilings on bank time deposits were not sustainable.[66] 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

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[62] 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.

[63] 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.

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

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

[66] Ibid.

employee grew by more than 300 percent.[67]

Less government control also lifted restriction 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.[68]

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.[69] Some analysts have argued that many S&Ls were already insolvent by the late 1970s, prior to the period of financial deregulation.[70] 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

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

[68] Ibid.

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

[70] Ibid., England. In 1980, for example, only forty-three S&Ls were declared insolvent, while 434 S&Ls were declared insolvent in 1988.

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 associated with Alexander Graham Bell's invention of the telephone set and another patent issued in 1877 generated the property rights that sustained the industry's first monopolization. The actual property rights were not secured until 1979, however. In that year, AT&T and Western Union reached a settlement with respect to AT&T's patent suit. This suit was terminated voluntary by AT&T when Western Union conceded the priority of AT&T's telephone patents and both companies agreed to licensing their patents to each other.[71] AT&T's ensuing patent monopoly lasted until 1894 when the two patents expired. During this fifteen- to sixteen-year period, AT&T was in the position to establish local telephone companies without fear of competition by leasing telephone instruments to companies and individuals that it had licensed to operate these instruments.[72] In fact, by 1979 AT&T had inked 185 contracts that amounted to control over local telephone service in the more lucrative areas of the United States.[73]

Coterminous with the patent awards that laid the foundation for AT&T's patent monopoly, the Supreme Court released its 1877 decision of *Munn v. Illinois*.[74] 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

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

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

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

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

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 economic effects with respect to a large number of consumers is a necessary condition for the regulation of an economic market.

It is important to note that under *Munn v. Illinois* the monopolization of a market is not a necessary condition for the regulation of that market. However, the monopolization of a market 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 patent monopoly over local communications made it a target for regulation whenever 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 make this decision during the time period covering AT&T's patent monopoly. This event occurred in 1885 when Massachusetts decided to regulate telephone services and other public utility services such as electricity.[75]

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 thought to be crucial to the country's economic well-being. The railroad industry during the 1870s and 1880s was at the center of the United State's economic growth and geographic expansion. The competition in this industry, however, was extremely rivalrous in a discriminatory fashion during this period. The Congress found that this industry was characterized by stable prices interspersed with episodes of price wars and price discrimination against customers with the more inelastic demands for railroad services.[76] The price wars certainly did not promote the economic well-being on the small community of railroad owners, nor did they promote the economic well-being of the larger community of

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[75] 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.

[76] Ibid., 312.

railroad workers. Similarly, they did not promote the relative economic well-being of the community of railroad users with the more inelastic demands for railroad services. Such wars did, however, improve the economic well-being of the community of railroad

users with the more elastic demands for services and the consumers of goods transported by rail.

When the Congress concluded its deliberation of the gains and loses associated with the operation of the railroad industry, it decided to pass the *Interstate Commerce Act of 1887* to allow the federal government to assist in the maintenance of stability and the minimization of discrimination in the prices of railroad services. Although the past price wars established that the railroad industry was not monopolistic, the Congress acted consistently with the theory of *Munn v. Illinois*. The diversified community directly affected adversely by the unregulated operation of the railroad industry was larger than the diversified community directly experiencing positive economic effects. Consequently, this federal law served as an appropriate basis under *Munn v. Illinois* for the federal regulation of interstate railroad rates by the Interstate Commerce Commission (ICC).

The Congress in 1887 apparently did not believe that the then existing operation of the national telephone service was harming the United States' economic well-being. This position is not unreasonable. AT&T was 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.[77] Obviously, the prices of telephone service was a strategic variable affecting AT&T's expansion policy. Competitive prices made its local telephone services comparable to the local mail and local face-to-face visits. Similarly, a competitive price in a viable long-distance market made this service comparable to telegrams. Therefore, economic regulation in 1887 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

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

that non-Bell companies entered various local markets.[78] Sometimes, these firms were in direct competition with AT&T's local companies. Other times, the settled service territories of AT&T did not have a prior market presence. Presumably, the Congress was not disturbed by the competition in the local telephone markets. 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 must have overshadowed the negative effect of AT&T's refusal to interconnect non-Bell firms to its long-distance network.[79] The non-Bell companies tried to enter the long-distance market by building their own long lines, but this effort failed in 1899.[80]

Although AT&T did not help its competitors after the expiration of its patent, 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.[81] 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 telephone services to the ICC. The regulatory boundaries of this federal law allowed the ICC to regulate rates and control entry into the market for interstate telephone services.

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 interconnect the remaining and new local companies to its long-distance network.[82] One interpretation of this agreement is that it eliminated most incentives to build an

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

[79] Ibid.

[80] Ibid.

[81] Ibid.

[82] Ibid., 27.

alternate long-distance network for strategic reasons.[83] 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.[84] Whichever is correct, the ICC did not do much economic regulation under the Mann-Elkins Act.[85]

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 regulatory charge to achieve universal and affordable telephone service.[86] 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 financial commerce of the United States. Influential money managers, corporate leaders, and private investors relied on this service for quick and private transfers of information. Meanwhile, the Great Depression was taking its toll on these groups and almost everyone else. After a period of growth in subscribership during the 1920s, AT&T and the government were confronted with a 6 percent decile in subscribers from 1930 to 1933.[87] Consequently, the price regulation of telephone service certainly appeared germane to the United States' economic well-being.

The dire economic circumstances of the 1930s also precipitated a departure from the price-stability and price-nondiscrimination objectives of the *Interstate*

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[83] Ibid.

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

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

[86] 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.

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

*Commerce Act*. Viscusi et. al. suggest that the ICC may have achieved price stability at near monopoly prices.[88] Such price outcomes would indicate that the regulation of price levels was not a primary focal point for the ICC. The price levels were a focal point in 1934, however. The Supreme Court addressed the issue of price level regulation in the public interest when it decided *Nebbia v. New York*.[89] 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.[90]

The FCC did not disturb AT&T's interstate monopoly until 1959, however, when it released its decision on the use of frequencies above 890 megacycles in its *Above 890 Decision*.[91] The commercialization of microwave technologies developed during World War II reduced the cost of interstate telephone services and reduced the minimum efficient size of a point-to-point interstate common carrier.[92] The FCC responded to these facts by allowing the construction of point-to-point private microwave networks that could be used only to transmit the interstate message of the network's owner.

AT&T responded with a substantial lag to this extremely limited competitive force that had been unleashed by the FCC and the commercialization of microwave

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

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

[90] *Nebbia v. New York* is not an extension of a monopoly-dependent *Munn v. Illinois* to competitive markets. The Supreme Court's touchstone is the same in both of these cases. Two majorities of 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.

[91] *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).

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

technology. In 1961, AT&T introduced Telpak, which was a discounted tariff, in an apparent effort to stop the substitution of private networks for its private line services.[93] Although Telpak was based on volume discounts, it is likely that these discounts did not substantially affect AT&T's overall revenue and profit performance. Telpak arrived during a forty-seven-year period when the average growth rate in the number of Bell system telephones was 4.6 percent.[94] Additionally, Bell system revenue was growing at an annual real rate of 5.3 percent between 1959 and 1968.[95] These data suggest that shared-line customers would be affected by Telpak and private-line customers would make informed choices. Circumstances changed after the introduction of Telpak, however.

In 1963, four years after the *Above 890 Decision* and two years after Telpak, MCI requested permission to sell point-to-point private line service as a common carrier.[96] Telpak immediately became a thorn in MCI's side. Volume discounts made it harder for MCI to sell private line services to AT&T's customers. Concurrently, the FCC considered MCI's application and the legality of the Telpak tariff. MCI was eventually granted this authority, and the FCC rejected Telpak cost justification.[97] MCI became a common carrier in 1969.[98] Almost immediately thereafter, other companies requested the same authority to sell private lines services. In 1971, the FCC extended common carriage status to all these companies in *Specialized Common Carrier*

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[93] Ibid., 492.

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

[95] Ibid., 37.

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

[97] Ibid.

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

*Decision*.[99] AT&T responded in 1973 to the FCC's *Specialized Common Carrier Decision* with the HI-Lo tariff.[100] Another tariff battle ensued.[101] It and others came to some form of closure when AT&T revealed multiple schedule private line rates in 1977.[102]

The introduction of microwave technology is an important watershed in the history of telecommunications because it is an economies-of-scale-busting technology. Prior to the commercialization of microwave technology, AT&T's "land-lines" technology had high fixed costs and low variable costs, especially when it came to adding another interstate caller. During the same period, the interstate market consisted primarily of voice-grade long-distance calls.[103] Importantly, the growth in these calls did not begin to trend upward at an appreciable rate in response to growth in real disposal income until 1949.[104] This mixture of demand and cost characteristics suggests the declining average costs of production that have been estimated for the period 1947 to 1976.[105] This mixture also suggests the possibility of economies of scale in the production of telephone services that were found to exist during the 1960s

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[99] *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).

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

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

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

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

[104] Ibid., 488.

[105] 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).

in the neighborhood of 1,000 to 1,200 circuits per intercity route.[106] Consequently, it would have been difficult for two or more interstate common carriers using “land-lines” technology to coexist

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

before the 1950s, even if economies of scale did not extend to the cost subadditivity that is required of a natural monopoly.[107]

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.[108] More than likely to stem these losses, both companies offered switched services over the same facilities that they used to provide their 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 the fact that Execunet was not a private lines service was not sufficient reason for the FCC foreclosure of this service to public, and therefore, it had to reverse the FCC's rejection of the MCI's Execunet tariff.[109] The basis of the appeals court decision 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

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[107] Although it is unknown whether cost subadditivity existed before the commercialization of microwave technology developed during World War II, there is evidence that the multiproduct cost function of the largest interstate common carrier in the United States was not subadditive during the period 1958-1977. See David Evans and James Heckman, "Multiproduct Cost Function Estimates and Natural Monopoly Tests for the Bell System," in *Breaking Up Bell*, David Evans, ed. (New York: North-Holland, 1983).

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

[109] *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 Us. 1040 (1978).

determine whether interstate toll services are a monopoly.[110] 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.[111] 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.[112] 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 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 their technical ability to pack 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 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-

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[110] *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).

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

[112] *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).

running antitrust suit.[113] 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 manufacturing telecommunication equipment from making sales to its long-distance and local exchange companies. The suit was settled in 1982 when AT&T proposed the divestiture of its local exchange companies and agreed to provide "equal access" to its facilities-based competitors.[114] 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 and its local exchange companies.[115] Subsequently, the government changed its mind and wanted the divestiture of Western Electric and a portion of Bell Laboratories.[116] Meanwhile, MCI and other alternative interexchange carriers wanted to enhance their competitive chances in the interstate market for voice-grade telecommunications services after the *MTS and WATS Market Structure Decision* and the implementation of *inferior access* at negotiated rates for alternative interexchange carriers.[117] Consequently, the government could kill two birds with one stone if it settled its antitrust suit in return for the divestiture of the local exchange companies and the creation of equal access services that would be purchased by the

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[113] *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).

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

[115] Phillips, *Regulation*, 774.

[116] *Ibid.*, 810 n154.

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

alternative interexchange carriers. Finally, the FCC had become committed to bringing the benefits of competition to consumers, and it could use the implementation of equal access as one of the means to fulfill this objective.

The equal access mandate of the *Modification of the Final Judgment* required the creation of an equal access tariff. This tariff would be based on the cost of providing access service to alternative interexchange carriers that was "equal" to the access available to AT&T.[118] No one knew the cost of this service, however, because such a service had never existed. The FCC with the support and assistance of all interstate carriers used this knowledge void to shift the responsibility for the recovery of nontraffic sensitive costs from interstate calls to intrastate and local calls. The initial position of what might be called the "incumbent coalition" was that the total cost of nontraffic sensitive facilities not directly assignable to the production of interstate calls should be recovered from the rates for local basic service. The initial position of the state regulatory commissions and consumer groups was that the implementation of equal access does not necessitate a change in the responsibility with respect to the recovery of nontraffic sensitive costs. A heated and vigorous battle ensured. In the end, neither side prevailed in its initial position. Instead, the FCC was able to shift some but not all of the responsibility for the recovery of nontraffic sensitive costs to local callers. This "victory" served to guarantee long-distance price reductions during the years immediately succeeding AT&T's divestiture of its local exchange companies. These price reductions merely amounted, however, to a rate redistribution. As the price per unit of interstate calling fell, the price of local basic service rose.

AT&T was regulated in the traditional fashion until the settlement of the antitrust suit and the emergence of plans for large-scale entry on a facilitates basis into the interstate market. AT&T's profits were regulated using the principles of ratebase/rate-

[118] 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.

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 implications of not changing these rates were placed in a subordinate role. The regulatory process did not move quickly as evidenced by the Telpak, Hi-Lo, WATS tariffs.

The nature of cost-based pricing changed around 1984. The previous focus on average embedded costs was switched to average incremental cost. This change meant that AT&T's rates had to provide revenues to cover at least the incremental cost of producing the affected services. The generation of revenues equal to or in excess of incremental cost, however, was only a threshold test of regulatory sufficiency. The new rates had to pass a "net revenue" test. The purpose of this test was to ensure that all customers benefited in one sense or another from the introduction of price decreases. 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 new tariff regime produced the "Reach out America" and "Pro-America" tariffs. Each of these tariffs involved volume discounts for residential customer with the Pro-America tariff introducing them to two-part tariffs. It also produced Tariff 12 and Tariff 16. Tariff 12 was available only to very large business users with seemingly special needs. It allowed AT&T to offer custom-designed volume discounts to specific customers without the requirement that similar discounts be offered to other customers. Tariff 16 was a competitive necessity tariff that permitted AT&T to respond on a targeted basis to the marketing efforts that its competitors had designed 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.

An important aspect of extensive volume discounting in the interstate market is that this activity was predated by the availability of equal access for facilities-based competitors of AT&T. The purpose of equal access is to permit "full and fair" competition between AT&T and its competitors. The implementation strategy was to

bring AT&T's competitors up to approximately the same level of interconnection enjoyed by AT&T with respect to the production of interstate toll services. Essentially, access and interconnection arrangements were neatly uniform for all interstate common carriers. Each carrier was paying the same prices for these arrangements. All of these companies were in the position to begin the customization of their access and interconnection arrangements. As a result, price competition began to spread across a wider range of telecommunications products. The expansion of price competition meant that AT&T needed to operate under a regulatory format that provided it with more pricing flexibility and an enhanced capability to respond rapidly to the pricing initiatives of its competitors. Therefore, the traditional regulation of AT&T ended when the FCC adopted price-cap regulation. This alternative form of regulation allows both of these activities. Price increases are not challenged by the FCC unless they exceed the relevant price caps. AT&T can lower its prices as long as they are not anticompetitive.

This history of the telecommunications industry supplies many lessons for state regulators 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 regulated monopolist that had attained its market position on the strength of economies of scale. Although new scale-reducing technologies must contribute to the structural change of the marketplace, public policies have to permit these technologies to gain an economic foothold. For example, a pro-competition policy was adopted for the interstate telecommunication market in 1969 with the initiation of a series of long-running FCC's proceedings culminating in the entry of MCI into the market for voice-grade transmission. 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 and 1987 during the FCC's Computer III Inquiry that ended with a regulatory decision to

implement open network architecture.[119] Recently, the passage of the

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

*Telecommunications Act of 1996* has extended the pro-competition policy to local telecommunications.[120]

Second, the deregulation of AT&T was not a prerequisite for the implementation of competition-enhancing policies for the interstate market. 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 pricing in the early 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 regulatory era. The major chance in the regulation of AT&T up until the implementation of price-cap regulation was that this traditionally regulated company 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 the regulated company to engage in market segmentation. In practice, market segmentation is another name for more price discrimination for competitive purposes. As shown as early as the 1870s with respect to the railroad industry, price discrimination for competitive purposes means the customers and customer classes with elastic demands for services experience price reductions, while those with inelastic demands for services experience

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[120] 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. Essentially, PURPA furnished the groundwork for competition in generation market. The *Energy Policy Act* (EPAct) represented the next extension of pro-competition public policy for electricity. EPAct heralded an era of wholesale competition and open access to transmission services. The FERC contributed to the pro-competition movement with a series of Notice of Inquiry ending with the release of FERC Orders 888 and 889. These orders clearly 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).

price increases or less rapid price reductions. AT&T's volume discounting during the first half of the 1980s confirms this trend for the interstate telecommunications market.

Fourth, the FCC did not choose to change the regulatory format applicable to AT&T until it was convinced that facilities-bases competition was firmly established in the interstate market. MCI was in the process of upgrading its network when the FCC adopted price-cap regulation. 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. In addition, the newly formed US Sprint was nearing the completion of the digital/fiber optic network planned by US Telecom and its predecessor company. In addition, other regional facility-based carriers were establishing themselves. Finally, AT&T's market share was falling and price competition was emerging for most of the customer classes that purchased services in the interstate market.

Fifth, the incumbent regulated 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 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 interconnection non-Bell local-exchange companies to its long-distance network. AT&T began a vigorous acquisition program when 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 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 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 incumbent monopolist does not guarantee the removal of all competitive problems in the market that relies on the nondiscriminatory availability of the bottleneck and essential facilities. As part of the settlement of the antitrust suit filed against it, AT&T chose to divest it local exchange companies and obligate the newly divested companies to provide the alternative interexchange carriers with an access service that was approximately equal to the access service that would be available to AT&T. Problems with access services persisted for many years after the initial Feature Group D equal access service was available to AT&T's competitors.

Seventh, a divested incumbent former monopolist is in the position to behave anticompetitively even if it does not control bottleneck and essential facilities. It was repeatedly argued by the alternative interexchange carriers that AT&T's series of volume-discounts tariffs for different market segments 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, nonaffiliated 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.[121]

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[121] *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.*

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 1996, and AT&T still is not deregulated with respect to its production and sale of interstate telecommunications services. AT&T's sale of telecommunications equipment and inside wiring was deregulated in about the same number of years. The deregulation of these services began with the *Carterfone Decision* in 1968.[122] This decision overturned those elements of AT&T's tariffs that prevented the attachment of non-Bell devices to telephone sets and those portions that did not allow 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*.[123] These decisions and the subsequent judicial review show that an industry can be deregulated on a piece-meal basis. They also indicate, however, that when deregulation occurs in this manner that the first pieces of the industry to be deregulated are peripheral to the transmission and distribution of the regulated services.

Ninth, qualitative and quantitative data have to be mergered 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 that was

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*Federal Communications Commission*, 905 F.2d 1217, 113 PUR4th 92 (9th Cir. 1990).

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

[123] *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).

provided to all interstate common carriers after AT&T's divestiture.[124] 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: these costs are heavily concentrated in the distribution facilities that connect individual homes and business to the rest of the world when they make and receive their local and long-distance calls. 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.[125] Prior to this Supreme Court decision, the rates for local service had been the tool for the recovery of all nontraffic sensitive costs. This decision also indicated that a usage-based allocation of nontraffic sensitive costs to local and long-distance services was acceptable to the justices, 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 increasing responsibility for the recovery of nontraffic sensitive costs laid on interstate rates was not a problem before the *Above 890 Decision*. AT&T had a complete monopoly over the long-distance market, and the FCC

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

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

routinely approved interstate rates that would recover the nontraffic sensitive costs that were the responsibility of its long-distance subsidiary. The legalization of private microwave networks, however, indicated that AT&T could not recklessly use the rates for private line services to recover nontraffic sensitive costs. Increases in these rates might induce one or more large corporations to build their own telecommunications networks.

The stage was set for AT&T to begin the process of "rebalancing" its rates for interstate private line services and interstate 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 portion of the remainder of the interstate users included those private line users whose usage levels were not large enough to justify the construction and ownership of private microwave networks under the existing private line rates. 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 presumably lower per unit cost of constructing a private network for the shared use of multiple private line customers. Therefore, traditional regulation once again would 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 place else to go in the interstate markets after the *Execunet* decisions when it came to 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 access tariffs 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 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 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 nontraffic sensitive costs that were the FCC's responsibility. 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 a little further.

The SLC and the Gross Allocator were implemented after the divestiture of AT&T. Neither change in regulation practice was implemented on a "flash-cut" basis. Consequently, it took time for the full impact of these changes to be reflected in the prices of interstate toll service. This time lag meant that the prices of interstate toll services, set according to the principles of cost-of-service regulation, would fall steadily without any change or improvement in 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.[126] The SLC for the next thirteen-month period was $2.00 per month. This fee for the next

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

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 implement the SLC for residential customers. During the same time period, the SLC was increasing for multi line business customers and Centrex customers.[127] 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 slow 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

[127] Ibid.

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. 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.

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 | |

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.[128] 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 opportunities for cost reduction during this era of price-cap regulation. Therefore, these hypothesis suggest that it would not be appropriate to deregulate interstate toll and other currently regulated services.

Tenth, the liberalization of interconnection policies is a powerful public-policy tool that can cut both ways for the regulated company.[129] AT&T's first liberalized its interconnection policies in 1913. This strategic decision enabled AT&T to comply with recently enacted antitrust laws and to solidify its monopoly over long-distance transmission. AT&T's second liberalization of its interconnection policies was part of a

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

[129] Alan Baughcum and Gerald R. Faulhaber, *Telecommunications Access and Public Policy* (Norwood, NJ: Ablex Publishing Corporation, 1984); Walter G. Bolter et al., *Telecommunications Policy for the 1980s* (Englewood Cliffs, NJ: Prentice Hall, Inc., 1984); and Marcelles S. Snow, *Marketplace for Telecommunications* (New York, NY: Langman, 1986).

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 |

package designed to settle an antitrust suit. AT&T agreed to divest its local companies in return for the obligation of its divested companies to provide "equal access" to it and its competitors. Consequently, AT&T had to give up its long-distance monopoly and any competitive advantages it may have enjoyed from formerly being the long-distance monopolist.

Eleventh, the regulated firm 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 “Kingsberry commitment.” Similarly, the initial implementation of the Modification of Final Judgment (MFJ) "1 + dialing" equal-access provision came off without any major glitches.[130] 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 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 that were 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.[131]

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

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

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 upstream or downstream competitive markets.[132] 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.[133] 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 sunk 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 sunk costs to customer classes without options.[134]

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

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[132] 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.

[133] 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).

[134] 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).

sturdy support for their policies.[135] In fact, the *Communications Act of 1934* gives the 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 of state policies when state policies frustrate or impede the progress of a federal policy.[136]

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.[137] 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.

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[135] 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.

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

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

Factors along these lines were sufficiently strong to cause AT&T to be a dominant firm even though it had relinquished its control over bottleneck facilities.[138]

## TRANSITIONAL CONCERNS

During the incipient periods of competition, newly deregulated industries have encountered adjustment or transitional problems. This is not surprising as new suppliers enter the industry, consumers, for the first time, are able to choose among different suppliers and the industry is rapidly pursuing higher efficiency. Empirical evidence across a wide range of circumstances shows that industry restructuring and deregulation greatly affect the behavior of market participants. Consequently, adjustment to the new environment takes time and, frequently, encounters major difficulties. It may well be the case that industries that initiated deregulation activities going as far back as almost twenty years (e.g., the airline industry) have not yet completely adjusted to a competitive environment. What we can say about these industries is that, as they approach a long-run competitive equilibrium, they become more efficient and responsive to consumer demands.

The long transitional period in many deregulated industries has inflicted pains on certain players. In the natural gas industry, for example, it took several years to resolve the take-or-pay gas contract problem. In the U.K. electric power industry, the market power of two generators kept wholesale prices above what they would be under competitive conditions. A common pattern of deregulated industries is that, for an indefinite time, some consumers benefit much more than others. In certain instances, some consumers may see a temporary increase in their prices, especially if these consumers were the beneficiaries of cross-subsidies under the old regime.

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[138] 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.

One major, politically-sensitive concern of deregulation was that it would hurt those consumers living in rural areas. The fundamental argument was the deregulation would "skim the cream" off the profits that regulated firms had earned and used to provide affordable service to rural consumers. In other words, under deregulation firms would be forced to charge prices based on economic costs. At the worst, these firms may even be reluctant to serve unprofitable rural markets. Consequently, whatever subsidies were distributed to rural consumers would dissipate in a deregulated market.

The post-deregulation evidence has shown these claims to be false or exaggerated. In the trucking industry, for example, services to small communities have not declined. Because of free entry, new efficient carriers are now serving small communities. With regard to airline service, cities of all sizes have benefited from a better integrated air-service network that sprung up after deregulation. Airlines quickly developed route networks that better matched traffic patterns.

Overall, service deterioration and price shocks to rural consumers have not happened as some observers anticipated. New market institutions have evolved to play an important role in spreading the benefits of competition to rural markets. In fact, it is accurate to say that rural consumers have benefited from deregulation, although perhaps less than their urban counterparts.

Table 6 lists the adjustment problems encountered by restructured industries during the transitional period. These problems reflect the dramatically different environment within which firms conduct their business. Consumers also have to make decisions that they were previously not required to make. Finally, regulators must adapt their policies and practices to a more competitive marketplace. Overall, the different market players must adjust their behavior to the new environment. In the transition, market players are striving to position themselves for the new equilibrium that will eventually take place in the restructured industry. The U.S. electric power industry will not be exempt from these adjustment problems.

***TABLE 6***

***TRANSITIONAL PROBLEMS FOR RESTRUCTURED INDUSTRIES***

- ***Regulatory lag in responding to competitive pressures***
- ***Distributional effects on shareholders and certain consumers***
- ***Consumer transaction costs***
- ***Funding of certain social activities***
- ***Retention of market power by incumbent firms***

## Consumer Confusion

One transitional problem revolves around whether consumers will make wise decisions in an environment where they face more market opportunities and risks. In the tightly regulated regime consumers often had few choices, as their choice of suppliers and the menu of services were greatly limited. In the new environment, consumers will face more difficult decisions. For example, under retail wheeling do they stay with the local utility for power supplies or do they switch to a new unknown supplier or aggregator who promises them lower prices? In most market situations, consumers makes these decisions based on the information they acquire from various sources. Consumers are also accustomed to making such decisions since they have always had the ability to shop around for the "best deal."

A consumer may become perplexed when, for the fist time, she is given the opportunity to choose a supplier for a particular service or product. The consumer may not fully comprehend the new rules: What risk do I face? What is the service obligation (if any) of the old supplier? How can I be assured of reliable service? How often can I change suppliers? What up-front costs am I responsible for when I change suppliers? In addition, information about different suppliers may initially be unavailable or not transparent. In all, at the start-up of competition, consumers may find it difficult to make intelligent decisions.

Regulation can play a vital role in assuring consumers that they know the new rules and have access to information needed for wise decisionmaking.[139] Especially for small consumers (it is assumed that the large customers can take care of themselves), regulators can require the local public utility to educate consumers about their rights and responsibilities and to disperse clear information that consumers can evaluate in choosing a supplier. Residential unbundling of natural gas and electricity services represents cases where these requirements would seem applicable.[140]

## Stranded Costs

Another potential problem encountered during the transitional period concerns the allocation of what are commonly called "stranded costs." Needless to say, this has been a major issue in the current debate over restructuring of the U.S. electric power industry. In the deregulation of non-public utilities, firms were not compensated for any loss in revenues that may have resulted. Some industries actually increased their profits after deregulation (one notable example is the railroad industry). Of course, for the transportation industry capital assets are mobile, mitigating against a stranded-cost

[139] A state regulator, for example, may want to establish a code of conduct that would specify rules for all concerned parties. These rules would in part protect against consumer deception and fraud.

[140] See, for example, Costello and Lemon, *Unbundling the Retail Gas Market: Current Activities and Guidance for Serving Residential and Small Consumers*.

problem.

For the telecommunications and natural gas industries, stranded costs required special consideration by regulators. In the telecommunications industry, regulators allowed accelerated depreciation of deregulated customer premise equipment with the condition that the revenues received from the sale of rotary telephones be used to offset the cost of undepreciated capital. The depreciation rates for the obsolete capital caused by the divestiture of AT&T were generally allowed to increase. When, later, increasing competitive pressures penetrated all sectors of the telecommunications industry and, thereby, accelerated the obsolescence of existing investments, regulators commonly resorted to price caps. Under price caps, the telecommunications firms were responsible for the recovery of the undepreciated portion of obsolete capital.

Three major lessons can be learned from the experiences of the telecommunications industry with regard to stranded costs. First, the strength of competition has influenced the regulatory response. When competition is selective or narrowly-based, regulators tend to protect the shareholders. As competition becomes more pervasive, customers tend to be favored over shareholders. Growing competition in the industry causes existing plant and equipment to become obsolete more rapidly. Second, the character of the stranded-cost problem has changed over time. Initially, it was concentrated on specific facets of the telecommunications business; later, it spread throughout the business. Third, regulators have chosen different ways to address the stranded-cost problem. They have realigned depreciation rates on both an *ad hoc* and generic basis, approved of pricing flexibility and discounts, convened rate cases, and instituted new regulatory formats.

Since the early 1980s, the natural gas industry has addressed stranded costs on two separate occasions in response to FERC's industry-restructuring orders. FERC Order 500 established a transition-cost recovery (TCR) methodology allowing pipelines to recover between 50 and 75 percent of their prudently-incurred take-or-pay costs

associated with existing contracts with gas producers.[141] Most pipelines reached a settlement with their customers (mainly local gas distributors) that called for a 50-50 split of these costs. After some litigation, gas distributors were generally allowed by state regulators to recover their allocated share of the take-or-pay costs.

The FERC's position in Order 500 was that the burden of take-or-pay costs should be shared among gas producers, pipelines, and customers. One provision of Order 500 allowed pipelines to establish gas inventory charges (GICs) for firm gas service. GICs helped to avoid future take-or-pay problems and, at the same time allowed pipelines to directly bill customers for firm service.[142]

FERC Order 636 allowed pipelines to recover all "prudently-incurred" transition costs associated with restructuring.[143] Ten percent of these costs must be recovered from interruptible customers.

The natural gas experiences with stranded costs (or transition costs) also have three useful lessons applicable to the electric power industry. First, the possibility of large stranded costs should not unduly slow the movement toward restructuring and competition. The industry and regulators were able to move ahead in view of the contentious debate over how stranded costs should be allocated. Second, the efficiency gains arising from competition and restructuring can offset some portion of the stranded costs.[144] Some unknown share of the take-or-pay liabilities was "funded" by significant efficiency gains arising from wellhead price deregulation and open access of the pipeline system. Third, a political if not economic solution to the stranded-cost problem may require a sharing of these costs among all stakeholders. FERC took

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[141] Pipelines commonly purchased new gas reserves under a take-or-pay stipulation of 75 percent to 95 percent of deliverable volumes.

[142] Another provision of Order 500 required gas producers to credit against a pipeline's take-or-pay liability any gas transported for them to third parties.

[143] Transition costs are grouped into four categories: (1) gas supply realignment, (2) unrecovered gas (Account 191), (3) stranded facility costs, and (4) new facilities costs. The FERC estimated these costs to be as high as $4.5 billion.

[144] In other words, the revenue losses for old services induced by competition can be counteracted by cost reductions and the introduction of new services.

this position in its Order 500. It can be argued that sharing these costs is the only way to not violate generally-accepted equity standards.

## Social Activities

Funding social activities (e.g., low-income programs, universal service) through the price mechanism is a rare occurrence in nonregulated industries. Firms in these industries attempt to remain competitive by holding down their cost of operation and by offering value-added services and products. In this environment, it becomes difficult for a firm to incur costs that neither makes it more productive nor adds to its revenues (i.e., makes it more profitable). This is especially true when competitors are not required to incur these costs. Such costs are ultimately unsustainable, as market pressures prevent the firm from earning normal profits in the long run.

Because restructured public utility industries will continue to have market power for some of their services (e.g., "wires" services) for the foreseeable future, they will be subject to some form of price regulation. Consequently, nonmarket social activities can continue to be funded through the pricing of those services (e.g., electric distribution).[145] It is expected, however, that regulators and legislatures will reassess these activities in terms of their scope and funding as competitive forces will make it more difficult for these activities to continue. To minimize economic distortions, a "surcharge" can be imposed on the access charges associated with regulated delivery services. Such a surcharge would require *all* electricity consumers to pay for social programs.[146]

## Inefficient Competition

In a newly structured industry, incumbent firms such as traditional electric

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[145] A discussion of funding social programs with electric utility revenues in a quasi-competitive environment is contained in Robert J. Graniere, *Post-Reform Continuation of Social Goals* (Columbus, OH: The National Regulatory Research Institute, 1996).

[146] Raising the user-sensitive bill component of transportation service, instead, would result in allocative inefficiencies (i.e., consumers demanding too little of the service at the margin because of an artificially high price).

utilities may initially be in a position to stifle competition because of certain advantages they hold over new entrants. For example, airline carriers with existing gates may prevent new carriers from entering lucrative markets; Baby Bells may keep out competition in their markets by restricting access to or inflating rates for local exchange services; and so forth. History has shown that as competition advances incumbent firms may resist this competition by using the regulatory process to impede it.

Anticompetitive practices include affiliate-transactions abuse, predatory pricing, cost shifting and cross-subsidization,[147] withholding of vital information to potential competitors, and discriminatory access to bottleneck facilities. Any of these practices, which traditional vertically-integrated electric utilities are capable of carrying out, would diminish the benefits of industry restructuring to society-at-large. Most of these lost benefits would have gone to consumers in the form of lower prices.

State regulators can play an institutional role in assuring that regulated entities do not abuse their market position. They can go a long way in achieving this by establishing *fair rules* that show no partiality toward any firm. Fair rules mean that the successes and failures of individual firms will depend solely on their ability to offer value-added services at a profit that allows them to stay in business (i.e., on their merits). Fair rules, as those for athletic contests, attempt to achieve an outcome where the "best" come out as winners and the "worst" as losers. The "best," for example, can be defined as those firms who excel at providing value-added services to consumers at the lowest prices.

Fair rules may encompass removing certain restrictions on the utility. If utilities, for example, are constrained from adjusting their prices in response to changed market conditions, they may lose customers to higher-cost competitors. Fair rules may therefore involve giving utilities more freedom in certain activities, such as pricing, the

[147] For example, incumbent utilities have an incentive to cross-subsidize their competitive markets by redirecting the excess profits earned in monopoly markets.

offering of new services, and system operation, than what they currently have.[148] New competitors will try to burden incumbent utilities with old regulatory rules (e.g., embedded-cost pricing) that will limit their ability to compete.

[148] In addition to pricing, restrictions may apply to the offering of new services, service obligations, and planning activities.

## SPECIFIC LESSONS FOR THE ELECTRIC POWER INDUSTRY

The empirical evidence for deregulated industries points to a pattern of outcomes applicable to a restructured U.S. electric power industry. Extrapolating the outcomes to the electric power industry can be carried too far, however. After all, not all industries were regulated for the same reason. The regularity of the outcomes across widely different industries in terms of technology and the attributes of products or services do strongly suggest that we can predict — or at least make a good argument to try to predict — with reasonable accuracy the major outcomes of a restructured electric power industry. In the current context, "restructured" refers to a highly open industry characterized by a vigorously competitive generation market, nondiscriminatory access to the transmission network for both wholesale and retail transactions, a high degree of electrical service unbundling, and spot and futures electric power markets.[149] Regulation would remain in place for the pricing of transmission and distribution services, for "guiding" the transition, and for enforcing policies that guard against anticompetitive practices.

The comments below reflect our predictions and observations with regard to the outcomes of a restructured electric power industry. These outcomes draw heavily upon the empirical evidence on the effects of deregulation and greater competition for the five industries examined in this paper.

- *First, we expect that electricity consumers as a group will experience lower prices and, over time, will benefit significantly*.[150] This outcome will likely

[149] This vision of a restructured electric power industry coincides with that of many industry experts.

[150] Large savings for consumers under a restructured electric power industry are estimated in Chitru Fernando et al., "Unbundling the U.S. Electric Power Industry: A Blueprint for Change," unpublished paper, March 1995; and Michael T. Maloney and Robert E. McCormick, *Customer Choice, Consumer Value: An Analysis of Retail Competition in America's Electric Industry* (Washington, D.C.: Citizens for a Sound Economy Foundation, 1996).

The first study estimates that electricity consumers could save $60 billion or more annually. The second study estimates that electricity consumers could realize economic gains as much as $108 billion annually, with the economy as a whole benefiting on net by $24 billion annually. These latter numbers suggest that restructuring of the electric power industry will result in large transfers among the different players in the electric power industry.

occur even if competition in the industry is imperfect and some firms have a high concentration of market power. At least initially, those consumers given the opportunity to make market choices will benefit the most; other consumers, when ultimately given market access and when competition spreads throughout the industry, will receive large gains as well. Regulation has generally deprived consumers of benefits from price competition and, as a whole, has increased prices above marginal costs. As an illustration, off-peak electricity should be expected to fall dramatically under a more competitive environment.[151]

- *Second, we should not expect to see "rate shock" for any group of customers or a noticeable deterioration of service quality*. For a short time rates may increase for those customers who were being subsidized under the old regime. Over time, these customers should benefit from a more efficient electric power industry, especially if they are given the right to choose among different suppliers. Service quality as a whole, disputably, may somewhat decrease.[152] Rate-of-return regulation has probably inflated service quality beyond the level that would be observed in a less regulated industry. With greater competition, utilities would have a stronger incentive to control their costs of production and would be under intense pressure to offer prices below their current levels. For deregulated industries, service quality may have deteriorated in the airline industry but, as noted earlier, even in this instance consumers have "voted" their preference for lower service quality-lower fares compared to the service quality-fare offering previously dictated

[151] See, for example, ibid., Maloney and McCormick.

[152] We are hesitant to make this prediction. The evidence points to an increase in service quality in most deregulated industries after a period of adjustment. Some analysts (e.g., Clifford Winston) have argued that consumers in deregulated industries have benefited as much from improved service as from lower prices.

by regulation.[153] If there is concern over declining quality of service, state regulators can always resort to penalties, as in the case of the U.K. electric power industry, when utilities fail to achieve a specified standard of service.

- *Third, many utilities will likely benefit from a restructured electric power industry*. In almost all industries, the efficient firms have benefited (although less so than consumers) from deregulation.[154] Utilities will be expected to respond to competition by reducing their cost of operation, by more vigorously taking on innovations and new technologies, by developing new services, by tailoring their prices and services to individual consumers, and by entering new markets. All of these actions would be designed to increase profits. Utilities that fail to take such actions will either be financially distressed or prime candidates for take over by other firms. We expect electric utilities to operate, price, and invest for the future in a fundamentally different way from how they do currently.[155] Less regulation, on net, will likely be good for well-managed electric utilities as it has been for well-managed firms in other industries undergoing dramatic changes because it liberalizes a firm's operating, planning, service-offering and pricing activities. The evidence for deregulated industries shows that regulation hinders the development of new services and regulated firms generally have higher costs.

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[153] The word "may" is used here because, while airline deregulation has created more congestion at airports and less frills on airplanes, it has brought forth more frequent flights and more nonstop flights on heavily traveled routes. Surveys have shown no upward or downward trend in passenger complaints since deregulation.

[154] At the industry level, profits have generally not increased because of strong competitive pressures.

[155] For example, restructuring will enhance the role of market forces and diminish the role of political/regulatory forces in pricing and planning practices.

- *Fourth, current estimates of future benefits from less regulation of the electric power industry are probably too low*.[156] It is extremely difficult to comprehend today how consumers and the industry will fully respond to a more competitive environment. For example, most *ex ante* studies fail to consider those technological changes that are likely to evolve under deregulation. As a case in point, the debate over privatization of the U.K. electric power industry could not even imagine the benefits that resulted from the substitution of combined-cycle gas turbines for new, much costlier coal plants that the old Central Electricity Generating Board was committed to build and, in most likelihood, would have built. This underestimation of benefits is not a criticism against the analyst but against the inherent difficulty of any study to predict the long-run benefits of future deregulation or to measure these benefits *ex post*.

  The benefits of less regulation may also be estimated too low because of the failure to account for the reduction in unproductive rent-seeking/maintenance costs that will likely ensue.[157] These costs can be significant, as high as the efficiency losses under regulation plus twice the size of the wealth transfers induced by regulation.[158]

  A third source of "benefits" underestimation, especially those accruing to consumers, is the omission of new services that competition would likely

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[156] This position, as it pertains to deregulated industries in general, is supported by Hahn and Hird, "The Costs and Benefits of Regulation," 237-38.

[157] These costs include the costs incurred by stakeholders in swaying regulators and legislatures to their self-interest positions. Consequently, such cost are intended to affect wealth distribution, rather than economic efficiency or wealth creation.

[158] See, for example, John T. Wenders, "On Perfect Rent Dissipation," *American Economic Review* 77 (June 1987): 456-59. Because of uncertainty over the benefits of rent-seeking\maintenance activities by individual interest groups and the so-called free-rider problem, the actual costs may be substantially less.

engender. These services would be the outgrowth of service unbundling, which is expected to proliferate under industry restructuring.[159]

- *Fifth, over the long term, employees of a restructured electric power industry may actually benefit*. Employees in many deregulated industries (e.g., the trucking industry) either lost their jobs or had to accept lower wages/salaries;[160] the number of employees in other deregulated industries, such as airlines, actually increased because of the rise in demand for airline services. In the transition, as we have witnessed so far, utility employees will probably be harmed as utilities are under pressure to shed their costs quickly and substantially. In the longer term, however, if competition contributes to a more dynamic and faster-growing industry, employment and wages/salaries could conceivably be higher than what they would otherwise have been under the old regime.

- *Sixth, as discussed earlier, industry restructuring will likely lead to more competition-driven price differentiation*. Firms will be expected to offer special rates or provide services under bilateral contracts with special price and nonprice conditions that are tailored to the demands of individual consumers.[161] Such price differentiation is almost always economical from a societal perspective but may be discomforting to regulators and politicians, and those customers who receive a similar service at a higher price.

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[159] As noted earlier, from the experiences of former comprehensively regulated industries, service unbundling is a major and anticipated feature of a competitive marketplace.

[160] One conspicuous example is the trucking industry.

[161] On a modest scale, we have seen this so far in the electric power industry where many utilities have offered industrial customers special rates to relocate in their service areas, expand their manufacturing facilities, or to discourage self-generation. The accumulation of these rates over the last several years have widened the gap between electricity rates for small and large customers. During the period 1984-1994, for example, industrial electricity rates (in nominal dollars) fell by over 3 percent, while rates to residential customers rose by almost 17 percent (in nominal dollars). (Source: Edison Electric Institute, *Statistical Yearbook of the Electric Utility Industry 1994* [Washington, D.C.: Edison Electric Institute, 1995].) All consumers did, however, enjoy a decline in real electricity prices over this period.

- *Seventh, although restructuring implies less price and entry regulation, regulators as well as other government entities will assume a crucial role in assuring that consumers receive most of the benefits of competition and that the rules are fair to all service providers*. Lax regulation or regulation showing favoritism toward one group of service providers can jeopardize the benefits of restructuring to consumers and the overall economic performance of the industry. This has been true in the airline industry, for example, where the federal government's failure to execute congestion pricing for landings and take-offs has reduced consumer welfare from airline travel. As noted earlier, consumers may face start-up problems in choosing among different service providers. Regulators can help to assure that consumers know their new rights and responsibilities and gain access to information needed to make intelligent decisions. Any new service obligations of the local utility, for example, will need to be conveyed to consumers. Importantly, regulation will still be required for those consumers who choose not to make, or are unable to make, market choices. Deregulating those services for which the incumbent utility still has dominant market power would be detrimental.

The following quote from Alfred Kahn perhaps best describes the changed role of regulation in a more competitive, restructured electric power industry:

> Our recent experience demonstrates. . .that free markets may demand governmental interventions just as pervasive and quite possibly more imaginative than direct [price] regulation; but its lesson is that those interventions should to the greatest extent possible preserve, supplement, and enhance competition, rather than suppress it. Finally, to the extent direct economic regulation continues to be required, it is preferable that it be of a kind compatible with competition, rather than obstructive

of it.[162]

Kahn's observation speaks strongly for a continuing role for regulation as the electric power industry evolves into a more competitive market structure. As plainly shown from the experiences of deregulated industries, the transitional period can be arduous and long-lived. Regulation will have to undergo changes of its practices and policies if it is to accommodate the newly created competitive forces. Laying out the "ground rules" during the transition will be a major function of state public utility regulators over the next several years as competition advances in the electric power industry. Appropriate "ground rules," in fact, will go a long way to ensure the success of a restructured U.S. electric power industry.

[162] Kahn, "Deregulation: Looking Backward and Looking Forward," 353.