1. Country Overview

i) United States

REGULATORY RESTRUCTURING
IN THE UNITED STATES

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1. INTRODUCTION

Over the last 20 years, the United States has substantially altered its approach toward the regulation of the traditional “public utility” industries. There have been moves to reform regulation and industry structure to encourage more competition in these industries, and even to deregulate entirely industries that appear to be potentially competitive throughout. Where competition appears viable in some segments of these industries but not others, both industry structure and the structure of regulation have been reformed to encourage increased competition in the former while retaining regulation in the latter, and making the two compatible with one another.

Of course, the pace of change has not been the same in all sectors. For airlines and trucking, where pervasive competition appeared feasible, price regulation and regulations governing entry were simply eliminated. For similar reasons, regulation of the wellhead price of natural gas was eliminated in 1983. In telecommunications, in electricity, and in the transmission and distribution portions of the natural gas industry, where some portions of the industry seem potentially competitive while others do not, requisite changes in industry structure and the structure of regulation have been more complex and, hence, the pace of change has been slower. While dramatic changes have already taken place in these industries, reforms are still underway and, the ultimate form which regulation will take is still unclear.

The essays which make up this section of the book describe the changes which have taken place, and which are still taking place, in three of these industries -- airlines, telecommunications and electricity. Broadly speaking, the papers focus on three questions:

1. What are the forces which have given rise to regulatory reform?
2. What is the structure of the regulatory change which has occurred to date and is likely to occur in the immediate future?
3. What have been the effects on industry efficiency, prices and profits of the reforms which have occurred to date?

While all of these issues are addressed in each essay, as might be expected given the differences in the pace of deregulation, the principal focus of the discussion differs sharply among them. The essay by Steven Morrison, “The Effects of Airline Deregulation in the United States” focuses on the effectiveness of the policy in creating a competitive market, in improving efficiency and in lowering rates or improving the quality of service. The structure of Robert G. Harris’ paper, “Competition and Public Policy in U.S. Telecommunications” is somewhat different. For intercity toll service, where the process of deregulation is virtually complete, he reviews a number of studies of the impact of deregulation and competition on price. For access and intra-city or exchange service, where competition and deregulation are in more formative stages, the essay examines the changes in technological and market factors which are increasing the feasibility of competition, and the regulatory reforms necessary to make competition fully effective. Finally, Edward Kahn’s
paper “Privatization and Deregulation in the U.S. Electric Power Sector” concentrates on the changes in circumstances which are giving rise to changes in regulation. Because the scope of competition and regulatory change in the electricity industry has been more limited than in the other two, the discussion of the effects on price and performance is necessarily more limited.

It is not my purpose in this introductory essay to provide a detailed summary of these industry-specific essays. Each of them is clear and speaks for itself. However, a review of the three papers reveals a number of broad themes related to the forces governing regulatory change, the structure of regulatory response to competition, and the gains from regulatory reform. Some discussion of those themes may provide a useful introduction to the industry-specific essays.

2. THE CAUSES OF REGULATORY REFORM

Is it not remarkable that the trend toward deregulation has been so pervasive in the U.S.? While only airlines and trucking have been entirely deregulated, in telecommunications the intercity market has become virtually deregulated and state commissions throughout the U.S. are holding hearings to reconsider what form of regulation should govern the markets for intrastate toll, access and local exchange service. The trend in these hearings is a general shift from rate of return to price regulation. This shift, in large measure, has been driven by the perception that many telecommunications markets are rapidly becoming competitive. Although some markets for telecommunications services may remain monopolies for the foreseeable future, traditional rate of return regulation is widely seen as an ineffective tool for dealing with this mixture of competitive and monopoly services. Most regulatory commissions are groping for tools to:

1. promote competition in these markets where feasible;
2. provide traditional regulated carriers with sufficient pricing flexibility to respond to competitive pressures;
3. shift investment risk back to investors;
4. assure that monopoly control of bottleneck facilities does not inhibit the development of competition in monopoly markets;
5. assure that regulated firms have adequate incentives to invest effectively; and
6. avoid cross subsidies between monopoly and competitive services.

Although deregulation has not progressed nearly as far in electricity as in telecommunications, here too there is enormous ferment. As early as 1979, reforms were

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1 According to a recent study by NRRI, 14 states had implemented price caps regulation by early 1995, and several more were formally considering price cap plans. Nearly all states are considering some form of alternative regulation. See Davis, 1995.

2 See Kahn, 1988, pp. xxxiv-xxxvii.
introduced to mandate the purchase of independently generated power and thereby to increase the competitiveness of that sector. Although these reforms have been successful in accomplishing a dramatic expansion in the independent power industry, serious questions have arisen as to whether this entry has brought the benefits of competition to consumers. In part as an outgrowth of these reforms, however, there is now substantial political pressure to mandate “retail wheeling” which would allow industrial and large commercial customers to choose among generating sources and to permit independent power producers to compete with utilities, and utilities to compete with each other, for such loads. While to date most regulators have resisted such pressures, the discussion of retail wheeling has focused attention on the potentially competitive nature of the generating sector and, hence, interest in regulatory reforms which would permit all consumers to benefit from such competition.

What is causing this broad-based trend toward deregulation and regulatory reform? After all, each of these industries had been pervasively regulated for at least 50 years and industry performance in all of them was widely viewed as quite good. Prior to the divestiture of AT&T, the U.S. was widely regarded as offering high quality, low cost, reliable and nearly universal telephone service. Similarly, airline service in the U.S. prior to deregulation was viewed as high quality and safe, and was widely lauded for its nearly ubiquitous network which provided service even to relatively small towns. Electric utilities, while subject to sharply rising costs and substantial excess capacity following the Arab oil embargo in 1974, had consistently delivered reliable supplies of power at steadily declining costs, and their cost performance in the face of rising fuel prices is not any worse than that of many competitive industries. Even today, despite marked

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3 In 1983, prior to divestiture, 93.7 percent of the households in the United States had telephone service. (Source: Federal Communications Commission, 1992.) Productivity improvements have caused the real price of telephone services to consumers to fall steadily since the 1960s. From 1964 to 1972, the real price declined at an average rate of 2.4 percent per year. From 1972 to 1981, the real decline was even faster -- 5.7 percent per year. It is worth noting that this latter period was one of increasing general inflation. (Crandall, 1991, p. 59.) Crandall also points that service quality was viewed as quite good in the late 1970s and one of the concerns with regard to the breakup of AT&T was that this quality would decline. (Ibid., p. 121)

4 The impetus driving the move toward airline deregulation was the wide perception that prices would be significantly lower if the industry were deregulated, rather than concerns about the availability or safety of air travel under the existing industry structure. For a discussion of the move toward deregulation. (See Meyer, et al., 1981.)

5 For example, from 1978 through 1985, residential electricity prices grew at an average annual rate of 9 percent per year. Over the same period, home heating oil prices grew at an average annual rate of 30 percent per year. (Source: Energy Information Administration, January 1992.)
price increases from 1974 to 1986, U.S. electric rates are quite low and reliability quite high by world standards.\(^6\)

If the traditional regulatory approach has served so well, why are we moving away from it? There are two interrelated explanations. First, in each of these industries a variety of regulatory policies has caused relatively wide disparities between prices and costs in specific sub-markets. In some cases these disparities reflect distributional objectives of the regulators and in others the effort to assure the recovery of historic investments. Where prices have been set well above the incremental cost of production, these pricing policies provide substantial incentive for competitive entry in specific markets. These entrants have been a driving force pressing for regulatory reform.

Second, in at least some of these industries, growth in market size and technological change may have increased the technical feasibility of competition. Thus, even where regulation was initially necessary to constrain the market power of natural monopoly producers or to assure service in low density markets, growth in market size may make regulation unnecessary throughout the industry or in specific submarkets.

Each of these explanations has somewhat different implications for both the pace of regulatory reform and its ultimate efficiency. If the growth in market size alone has made competition feasible in previously regulated markets, the implication is that deregulation or regulatory reforms to accommodate these changes is likely to lead to unambiguous efficiency improvements. On the other hand, if price distortions are the principal source of competitive pressure, accommodating such competition without prior rate rebalancing can lead to uneconomic competition which ultimately is not sustainable. However, as we shall see below, even where competition is feasible, price distortions of the sort described above may be necessary to generate the political and market pressures necessary to accomplish regulatory reform. In the sections which follow we discuss both growth in market size and price distortions as causes of regulatory reform in airlines, telecommunications and electricity.

3. Market Scale and the Growth of Competition

Growth in market size and technological changes have simply made competition more feasible than when the current regulatory systems were designed. As market size has steadily increased and technological change has ended scale economies, the ability of each market to support several competitors may have increased the feasibility of competition, at least in portions

\(^6\) Industrial electric rates in the U.S. averaged 4.7 cents per kWh in 1994, the fifth lowest of the 17 countries for which OECD provides price comparisons. And countries which have lower prices, such as Canada, typically have ample supplies of low-cost hydro power. In Germany, for example, electric rates averaged 9.2 cents per kWh (in U.S. dollars), in Italy 9.4 cents, and in the U.K. 6.8 cents per kWh. A similar pattern is seen in residential prices. (Source: Organization for Economic Co-Operation and Development, 1995.)
of these industries. And since price regulation is widely viewed as a highly imperfect substitute for the competitive marketplace, the growing potential for competition inevitably creates pressure for deregulation and regulatory reform. Let’s examine this hypothesis in a bit more detail.

3.1. Airlines

It is hardest to make the case that growth in market size was the driving force for regulatory reform in airlines. This is because the threat of a single dominant carrier was never the grounds for regulating airlines. In fact, the initial rationale for regulation was that entry might be too easy and that restrictions were needed to avoid destructive competition. A second concern, however, was distributional -- the desire to encourage air service to smaller cities and towns where traffic density might not justify entry. And in this regard, the growth of market size may well have increased the willingness to deregulate. By the time deregulation occurred, traffic volumes were obviously sufficient to support competition, not only between large cities but in less densely populated areas as well. As Professor Morrison points out, since the deregulation of the industry, the average number of airlines serving individual routes has increased. Moreover, the hub and spoke system of serving routes, which has grown with the elimination of regulation, has clearly increased the potential competitiveness of the market, even in smaller cities and towns, by increasing the number of different ways in which individual city pairs can be served and by increasing the sustainable load factor on individual routes.

3.2. Telecommunications

Growing market size, at least in the intercity market has undoubtedly been a factor driving reform in telecommunications. When the regulatory structure for telecommunications was initiated, the predominant focus of telephone usage was intra-exchange or intra-city. In these markets, where loops constitute the primary investment needed to serve customers, it is obviously inefficient for more than a single carrier to serve each community. However, over time the intercity market grew much more rapidly than the local market and by 1984 accounted for nearly 60 percent of total telephone revenues. Although AT&T had managed to secure a virtual

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8 In the early 1900s there was competition in some cities. However, such competition eroded rapidly as Bell acquired these competing systems. In addition, the public was clearly unhappy with the inefficiencies resulting from this competition:

“Competition resulted in duplication of investment, the necessity for the businessman maintaining two or more telephones, economic waste to the company, increased burden, and consequent continuous loss to the subscriber. The policy of the state was to eliminate as far as possible, duplication.” (Source: Vietor, 1989, p. 32.)
9 Local service revenues in 1984 were $30.5 billion and toll revenues were $46.6 billion. (Source: Federal Communications Commission, 1990, 1991, Tables 7.1, 7.3.)
monopoly in the intercity market by virtue of its control of the local market and its control over the patents which made high quality long distance voice transmission possible, it was never obvious that the same natural monopoly features which seemed to characterize the intra-city market also characterize this intercity market. And, as the size of this market has grown, its ability to support several viable competitors also has increased.

While more debatable, it is also possible that technological change may tend to increase the viability of competition in the intercity market. Initially, the intercity market was served, as the intra-city market had been, by copper wire transmission facilities. And since the costs of such facilities are largely insensitive to traffic volume, such a technology favors a single supplier. However, in the late 1960's and throughout the 1970's, when the initial entry of competitors into toll markets began, microwave and satellite transmission became economic modes for handling intercity traffic. Since the costs of such facilities may be considerably more modular and volume sensitive, perhaps they lend themselves to competition among a number of smaller suppliers.

More recently, fiber optics has become the predominant mode for handling telecommunications traffic. The investment in the fiber optic transmission facility itself, like copper wire, is largely insensitive to volume, seemingly favoring a single supplier of service. However, with fiber optics, an increasingly large portion of the total transmission investment is not in the laying of fiber, but in installing electronics to increase the volume of traffic which the fibers can handle. Since investment in electronics to expand transmission capability is modular, this may reduce the potential for scale economies and lumpiness in transmission investment and increases the viability of competition.

3.3. Electricity

A somewhat different but equally decisive form of market expansion has occurred with respect to electricity production. As structured historically, most electric utilities in the U.S. are vertically integrated monopoly suppliers of generation, transmission and distribution services within their own service territories. Each company seeks to construct sufficient capacity to meet anticipated load within its franchised service territory with a margin for reliability. Historically then, all the capacity serving a particular retail market was located in that service territory and owned by a single supplier. This creates a monopoly supplier in need of pervasive regulation.

Over time, however, in order to reduce the reserve margins needed to maintain reliability, utilities constructed interlocking transmission facilities, permitting adjoining utilities to rely upon each other when their own facilities are inadequate to meet load. In many regions, extensive transmission networks have also been constructed to exploit permanent cost advantages. For example, in some regions, long transmission networks were built to bring power from hydro resources to distant markets or to increase the usage of low cost minemouth coal or wellhead gas facilities. Over time, these integrated transmission networks have grown to be used not only to

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10 For an overview of economy of scale studies, see Kiss, 1986.
meet emergency circumstances or to exploit permanent cost advantages, but to achieve greater economies through region-wide economic dispatch. In some cases (particularly in the Northeast), utilities have set up integrated pools to economically dispatch all the capacity in the region. In other cases, the same function is achieved through bilateral trading on a short-term basis and purchased power contracts on a long-term basis. The presence of these integrated networks has substantially expanded the market for power, enabling utilities to substitute for their own plants lower cost resources from neighboring territories which may exist because of temporary capacity excesses, or transitory or permanent differences in fuel prices.

Having created broad regional grids, existing utilities have created the potential for an effectively competitive generation market within each region. As an example, the PJM power pool, which serves customers in Pennsylvania, New Jersey, Delaware, Maryland and the District of Columbia, has effectively created a marketplace in which the 11 utilities making up this pool can, and effectively do, compete to decide who supplies how much energy to the consumers of the region. Since this network is also interconnected with networks in adjoining regions, for many hours of the year an even larger number of utilities can compete for these loads. Moreover, having once created such a network, there is no technical reason why other potential suppliers of power -- independent power producers or co-generators -- could not also compete to supply this regional market. Thus, the creation of these regional grids has expanded the size of the market and made aggressive competition among generating companies feasible. It is the realization of this potential with all it implies regarding regulatory cost and efficiency which underlies at least some of the pressure for regulatory reform.

In this context, the principal factor driving regulatory reform has been market expansion which permits competition. Differences in the pace of reform result almost entirely from the ease or difficulty with which the competitive portions of these industries can be separated from those portions which remain natural monopolies. In airlines, because there were never any significant barriers to entry and growth assured competitive service even for low density markets, reform could occur quickly through total and complete deregulation. For telephone, the reforms took longer to implement because they appeared to require vertical deintegration of the industry. Moreover, controversy and change continue within this industry because the dividing line between the competitive and monopoly sectors is constantly shifting and the form of regulation which best suits an industry which is partially competitive and partially a monopoly is yet to be fully worked out.

Reforms in electricity have taken longer still. Given the degree of integration between transmission and generation planning, finding a mechanism to effectively assure competition in the generating sector while continuing to assure the efficient use and expansion of the transmission

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11 Currently with competition becoming increasingly viable in local markets, it seems less clear that vertical deintegration is a necessary prerequisite to effective competition in telecommunications markets.
grid is much more difficult. Viewed in this way, the pressures for regulatory reforms in airlines, telecommunications and electricity are all driven by the same basic forces -- a tendency for technological change and growth in market size and geographic scope to increase the feasibility of competition in all or portions of these industries. Differences in pace reflect primarily the extent to which the growth in market size affects the entire industry or merely portions of it.

4. Regulatory Pricing and Competitive Pressures

Leaving market growth and technological change aside, the pressure to open these markets to competition has also been driven by historic pricing policies in these industries. In each case, regulators have allowed industry prices to depart significantly from cost. These price-cost disparities have created substantial incentive for competitive entry, which may or may not be sustainable in the long run.

4.1. Telecommunications

The case for this is clearest in telecommunications. Historically, regulators set the price of intercity telecommunications service high relative to its cost and used the resulting revenues to subsidize the prices charged for access and local usage. The motivation for this policy was twofold. First, the policy promoted universal service by making telephone service easily affordable for low income consumers and consumers in rural areas where usage was relative low. Second, the policy permitted greater rate stability than would otherwise have been the case. Over time, technological change and rapid growth in usage markedly reduced the cost of toll service, while slower rates of growth in technology and usage increased the cost of access. If these services had been priced at incremental cost -- as they would have been in competitive markets -- toll prices would have fallen sharply while access prices rose. By simply allocating an increasing share of access costs to toll usage over time, regulators avoided the need to engage in unpopular rate restructuring.

Ultimately, however, the gap between intercity rates and costs created strong pressures for competitive entry. Even producers for which the incremental costs of supplying toll service exceeded those of the regulated carrier could earn substantial profits at the artificially high price of toll service. The imbalance also created substantial incentives for large toll consumers to seek out these alternative suppliers as a means of reducing their costs. This rate imbalance would have attracted competitive entrants even if the industry were characterized by substantial scale economies which give the regulated supplier a strong cost advantage. Of course, regulators could easily have eliminated these pressures by rebalancing rates; however, they long resisted such pressures since rebalancing was politically unattractive.

The importance of these pricing policies as a cause of competitive entry, and ultimately regulatory reform, cannot be overestimated. Reform in telecommunications did not occur because regulators or other policy makers woke up one day, realized that the industry was potentially
competitive and moved to reform it to accommodate that competition. In fact, initially the FCC and
the state commissions strongly resisted competitive entry. Reform occurred because competitors
(like MCI), seeing profit opportunities, aggressively sought to enter the industry. In many cases,
these competitors did not seek regulatory approval for entry, but entered and waited to be
challenged. Where necessary, entrants challenged both regulators and the incumbents in court to
secure continued entry on what they regarded as fair terms. Whatever the economic case for
regulatory reform and competitive entry, it never would have occurred absent aggressive efforts by
challengers to enter the industry. And, the motivation for these aggressive efforts lay largely in the
wide imbalances between the rates charged for intercity toll service and the cost of that service.

4.2. Electricity

Similar rate-cost disparities are also a driving force for regulatory reform in the electricity
sector. Here, however, the disparities between rates and costs have a different cause. Following
dramatic increases in the prices of oil and gas in 1974 and again in 1979, the industry sought to
reduce its dependence on these fuels by constructing coal and nuclear capacity, with relatively high
capital costs but low fuel costs. Failing to anticipate slowdowns in growth, the industry ultimately
constructed more capacity than was needed to meet demand with adequate reliability. The extent of
this excess capacity is documented in Dr. Kahn's paper below. Moreover, health, safety and
environmental concerns surrounding both of these technologies, but nuclear in particular, drove the
costs of these alternatives far above that anticipated when the commitments to these plants were
made.

Further, when oil and gas prices began to fall after 1983, the industry found itself with
both excess capacity and capacity with embedded costs far in excess of the incremental cost of
production. Finally, disparities between incremental and embedded cost were further accentuated
by technological changes which improved the operating efficiency and lowered the capital cost for
new gas-fired combined-cycle plants.

Averaged across the U.S., embedded generating costs are nearly 5.5 cents per kWh. In
contrast, rates required to recover the capital and operating cost of new generation average about

12 The FCC and local regulators consistently opposed the entry of new long-distance carriers until
they were circumvented by MCI in court. AT&T argued, and the FCC apparently agreed, that
allowing competitors to “cream-skim” would pose a threat to the goal of universal service. (MCI
Telecommunications Corp. v. Federal Communications Commission, 561 F. 2d 365, DC Cir. 1977).
(Source: Crandall and Flamm, 1989, pp. 127-128.)

13 Based on 1992 data for the U.S. electric utility industry as a whole, embedded generating costs
averaged 5.3 cents per kWh. This reflects operating and maintenance costs (including a share of
administrative and general costs), fuel costs plus the cost of amortizing existing plant. These results
were derived from data reported in Statistical Yearbook of the Electric Utility Industry, Edison
3.5 to 4.0 cents per kWh.\textsuperscript{14} Even wider disparities exist in some regions of the county where reliance on nuclear capacity is high or where regulators have imposed substantial investment in demand side management or in independent power producers. Moreover, because the industry has substantial excess capacity, the incremental costs of meeting new loads are under 3.0 cents in many regions of the country.\textsuperscript{15} Since, under current regulatory conventions, rates for usage are set to recover embedded cost, the gap between incremental and embedded cost creates substantial competitive pressures. Independent power producers are tempted to compete with traditional utilities to serve industrial and large commercial customers. This incentive exists even where the IPP’s incremental costs are higher than those of the utility, because the IPP sees a substantial profit opportunity in the gap between rates and its incremental cost. Moreover, at least on the margin, utilities have strong incentives to compete with each other for industrial and large commercial loads. Whereas utilities trade power with each other at incremental cost, they charge their customers, insofar as possible, embedded cost. In this context, each utility can increase its profits if it can capture industrial loads from its neighbors. Finally, the rate-cost imbalance creates strong incentives for customers to seek out competitive suppliers. Obviously, an industrial customer paying 5.0 cents per kWh for electric generation has a strong incentive to seek out a new supplier who offers competitive supplies at a lower price. And since the incremental cost of production is 3.5 to 4.0 cents, absent regulatory restrictions such opportunities abound. Since the existing system of regulation is seen as the principal barrier to capturing these opportunities, this creates substantial pressure for regulatory reform.

4.3. Airlines

Rate-cost disparities were also a factor encouraging regulatory reform in airlines. To encourage ubiquitous service, the regulator required carriers to provide service to many small cities and towns where low load factors made service uneconomic. The regulator then allowed carriers to make up for losses on these low density routes through above-cost charges on high density routes.

\textsuperscript{14} The costs of new generation are based on the capital and operating costs of a gas-fired combined-cycle unit. Capital costs and non-fuel operating and maintenance costs, which are about 1.5 cents per kWh, are based on estimates made by EPRI (Electric Power Research Institute, 1993.) Fuel costs, which are about 2.5 cents per kWh, are based on the long-term forecast made by the Gas Research Institute. (Gas Research Institute, 1995)

\textsuperscript{15} Because there is excess capacity in the industry, the cost of meeting new load reflects the marginal energy costs. NERA has estimated these marginal energy costs in various regions by using linear programming models to simulate the operations of those systems.
where the cost of service was much lower. Attention drawn to these rate-cost disparities as well as potential profit opportunities for new entrants accentuated the pressure for deregulation.\footnote{In the mid-1970s, Congressional hearings and economic studies, such as one done by the General Accounting Office in 1977 which showed that CAB regulation costs American passengers nearly $2 billion per year in excess costs, exerted great pressure on the CAB to move toward regulatory reform. Consumer groups such as Common Cause and Ralph Nader also lobbied heavily for reforms. In addition, airlines such as Pan Am began to support unrestricted route entry in the hope of using their excess capacity. (Source: Meyer et al., 1981.)}

4.4. Implications

The observation that regulatory reforms in all of these industries have been and are being driven, at least in part, by imbalances between rates and incremental costs lends itself to a number of alternative interpretations. The imbalance between rates and costs inevitably raises questions about the ultimate efficiency of these reforms. Since rates do not reflect the existing industry’s incremental cost, competitive entry may occur even when the cost of the added supply exceeds the existing firms’ long run costs of added supply. Competitive entry in these cases may ultimately prove uneconomic as low rate but high cost supplies are substituted for those with lower costs but higher rates. Here we should perhaps distinguish between two forms of uneconomic entry.

First, even where competition is ultimately both feasible and economic, the wide gap between costs and rates imposed by regulation may mean that the transition from a regulated monopoly to a more competitive industry will be accompanied by temporary capacity excesses. Second, and ultimately more troubling, these rate-cost disparities may encourage competitive entry even in the presence of substantial scale economies. In this case, the most efficient means of supply may be a single producer, but the gap between price and cost nevertheless makes competitive entry appear economic. All of this suggests that substantial rate rebalancing should precede, or at least accompany, regulatory reforms designed to encourage competition. In practice, however, this rebalancing is politically difficult to achieve.

Initial imbalances between rates and costs also make it difficult to evaluate the benefits of competitive entry. As Professor Harris points out in his essay, many observers have interpreted the dramatic declines in toll prices occurring since divestiture as evidence of the effectiveness of competition in the toll markets. On the other hand, as Professor Harris also notes, others maintain that the declines in toll prices have simply mirrored declines in the access charges which interexchange carriers pay to the pervasively regulated local exchange carriers. From this perspective, the declines do not reflect either the benefits of competition or evidence that competition has been effective, but rather rate rebalancing, which in principle could have occurred without either industry restructuring or competitive entry.

It is also possible, however, to take a more serendipitous view of rate-cost imbalances as a cause of regulatory reform and competitive entry. Even where competition is both feasible and
economic, it may simply not occur because of substantial institutional barriers. Certainly the history of regulatory reform suggests that strong pressures exist to maintain the status quo even when entry is economic. For example, in telecommunications, the incumbent regulated carriers and the regulator strongly resisted the entry of equipment manufacturers into the market for customer premises equipment on grounds which now seem entirely specious.17 Similarly the FCC, now viewed as a champion of regulatory reform and competitive entry, initially opposed the entry of MCI and other competitors into the toll markets on the grounds that their entry would erode the regulated carrier’s scale advantages. Equipment manufacturers and competitive toll suppliers gained entry to these markets only through legal challenges by both competitive entrants and the Justice Department and not, in the first instance, through reforms initiated by the regulators. While airlines may present a counter example, in both electricity and telecommunications, pressure for reform has come primarily not from regulators but from competitive entrants seeking to profit from high rates or from customers seeking to avoid those rates.18 And the profit opportunities from entry stem not from any inherent cost advantage of the entrants over incumbents, but primarily from rates which are set artificially high by regulation. Since the pure efficiency gains from competitive entry may be relatively modest, these large price-cost disparities may be an accidental but necessary precondition without which neither regulatory reform nor competitive entry, efficient or not, would occur. Where strong independent evidence exists that competitive entry is beneficial, perhaps the regulatory reforms which permit competitive entry should be welcomed irrespective of their proximate cause.

4.5. Stranded Investment

Disparities between rates and costs, which have served as a strong incentive for reform in both telecommunications and electricity, can also present an obstacle to reform. This is clearly the case today within the electricity sector. Were the electric industry reformed to permit (or require) existing generators to compete among themselves or with new entrants for retail loads, the resulting competitive rates for generation would not permit those existing generators to recover their historic costs. The shortfall would be sufficiently large that many, if not most, existing utilities would be

17 AT&T presented voluminous evidence in court that protective devices would be needed to protect its equipment from customer premises equipment provided by its competitors. Even at the time this evidence was presented, however, there were people within AT&T who believed such devices were unnecessary. (Crandall et al., 1989, pp. 122-123.)

18 Even in airlines there was substantial pressure for regulatory reform by potential entrants before reform ultimately occurred under the stewardship of Alfred Kahn. Companies like World Airways and Southwest in the U.S. and Freddie Laker in the U.K. for years before that were knocking on the doors of the CAB and the corresponding British agency and finding their entry blocked by regulators.
bankrupted by the decline in rates.\textsuperscript{19} The result is to make incumbent utilities extremely wary about any efforts toward regulatory reform, unless the issue of stranded investment is resolved first. Even utilities which expect to thrive in a competitive environment will resist the reforms which bring those changes about until the issue of stranded investment is resolved.

From a policy perspective, the issue of reforming the industry to permit competitive entry and the issue of recovering stranded investment should be delinked. The existence of stranded investment does not in any way imply either that historically the industry has operated inefficiently or that competition is warranted. Moreover, the benefits from competition, if they exist, result not from allowing consumers to avoid the cost of stranded investment, but from prospective efficiency improvements which occur when future investments and existing operating costs are subjected to market tests.

Nevertheless, political realities suggest that for the electricity sector, the issue of stranded investment and the issue of regulatory reform are likely to remain inextricably intertwined. Without some opportunity to capture the gap between embedded and incremental cost, either in the form of profits to entrants or rate reductions to existing consumers, much of the political pressure for regulatory reform would evaporate. On the other hand, as long as the likelihood of recovering historic investment is held hostage to the reform efforts, incumbent utilities will oppose reform with all the resources they can muster. Only a political compromise which resolves the stranded investment to the mutual satisfaction of existing utilities, entrants and customers is likely to be the precursor to reform in the electric utility industry.

5. DIVERSITY IN REGULATORY POLICY

As the discussions in the ensuing essays make abundantly clear, trends toward deregulation in the U.S. have not been governed by a single consistent policy. Deregulation, which occurred suddenly and completely in the airline industry, has proceeded much more gradually in telecommunications and still more slowly in electricity.

In large measure, these differences reflect the differences in the structure of these industries. In airlines, most analysts examining the industry in the 1970's could see no significant barriers to creating workable competition throughout the industry. Consequently, since there were no strong entry barriers and no sources of scale economy, there was no obvious reason to impose price restrictions or to continue regulatory restrictions on entry.

The situation in telecommunications and electricity is quite different. In both cases, these industries were vertically integrated and, while there were clearly prospects for competition in

\textsuperscript{19} In a recent study, Oak Ridge National Laboratory estimated that stranded costs could range from $69 billion to $99 billion, and they cite a range of estimates by others from $10 billion to $500 billion. By comparison, the current market value of utility stock is about $200 billion. (Baxter and Hirst, January 1995.)
portions of these industries, other portions were, or appeared to be, natural monopolies. Thus, in telecommunications the initial pressure to introduce competition occurred in customer premises equipment and in intercity service rather than in network access or exchange service. Similarly, in electricity the pressure for competition has occurred primarily in the generating sector with broad recognition that transmission and distribution are likely to remain natural monopolies and, hence, require continued regulation.

These distinctions, of course, have made the process of deregulation vastly more complicated in telecommunications and electricity than in airlines and trucking. In airlines, no changes in industry structure were necessary prior to deregulation, and since the entire structure of economic regulation was vested in a single agency -- the CAB -- regulation could be eliminated relatively simply. Once the decision to deregulate occurred, the regulatory agency was simply eliminated without affecting continuing need for safety standards which were and are the province of a separate Federal agency -- the FAA.

In contrast, for both telecommunications and electricity, reform involves changing the structure of regulation to deregulate some services while continuing to regulate others. Moreover, regulation in these industries involves numerous agencies, all of which must act in order to change regulatory structure. Both of these factors have made regulatory reform vastly more complicated in these industries than in airlines.

Consider first the problems of industry structure. In both of these industries the precise boundaries between competitive and noncompetitive services are ambiguous. Moreover, the optimal approach to regulating firms which produce some services in competitive and some in deregulated markets is unclear. Consequently, the pace of change has inevitably been slow and halting with numerous detours taken before settling on an appropriate structure.

In addition, many observers have argued that achieving effective deregulation in both electricity and telecommunications requires some vertical deintegration of the existing firms in these industries. Certainly the breakup of AT&T has been widely viewed as a necessary prerequisite to achieving effective competition in the intercity toll market.20 Similarly, many observers have argued that the unbundling of transmission and distribution from generation will prove a necessary precondition for introducing competition into the electricity sector.21 Once such structural changes are made, however, additional reforms are necessary to preserve the economics of scope which were facilitated by vertical integration.

In addition to these broad policy issues, the regulatory structure itself has made the process of deregulation much more complex and less uniform in electricity and telecommunications than in airlines. In airlines, a single federal agency controlled much of the regulatory process. In contrast, telecommunications and electricity are regulated both by federal agencies (FERC for electricity and the FCC for telecommunications) and by 50 separate state agencies.

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20 See, for example, the chapter on interexchange competition in Crandall and Flamm, 1989.
21 See, for example, Ruff, June 1994, pp. 24-43, and Pierce, November 1994, pp. 16-21.
public service commissions. To further complicate the picture, in electricity some providers of electricity -- the state and federal agencies which produce and distribute electricity and municipally-owned generation and distribution companies -- are self-regulated, at least with regard to their investment and retail pricing policies. The diversity of regulatory agencies which govern these industries has made the development of consistent policies toward competitive entry and deregulation much more difficult than would otherwise be the case.

The federal-state conflict, in particular, has produced serious obstacles to consistent regulatory reform. For example, in telecommunications, at least following divestiture, the FCC has pursued an aggressively pro-competitive regulatory policy, while the states have embraced competition more reluctantlly. In large measure, this difference in policy reflects the mix of services over which state and federal agencies have principal responsibility. Thus, the FCC’s principal responsibility is for interstate toll service which was widely regarded as a potentially competitive market and, hence, one for which rates were bound to decline as a result of competitive entry. On the other hand, state regulators are more directly responsible for customer access and local usage charges which, initially at least, were regarded as less likely to be competitive and, hence, subject to rate increases in the face of competition in the provision of services previously used to cross subsidize local usage charges. The difference in federal and state enthusiasm for competition can perhaps best be understood in this context.

6. THE ONGOING PROCESS OF REGULATORY REFORM

It is tempting in an evaluation of this sort to focus on the regulatory reforms which have occurred to date and to examine their consequences. While this approach may be feasible in airlines, where complete deregulation occurred at the outset, it seems both less relevant and less feasible in electricity and telecommunications, where regulatory reform is still evolving and where reforms initiated at the outset of the process have given rise to changes in industry structure which create pressures for still further reforms. In this case, it may be more useful to focus, as the essays in this book do, on understanding the ongoing process of reform in these industries. Of particular interest, in my view, is the tendency of initial tentative reform efforts to give rise to unanticipated changes in industry structure and behavior which then stimulate still further reform efforts. There is evidence of such evolutionary behavior in each of the industries examined in this book. Some of these evolutions are examined below.

6.1. Airlines

Perhaps the three most interesting developments within airlines have been the emergence of the hub and spoke system, frequent flyer programs, and the alleged use of computer reservation systems to favor the airlines who developed them. In retrospect, all of these developments seem natural outgrowths of the intensely competitive environment created by deregulation. They represent efforts by the individual firms to expand demand, retain customers, and improve load
factors so as to increase profits. In each case, however, these developments have given rise to complaints that they will lead to the domination of the industry by a few large carriers, thus stifling the competition which reform was designed to promote.

Of all the developments, the hub and spoke system is the most intriguing. Under this system, individual carriers develop regional hubs into which they can channel flights from smaller cities within the region. This almost undoubtedly has increased load factors and therefore the overall efficiency with which customers can be served. By funneling customers from small cities into regional centers where they have a wide choice of destinations, this system has improved the quality and frequency of service to these small towns. The development of this system under competition but not under regulation is among the clearest indications of the efficiency consequences of competitive markets and the difficulty of emulating those innovations in a regulated environment.

Some critics of deregulation have alleged that the hub and spoke system permits large carriers to achieve a form of market dominance. By flying all passengers within a region into a hub which they dominate, they reduce customers' choice of carriers in subsequent legs of the flight and increase the likelihood that customers will fly with a single carrier from origin to ultimate destination. The reality is different. While a single carrier may well “dominate” the hub it has created, this is somewhat akin to saying that an individual producer dominates production at a factory he has built. Competition occurs because customers have choices of carriers at the origin of the flight. The data presented in Professor Morrison’s essay on the growth in the number of carriers serving individual routes is persuasive evidence that the hub and spoke system has increased customer choice.

Frequent flyer programs, of course, represent an effort by carriers to gain repeat business from their customers and to achieve a level of brand loyalty which would otherwise be difficult in a market where available alternatives all appear closely substitutable. The obvious difficulty is that such programs offer a substantial advantage to large ubiquitous carriers which can offer a wider range of alternatives than can a smaller, more regional carrier. Of course, small regional carriers may overcome this by combining with others to offer joint programs, but on the whole, the programs seem to favor larger carriers.

As Professor Morrison points out, these programs are of particular concern because of the principal-agent problem which they exploit. A large percentage of frequent flyer miles are earned by business travelers who choose the mode, but rarely pay the bill, for travel. This raises the possibility that the business traveler will choose the airline which most augments his frequent flyer benefits, to some extent independently of the price paid for the flight. If the same decisionmaker both paid the price and received the frequent flyer miles, these programs would operate no differently than other forms of volume discounts, and the efficiency consequences of the programs

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22 This increase in efficiency occurs despite some added peaking and congestion costs associated with the hubs.
would consequently be less ambiguous. Nevertheless, there is little evidence that frequent flyer programs to date have had any effect in increasing industry concentration nor do they appear to afford larger carriers the ability to raise rates.

Finally, the use of computerized reservations systems to favor the flights offered by the developers of these systems raises the age-old dilemma of how competitive markets allow developers to capture returns from their innovations. Clearly, computerized reservations systems provide efficiency benefits to the industry. They allow customers and their travel agents to more easily determine the alternatives available to them, to compare the characteristics of these alternatives, and to quickly and reliably make reservations on the chosen alternative. Moreover, in a competitive era, such systems provide an essential aid to searching available discount options.

On the other hand, only a large carrier or a collection of smaller carriers would have the financial incentive to develop such a system since a smaller carrier would find it impossible to amortize development costs over its small number of available flights. Moreover, it seems inevitable that the developer of such a system, even where the system purports to evaluate all possible options, would use the system to favor, however subtly, its own services. In fact, if every carrier were guaranteed free access to such a system once it was developed, the free rider problem might inevitably mean that such systems would never be developed at all. Achieving a balance of incentives to assure that such systems are developed without giving undue advantages to dominant carriers has proven to be one of the interesting challenges for case law in this area. For better or worse, the net effect of these decisions has been to eliminate any ability which developers otherwise might have had to use the computerized reservation system to bias choice in favor of their own flights.

6.2. Telecommunications

In telecommunications, the initial vision of regulatory reform was in many ways quite different from the industry structure which seems to be emerging now. At the time of divestiture, the perception was that intercity toll service was potentially competitive, but that access and local exchange services were not. The theory underlying the divestiture of AT&T was that competition had been impeded in the past by the vertical integration of the local exchange carrier (which possessed a bottleneck monopoly) and interexchange service which may have had no natural monopoly properties.

Consequently, AT&T was divided into an access and local exchange portion served by the seven Regional Bell Operating Companies (RBOCs) and an interexchange portion, which was to be served by AT&T in competition with other carriers. The dividing line between local exchange and interexchange service was drawn by creating Local Access and Transport Areas, or LATA’s, which typically include large cities and their surrounding suburbs, but are much broader in some areas, particularly where population density is low. In some places an entire state might constitute a single LATA.
The initial assumption was that the local exchange carriers would retain their franchise monopolies over access and service within the LATA’s, but that competition would be allowed to emerge for interLATA service. To assure the stability of this structure and to avoid the re-emergence of a vertically integrated monopoly, the RBOC’s were prohibited from entering the interLATA market.

Of course, it was understood at the outset that the boundary between intraLATA and interLATA service was in many cases arbitrary and that the interexchange carriers would seek to compete with each other and with the local exchange carriers (LEC’s) for this market. The competitive status of this market, however, was left to be resolved by individual state public service commissions. A substantial portion of the regulatory debate in the first decade following divestiture has been devoted to determining whether these markets would be opened to competition and under what terms. While initially many states resisted opening these markets to competition, it soon became clear that competition in them would occur regardless of the regulatory structure. Most states now permit both facilities-based carriers and resellers to compete in these markets. However, since LEC’s can serve these markets but not the interexchange markets, state commissions have not permitted customers to presubscribe to competitive service in the intraLATA market. Doing so would give interexchange carriers -- who could then provide one stop shopping for toll service -- too great a competitive advantage. Consequently, in most states, intraLATA calls are automatically carried by the local exchange carrier unless the customer dials an access code to reach the long distance supplier. This balance is likely to remain in place until the restriction on LEC entry into the interLATA market is lifted.

The direct competition between local exchange and interexchange carriers in the intraLATA market has raised important issues about the prices charged by LEC’s for access to their networks. In principle, by setting their own toll prices low but charging relatively high access prices, LEC’s could prevent interexchange carriers from effectively competing in the intraLATA market, even when they had a cost advantage. To avoid this problem, most state commissions have imposed an imputation test on the LEC’s toll and access prices. While there are many variants, the principal requirement is that the price charged for toll service by the intra-exchange carrier must cover at least the incremental cost of toll service plus the imputed price for access service. This requires that the LEC charge itself and the interexchange carrier the equivalent price for access service. If correctly applied, this principle should assure that local and interexchange carriers compete for the intraLATA market on an even footing.

Although competition for the intraLATA market was to be expected, a much more surprising development has been the apparent competitiveness of at least portions of the access and local exchange markets. In many cities, alternative access providers have built fiber optic networks, providing high volume business customers with direct access to interexchange markets. This service competes directly with the access service supplied by the LEC’s. As the networks of alternative access providers expand they also offer direct substitutes for some of the local exchange service provided by LEC’s. In addition, private networks using satellite facilities, which many
large business customers have constructed to serve their own facilities, compete with both access and toll service.23

Three other competitive threats face traditional LEC’s. First, cellular service, which initially was thought of as exploiting only the market for mobile telephone service, is increasingly showing the potential to provide direct competition with wireline local service. Second, the FCC’s auction of PCS service, which is simply a cellular service using smaller cell sites, is a source of direct competition with wireline service. Finally, cable television networks, which currently pass 95 percent of American homes and are subscribed to by 60 percent of U.S. households, appear poised to enter the telephone market. The successful entry by cable television into this market in the U.K., the announcement by the Time Warner Cable Company of their intention to provide telephone service in the city of Rochester, New York, and the low cost at which entry apparently can take place, indicate that this a highly credible threat.

These various sources of both existing and prospective competition pose an interesting challenge for telecommunications regulation, particularly at the state level. How should regulators manage the transition from a pervasively regulated to a more competitive telecommunications market? This challenge would be daunting enough if there were widespread consensus that the entire market was becoming competitive. Even in that case, the regulator would have to establish an appropriate pace and conditions for deregulation. Moreover, if there are to be competitive local exchange providers, continuing regulation will be necessary to assure effective and efficient interchange among these providers.

The situation is still more complicated because of the expectation that access and local exchange competition will proceed at different paces in various subsets of the telecommunications market. Competition is likely to come much more quickly in areas of high than in areas of low population density. Moreover, as already illustrated in existing toll markets, competition is likely to be far more aggressive for high than for low volume users of telephone service. The challenge to regulators is to devise a regulatory approach which permits competition to emerge where it is cost effective while continuing to provide price protection for consumers whose access is still limited to a single telecommunications carrier.

An additional challenge for regulators is to avoid what might be termed the “balkanization” of telecommunications markets. Currently, the only pervasively regulated telecommunications carriers are the LEC’s, who in turn are subject to competition from less regulated carriers in portions of virtually all of their markets. If regulation of these carriers remains restrictive, they may lose the flexibility to compete effectively in those portions of their markets which are becoming competitive, and they may be reduced to being the carrier of last resort in markets which are untouched by competition. Such a development would, in all likelihood, produce a market of telecommunications haves and have-nots -- regulated but still expensive and

23 It is not clear, however, that this competitive entry is efficient. It may simply represent a response to the remaining price/cost disparities which persist in these markets.
limited services in markets untouched by competition contrasted with unregulated, lower cost and more diverse services in the higher density markets served by competition. To avoid this, regulation needs to assure that the burdens of serving low density markets are more equitably shared among all carriers and that the traditional regulated carrier has the price flexibility and incentives to compete effectively in potentially competitive markets.

A final regulatory concern with increased competition is the problem of who bears the responsibility for historic investment decisions. In order to compete effectively in potentially competitive telecommunications markets, the historically regulated carriers have to take investment risks which they did not face as franchised monopolies. If, for example, cable companies are successful in providing access to telephone networks, a substantial portion of existing telephone investment in loops could become uneconomic. Moreover, in order to meet prospective competition from PCS, cellular and cable suppliers, many local exchange companies may seek to expand into the provision of entertainment and information services. If the restrictions imposed by the Modified Final Judgment are lifted, moreover, these same carriers will undoubtedly seek to expand their networks to provide interLATA service.

While some of these investments may succeed, others will undoubtedly fail as the regulated carriers succumb, in portions of their markets, to more effective competitors. Of course, these are normal business risks for suppliers in competitive markets. But under the traditional rate of return approach to regulation, the risks of these failed investments would be borne, in whole or in part, by the remaining customers of the regulated supplier. While such a system may have made good sense for suppliers with a franchise monopoly, it makes much less sense as a means of governing investment decisions in a market strongly influenced by competition. On the one hand, it subjects consumers, who have no control over investment decisions, to a level of investment risk which is likely to be intolerable. At the same time, the system is unlikely to provide sufficient incentives to assure that the correct investments are made. Some regulated firms may make excessive or unwise investments, insulated by the presumption that they can recover the investments and a return even when, after the fact, they prove unwise. Other regulated carriers may fail to undertake sufficient investments, convinced that they will recover no more than the costs of their successful investments and be forced to absorb some or all of the costs of investments which are not successful.

Faced with these challenges, many state regulatory commissions are moving to substitute price regulation for rate of return regulation. Under this approach, commissions may choose to entirely deregulate some services which appear to be subject to competition or sufficiently discretionary to not need price regulation. For the remaining regulated services, price caps are substituted for traditional cost-based regulation. In some cases, prices are capped at their current levels for a period of time after which the company gains complete or banded price flexibility. In other cases, future prices are limited by a cap which rises (or falls) at a rate governed by the difference between inflation and any anticipated difference between productivity growth in telecommunications and in the rest of the economy.
The theory is that this regulatory approach will accomplish several changes needed to accommodate the influx of competition in some markets:

1. by eliminating rate of return constraints, it provides the regulated carriers pricing flexibility to operate in competitive markets;
2. by eliminating reference to historic investment in setting rates, it shifts responsibility for investments from consumers to the carriers;
3. by eliminating reference to current costs in setting rates, it increases the incentive for firms to control costs; and
4. by imposing price caps on basic, presumptively noncompetitive telephone services, it continues to assure protection of monopoly consumers of these services.
5. by delinking rates and returns it eliminates the incentive to cross subsidize competition at the expense of monopoly services.

In addition to these reforms, many commissions are now proposing or undertaking hearings to address directly the terms under which competitive carriers will assure mutual access to the networks and continued joint support for universal telephone service. The form which those terms and conditions will take -- subjects addressed directly in Professor Harris' paper -- remain to be resolved.

6.3. Electricity

While clearly at an earlier stage, regulatory reform in the electricity sector is also evolving in ways which were not predicted at the outset of the reform effort. In many ways the evolution in electricity mirrors that in telecommunications and illustrates the difficulty in predicting how competitive forces, once unleashed, will develop in an industry or how regulatory structure will need to evolve to accommodate competition within the traditional regulatory framework.

As detailed in Dr. Kahn's paper, the initial efforts at reform in electricity were embodied in PURPA regulations, the thrust of which was to create increased competition within the generating sector by requiring utilities to purchase power from cogenerators, renewable resource developers and small independent power producers at avoided cost.

But these reforms immediately encountered problems not anticipated by the reformers. Merely offering to pay constructors of new generation at avoided cost did not stimulate much investment. Since avoided costs could not be predicted in advance, it was impossible to obtain financing for investment in generating projects for which income was based on an indeterminate
market price. At some price levels IPP’s might have built capacity in response to spot prices but not at the avoided costs emerging from the regulated structure of the industry.24

Pushed by the incipient independent power industry, by environmentalists, and by others anxious to promote the development of smaller, more diverse resources, regulators responded to this problem by requiring utilities to offer both PURPA suppliers and other independent power producers long-term contracts, under terms sufficient to assure that these projects could obtain financing.25 In some cases, prices for this power were to be set based on the utility’s or commission’s forecast of long run avoided costs. In other cases, legislatures mandated price floors at which power was to be purchased, even if those floors differed from estimates of long run avoided costs.26 Even where price was tied to long run avoided costs, prices were allowed to exceed avoided costs in the early years as long as the levelized price over the life of the contract was no higher than levelized avoided costs over the same period.

Utilities were generally induced to sign these contracts by assurances that once approved, the cost of the contracts could be recovered in rates or by contract provisions which permitted utilities to escape the contracts if subsequent commissions denied rate recovery.27 In still other cases, the inducement to enter into such contracts was the presumption that it would lead to favorable approval of existing rate requests.

24 As long as the regulated utility is prepared to construct capacity at regulated rates of return, it seems unlikely that actual avoided costs would ever rise high enough to stimulate entry by firms with higher risks and, hence, higher costs of capital.
25 A thorough discussion of FERC and state commission implementation efforts with regard to PURPA can be found in Pfeffer, Lindsay & Associates, Inc, March 1986.
26 For example, in New York, a floor of 6 cents per kWh for payments to cogenerators was established by statute in 1984 even though it was recognized that the rate would at times exceed avoided cost. In Maryland, energy payments to a QF were set at 2.0 cents per kWh for off-peak and 3.0 cents per kWh for on-peak sales even though the hearing examiner determined off-peak avoided energy costs were 1.5 cents per kWh. Similarly, capacity payments were set at 2.5 cents per kWh even though the examiner acknowledged that the utility could purchase capacity for 0.7 cents per kWh. This was done expressly because the examiner was “of the opinion that a higher rate....[was] needed to encourage QF development and operation.” Thus, QF rates were based not on the utility’s avoided costs but on the level the Commission assumed would be needed to assure QF development. (Ibid. p. 6.20.)
27 A recent study by the National Independent Energy Producers which reviewed independent power producer contracts, found that nearly a third of them contain some sort of “regulatory out” provision that allows the utility to reduce energy and capacity payments if the regulator does not allow the utility to recover contract costs from its consumers. (National Independent Energy Producers, September 1992.)
With guarantees of long-term contracts, independent power succeeded beyond the greatest expectation of proponents. In some states, substantial portions of total generation were met through independent power and more than a third of all new capacity constructed after 1985 has come from independent power producers.\(^{28}\) In fact, so much power was forthcoming under these bidding programs that in many cases the utility's avoided cost estimates were no longer used to determine the price paid. Instead utilities set up limits to the amount of capacity for which they would accept bids and took the lowest cost bids at which these requirements were met.\(^{29}\)

Although mandated long-term contracts for cogenerators and independent power producers clearly produced large supplies of such power, the power produced is turning out to be very expensive. Much of the power purchased under these contracts was acquired at prices which are well above the avoided costs which are now anticipated and consumers are likely to absorb these higher prices. Moreover, the relatively high costs which have resulted in this market do not simply reflect forecast errors by the utilities purchasing the power, but rather inefficiencies which are either inherent in the bidding process or were imposed upon it by an inefficient regulatory process.

First, in some cases the gap between the cost of these contracts and avoided cost has occurred because too much capacity was purchased. However, utilities often realized that they had contracted for excess capacity after contracts were signed, but before the capacity was constructed. Efficient contracting would have permitted cancellation of some or all of the contracted capacity in these cases. Certainly cancellations would have occurred had utilities been constructing the capacity themselves. But because the contracts afforded large profits to the bidders and because regulators were anxious to encourage these contracts, it proved impossible to cancel them in a timely fashion.\(^{30}\)

\(^{28}\) In 1979, non-utility producers accounted for 5 percent of capacity additions in the U.S. Since 1990, non-utility producers' share of capacity additions had been about half of the total. (Source: Capacity, and Generation of Non-Utility Sources of Energy, Edison Electric Institute, 1993 and 1985 editions.)

\(^{29}\) By the mid-1980's so much nonutility capacity was forthcoming that utilities turned to a process of competitive bidding. This approach has become quite common and currently utilities often receive bids for capacity that exceed the amount solicited by 100 percent or more. (Pfeffer, Lindsay and Associates, 1986.)

\(^{30}\) In New Jersey, IPP contracts contain a “sunset date” three years after the expected in-service date that allows the utility to cancel the project if it has not been completed by then. Jersey Central Power and Light entered into an agreement with an independent power producer to build the Crown-Vista project with such a provision. The Crown-Vista project was not completed by its sunset date, however (in fact construction had not even begun). In response to the utility's attempt to exercise its right to cancel the contract, the IPP is attempting to have the state legislature pass a law that would force the utility to honor the contract even though its completion date is uncertain, its power is no longer needed and its costs are well above those of other alternatives available to the utility.
Second, there were often significant delays between the time avoided cost estimates were made and the time contracts were actually signed. During this time, avoided cost estimates fell, but utilities were not permitted to revise the contracts to reflect their new avoided cost estimates. Independent power producers were awarded the higher price even though the contracting parties knew it exceeded expectations. This would not have occurred with an efficient contracting process, and it reflected strong political pressures to increase utility reliance on independent power producers.

Third, in some cases, legislative intervention required utilities to sign contracts for power at values that were in excess of avoided cost at the time the contracts were entered into. Given these flaws, utilities will undoubtedly end up paying more for this power than if the bidding process had been driven by competitive market forces. Further, it is not clear that the power will be any cheaper than power from utility-built units.

The central problem is that utilities have no strong incentives to contract for independent power. Under current regulatory convention they would rather construct capacity themselves. Consequently, regulators and, in some cases, legislators feel constrained to maintain steady pressure to assure that independent power is bought at prices sufficient to attract substantial supplies. But regulators have not proven to be a good substitute for the market in determining the appropriate terms for independent power contracts. For all of these reasons, the process by which utilities historically acquired power from independent producers is now widely regarded as flawed and a variety of efforts are underway to revise the competitive bidding process.

In part because of the failure of competitive bidding to produce low cost power and in part because of its success in bringing forth large supplies of independent power, this process is likely to induce further regulatory reforms resulting in far more radical changes in both the structure of regulation and the structure of the industry. Independent power producers, having gained entry to the industry, now wish to expand their markets by competing directly with utilities for sales to large industrial customers. As a consequence, independent power producers are among the most significant advocates of retail wheeling.

In addition, the relatively high cost of power resulting, in part, from competitive bidding itself is increasing the incentives which industrial customers have to seek retail wheeling. By increasing the extent of excess capacity and increasing the spread between embedded and $^{31}$

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For example, in New York, Rochester Gas and Electric Corporation was required to enter into a contract in 1990 with an independent power producer (Kamine) that was based on 1988 estimates of avoided costs. The contract avoided costs are far in excess of those currently expected to prevail in New York. The contract contains a provision that the difference between contract and actual avoided costs will be collected in an adjustment account and paid back to consumers. However, the disparity between current avoided costs and the 1988 avoided costs reflected in the contract is so large that it is unlikely to be feasible for Kamine to repay the adjustment balance. Because of this, the utility has taken legal action to have the contract voided or its terms altered.
incremental costs, the competitive bidding experiment has stimulated further interest in retail wheeling as a mean of reducing rates.

Finally, for many dispassionate observers, the competitive bidding process has simply illustrated the wide gap between this process and a genuinely competitive generating market. If there were competition between utility and nonutility generators for retail customers, this market would no longer require regulation and, hence, market forces themselves rather than rules made up by regulators would set the terms of contracts between generators and their customers. Given the experience of the last decade, there is every reason to believe that the market would produce more efficient contracts and pricing than those produced by regulatory intervention. Moreover, it seems possible that, in the absence of regulation, a spot market for generating capacity would emerge. In this context, consumers would pay competitively-determined prices for power rather than prices anticipated by either regulators or utility buyers. Finally, the observation that many suppliers are willing and able to construct and operate generating capacity strongly reinforces the view that this market is potentially competitive.

These considerations underlie the much more radical proposals for industry reform which have been tentatively adopted in California and are under active consideration in other states as well. These proposals involve deregulation of the generating sector of the industry and the creation of an open access pool to which all generators could offer supplies of power and from which all buyers could eventually purchase power at the spot price. These reforms would also allow customers to enter into contracts for power with generators or with independent power marketers who would be financially responsible for assuring reliable supplies. While these reforms are merely under consideration and not adopted in most areas, it is important to recognize that they are, at least in part, a natural outgrowth of the much more modest reforms initiated legislatively through PURPA in 1979 and through further reforms in the Energy Policy Act undertaken in 1992. The nature of the reforms being proposed is discussed much more fully in Dr. Kahn's paper.

7. Summary and Conclusions

Frankly, it is quite difficult to either draw succinct conclusions or to briefly summarize this rather wide ranging review. To be brief, however, there is clear evidence of a broad-based trend toward reform in the regulated sector of the U.S. economy. This reform is being occasioned both by market expansion and technological changes which are increasing the competitive potential in all or part of these markets. In addition, the pressure for reform is coming from artificial price-cost disparities created by the regulators. Finally, the course of regulatory reform in these industries, with the possible exception of airlines, is neither smooth nor simple. Since competition is feasible in some parts of these industries but not across the board, either industry or regulatory reform, or both, are necessary to accommodate industries which are partially served by monopolies and partially served by competitors. And these reforms must be accomplished without sacrificing the benefits historically achieved by vertical integration. The evolution of such reforms
and an assessment of their effectiveness and feasibility is a principal theme of the essays which follow.
BIBLIOGRAPHY

ii) United Kingdom

PRIVATIZATION AND DEREGULATION IN THE UK: BACKGROUND AND OVERVIEW

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1. Introduction

The late 1970s and 1980s saw the introduction of a number of radical new policies in Britain at both the macroeconomic and microeconomic levels. In microeconomic policy the flagship policy was privatization of assets owned by central government and local government. Transfer of ownership was, however, only one strand of a relatively varied mix of policies which also contained elements of deregulation, liberalization, industrial restructuring and regulatory reform.

In the UK context, deregulation is usually taken to mean the removal of government imposed restrictions on market behaviour, whereas liberalization refers to the process of elimination of entry barriers into markets. Clearly, there can be a large overlap between the two policies. They can, however, also differ. To illustrate, removal of government imposed restrictions on entry into a market is unambiguously a form of deregulation but, if other substantial barriers to entry remain, the market will not have been liberalized. Liberalization in such cases may require an activist anti-trust policy -- itself a form of regulation -- to reduce strategic entry barriers erected by incumbent firms.

The paper that follows provides an outline of the operation of the various strands of UK microeconomic policy associated with privatization at the level of central (national) government over the period since 1979. Before considering issues of privatization, competition and regulation, however, it will be useful to look briefly first at the structure of the British state-owned enterprise (SOE) sector as it was in 1979 when the first Thatcher administration came to power, and secondly at the performance record of that sector.

2. The state-owned sector in 1979

In 1979 the state-owned enterprise sector of the economy accounted for around 10.5% of gross domestic product, 8% of the labour force, 17% of the industrial capital stock and 15% of gross investment. The main industries and enterprises in the sector at that date are shown in Table 1, classified by the principal industry/enterprise characteristic or policy goal that was responsible for their incorporation into the public sector. As can be seen, the principal motives for public ownership of industries were varied, but were chiefly of a pragmatic rather than an ideological character, in keeping with other aspects of economic policy in the period up to 1979.

The greater part of the assets of SOEs was accounted for by the first column of the table. Thus, as in other western economies, public ownership was most closely associated with industries where two aspects of private sector performance tend to invite intervention, these being:

i) a tendency toward monopoly.

ii) a tendency toward wide spatial variations in prices due to economies of density.

In respect of industries in the first column, successive UK governments generally sought to hold price levels down and to suppress spatial price differences (for equity or for simple political
reasons). For example, there was a single tariff for domestic gas supplies throughout the country, despite the fact that there were significant differences in the costs of transporting natural gas to different locations. Since it is very difficult to allow any form of competition -- even the threat of new entry -- whilst following a policy of suppressing price differentials, public ownership was typically accompanied by regulation to restrict competition. That is, incumbent state corporations in the network industries were granted monopoly rights.

Enterprises appearing in the other columns of Table 1 operated in product markets that either were or could easily be made reasonably competitive. This is particularly true of the fourth column, which contains enterprises that were being driven into bankruptcy by market forces before the state intervened. Thus, while the greater part of public enterprise output came from state monopolies in industries such as telecommunications, gas, electricity, water, rail transport and postal services, major SOEs also existed in competitive or potentially competitive industries such as steel, coal, oil, and motor vehicle manufacture.
Table 1. Nationalised industries and firms in 1979.

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<tr>
<td>TRANSPORT</td>
<td>British Rail</td>
<td>National Freight Corporation</td>
<td>British Airways</td>
</tr>
<tr>
<td></td>
<td>National Bus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WATER</td>
<td>Water Authorities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTHER</td>
<td>British Sugar</td>
<td>National Enterprise Board</td>
<td>British Leyland (vehicles)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>British Aerospace</td>
<td>British Shipbuilders</td>
</tr>
<tr>
<td></td>
<td></td>
<td>British Steel</td>
<td>Rolls-Royce</td>
</tr>
</tbody>
</table>
3. The performance of the SOE sector

Studies of the performance of the SOE sector during the 1960s and 1970s found numerous specific examples of inefficiencies in resource allocation, but overall productivity growth in SOEs was broadly in line with that in the British private sector. The SOE sector did, however, have a substantial, persistent financial deficit in the pre-privatization period. Taking account of subsidies, this deficit amounted to over 20% of the SOEs’ contribution to GDP in 1979, which itself was down from a high of over 35% in 1975 (see Table 2, which also indicates the tendency for financial support to the SOE sector to rise in years when there is a general election (1974 and 1979)).

The fall in the financial deficit of the SOE sector between 1975 and 1979 in large part reflects changes in public policy that placed much greater stress on the financial performance of public enterprises. These policy changes were in turn stimulated by a crisis in a macroeconomic policy in 1976, at which point much more restrictive monetary and fiscal policies were adopted by the Government. The shift in policy priorities for SOEs was set out formally a little later in a Government White Paper on the nationalized industries, published in 1978.

Table 2. The financial deficit of the SOE sector (including subsidies) as a percentage of contribution to GDP.

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1979</td>
<td>20.9</td>
</tr>
<tr>
<td>1978</td>
<td>13.7</td>
</tr>
<tr>
<td>1977</td>
<td>16.7</td>
</tr>
<tr>
<td>1976</td>
<td>25.4</td>
</tr>
<tr>
<td>1975</td>
<td>37.5</td>
</tr>
<tr>
<td>1974</td>
<td>36.2</td>
</tr>
<tr>
<td>1973</td>
<td>22.7</td>
</tr>
<tr>
<td>1972</td>
<td>21.1</td>
</tr>
<tr>
<td>1971</td>
<td>25.6</td>
</tr>
<tr>
<td>1970</td>
<td>22.4</td>
</tr>
</tbody>
</table>

Hence, a type of regulatory reform of the SOE sector was well underway at the beginning of the privatization programme, and the emphasis on financial objectives was increased further by the Conservative Government that came to power in 1979. Indeed, it can be noted that privatization was barely mentioned in the Conservative Party manifesto of that year, which placed much greater stress on the general need for the maintenance of strict monetary and financial
disciplines throughout the economy.

4. The British privatization programme

Privatization in Britain has involved different types of policy at different levels of government (national and local). An early and major example was the commencement of a programme of sales of public sector housing stock in the early 1980s. Contracting out of services at local government level and in organizations such as the National Health Service has also been a major feature of the privatization process. The discussion below, however, is directed at the transfer to private ownership of SOEs, which is the aspect of the public policy that has attracted most international attention.

The programme of privatization of state-owned enterprises commenced in 1979 with the sale of a tranche of stock in British Petroleum (BP), a company that was already in part privately owned. This sale followed a precedent that had been set by the previous Labour administration which had likewise sold a tranche of stock in the company, largely as a funding exercise stimulated by what at the time was a relatively large public sector fiscal deficit. However, from 1979 onwards, privatization of state-owned enterprises was quickly established as a major component of the Government’s economic policy and a whole series of flotations followed the BP issue. The major asset sales to date (including those planned for 1995 and 1996) are summarised in Table 3.

The privatization programme -- together with associated measures of deregulation, liberalization, industrial restructuring and regulatory reform -- divides naturally into phases defined by national elections (1979-83, 1983-87, 1987-92, 1992-). The key policy elements in each phase will be discussed in more detail in section 6 below, but the following broad features of the changing policy mix can be noted immediately.

Until 1984 the firms transferred to the private sector were typically the smaller state-owned enterprises and/or were operating in reasonably competitive product markets. Transfer of ownership therefore tended not to be accompanied by major measures of deregulation or regulatory reform. On the other hand a number of significant Acts of Parliament were introduced which were designed partially to deregulate and to liberalize transport, telecoms and energy markets, independently of any prospective changes in ownership.

From the British Telecom privatization onwards, however, the flotations have, on average, realised much higher sales proceeds and in a number of cases -- most notably British Telecom itself, British Gas, the British Airports Authority, the water companies and the electricity companies -- have involved the transfer to the private sector of firms with substantial degrees of market power. In these latter cases, therefore, privatization has been accompanied by the establishment of new regulatory bodies which, among other things, operate systems of price controls that apply to certain of the relevant company’s outputs.

It is important to note, however, that even the flotations of smaller and/or less
monopolistic enterprises were sometimes accompanied by some interventionist measures (i.e. there was not full and immediate deregulation). Typically, the Government either retained a “golden share” – which carried rights that enabled politicians to block takeovers – or placed upper limits on the permitted sizes of individual shareholdings in the companies. The purpose of these measures was to provide incumbent managements with temporary protection against changes in control (i.e. to give managers time to adjust to the new environment).

Whatever the merits of these arrangements – and it can be argued that they were simply a side-payment to incumbent managements to buy their cooperation in the privatization process – the net result has been that newly privatised firms did not immediately have to confront the full rigors of competition in the market for corporate control, and that political discretion was, at least in part, replaced by managerial discretion. Moreover, managerial discretion was further strengthened by the tendency of Government to use the flotations as a means of promoting wider share ownership. Thus, many of the companies ended up with very large numbers of very small investors on their share registers.

Whereas the flotations of British Telecom and British Gas did not involve any major prior restructurings of the SOEs concerned, the later phases of utility privatization have seen a rather different emphasis. In the case of water, those activities of the regional water authorities which were concerned chiefly with environmental and regulatory matters were separated from the more business-like functions of water supply and waste disposal, and only the latter were privatized. In the case of electricity, a series of restructuring measures radically changed the shape of the industry before transfer to the private sector, and a similar approach involving the separation of infrastructure and operations is being pursued in relation to the privatization of British Rail.
### Table 3. Principal asset sales, 1979-95.

<table>
<thead>
<tr>
<th>Company</th>
<th>Year(s) of first sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Petroleum</td>
<td>1979</td>
</tr>
<tr>
<td>British Aerospace</td>
<td>1981</td>
</tr>
<tr>
<td>Cable and Wireless</td>
<td>1981</td>
</tr>
<tr>
<td>National Freight Corporation</td>
<td>1982</td>
</tr>
<tr>
<td>Britoil</td>
<td>1982</td>
</tr>
<tr>
<td>Associated British Ports</td>
<td>1983</td>
</tr>
<tr>
<td>Enterprise Oil</td>
<td>1984</td>
</tr>
<tr>
<td>Jaguar</td>
<td>1984</td>
</tr>
<tr>
<td>British Telecom</td>
<td>1984</td>
</tr>
<tr>
<td>Trustee Savings Bank</td>
<td>1986</td>
</tr>
<tr>
<td>British Gas</td>
<td>1986</td>
</tr>
<tr>
<td>National Bus</td>
<td>1986</td>
</tr>
<tr>
<td>British Airways</td>
<td>1987</td>
</tr>
<tr>
<td>Royal Ordnance</td>
<td>1987</td>
</tr>
<tr>
<td>Rolls Royce</td>
<td>1987</td>
</tr>
<tr>
<td>British Airports Authority</td>
<td>1987</td>
</tr>
<tr>
<td>Rover Group</td>
<td>1988</td>
</tr>
<tr>
<td>British Steel</td>
<td>1988</td>
</tr>
<tr>
<td>Regional water companies</td>
<td>1989</td>
</tr>
<tr>
<td>Electricity distribution companies</td>
<td>1990</td>
</tr>
<tr>
<td>Electricity generation companies</td>
<td>1991</td>
</tr>
<tr>
<td>British Coal</td>
<td>1994</td>
</tr>
<tr>
<td>British Rail</td>
<td>1995/6(?)</td>
</tr>
<tr>
<td>Nuclear Electric</td>
<td>1996(?)</td>
</tr>
</tbody>
</table>

### 5. Policy objectives

Sir Alan Walters, former personal economic adviser to Prime Minister Thatcher, has identified two “underlying motives” for privatization:

- reduction in the politicisation of economic decision making, and
- increasing net wealth (by improving the economic efficiency of the enterprises and markets concerned).

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It is clear from the record, however, that a number of different policy goals have been pursued by British governments since 1979 and that the relative weights given to these goals have varied over time.

One important objective has been the promotion of competition in previously monopolised areas of economic activity, and this has given rise to a range of measures intended to secure deregulation and liberalization of markets. Promotion of competition is largely derivative from Walters's second underlying motive -- increasing net wealth -- although it has arguably sometimes been pursued as an end in itself (rather than as a means to an end).

The competition objective has not, however, always been given a high priority, particularly in the process of privatizing major utilities. Indeed, a number of other objectives can be identified which, in practice, have tended to be given greater priority. These include:

- raising revenue for central government (the fiscal objective), and
- gaining political advantage by means of transfers of wealth (the distributional objective).

Broadly speaking, the first of these two additional objectives was particularly important in the first and second phases of policy (1979-83, 1983-7) while the second was particularly important in the second and third phases (1983-7 and 1987-92). Deregulation and liberalization were given high priorities in the early 1980s but had less of an impact in the middle of the decade. More emphasis on measures to promote competition did, however, reappear later in the cases of electricity and rail privatization.

6. The phases of policy

6.1 Phase 1, 1979-83

At least three distinct strands can be identified in this first period of Conservative government:

- the maintenance and reinforcement of strict financial controls and disciplines on state-owned enterprises, together with the associated introduction into the SOE sector of more financially-oriented, senior managers from the private sector,
- the introduction of a series of measures of deregulation and liberalization in road transport, telecoms, gas and electricity, and
- privatization of a number of SOEs which did not operate in utility sectors of the economy.

6.1.1 Financial controls

The stricter budget constraints placed on SOEs and the increased emphasis on financial performance represented a continuation of the previous Labour Government's post-1976 policies. The driving motivation was a desire to reduce the impact of the SOE sector on the UK's overall
fiscal deficit, and there is evidence to suggest that in had significant success in this respect. In steel and airlines (and later in coal) the increased focus on financial objectives was accompanied by the introduction of new managements.

The changes that occurred in the SOE sector were most dramatic in the case of British Steel. The Corporation had some modern, high productivity plants, but a substantial proportion of the workforce was attached to outdated and low productivity steel making plants. Trade unions were strong and, despite some limited protection afforded by domestic and EC policies, British Steel was making very heavy losses at the end of the 1970s. It was not, therefore, an attractive candidate for privatization.

Following the appointment of Sir Ian MacGregor as Chairman, British Steel began a period of major restructuring. Older plants were closed in the face of trade union resistance (which was only overcome after a major national strike). The subsequent productivity and unit cost improvements were, however, spectacular (see Table 4): from a unit-cost position near the bottom of the West European league table, British Steel was one of the lowest cost steel producers in the world at the end of the decade.

British Airways was a rather different case in that, although overmanned, its initial financial position was somewhat better than British Steel. Thus, in principle it would have been possible to privatize the enterprise very much earlier, leaving more of the task of increasing productivity and cutting costs to the new private company. In practice, factors such as outstanding litigation in respect of North Atlantic routes delayed privatization, and, under a new management team headed by Lord King (appointed in 1981), major restructuring, accompanied by rapid improvements in profitability, occurred before flotation.

The greater emphasis on financial objective in the early 1980s had a substantial effect on the performance of the SOE sector as a whole. The financial deficit plus subsidies of the sector as a percentage of the its contribution to GDP fell from a high of 20.9% in 1979 to a low of 11.3% in 1983 (although it subsequently increased somewhat again in the following years). Evidence on the productivity performance of SOEs other than British Steel also tends to suggest the stricter budget constraints had a positive effect on SOE performance from around 1982 onwards. Figure 1 illustrates this in the case of British Gas: there is a strong, short-term (positive) correlation between labour productivity growth and output growth in the industry but, as can be seen from Figure 1, the pre-1982 observations lie clearly below the later relationship.

6.1.2 Deregulation and liberalization

Between 1979 and 1983 deregulation and liberalization initiatives were pursued in several areas of economic policy making and included the following measures:

The Transport Act 1980 was the first step in the deregulation of the markets for coach and bus services. As well as providing for the privatization of the National Freight Corporation (the state owned road haulage operator), the Act
fully deregulated long-distance bus travel (defined as journeys in excess of 30 miles) by abolishing entry barriers arising from licensing requirements and by removing other restrictions on market conduct,
- partially deregulated local bus travel by easing both price and entry restrictions in local bus services, and
- allowed the Minister of Transport to conduct “experiments” in further deregulation of local bus services by dropping the remaining licensing requirements.

On the other hand, the Act retained, and indeed strengthened, regulation of quality in that it required tighter “fitness” standards to be met in terms of the physical conditions of vehicles that were allowed to operate.

The British Telecommunications Act 1981 established British Telecom (BT) as a public corporation separate from the Post Office (with which it had previously been combined) and provided for deregulation in equipment markets, in network operation and in the provision of services. Deregulation was accomplished by:

- Abolishing BT’s exclusive privilege to supply customer apparatus (although, for a period, BT retained the right to supply a customer’s first telephone).
- Establishing independent machinery to set standards and approve equipment, so that BT could not use equipment approval procedures to block entry.
- Giving the Secretary of State for Industry powers to license firms other than BT to run telecommunications systems, a power that was quickly used to grant a license (in 1982) to Mercury to compete with BT as a second public telecommunications operator.
- Allowing competition in value-added network services (VANS).

The Oil and Gas (Enterprise) Act 1982 created a new company, Enterprise Oil, earmarked for quick privatization, to take over the offshore oil interests of British Gas (which were peripheral to BG’s main business) and provided for the use of British Gas’s pipeline and storage network by competing suppliers or by any other persons wishing to transport gas. Access to the network did, however, depend upon obtaining consent from the Secretary of State for Energy, and the Government made it clear that such consent would be denied to anyone seeking to supply in volumes less than 25,000 therms (approximately 733,000 kWh) per annum to persons located less than 25 yards from an existing British Gas pipe. What this meant was that only the market for larger industrial/commercial loads was open to potential competition; supply to households and to smaller industrial or commercial premises remained a British Gas monopoly. Nevertheless, as well as providing for some competition in gas markets, the Act also implicitly ended British Gas’s monopsony position in respect of the purchase of natural gas produced from offshore fields in the UK sector of the North Sea.
The Energy Act 1983 sought to encourage competition in the generation and supply of electricity by:

- removing provisions in earlier Acts of Parliament that had (i) prohibited persons other than Electricity Boards from supplying or distributing electricity as a main business and (ii) restricted the establishment and extension of generating stations (i.e. the Act removed statutory barriers to entry and growth),
- requiring state-owned electricity corporations to make their transmission and distribution networks available for use by others, and
- requiring the state-owned electricity distribution corporations to purchase supplies from private power producers at prices that reflected avoidable costs (i.e. the monies the distributors would save if they ceased buying equivalent supplies from the SOE sector).

6.1.3 Asset sales

In respect of ownership transfers, asset sales in the first policy phase were concentrated on enterprises other than the major monopolies that lay at the heart of the public sector. These sales included Associated British Ports, British Aerospace, Britoil, Cable and Wireless, National Freight, and sales of stock in British Petroleum (already part privately owned). Although some of these firms possessed significant pockets of market power, they were all to some degree exposed to competitive pressures both before and after privatization. In general, therefore, asset transfers were not accompanied by any major regulatory reforms.

The characteristics of these privatizations indicate that a mixture of efficiency and revenue objectives were being pursued at the time, with case-to-case variations in the balance of priorities (in part reflecting the views of the different ministers responsible for handling the flotation). For example, National Freight was a deeply discounted management/worker buyout that raised little revenue for the Government but which fundamentally transformed incentives. On the other hand, the sales of shares in British Petroleum raised substantial amounts of cash for the Government but had very little impact upon how the company operated. More generally, sales of oil companies over the period can be seen largely as representing sales of rights to the oil supplies lying under the North Sea, aimed at helping cover a large fiscal deficit rather than at improving industrial efficiency or deregulating and liberalizing markets.

6.2 Phase 2, 1983-87

Sales of enterprises operating in reasonably competitive industries continued in this

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1 Under public ownership each state-owned enterprise was responsible to a particular “sponsoring” ministry, such as the Department of Trade and Industry, the Ministry of Transport, the Department of Transport, and so on. Individual minister also tended to move relatively frequently from one Department to another.
second period, including Enterprise Oil, Jaguar (motor cars), the Trustee Savings Bank, British Airways and Rolls Royce. Deregulating measures in advance of privatization also continued, particularly in the transport sector.

The Transport Act 1985 completed the process of deregulation and reform in the bus industry by:

- extending full deregulation to local bus services by abolishing licensing restrictions,
- providing for the reorganization of the state-owned National Bus Company into smaller units and for the privatization of those new units,
- requiring that the bus operations of Passenger Transport Executives (metropolitan transport authorities) and of local councils be transferred to separate companies (to prevent such authorities biasing local policy decisions in favour of their own operations), and
- requiring authorities responsible for public expenditure on subsidized bus services (for example, services in rural areas or transport of the elderly) to invite tenders for the supply of such services on a competitive basis.

The 1984 Government White Paper Airline Competition Policy set out the framework for the UK airline industry in anticipation of the forthcoming privatization of British Airways (BA). It signalled a substantial deregulation of domestic prices and entry conditions, but was nevertheless significantly less radical in its measures to promote domestic competition than had been recommended in a preceding report from the Civil Aviation Authority in the same year. It is therefore possible to see in this White Paper an attenuation of the drive toward greater domestic competition in favour of the pursuit of the conflicting objective of strengthening British Airways (in turn motivated by desires to (i) promote BA in its competition with other leading world airlines and (ii) raise greater revenues from privatization).

The distinguishing feature of phase 2 of the Conservative Government’s economic policy was, however, the first sale of a major utility/network industry, in the form of the flotation of a little over 50% of British Telecom shares in November 1984. This was relatively quickly followed by the (100%) sale of British Gas in December 1986. These two privatizations marked a decisive shift in emphasis in the privatization programme, away from flotations of companies that operated in reasonably competitive markets and toward the sale of the monopolistic heartland of the public sector.

The White Paper setting out the Government’s plans for the privatization of British Telecom (published in 1982 at a time when the fiscal position of the Government was still a very difficult one) gave particular emphasis to the financial motive of allowing British Telecom access to capital markets without increasing state borrowings. By late 1984, however, the objective of gaining political advantage by means of selling shares at a discount to expected market value was beginning to be much more in evidence. Thus, an important innovation of the British Telecom
flotation was the extent to which the share issue was targeted at small investors. For the first time successful applicants for shares were numbered in millions, and the offer price was such that first day capital gains amounted to 33% on the full price and 86% on a partly paid basis.

A similar pattern was followed in other privatizations during the second phase of privatization, including British Airways, Rolls Royce, British Gas and the Trustee Savings Bank (see Table 4). In this context it can be noted that, while it is typical for new equity issues to go to a premium on the opening of trading, the mean first-day capital gain on this portfolio of privatization stocks was substantially larger than the market norm.

The privatization of the monopoly supplier of telecommunications services raised, for the first time in the privatization programme, issues of redesigning UK regulatory structures to accommodate the creation of privately owned utilities. The solution favoured was that of establishing new regulatory bodies -- the Office of Telecommunications (Oftel) and the Office of Gas Supply (Ofgas) -- independent of the relevant sponsoring ministries. Their remit is broadly twofold:

- to apply price controls to the regulated firms in those economic activities where competition is largely absent (i.e. the classic function of a utility regulator), and
- where feasible, to promote competition (i.e. to regulate for competition).

Since the BT privatization, price control in the UK has taken the form of price-cap regulation according to some or other variant of the RPI-X formula. This requires that either the price index of a basket of regulated services or the average revenue from regulated activities increase in any one year by no more than the increase in the retail prices index (RPI) less (or, later, in the cases of water and electricity, plus) some efficiency target (X). For BT X was initially set at 3% on the basis of estimates of the potential for unit cost reductions from scale economies and from technical progress. For British Gas X was set at 2%, although in this case the firm was allowed to pass through into final prices any increases in its gas purchase costs -- denoted Y, so that the formula became RPI-X+Y -- on grounds that these costs were determined by long-term contracts and were therefore largely beyond the control of the firm in the short- to medium-term.
Table 4. **Pricing of shares** (values in £).

<table>
<thead>
<tr>
<th>Company</th>
<th>Gross proceeds</th>
<th>Offer price</th>
<th>First instalment price</th>
<th>Opening</th>
<th>% gain</th>
<th>Value of gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT</td>
<td>3,900m</td>
<td>1.30</td>
<td>0.50</td>
<td>0.93</td>
<td>86%</td>
<td>1,290m</td>
</tr>
<tr>
<td>Trustee Savings Bank</td>
<td>1,360m</td>
<td>1.00</td>
<td>0.50</td>
<td>0.85</td>
<td>70%</td>
<td>476m</td>
</tr>
<tr>
<td>British Gas</td>
<td>5,600m</td>
<td>1.35</td>
<td>0.50</td>
<td>0.625</td>
<td>25%</td>
<td>518m</td>
</tr>
<tr>
<td>British Airways</td>
<td>900m</td>
<td>1.25</td>
<td>0.65</td>
<td>1.09</td>
<td>68%</td>
<td>317m</td>
</tr>
<tr>
<td>Rolls Royce</td>
<td>1,360m</td>
<td>1.70</td>
<td>0.85</td>
<td>1.47</td>
<td>73%</td>
<td>496m</td>
</tr>
<tr>
<td>British Airports</td>
<td>920m</td>
<td>2.45</td>
<td>1.00</td>
<td>1.46</td>
<td>46%</td>
<td>172m</td>
</tr>
</tbody>
</table>

Source: Financial Times.
The initial RPI-X(+Y) formulae for BT and BG were set for a period of five years, at the end of which regulatory reviews occurred which reset the formulae (see section 6.3 below). This inbuilt “regulatory lag” was considered a key factor in the incentive structure being created, since it allowed the regulated company to benefit directly from any cost efficiencies it could achieve within that period (i.e. the benefits of cost reductions would not be taken away immediately by downward price adjustments). Under existing legislation, the Director General of the relevant regulatory body makes the decision as to what the new price control formula will be. If the regulated company accepts the decision, the necessary licence amendments are made and the new price control comes into effect. If the firm does not accept the decision, the matter is referred to the Monopolies and Mergers Commission (MMC), which serves as an appeals mechanism in these cases.\footnote{The situation is complicated by the fact that the MMC does not have the final word, but discussion of the fine detail of the review mechanisms is beyond the scope of this paper.}

In adopting price-cap regulation based on the application of RPI-X formulae for periods of several years, UK policy makers were very much concerned to avoid some of the perceived pitfalls of US-style cost-of-service (or rate-of-return) regulation. In particular, the weak incentives for cost reduction of a cost-of-service approach were considered a particularly negative feature of that approach. It was believed that newly privatized utilities were likely to be highly cost-inefficient as a consequence of their earlier subjection to political interventions, and hence that strong incentives to reduce costs would yield substantial performance improvements. What quickly became clear, however, was that RPI-X regulation has incentive problems of its own, including, for example, a tendency to give regulated firms incentives to degrade the quality of their products and services. It also had potentially negative implications for incentives to invest: in the absence of any explicit guarantees that shareholder investment would be adequately remunerated in the future, the discretionary powers available to regulators clearly give rise to problems of policy credibility.

The second type of duty assigned to the new regulatory agencies, the promotion of competition, represented a radical departure from previous approaches to the industries concerned in that it (i) envisaged a much larger role for competition than was earlier thought efficient and (ii) entrusted regulatory agencies with the task of actively using their powers to promote competition. That is, rather than seeing regulation as a substitute for competition (the traditional approach), the new perspective was that regulation could itself be a means of achieving more competitive outcomes.

The first practical examples of regulation for competition occurred naturally enough in telecoms, the first industry to be privatized and subject to a new regulatory regime. Mercury was deliberately assisted, first by the Government and then by Oftel, with the aim of developing the company into a major competitor for BT. The Mercury case showed, however, the ambiguities in the “promotion of competition” objective. The Government decided that, for an initial period,
only Mercury would be licensed as a second public telecommunications operator so as to afford some protection for the smaller company and encourage it to invest more. Thus, promotion of competition was not interpreted to mean liberalization of the market based on a permissive licensing policy, but rather was seen as requiring the so called “duopoly policy” that was pursued in the 1980s. It is partly because of this type of use of regulatory powers to promote competition that the new policies for the telecoms and energy industries in the UK can not be regarded as being a straightforward exercise in deregulation. Rather, the policies can best be described as major regulatory reforms which looked forward to the prospect of substantial deregulation of non-naturally monopolistic parts of the relevant industries in some future period when competition was firmly established.

6.3 Phase 3, 1987-92

Although it includes major asset sales such as British Steel and the British Airports Authority, the third phase of the privatization programme was dominated by the sales of the water (1989) and electricity (1990-91) industries and the accompanying regulatory reforms. The period also included the first reviews of the price-cap formulae in the telecoms and gas industries, and it saw a number of significant developments in the new regulatory regimes.

The water and electricity flotations were similar to the earlier telecoms and gas privatizations in that new bodies (Ofwat and Offer respectively) were established to regulate the industries and the flotations were heavily targeted at small investors. Unlike in telecoms and gas, however, in both cases there was substantial restructuring of the SOEs before privatization. In respect of water, restructuring was driven by the desire to separate environmental regulation from the businesses of water supply and the treatment and disposal of liquid wastes (these functions were bundled together in the public sector), rather than by any notion that competition might be increased as a result. Indeed, the Government explicitly recognised that the prospects for competition in the supply of basic services were poor, and instead emphasised the potential for the development of “competition by comparison” (another name for yardstick regulation) that existed by virtue of the fact that were many, regionally-based water utilities.

Pressures for improved water quality (for example, to meet European regulatory standards) meant that, at the time of privatization, the industry was planning for a large-scale investment programme, to be spread over a period of many years. This raised fears of possible underinvestment by privately-owned water utilities. Initial price controls therefore took the form of formulae which promised the utilities future prices that, year by year, would rise substantially faster than the general rate of inflation. The extent of the permitted annual increase in real prices varied from utility to utility, depending upon each firm’s anticipated investment requirements. In effect, “regulatory contracts” were struck with the utilities allowing the latter to obtain finance for investment from consumers.

In contrast, in electricity industrial restructuring was driven by an attempt to increase
competition. In England and Wales the monopoly generation and transmission enterprise, the Central Electricity Generating Board (CEGB), was split into four parts: two non-nuclear generating companies, one nuclear generating company which remained in state ownership, and a transmission company that was transferred to the joint ownership of the twelve soon-to-be-privatized regional distribution companies. While there remained a number of significant limitations on competition associated with this structure and with the associated regulatory regime, by international standards the measures taken in respect of electricity supply were the most radical of the whole privatization programme up to that time.

In Scotland the pre-privatization restructuring of the industry was less dramatic. As in England and Wales, nuclear assets were separated out into a new SOE, Scottish Nuclear. The rest of the industry was then sold in the form of two vertically integrated regional companies which were the natural successors to the two regionally-based SOEs of the earlier period. Among other things, the policy approach in Scotland reflected the Government’s view that the prospects for greater competition were rather bleaker than in England and Wales. Factors contributing to this perception included the smaller size of the market\(^3\), the greater importance of hydro power, the much greater importance of nuclear power, and the existence of substantial excess capacity.

In respect of more general developments in regulation, the period 1987-92 saw a number of highly significant events. The first reviews of RPI-X led to the imposition of much tighter price caps, with \(X\) rising from 3% to 4.5% in telecoms and from 2% to 5% in gas. These reviews also marked an important transition for the industries concerned: from these first reviews onwards the prices of the utilities have been constrained by the new regulatory agencies rather than by sponsoring ministries (which were responsible for the setting of the first price-caps immediately prior to the flotations).

Quality of service issues also began to become more prominent in debates about the performance and control of utilities (in telecoms and energy as well as in water, where water quality and general environmental issues were central from the outset). Recognising the weaknesses of the simple RPI-X approach, regulators tended to become more active in monitoring quality of service, although their powers to act varied from industry to industry as a consequence of differences among the various pieces of legislation. This latter problem was remedied in 1992 by the passage of legislation which gave all the new regulatory bodies powers to set and monitor quality of service. As a consequence of these developments, much of the simplicity of the original regulatory approach was necessarily lost, and there was a trend over the period towards more intrusive regulation. Widespread deregulation therefore remained a future potentiality rather than a current reality.

There were nevertheless, significant steps toward deregulation and liberalization in a

\(^3\) Although the Scottish system is connected with that of England and Wales, the capacity of the interconnectors is relatively limited.
number of specific areas. The introduction of competition into electricity generation and into the supply of electricity to large industrial and commercial customers, together with the absence of price-controls on these activities, represented a very major change, as did the abandonment of the duopoly policy and the move to permissive licensing in telecoms. In gas, both the Monopolies and Mergers Commission and the Office of Fair Trading were active in trying to correct some of the earlier defects of the privatization legislation which had left British Gas with a very high degree of market power. In particular, a number of measures were implemented which had the effect of reducing barriers to entry into gas supply, for example by (i) clarifying the access conditions for use of BG’s pipelines and storage system, (ii) impeding predatory behaviour by BG and (iii) enabling potential entrants to gain access to supplies of gas from the North Sea. In all three of the industries the result has been that new competitors have been willing to enter the industries and levels of concentration have fallen.

6.4 Phase 4, 1992-

By 1992 much of the momentum had gone out of the privatization programme. Mrs. Thatcher had been replaced by Mr. Major as leader of the Conservative Party and, following the general election of 1992, the Government had a much reduced parliamentary majority. Most of the SOE sector had already been privatized and the enterprises that remained in the public sector were naturally those for which ownership transfer had been regarded as particularly difficult in earlier periods.

The changed political circumstances are reflected in the Government’s failure to carry through plans to privatize the Post Office. Despite the enthusiastic support of the Secretary of State for Trade and Industry, opposition from within the ranks of Conservative members of parliament made it impossible for the Government to find sufficient political support for its proposals. The chief concern of the opposition was the potential impact of privatization on the future existence of thousands of small post offices in rural areas.

The Government did manage to privatize British Coal in 1994, although by that date the company was only a fraction of its size in 1979 (see Table 5). Following the defeat of a year long miners’ strike in 1984/5 there had been very widespread closures of higher-cost coal mines. Electricity privatization subsequently led to further substantial contraction in the size of the industry as (i) nuclear electricity increased its market share and (ii) gas replaced coal as the preferred fuel input in new thermal stations.
Table 5. The decline of British Coal

<table>
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<th></th>
<th>1979/80</th>
<th>1986/87</th>
<th>1993/94</th>
</tr>
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<tbody>
<tr>
<td>Output (million tonnes)</td>
<td>108.6</td>
<td>87.1</td>
<td>42.5</td>
</tr>
<tr>
<td>Number of employees (000s)</td>
<td>232.5</td>
<td>125.4</td>
<td>19.4</td>
</tr>
<tr>
<td>Number of mines operating</td>
<td>219</td>
<td>110</td>
<td>19</td>
</tr>
</tbody>
</table>

More significant is the privatization of British Rail. Following the precedent set in electricity, the rail industry has been substantially restructured in preparation for transfer to the private sector. In particular, the rail infrastructure (rails, signals, etc.) has been separated out and the assets assigned to a new company, Railtrack. The plan is that train operating companies will be able to bid (competitively) for franchises to operate particular passenger routes and services, using Railtrack's infrastructure. In addition there will be limited access to the infrastructure for non-franchised operators.

A new regulatory office (the Office of the Rail Regulator) has been established which will operate in a manner similar to OfTEL, Ofgas, Ofwat and Offer. In particular it will regulate the charges paid by train operating companies for use of Railtrack's infrastructure. A novelty of the approach is, however, the creation of a second and separate agency which will be concerned with the allocation of franchises. One issue here is the problem that many routes and services are loss making. Thus, as in the case of certain local bus services, the competition for franchises will, in some cases, take the form of companies bidding for subsidies to operate the designated services.

The details of the rail privatization are extremely complex, and there is considerable opposition to the Government's plans in both parliament and outside. It remains to be seen, therefore, whether it will be possible for the Government to complete most of the privatization by the time of the next general election (due by Spring 1997 at the latest).

There are likewise doubts about the other, substantial SOE privatization still on the policy agenda, nuclear electricity. It was originally intended that nuclear power stations be sold along with the rest of the electricity supply industry in 1990/1, but the potential liabilities surrounding nuclear power proved too much for the capital market to handle at the time. The Government has since revisited the nuclear issue and intends to privatize the newer nuclear power stations, which are responsible for the bulk of nuclear output, whilst retaining the older stations, for which the liabilities issue is more difficult, in the public sector for closure and decommissioning.

While the programme of privatizing SOEs clearly slowed down in phase 4, developments in regulatory policy continued apace and this whole policy area has tended to become more controversial politically. That is, the balance of policy has shifted decisively from a focus on
ownership transfers to concerns about the development of the regulatory environment. And, while it is not appropriate to go into detail in an overview paper such as this, some of the aspects of current controversies in the UK can be illustrated by reference to some of the developments in electricity regulation.

When the electricity industry was privatized, wholesale prices of bulk power were deregulated. A power pool was created in which generating companies would bid on a daily basis to supply power to the wholesale market. However, operation of the power pool has given rise to a whole series of difficulties and incumbent generators have been constantly accused of manipulating prices. Eventually, in early 1994, the Director General of Electricity Supply (DGES) responded by introducing a two year price cap on average pool prices. Thus, what had been deregulated at the time of privatization has been subsequently re-regulated.

More generally, there have been widespread complaints about the post-privatization levels of electricity prices and about the associated high levels of profit made by a number of the new companies. The DGES completed a review of distribution charges in the summer of 1994 and announced new, tighter price-caps on the relevant companies. However, following a bid for one of the distribution companies in early 1995, the DGES decided that he might not have been tough enough in his 1994 review and announced that he would reconsider those earlier decisions. This reconsideration of the outcome of the distribution price review did, of course, violate one of the fundamental principles of the RPI-X approach to regulation, that, once made, pricing decisions remain unchanged for a period of several years. The DGES’s behaviour has, therefore, given rise to a lively debate about the effectiveness of the UK system of utilities regulation.

7. Assessment

The post-1979 history of the UK is a fascinating case study for anyone interested in micro-economic policy making. A rich mixture of reforms have been implemented across a range of industrial sectors. Various combinations of industrial restructuring, ownership transfer, liberalization, deregulation and regulatory reform have been tried, and within each of these major headings there have often been significant differences in the options chosen from one situation to another. Some general points can, however, be extracted from the kaleidoscopic detail of policy practice.

For much of the period, ownership transfer has occupied centre stage. The reason for this is not that ownership is the major factor influencing economic performance but rather that it is ownership transfer that produces the most immediate macro-economic and macro-political effects.

4 The situation was not helped by the timing of the latter announcement, which occurred on the first day of trading after the Government had sold its residual stock in the two major generating companies. The subsequent fall in the share prices of the generating companies has led to accusations that the Government misled investors by withholding market relevant information.
The sale of SOEs raised billions of pounds for the Government, funds which first enabled it to finance an awkward fiscal deficit and later provided it with a justification for cutting taxes. Even today, the timing of the prospective sales of Railtrack and Nuclear Power is heavily influenced by fiscal considerations, particularly the prospect that they may provide some scope for tax cuts before the next election.

Sale of SOEs by means of stock market flotations has also enabled the Government to gain political advantage by redistributing resources to key groups of voters. This has been done by the simple mechanism of underpricing shares whilst simultaneously ensuring that the allocation mechanisms then needed to ration excess demand channel a substantial proportion of the available shares to large numbers of small investors.

In contrast to these “macro” effects of privatization, the political gains from policies such as deregulation, liberalization and regulatory reform tend to be more diffuse and more spread out over time. As a consequence, such objectives have often had to take second or third place behind the fiscal and redistributive goals of public policy. In the longer term, however, it is the changes in regulatory structures and in market competition that have the more profound implications for economic performance, both in the sectors concerned and, ultimately, in the economy as a whole. And, although such considerations have not generally been the priority on short-term political agendas, there have nevertheless been a number of major advances in these areas.

Among the positive features of the post-1979 UK experience, I would list the following factors:

1. The delegation of regulatory functions to specialised agencies which, although part of government, are semi-independent of the day to day pressures faced by ministers and their civil servants.
2. The assignment of duties to promote or facilitate competition to the new regulators, in recognition of the problems of transition faced in moving away from state-owned, state-controlled monopolies.
3. The recognition, embodied in regulatory structures (and also in some of the new industrial structures), that competition can be both feasible and effective in large areas of economic activity that were previously thought either to be naturally monopolistic or to be subject to other market failures that justified the suppression of competition via the creation of statutory entry barriers.
4. The improved economic performance that has resulted when monopolistic market structures have been broken down and supplanted by more competitive and less centrally controlled market processes.

On the other hand, not everything has been positive. Apart from the aforementioned tendency to place deregulation and liberalization objectives second or third, the negative factors
include:

i. Early Government naiveness about regulation, particularly the notions that simple RPI-X regulation was all that was needed effectively to control monopolies.

ii. A tendency for the Government to seek to “manage” emerging competition -- as in the duopoly policy in telecoms and the multi-airline policy in aviation -- rather than to seek only to establish conditions in which competition can exist.

iii. Failings in the structure of regulation that have led in many instances to increasingly intrusive regulation rather than to deregulation.

iv. A tendency for most of the early performance gains arising from the new policies to be channelled to shareholders and managements, sometimes leaving consumers worse off (e.g., water and electricity) and thereby weakening longer term political support for pro-competition policies.

The first two of these weaknesses are now largely irrelevant, but the second two are very much at the centre of current political debates in the UK. It is widely recognised that there are few checks and balances in the UK regulatory system, and that therefore the general duties given to the various Directors General allow regulators very considerable discretion in deciding how they should approach their tasks. There is, however, no consensus as to how the regulatory system might be changed, and some of the proposals for reform (such as increasing the degree of political supervision of regulators) threaten a move backwards which would tend to undermine major benefits of existing arrangements.

The failure to deliver a larger share of the benefits of improved industrial performance to consumers, particularly in the water and electricity industries, has led to a growing attack on RPI-X regulation. An alternative -- now being advocated by the Labour Party, evaluated by the gas regulator, and already operated to some extent in water and electricity -- is a sharing rule whereby when profitability rises above some threshold level the regulated company will be required to make price cuts to the value of, say, half the excess profit. Compared with the RPI-X approach this would arguably generate lesser incentives for immediate cost reduction (since part of the gain might be taken away immediately in the form of lower prices). In compensation, by giving rise to a more acceptable distribution of benefits, it may have the positive effect of reducing the incentives of politicians to intervene, not just in respect of prices but also in relation to other aspects of the regulated firm's conduct.

These last two paragraphs indicate an important point. Post-1979 UK micro-economic policy marks a radical departure from what went before and many of the changes have been experimental in nature. There is still a good deal of learning going on, and it is not at all clear that either the structure of the new regulatory system or the principal rules that are currently operated are in anything like a steady state. Regulatory policies are inevitably influenced by the political climate of the day, and in the UK this has changed substantially since the days of Mrs. Thatcher. Continuing change can therefore be expected over the next period.
Figure 1. British Gas: productivity growth vs output growth.
iii) Japan

PRIVATIZATION AND DEREGULATION IN JAPAN:
AN OVERVIEW

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I. Introduction

When Japanese government faced the problem of restructuring its economic infrastructure after the World War II, there existed several approaches to accomplish it. All the public utilities were integrated into national monopoly during the wartime and the task was how to reshape these monopolies into more efficient organization. With regard to the industries analyzed here we can classify them into three types:

1) Creation of Kosha or public corporation
2) Regulated local monopolies
3) Creation and protection of government owned company

The first approach was adopted to NTT (Nippon Telegraph and Telephone) public corporation, JNR (Japan National Railways) and Japan Monopoly Corporation (tobacco and salt).

The rationale for creating public corporations is that governmental intervention should be avoided in order that an organization with definite objective should achieve its goal. Kosha was an independent entity subject to the surveillance of the Diet but free from ministerial regulation. In this group NTT was a natural monopoly in economic sense but JNR and Japan Monopoly Corporation belonged to another species. JNR had nation wide railway network and was the greatest company in Japan in terms of the number of employees but it had to face competition from other transport modes. Private railways, highways and airlines were increasingly becoming important competitors. On the other hand, Japan Monopoly Corporation was established for the purpose of collecting tax and from economic viewpoint very strange organization. Government could collect tax without monopoly corporation and it could have raised more tax by liberalizing the cigarette market.

The second category is represented by electric utility companies. In 1951 the prewar electricity monopoly was broken up and reorganized as nine local electricity companies. They are subject to regulation of MITI (Ministry of International Trade and Industry). The firm size is different from region to region but electric utility companies occupy politically and economically important position in each franchise. Electric utility is an integrated body of power generation and dispatching. It was believed that there existed huge economies of scale in power generation and that was a rational for natural monopoly status.

The third category includes airline industry which started as an infant industry after the World War II. In Japan railways used to be dominant as transport mode in the domestic market and accordingly the prospect for domestic airline was not bright. The international airline market was much more uncertain and American carriers were dominant. The Ministry of Transport created government owned company, Japan Airlines.

Coming into 1970's the management and performance of public firms in general have become the target of discussion. Especially business leaders were doubtful of the bureaucratic
management of Kosha and protected government owned companies. Among these firms there seemed to exist so called X inefficiencies through the huge size and bureaucratic organization. The public felt that there was considerable waste of resources and the need for organizational reform. In 1981 the Provisional Committee on Administrative Reform was founded and investigations into public corporations started. The focus of this Committee was on NTT, JNR and Japan Monopoly Corporation but it also triggered discussion on economic efficiency of regulated firms.

By the end of 1970's Japanese public utilities have grown to giant firms in each industry. At this time the approach of intervening into market mechanism through regulatory system has become disputed in the U.S. and U.K. Deregulation was an important agenda of U.S. government which introduced full competition into domestic airline service, trucking and telecommunications even if competition was to some extent controlled at the first time. In the U.K. under the leadership of primer M. Thacher ideological support for nationalized industries collapsed and privatization became a major wave in the early 1980's. Japanese situation was similar to the U.K. in the sense that Japan had Kosha's or public corporations to be privatized as in the U.K. nationalized industries.

Deregulation in the U.S. meant lifting up the government regulation or removal of government dominance to market mechanism in the name of public interest. The focus of U.S. deregulation was to realize competition by paying attention to the market control of incumbent firm. In this process the usual regulatory constraints like entry and exit approval, the rate return and price regulation were totally removed in the case of airline and trucking industries. Asymmetric regulation was applied to AT&T by the FCC because of the market dominance of AT&T as incumbent for a long time but price cap regulation was introduced later and it was made clear that regulation is transitory towards the process of full competition.

Japan and the U.K. employed this deregulation policy when they privatized public corporations. But the policy combination of deregulation and privatization was different in each county. We will analyze the characteristics of government policy and its economic performance in the next section.

II. Telecommunications

The privatization of NTT public Corporation was accompanied by the introduction of the Telecommunications Business Law and the NTT Corporation Law. The Telecommunications Business Law determines the industrial structure of telecommunications industry whereas the NTT Corporation Law defines the role of NTT as a special entity. The spirit of the Business Law was to realize competition in Japanese telecommunications industry but in reality it brought in relatively strict regulation upon service providers. By this law service providers are divided into Type I

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carriers and Type II carriers. The former is a service provider which owns its telecommunication facilities whereas the latter does not own but rents them from Type I carrier. Type I carriers face MPT (Ministry of Posts and Telecommunications) regulation on many subjects and they are classified into several categories as in Table-1. The important regulation imposed by MPT can be summarized as follows:

1) Supply and Demand Balancing Clause

The number of firms which can operate in a certain category of industry is regulated by MPT considering the firm’s financial viability, the threat of excess supply and further development of industry. Accordingly the number of entrants is determined by MPT and at the same time exit is not automatically possible because the minister of MPT can forbid it when he or she thinks it necessary. As a result, for example, the number of entrants in the long distance market was limited to three although new entrants enjoyed high rate of return soon after their entry.

2) Fair Rate of Return

MPT adopted the Fully Distributed Cost (FDC) method which used to be employed by the FCC and is still used now by the state public utility regulators. This method requires the calculation of separate cost by distributing the common cost into detailed services. The way of common cost distribution is arbitrary in the sense that it does not correspond to any kind of efficiency criteria. This method also invites difficulty when new service is going to be priced. There is no adequate information for cost calculation of this service because it is new. The FDC method is liable to be preventive to the development of new services.

II.1. Competition in the long distance market

Three firms-DDI (Daini Denden Inc.), JT (Japan Telecom) and TWJ (Tele Way Japan)---were allowed to enter into the long distance market. They began to provide telephony service in 1987 and they succeeded to capture most profitable markets. There are several reasons: Firstly it was recognized by large users that the quality of service of new comers is not inferior to that of NTT. Secondly there existed 15-20% price differential between NTT and NCCs (New Common Carriers). (Table-2 & 3)

Thirdly NTT was not allowed to make price matching to NCCs and there was no way for NTT to recover its lost market. As a result two of NCCs-DDI and JT--became profitable much earlier than expected. Recently the rates of NCCs have become determined by end to end formula instead of board to board. Also in 1994 access charge was at last introduced and these changes have given negative influence upon the profitability of NCCs.

In spite of the high profitability of NCCs MPT neither considered additional approval of entry into this industry nor expressed a sign when protection of three NCCs will come to an end.

Research Institute, Economic Planning Agency
Without further entry into the long distance market, it is impossible to know whether existing entrants are efficient or not. In the U.S. there exists no entry regulation in the long distance market and in the U.K. any regulation was removed after the Duopoly Review in 1991. Japan is far behind of these countries. Although efficiency gains were substantial measured by consumers’ surplus, the competitive process contrived by the Telecommunications Business Law is still very dubious from the view point of dynamic process of competition. (Table-4)

II.2. Competition in the local market

At the outset of reform of telecommunications industry new entrants appeared in the local market. They are mainly subsidiaries of electric utilities. But interconnection between NTT network and local NCCs’ network was not complete by the regulation of MPT. Namely the subscribers of local NCCs cannot reach NTT’s subscribers. This is fatal defect of NCCs’ network and accordingly they did not grow in the local market. On the other hand, the bypassers like CAPs or wireless service providers did not become a real threat to NTT. CAPs are Type I carriers in Japanese regulatory scheme and they have not been allowed to appear. Mobile telephone operators began their business but the tariffs of these carriers were too high to attract customers. This is because mobile carriers are Type I carriers and the tariff must be based upon FDC rule. As a result mobile service providers could not compete charging freely low prices to allure many customers. CATV business did not grow successfully as in the U.S. because of strict regulation upon them as broadcasters. They did not constitute a potential competitor to NTT. After all competitive threat to NTT has been totally forbidden by MPT and accordingly NTT appears like a bottleneck monopoly. This is not because NTT local network is bound to be a bottleneck in technological sense but because regulation has been an ultimate barrier to entry. Seeing that competition in the local market has been flourishing in countries where entry regulation was lifted, the frustrated Japanese local market can only be rescued by removing entry regulation into this field.

II.3. Consumers Surplus in the Long Distance Market

We could successfully estimate demand function in the long distance market of long line telephone. By using this estimation we obtained estimate of consumers’ surplus brought about by price competition in the long distance market. According to the estimated result, the accumulated surplus amounts to 1955 billion yen since 1980 when rate reduction started. That surplus came from the controlled competition in this market and as was noticed we must be careful to interpret these figures because dynamic process of entry was not guaranteed in our system.

II.4. Conclusion

Japan introduced competition as early as in 1985 but competition between NTT and NCCs has been restricted to the extent that MPT has exerted strong power to formulate the type of competition. The competitive process in the local as well as long distance market did not work as economics expected. As a result NTT looks like a bottleneck monopoly which continuously invites
a discussion of divestiture. Looking at, however, the evolutionary development of competition in the
local market and technological possibilities, the first task to be taken in Japan is to deregulate this
industry in the spirit of the U.S. and U.K.

III. Air Transport

Japan has grown one of the major airline service provider in the world in the past 40 years. Air Transport industry has been regulated and protected by the Ministry of Transport. Seeing the
growth of the Japanese airlines at least up to now, the industrial policy of MOT may be judged as a
success. But when we look at the performance of this industry, we encounter serious problems to be
solved. Profs. H. Yamauchi and H. Murakami analyzed this situation from the viewpoint of
economic efficiency. They started analysis by historical background of the air transport industry.

In 1952, Japan Airlines was established as a major private company and started service in
the domestic market. Next year, Japan was allowed operating international air transport service,
and the government decided to reform JAL to half public corporation. The purpose of this reform
was to foster the company as a national flag carrier. Around that time, several private airline
companies were founded in 1957 and the bigger two of these carriers merged to form All Nippon
Airways. After that, remaining companies were also undergone the integration and consolidation,
and in the mid-1960s, there existed four airline companies in Japan, that is JAL, ANA, Japan
Domestic Airlines (JDA) and Toa Airways (TA). In the second half of 1960s, TA developed
co-operative arrangement with ANA, while JDA with JAL. As a result, it was assumed that they
would be consolidated into the big two, JAL and ANA.

However, the government policy changed its course due to the Cabinet Meeting Resolution
“Concerning Airline Operations” of November 1970 and the Notice from the Minister of Transport in
July 1972. The Cabinet Meeting Resolution of 1970 specified not a two-company system, but rather
a three-company system resulting from the consolidation of JDA and TA. According to this decision
and notification, generally referred to as the “Aviation Constitution,” Japan Airlines would be
responsible for international routes and domestic trunk routes; ANA would be responsible for
domestic trunk routes, local routes and short-distance international charter flights; and Toa
Domestic Airlines, which was the new company resulting from the consolidation of JDA and TA,
would be responsible for local routes and a portion of domestic trunk routes. Thus, the so-called
1970-1972 airline regulation system (the old regime, hereafter) was established.

The old regime could survive until 1980’s when new era for air transport service was
initiated. Already in 1970’s the U.S. airline policy met a drastic change and the rest of the world
had to respond to it. Japan was no exception and in 1986 the Ministry of Transport replaced its old

2 Hirotaka Yamauchi and Hideki Murakami, “Air Transport in Japan: Policy Changes and its
Planning Agency
regime by new policy inviting to more competition into the field.

With respect to domestic aviation, the Ministry of Transport promoted a policy which induced competition in the form of double or triple tracking, based on the quantitative standards in 1986. In these standards, new entries were judged on the number of passengers carried in the previous year. Since that policy change, double and triple trucking routes have increased gradually. In 1993, about 65% of total air transport passenger flew in either double or triple trucking route, although the number of these routes counts for only 19% of the total.

In addition, a related bill was passed in September 1987 pertaining to the complete privatization of JAL.

However, it should be noted that the new policy did not give enough freedom for airlines to change themselves. This new policy seeks “promotion of competition” within the range of administrative operation without altering the previous systematic framework stipulated by the Civil Aeronautics Law. In other words, the licensing system for new entry and approval system for setting fares remained unchanged. On top of that, it is criticized that the new policy enhanced administrative discretion and that in some respects the regulation was strengthened because regulators have to decide which route will become a double track and which carrier will enter.

The liberalization in 1986 increased the opportunity of service competition but price competition was suppressed in the fear, according to the regulator, that competitive strength of Japanese airlines are weaker than that of the U.S.

Accordingly, the authors conclude that the new air transport policy since 1986 has not brought effective competition to the market. As a result, consumers have not obtained gain from the policy change. Thus what Japanese government should do urgently is to make the competition effective in the air transport markets. At the end of last year, the government revised the Civil Aeronautics Law to relax the conditions for introducing discount fare in domestic markets, but in order to give the fruit to consumers more drastic relaxation is needed. (Figure-1 & 2)

IV. Trucking Industry

Japanese trucking industry experienced the regulatory reform through replacing the Road Transport Law by the Motor-Trucking Business Law in 1990. The main theme of this section is to examine what kind of changes have been rendered by this reform. But before analyzing that change it will be useful to review the development of trucking industry since 1950's.

When we look at the history of transport industry, it is most striking that the market share of railways declined dramatically: in 1955 its share was 50%, in 1965 30%, in 1975 17% and finally in 1991 5%. The market share of coastal shipping has been stable at around 45%, trucking succeeded in capturing the business of railways. This process is closely linked with the failure of the Japan National Railways. JNR was given a status of Kosha (public corporation) which is independent of the ministerial regulation in principle. JNR started as an excellent company in 1950's but in early 1960's met a financial difficulty because the Diet would not allow rate increase in
the face of high rate of inflation. Politicians intended to suppress inflation by refusing rate revision of public corporations arguing that the rise of public prices would hit the life of general public must seriously. The deficit of JNR was institutionalized in this way and it accelerated the organizational problem of JNR.

The Ministry of Transport revised the Road Transport Law in 1953 and got the hold of this industry. At first MOT was going to coordinate the role of railways and trucking but the decline of railways was almost exogenously determined. MOT took different approach to passenger and freight transport: as for the latter regulation used to be more relaxed than the former. Tariffs were based on the band and illegal entry was permitted with anticipated penalty on entrants. But the Road Transport Law include supply-demand balancing clause in the spirit that regulator can foresee and get rid of the gap between demand and supply. In practice this regulation was not binding and constituted no constraints to new comers.

In short before Motor Truck Business Law came out in 1990, the trucking industry was workably competitive and new law only reconfirmed the situation. With the introduction of newly enacted law, the old supply demand balancing clause was removed although policy measure to watch excessive supply was retained. Professor H. Yamauchi analyzed the effect of motor Trucking Business Law upon market structure, fare and employment.

The change of market structure seems small although the growth of aerial carriers was witnessed since 1991. One notable change is that the size of special consolidate carriers has been increasing. The trend of fare has not been changed by the new law. There exists continued moderate upward trend (Figure-3). The effect upon employment cannot be traced exactly because of the lack of data. Summing up, the deregulatory policy in 1990 has not produced remarkable change simply because the trucking industry has already been competitive even if there may have existed anti-competitive problems.

Lastly we will pick up the case of door to door trucking service which can illustrate the regulatory response to new business. In 1976 Yamato Transport Company introduced door to door delivery service. Yamato faced MOT reluctance to admit this business because it might give unfavorable influence on other transport operators. MOT was slow to approve the first fare application and prolonged the examination process for application to expand delivery network. Yamato had to fight in the court to avoid regulatory delay. In spite of the turmoil for network expansion, door to door delivery service grew rapidly and has become quite popular (Figure-4).

V. Electric Utilities

V.1. Institutional framework

When we compare electric utility industry with other regulated industries -

telecommunications, air transport and trucking - it is noticeable that this industry was relatively immune from deregulation movement in 1980’s. It was not until 1994 that effective deregulatory measures were discussed and introduced. In order to understand this, we will first give descriptive analysis of Japanese electric utilities after the World War II.

In 1951 nine electrical utility companies were created by dividing the national monopoly which was formed by the government during wartime. New electric utility was a regional monopoly. The electric utilities have been regulated by the Electric Utility Industry Law of 1964 in the most traditional manner. The main subjects of regulation are as follows:

1) supply and demand balancing clause
   Entry and exit are not free but need approval of the Public Utility Department of the Agency of Natural Resources and Energy. It has been strictly imposed except for in-house power generation.

2) FDC (Fully Distributed Cost) method.
   Rate making has followed the traditional rule which is based on the concept that all the service rates must be equal to the cost calculated by distributing the total common cost into service categories. This is not opportunity cost but mere accounting cost and accordingly the divergence between regulatory rates and economic opportunity cost is inevitable from time to time.

3) fair rate of return
   The rate of return has been regulated by the fair return principle. This rule is often discussed as it may invite bias into the construction of capital stock (Averch Johnson effect). Especially in Japan atomic powers generation has been popularized and this is a controversial problem.

Under the regulatory scheme as above Japanese electric power companies have grown steadily in the past. Their firm size is remarkably large when we compare them with other electric utilities in the world. They are not only economically important but politically strong to take leadership of the Japanese industry. In the regional economy an electric company is a dominant factor and major electric utilities have had a strong voice upon the central decision making process in the capital.

In the course of this development Japanese electric utilities have now faced a structural problem recently. Although electricity is not an exportable goods, this is closely connected with the exchange rate and export capability of Japanese manufacturers.

V.2. Price differential between at home and abroad
   As the exchange rate of yen has been rising, we naturally witnessed a large difference between domestic and foreign prices. If the speed of exchange rate change is unusually high, such price differentials are more or less inevitable. But even if we make some adjustments, Japanese
electric service rates are high compared with the developed countries. We must investigate the causes of this divergence. (Figure-5)

A report of the Rate Making Subcommittee of the Electric Utility Industry Council appointed out six reasons of high electricity rates:

1) appreciated depreciation costs by the rising yen
2) rising equipment costs due to high growth rate of demand
3) fall of annual lead factor caused by spiraling summer peaks
4) inflated wages by the strong yen
5) environment investment and accompanied high fuel cost to achieve stringent environment standards
6) land related constraint

All the points have some relevance to high cost of electricity service but the most important point is lacking. That is the productivity differential between Japan and other countries. Professor H. Kibune argued that such differential is closely related to our traditional regulatory system especially with regards to the flexibility of power generation. Now we will focus upon the problem of entry and competition in generating power.

V.3. Towards deregulation

In recent years Japan has experience peak demand in summertime because of the increase of the usage of air conditioners. Electric utility companies have obligations to provide necessary services at any time and they had to find sites to meet additional demand. This imposes huge extra costs to power produces as far as they employ large scale power generation system, especially, atomic power generation. At the same time some economists argued that there does not exist economies of scale in large scale power generation. In the U.S. it has become common that electric utilities buy outside power from I.P.P (Independent Power Produces), cogenerators and wholesales. All this implies that introducing competitive power producers may reduce the cost of power generation. Of course in Japan in house power generation accounted for a considerable percentage of consumption (11.9% of total electricity demand in 1993). But it has not been openly discuss to liberalize power generation to let own power generators to sell its residual power to electric utilities. Now the problem of price differential between home and abroad called for restoring rigid supply scheme inherited for a long time after the World War II. In 1994, a subcommittee in the Electric Utility Industry Council submitted a plan to introduce competition in power production. It was a shift of regulatory paradigm: Any electricity wholesaler used to need a license issued by MITI but now bidding system was going to replace it.

In addition to bidding system, there remains an important problem to be solved: access to transmission network. Since transmission network is owned by electric utilities, it must be opened to new competitions. Here comes a usual problem met in network industries: how to charge access fee to transmission network or “bottleneck”. This question has not been settled and deregulation in electricity power generation is only at its start.

When deregulation is discussed, it is usually accompanied by the introduction of incentive pricing to replace the old rate making system. Price capping formula is now quite common among developed countries but in Japan it was not introduced because the majority of council members were rather reluctant to it. Instead the concept of “yardstick competition” was revived and rate making rule was modified. But the efficiency of yardstick competition is often questioned by economists and its institutional workability remains to be seen.

VI. Conclusion

We have analysed four industries from the aspect of deregulation and privatization focusing the period of the past ten years. It is quite difficult to draw clear conclusions from them but we will try some by restricting our angle as follows:

1) international price differential of services
2) productivity
3) dynamism of management

These subjects have been often argued in Japan to review deregulatory policies in the past.

1) international price difference

If competition does not work, there may be found high prices. But this cannot happen for a long time when free entry is guaranteed. In case of the regulated industries, entry at home and from abroad is restricted and the process of undercutting may not be expected. When we look at domestic air lines, electricity and telecommunications, entry has been strictly controlled by regulators. As a result, expectedly by economic theory, high price has been structured into the industry, although it was exaggerated by rising yen. Domestic air fares have been kept high when we compare discounted fares between Japan and the U.S. Electricity rates have been unproportionally high even if we take into account the environmental and land problems in Japan. Japanese long distance telephone rate has been reduced rapidly but it is still much higher than in the U.S. and U.K. All these phenomena are closely related to the lack of deregulation, especially the existence of supply demand balancing clause. The protectionist or industrial policy of Japanese government which is still in the heart of regulatory policy, is the ultimate cause of economic deficiency in the regulated industries.
2) productivity

The productivity difference in airlines and electricity between Japan and the U.S. or U.K. has often been debated in governmental committees. In both industries wage as well as capital costs account for such difference and exchange rate accelerated such tendency. It is impossible, at least for the moment, to look for cheaper laborers from abroad and it is not an easy task to remove the fundamental difficulty. But as far as the domestic infrastructure is costly when compared internationally it may do harm to Japanese exporters, especially to manufactures. This may invite more formidable problem of Japanese industry in general.

3) dynamism of management

As far as industries are regulated and regulators are not captured, there exists a tendency for top management to flatter or not to disobey the regulatory policy. Bureaucrats are never entrepreneur and they are usually lacking imagination towards the future. The consensus between regulators and flattering management is often conservative and will not welcome innovation. On the other hand, if regulators are combatting with regulated industries, there will be a delay of important decision making. In the worst case, stalemate will be brought in and every decision will take long time to miss the best opportunity. The former case may be airlines and electricity whereas the latter may be telecommunications. In any case the economic welfare is severely damaged. The government business relationship may have worked well in 1960's and 1970's but now, in face of international potential competition, new business government relationship must be restructured.
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Source: InfoCom Research, Information and Communication in Japan 1993-94

### Table 2  Size of telecommunications carriers

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Source: InfoCom Research, ibid
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Source: NTT

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Source: NCC reports
Figure 3  Trends of Average Fares


Figure 4  Development of Door to Door Trucking Service


Figure 5  Electricity price difference

Note) US; Con. Edison, UK; E&W, France; EdF, Germany; Total, J apan; TEPCO
Source: Denki Jigyo Singikai (Electric Utility Industry Council)