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2 The Limits of Economic Regulation: The U.S. Experience

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The Limits of Economic Regulation:

*The U.S. Experience*¹

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¹ This paper is based on a presentation at a Conference on “Designing Russia’s Telecommunications Regulatory Reforms: Theory and International Experience,” Sponsored by the Centre for Economic and Financial Research, Moscow, 28 June 2003.

² At the time this paper was presented, I was a Senior Economist in the Strategic Analysis and Negotiations Division, International Bureau, Federal Communications Commission. Douglas Webbink, Gale Cohen, and Mark Uretsky and numerous others have provided helpful comments during the preparation of this paper. Nevertheless, the analyses and conclusions in the working paper are those of the author and do not necessarily reflect the views of other members of the International Bureau, other Commission staff, or the Commission itself. I can be reached at Peyton.wynns@yahoo.com.

We are often so overwhelmed with our immediate workload that we fail to look more widely to see what might be learned from other jurisdictions and other industries. This review summarizes some of our experience in the United States over many years in hopes that others might avoid at least a few of our mistakes.

It focuses on the industries I have worked on most closely—airlines, railroads, trucks, and telephones, all of which are described as “network industries.” It concentrates on long-term trends rather than the implementation 1996 Telecommunications Act.

In the United States, the Interstate Commerce Commission was established and railroads were brought under economic regulation in 1887 to protect shippers—especially farmers—from monopoly power.³ A half a century later—during the great depression of the 1930’s—numerous agencies were created for the regulation of a wide variety of other firms, including those engaged in finance, energy, and transportation. This wave of regulation reflected a belief that free markets were not working well rather than a concern about market power.

Over a long period of time, it became apparent that applying economic regulation was much more difficult than commonly supposed and the consequences were often unexpected. The regulatory process turned out to suppress innovation and productivity. The economic performance of regulated sectors was often worse than that of unregulated areas—even where the unregulated firms had some degree of market or monopoly power.

During the 1960’s, students of regulation became increasingly critical.⁴ By the 1970’s, the counter-revolution was well underway, first by the regulatory agencies themselves and then later ratified and extended by legislative actions. Legislation abolished both the Civil Aeronautics Board, which had regulated airlines, and the Interstate Commerce Commission, which had regulated the truck and rail industries. The initial waves of telecommunications deregulation were also accomplished under existing law by the FCC, often at the prodding of the courts. Major legislation was not passed until 1996.

Despite the vast differences among the various industries, the language contained in the 1887 rail legislation was largely copied—in many cases word for word—and applied to trucking, airlines and telecommunications. Thus, the legal requirements set forth by Congress regarding entry, exit, and pricing were almost identical in all four industries. Although different agencies have experimented with different procedures, several

³ An alternative view is that the act was encouraged by the railroads to reduce the number of price wars either to prevent “destructive competition” or to limit cheating on collusive pricing.

⁴ Numerous critical studies of transportation regulation were published by academics including John Meyer, Ann Friedlaender, and Richard Caves. Both the Department of Transportation and the Department of Justice called for less regulation and began to participate in rule-making proceedings held by the regulatory agencies. By 1970, the annual report of the President’s Council of Economic Advisors called for deregulation.

common themes run through our experience. I will first give a very abbreviated summary of the experience of each industry and then draw together what, to me, seem common themes.

THE INDUSTRIES BEFORE AND AFTER

AIRLINES:

Airlines were the first major industry deregulated and by far the most studied and best documented. Air service had barely begun when the Civil Aeronautics Board (CAB or Board) was created by the *Civil Aeronautics Act of 1938*.

Airlines already in operation when the Board was established received operating authority from the Board. After World War II, those carriers were standardized on larger aircraft and abandoned smaller towns. The Board then permitted a number of smaller firms to enter the industry as “feeder airlines.” But aside from these smaller carriers intended to feed the major airlines, the board never permitted a major new carrier to enter the industry and compete in providing scheduled service.

Despite the fact that new firms were not allowed to enter the industry, more than one airline served most major routes. Where existing carriers sought to serve new routes, complex and lengthy trial type proceedings evolved, usually requiring years to complete.⁵

Airlines found it easy to reduce service on unprofitable routes. They were usually able to abandon towns entirely. For firms wanting to exit the industry, the Board always approved a merger with a stronger carrier interested in acquiring the route authority held by the failing firm.⁶

As carriers competed on major routes, industry profitability was generally below what the regulators regarded as a healthy level. Failing in other efforts to raise profitability, the Board eventually decided to fix prices by specifying the exact fare to be charged in each market. The airlines nevertheless continued to compete by stressing food and other amenities but especially by scheduling additional flights.⁷ The result was a “ratchet effect” as more capacity led to lower than desired earnings, causing the regulator to raise

⁵ These proceedings required such time and effort that regulatory attorneys captured a major share of the prospective gains from route awards and it was no coincidence that some of the most vociferous critics of proposed deregulation were Washington attorneys. Ironically, many of these attorneys migrated into the practice of telecommunications law following airline deregulation.

⁶ The Board took pride in the fact that no secured lender had ever lost money in the industry.

⁷ The Board had no statutory authority over scheduling or equipment selection and therefore could not control capacity.

fares, causing still more capacity to be added, necessitating still more fare increases.⁸ The ultimate effect was an airline system with high fares; plenty of capacity; frequent flights at prime times; and primarily serving business travelers and the wealthy. Those who flew found spacious seating, free meals, and gracious service. But few could afford to fly.

Two types of operators were not covered by CAB regulation. First, the CAB did not have jurisdiction over firms that restricted their operations to a single state. Airlines flying only in California and only in Texas began to provide high frequency, low-cost air service. The intrastate carriers packed more seats in each plane and filled those seats by charging dramatically lower prices. By carrying twice as many people on each flight, they could charge fares that were only half as much as fares charged by regulated carriers.

Second, firms that restricted their operations only to small planes had been exempted from regulation by the Board itself, which did not want to bother with regulating crop dusters, flight schools, air taxis and other small commercial operators. Under this exemption, small “commuter airlines” sprang up, often replacing the former “feeders” and small communities became increasingly dependent on such service.⁹

By the mid-1970’s a vast amount of economic research cast doubt on the efficacy of CAB regulation,¹⁰ as did the success of intrastate carriers and commuter airlines and the Board’s continued refusal to license applicants who promised to provide low fare service.

By the late 1970’s the Board itself was opening entry and permitting pricing flexibility. With the airlines beginning to believe they continued to have the burdens of regulation but not the benefits, the industry split and the largest airline, United, joined the calls for deregulation. In 1978, Congress passed the *Airline Deregulation Act*. The Civil Aeronautics Board was phased out and a few of the Board’s former functions were transferred to the Department of Transportation.¹¹

⁸ The Civil Aeronautics Board believed itself to be the “best” of the regulatory agencies and prided itself on “scientific regulation.” What the regulators actually attempted to do was to establish a reasonable rate of return for an average airline operating with average efficiency. They erred in choosing a rate of return that was too high.

⁹ See DOT, *Air Service To Small Communities*, 1978. The limitation on aircraft size led to obvious inefficiencies. For example, Federal Express, unable to obtain operating permission from the CAB, began flying multiple small aircraft “wing tip to wing tip” where a single larger aircraft would have been far more efficient.

¹⁰ See for example, Miller and Douglas, 1974.

¹¹ Primarily, licensing, which now focuses on operational fitness, as well as consumer complaints, international negotiations, and statistical reporting.

Today, airline pricing is completely deregulated and airlines can exit as freely as they can enter. If a city will be left without any air service, and if that service is deemed essential, the government provides subsidies to arrange continued service by other carriers.¹²

The results have been well documented by a considerable body of research. Average prices fell dramatically, traffic surged, and the airlines moved to hub-and-spoke operations.¹³ Some business travelers experienced less convenient flights and higher fares but hub-and-spoke operations resulted in more flights and more nonstop flights. The vast majority of non-business travelers and even most business travelers paid lower fares and service to small communities ceased to deteriorate. Airline deregulation has pretty much been an unambiguous success for airline passengers and the annual benefits are generally reckoned to exceed \$20 billion.¹⁴

Some, of course, complain that air travel has changed from a pleasurable adventure to a cattle car experience for the masses. Periodically an entrepreneur starts a new airline modeled after the old system—high prices for spacious elegant service. The new firms promptly go broke as people continue to purchase lower priced services rather than the more elegant new offering.

RAILROADS

The railroads were the first major industry regulated¹⁵ and, after 80 years of regulation, the nation's railroads were in deplorable condition. Railroads were unable to stem major losses from passenger service; not permitted to discontinue such service; unable to abandon lightly used branch lines; often not permitted to raise prices for “captive shippers;”¹⁶ and the industry had been losing market share to trucks and barges since World War II.

The physical plant was in such bad repair, that “standing derailments” began to occur—where stationary trains simply toppled over. By then, farmers no longer used the railroads for anything but grain because shipments moved so slowly that other produce rotted long before delivery.

¹² The Essential Air Service Program was established by the Airline Deregulation Act as a guarantee that small communities would not be harmed by deregulation.

¹³ By connecting multiple flights at a central point, airlines can provide service between a large number of city-pairs with a relatively small number of flights.

¹⁴ For a recent summary, see Morrison and Winston, 2000.

¹⁵ The Act to Regulate Interstate Commerce in 1887 (usually referred to as the Interstate Commerce Act) established the Interstate Commerce Commission and first brought railroads under federal regulation. The Hepburn Act in 1906 and the Transportation Act of 1920 increased the ICC's authority.

¹⁶ The term “captive” usually refers to shippers using rail but not having access to a second railroad or to water transportation. In such situations railroads are thought most likely to have market power.

The rail crisis was brought to a head by the threatened cessation of rail operations in the northeastern United States as all the major railroads in the Northeast and Midwest had gone bankrupt. Congress created a public corporation in 1970 to take over passenger service (Amtrak).¹⁷ More legislation was required in 1973 to take over freight operations in the northeast by establishing another new corporation, Conrail.¹⁸ More billions of dollars were required in 1976 and the funding was accompanied by granting the railroads minor regulatory relief.¹⁹ Finally, in desperation, amid continued losses for both Conrail and other railroads, Congress responded with sweeping regulatory changes in 1980 by passing the *Staggers Rail Act*.

The *Staggers Act* was by no means total deregulation: although carriers were given much more pricing flexibility and allowed to enter contracts with shippers, limits were placed on the amounts that could be charged captive shippers. Carriers were allowed to abandon trackage but shippers were given the right to purchase and continue operating the tracks. Given the financial condition of the industry and the amount of deferred maintenance, many prices were expected to rise substantially. Most of the debate on the legislation focused on how much railroads would be allowed to raise prices.

For the railroads, the *Staggers Act* was a success from the start. Earnings improved rapidly and productivity soared as railroads became vastly more efficient as a result of mergers, crew reductions, abandonment of lightly used lines, more intermodal operations (such as containers carried partway by rail and partway by truck or ship), reductions in the number of empty cars, reductions in empty backhauls, contractual agreements with shippers, and a surprising amount of new investment. The efficiency of the rails has increased to such an extent that, today, five times as many ton-miles are moved per employee as in 1980.

Until the *Staggers Act*, the railroads were able to offer services only under tariffs. Contracts between railroads and shippers were illegal. The introduction of individual contracts yielded benefits for both railroads and shippers. Both invested in more efficient equipment and about 80% of tonnage now moves under contract. Agricultural produce even returned as railroads began to offer guaranteed on-time delivery in good condition.

Many prices rose initially, but many fell, and some were unchanged. By 1988, however, deregulation had lowered rates significantly for almost all commodities.²⁰ Average rates went down substantially even as earnings rose. Estimates of the direct savings to rail

¹⁷The Rail Passenger Service Act of 1970.

¹⁸The Regional Rail Reorganization Act of 1973 (3R).

¹⁹Railroad Revitalization and Regulatory Reform Act of 1976 (4R).

²⁰Wilson, 1994, at pp 2-3. Earlier studies had yielded differing results about average price changes resulting, in part, from changes in the mix of traffic. Viscusi, 2000, provides an excellent recap of some of the early studies and differing conclusions at pp 537-543.

shippers from lower rates are enormous, estimated to be \$32 billion annually in 1999.²¹ Some captive shippers did, of course, pay higher rates but these were far more than offset by lower rates for the vast majority of shippers, improvements in service times and the value of shipper's time saved. Some concern remains to this day about captive shippers but, given the overall declines in rates and the improved health of the industry, that is not a major issue.

As the results of the Staggers Act became viewed as an unambiguous success, the ICC was abolished in 1995 and replaced by the Surface Transportation Board, an agency with much more limited functions.²² The government even managed to sell Conrail to the private sector in 1997 although the government continues to finance large annual losses on passenger service by Amtrak.

TRUCKING

Trucking was brought under the jurisdiction of the ICC by the *Motor Carrier Act of 1935*.²³ Later legislation, in 1948, gave the trucking industry antitrust immunity to collectively set rates.²⁴

In terms of revenues, trucking is vastly larger and more important than all other modes of transportation combined.²⁵ The trucking industry includes more than 300,000 firms and

²¹This estimate was based on waybills: by repricing shipments made in 1999 at what they would have cost in 1984. The STB staff concluded that revenues moving the same traffic at 1984 rates would have cost \$70 billion, compared with actual 1999 revenues of \$38 billion, a savings of 45%. See, Surface Transportation Board, 2000.

²² The Interstate Commerce Commission Termination Act of 1995.

²³Technically, both trucks and intercity buses are "motor carriers" and both were brought under the jurisdiction of the ICC by the Motor Carrier Act of 1935. Somewhat different regulations evolved and Congress ultimately passed separate legislation terminating the regulation of intercity buses, the Bus Regulatory Reform Act of 1982. Scheduled intercity bus service, however, was a small and declining industry that has been little studied. I follow the common practice of simply ignoring it.

²⁴ The Reed-Bullwinkle Act actually applied to railroads as well but collective rate setting seemed far more important in the trucking industry. The rate cartels were called "rate bureaus."

²⁵ Delaney puts 2002 business expenditures on intercity trucking at \$300 billion; local trucking at \$162 billion; railroads \$37 billion; water \$37 billion; oil pipelines \$9 billion; air freight and forwarders at \$38 billion; totaling transportation expenditures of \$573 billion. For reference total GDP is estimated to be about \$10.5 trillion. See Delaney, 2003. As rail, barges, and pipelines specialize in bulk commodities, ton mileage figures are very different. The railroads carry about 40% of the nation's intercity ton-miles; trucks 28%; barges 14%; pipelines 18%; and air carriers less than 1/2%. The ton-mile data are from the Association of American Railroads for 1996 as cited in Viscusi, 2000, at p 531.

an amazing variety of firms.²⁶ Some specialize in small shipments; some deal only in full loads; and some specialize in particular types of hauling (e.g. household goods or petroleum products). Some provide package express and some focus on local delivery. There are also a large number of firms that carry their own goods (private carriage) and several hundred thousand “owner operators” who use their tractors to haul trailers for others. Some segments of the industry were never subject to ICC regulation at all, primarily intrastate operators and haulers of unprocessed agricultural products.

As with the airlines, the regulators sought to ensure a financially healthy competition by very restrictive entry practices. New firms had to demonstrate that their service would be successful and not harm existing operators. The “operating rights” held by those firms that had established operations before the advent of regulation attained large values. The ICC left ratemaking to industry rate cartels called “rate bureaus” and regulated prices were high as were industry wage levels and the profits of at least some of the companies. For regulated truckers, exit was much easier than for railroads: where truckers discovered service unprofitable, they simply cut back service and ultimately disappeared.

Trucking was usually understood by economists and other academics to be an industry that would naturally support a very large number of small competitors and where economic regulation was not necessary. The trucking industry, however, made the usual arguments against deregulation such as loss of service to small towns and rural areas and suggested the likely inability of firms to finance the networks of terminals necessary for less than truckload operations.

Critics of regulation pointed to high prices; circuitous routings; an unnecessarily large number of empty backhauls; the increasing use of private carriage; the high value of operating rights;²⁷ unusually high wage levels;²⁸ differentials between similar agricultural products that were exempt or non-exempt depending on their degree of processing;²⁹ experiences where commodities had shifted from regulated to unregulated status;³⁰ and international comparisons.³¹ Academic research concentrated on comparisons of the types described above. Broader research on the overall effects of trucking regulation was limited because the necessary statistical data was scarce.

The regulatory status of the industry was jealously guarded by both the industry and its labor force. Both provided far stronger opposition to deregulation than did the airlines or

²⁶The largest firm, UPS, has about 10% of intercity revenues. No other firm has even 1%.

²⁷Usually regarded by economists as capitalized economic rents.

²⁸In the 1970's unionized workers in the trucking industry were paid a premium of perhaps 50% over wages of comparable workers in manufacturing industries.

²⁹Raw manure versus dried manure was a favorite example.

³⁰Transport prices dropped, for example, when frozen chicken was reclassified as an exempt commodity rather than a regulated item.

³¹For example, comparisons showing higher rates in heavily regulated countries such as West Germany than in less regulated countries such as Belgium and the Netherlands.

railroads. Trucking regulation was first liberalized in a series of small steps by the ICC. In 1980, Congress first passed legislation aimed at a small segment of the industry where consumer complaints were particularly numerous, and then passed more general legislation later that same year.³² The *Motor Carrier Reform Act* liberalized entry but allowed the truckers to keep their rate cartels. Although the rate cartels were allowed to remain, their power to set high rates evaporated with freer entry. The value of operating rights collapsed as thousands of small new firms surged into the industry. There have been relatively few attempts to make comprehensive assessments of the effects of trucking deregulation. This is due, in large part, to the scarcity of data with which to make quantitative assessments. Nevertheless, there is general agreement that there have been great productivity gains along with a great deal of turmoil as many incumbents went bankrupt and were replaced with lower cost operators. Some research found improved service to small towns and some estimated that most of the gains had come from goods shipped in less than truckload lots and improvements in private carriage.³³

TELEPHONE SERVICE

From the telephone industry's inception, the local telephone companies owned by AT&T refused to allow any customer equipment to be connected to their networks unless that equipment was produced and owned by AT&T. Similarly, AT&T refused to connect with other long distance carriers. The regulators accepted these refusals and, as a result, AT&T, which owned most of the major local telephone companies, also monopolized both the production of equipment and the provision of long distance service for most of the 20th century.

During the last quarter of the 20th century, the integrated monopoly came unglued. A series of court decisions and FCC actions opened the equipment market which is now completely deregulated and highly competitive.³⁴ New companies were permitted to offer long distance telecommunications and AT&T's operating companies were required to connect with them. Pricing requirements for long distance carriers were gradually eliminated, first for smaller firms and later for AT&T.³⁵ In local service, where monopolization of the local loop remains a concern, pricing regulation generally shifted from rate-of-return regulation to price-cap regulation.

In telecommunications, as in transportation, the changes that have accompanied the transition toward more competition have been stunning. Cellular services have become

³² The Household Goods Transportation Act of 1980 and the Motor Carrier Act of 1980.

³³ Winston, et al., 1990 p 28.

³⁴ The first significant court decision beginning to crack open the equipment market—the “Hushaphone” case—was handed down in 1956 but significant restrictions and limitations on connecting customer owned equipment to the telephone network were not eliminated until the early 1980's.

³⁵ AT&T complained bitterly about “asymmetric” regulation but was regarded as a dominant carrier domestically until 1995 and internationally a year later.

ubiquitous. Like such services in much of the rest of the world, mobile services were never subject to traditional economic regulation. The Internet, which also remains unregulated, continues to increase its reach and importance. Long distance prices have declined to such an extent that, for many consumers purchasing bundled services, the costs of additional calling is essentially zero. The deregulation of terminal equipment is perhaps worth a little discussion only because it is so commonplace that we often forget all about it.

For nearly one hundred years, only equipment provided by the telephone company could be connected to the network and only telephone company personnel could install, fix or move phones. This was a terribly inefficient system where a service call was needed for every installation and to fix any problem, no matter how small.

More fundamentally, however, the monopolization of terminal equipment precluded any innovation by outsiders. Most households had only a single, solid black rotary phone produced by the monopolist—exactly the solution a state owned utility might have selected. After consumers became free to attach their own equipment to the telephone system, a virtual explosion of new equipment and services resulted.

Facsimile machines, which were rare despite the fact that the technology was even older than the telephone, became common. So did answering machines—previously rare despite the fact that voice-recording devices were patented as early as 1903.

And of even greater importance is the connection of a vast number of personal computers to the telephone system. I think we can all imagine how limited personal computers might be if all equipment and all software had to be invented, designed, and manufactured by the telephone company. The Internet would be nonexistent.

Our enthusiasm for citing the virtues of our telecommunications system and the success of the FCC in fostering its successes should be tempered by the realization that mobile service and the Internet may be successful precisely because they were never subject to economic regulation--and the realization that success in long distance and terminal equipment came at the insistence of the courts rather than the FCC.

COMMON THEMES:

Several themes run through the common experience of the ICC, the CAB, and the FCC. Here are those I draw from my experience.

Regulators are not the problem. At all three agencies, political appointees have generally been able, honest, energetic, and well intentioned. The staffs have been well trained and diligent. I stress this because the first reaction to calls for regulatory reform was often “we must need better regulators.” Any failures of regulation should not be taken as a criticism of the regulators any more than the poor performance of centrally planned economies should be blamed on the ineptness of planners. Where the results of

regulation have not been desirable, the problems are with the nature of regulation itself rather than the regulators.

Much of traditional economic regulation is now in disrepute.

Entry. Entry controls limit competition within an industry at great cost and little benefit. Limiting entry to ensure a healthy industry is an inherent contradiction.³⁶ Limiting entry to allow incumbent firms to earn profits to generate cross subsidies has been consistently unsuccessful. In fact, it is hard for me to visualize any situation where some benefit to the public arises from keeping a legitimate firm from serving customers who want to purchase its services.

Exit. Exit controls are usually viewed as a way of protecting customers from the withdrawal of services they depend on. Sometimes exit controls are an attempt to continue perpetuating cross subsidies. Experience varied from agency to agency, but never with happy results.³⁷ And exit barriers can unintentionally serve as substantial entry barriers.³⁸

Pricing. Price regulation is the most difficult and frustrating aspect of regulation. In all of our regulated industries, pricing became so complex that tariff schedules could be understood only by specialists.³⁹ Tariffs often benefited primarily the companies that filed them.⁴⁰

³⁶ It would be hard to find economists who think that predatory pricing is a reasonable worry.

³⁷ For railroads exit was historically difficult. Attempts to abandon lines resulted in administrative proceedings where shippers described their potential hardships compared with the minor improvement to a railroad's health that might be achieved from the abandonment of their particular line. In trucking, exit was generally easy—as truckers simply reduced service levels and ultimately disappeared. For airlines, the Board usually found it was better to allow an airline to abandon service to a city simply to get the complaining over with (complaints both from the airline about its losses and from the city about lousy service). In telecommunications, exit has not yet been a major issue as firms without market power have been allowed to exit and firms with market power have not sought to exit.

³⁸ Firms will be reluctant to enter markets, or experiment with new services, if failure may result in an ongoing string of losses.

³⁹ In the freight transportation industries, “rate sharks” appeared. For carriers, rate sharks scrutinized invoices to identify errors so that customers could be re-billed at higher rates. For customers, they examined bills--sometime the very same set of invoices--so that refunds for overcharges could be demanded.

⁴⁰ Thus, when the FCC told smaller long distance carriers that they no longer had to file tariffs, they kept right on filing. When the Commission told carriers not to file tariffs, they went to court arguing that that the Commission's action was illegal and that they should keep filing tariffs.

The ICC held lengthy proceedings on how to regulate rates without satisfactory resolution and often held up rates to protect competitors;⁴¹ the CAB's attempt to practice "scientific regulation" led the Board to prescribe exactly the same fare in all markets of equal length; the FCC's Telpak proceeding dragged on twenty years and helped AT&T fend off entry in the long distance market.⁴² The FCC's latest pricing prescription-- TELRIC-- remains debated by economists and under challenge in the court system.⁴³ Thus, while all of the regulatory agencies devoted major efforts to establishing pricing rules, it remains unclear whether we were ever able to accomplish more than a very rough justice.

Prices that are either too high or too low are not only inefficient but can have unexpected consequences: Consider the U.S. experience of overpricing long distance calls to encourage universal service only to later learn that the practice actually reduced subscribership.⁴⁴ It does not matter whether the troublesome prices are set directly by the regulator or filed in accordance with rules specified by the regulator. I can only conclude that the fewer prices we regulate and the more we recognize that we are unlikely to prescribe the correct prices, the less damage we are likely to do.

The retention of "non-economic" regulation. In general, regulation of other matters such as safety, sanitation, financial reporting, antitrust, environmental protection, and consumer protection, has not fallen into the same disrepute as economic regulation. These sorts of regulatory activities have generally not been eliminated and represent useful work for regulatory agencies.

Productivity. In all of the industries discussed above, deregulation has resulted in enormous productivity improvements. Reviews of the results by economists of the transportation industries find annual benefits of the size mentioned earlier—for example, \$30 billion annually in the railroads. Those who look at logistics in a broader sense find far larger savings—usually about three times the savings related only to transportation.⁴⁵

⁴¹ For an extensive discussion of ICC's rate regulation, see Alfred E. Kahn's classic Economics of Regulation, especially chapter 6 in volume I.

⁴² See Gerald W. Brock, 1981, pp. 198-210. Antitrust and court challenges to AT&T's continued monopolization of the long distance market were delayed while the matter was being considered and reconsidered at length by the FCC.

⁴³ TELRIC is shorthand for "Total Element Long Run Incremental Costs."

⁴⁴ It turned out that many of those without telephone service had been disconnected for non-payment of long distance bills. As long distance rates fell, poor families no longer found themselves so likely to incur large bills and lose telephone service. Rate rebalancing, which involved raising monthly local charges and slashing long distance prices, actually raised subscribership among poor households. See Hausman and others, 1993.

⁴⁵ Delaney has argued that, in the 1970's, business transportation was of poor quality and increasingly unreliable. The only real growth was in private trucking operated by manufacturing and distributing firms to haul their own products. Only after deregulation

Inability to foresee the future. During debates over airline deregulation, no one predicted the development of hub and spoke systems. The decline in rail rates was not foreseen. No one imagined most freight would soon be carried under contracts. No one foresaw the huge savings from reducing inventory costs or realized that deregulation would be a necessary precursor. No one visualized the Internet or the proliferation of personal computers, and other equipment connected to the telephone network. The ability of markets to respond to evolving needs faster than regulators is one of their strengths.

Regulation's inevitable need for additional controls. Where a firm or industry does not want to do what the regulator wants, simply controlling one facet of industry behavior will not be sufficient to accomplish the regulator's goals. The CAB sought to limit the amount of competition by restricting entry. When this did not result in the level of profitability the Board thought necessary, the Board specified fares to prevent price competition. When the airlines then competed by increasing the level of service and amenities, the Board then began ruling on such matters as meals and movies and began a proceeding to specify seat width and legroom.

Regulatory processes are slow. At least in the United States, no agency has been able to avoid cases that have dragged on year after year after year. Consequently, regulation is less appropriate for a dynamic, rapidly changing, industry than a static one.

Regulation probably cannot be technologically neutral. The unfortunate result of attempting to be neutral is that the regulation of the old technology is often applied to the new technology. As people began to use the local telephone network to connect personal computers to Internet service providers (ISPs), telephone companies argued that such calls were similar to calls using the same local loops to reach long distance carriers. Because long distance voice calls generated per-minute payments from long distance carriers, local companies argued ISPs should pay similar charges. These charges, if applied in an attempt to achieve equal regulatory treatment for both ISPs and long distance carriers, would have doubled the costs of Internet service. Equal regulatory treatment in the name of technological neutrality would have almost certainly nipped the development of the Internet in the bud. Thus, while regulated companies often make a

was it possible to merge materials management and physical distribution into integrated systems such as the "just-in-time" and other fast cycle manufacturing procedures that have spread widely throughout the American economy. Both transportation costs and other logistics costs were rising until 1980 when logistics totaled about 16% of GDP. These were split about equally between transportation and other inventory expenses (primarily obsolescence, warehousing, interest, and insurance). By 2002, measured in such terms, inventory costs had fallen by two-thirds and transportation costs by a quarter. Total logistics costs had fallen from 16% of GDP to 9%. Given a GDP exceeding \$10 trillion, the logistics savings total several hundred billions of dollars annually. See, the annual reports by Delaney. Annual State of Logistics Report, <http://www.cassinfo.com/bob.html>.

persuasive case against “asymmetric” regulation, I am convinced that it is often only such loopholes that let new ways of doing business develop.

Regulation slows new business strategies. Although the adverse impact on technology is widely understood, regulation also impedes new ways of doing business. At the CAB, an application by Federal Express to provide a package delivery service was set aside as staff resources were devoted instead to dealing with matters affecting “real airlines.” At the ICC, United Parcel Service struggled for years to acquire the operating authority that would allow it to provide a nationwide delivery service. The ICC stifled piggyback operations⁴⁶ by applying both truck regulation and rail regulation. Hushaphone and Carterphone (applications seeking to connect non-AT&T supplied equipment to the telephone network) and MCI’s initial application to provide shared private line microwave service between St. Louis and Chicago all required years and years to struggle through the regulatory process. Each of these examples was a new way of doing business. None depended on new technology.

Dependency on regulation. Each of the regulated industries became dependent on regulation, often used it to their own purposes, and often opposed deregulation.⁴⁷ And the regulators begin to depend on the industries and are sometimes described as being captured by the industries they regulate.⁴⁸

Transition costs can be high. For many regulated firms and their employees, the move from regulation to deregulation was not a happy one. Many airlines and trucking firms went bankrupt and were replaced by more efficient competitors. Many employees of these regulated firms, who had enjoyed high wages and inefficient employment practices, often found wages reduced or employment terminated. Only among local telephone companies and railroads, where existing carriers had “bottleneck” facilities or “captive” customers, did the incumbent firms generally do well.

⁴⁶ Piggyback operations refer to goods in containers pulled part way by trucks and carried part way on rail flatcars.

⁴⁷ Both truck firms and labor opposed trucking deregulation. The airlines generally opposed deregulation and the largest, United, endorsed deregulation only after the CAB had opened entry and permitted price competition. AT&T supported regulation until competitors entered the industry, then changed its stance. The railroads endorsed deregulation only after their economic condition became critical. Some have suggested that the railroads changed their stance only after they came to believe that the ICC was favoring trucks, barge operators, and shippers at their expense.

⁴⁸ There are actually several different views and a considerable literature on whether agencies are captured by the industries or whether individuals within the regulatory agencies use the regulated industries for their own gain. But in one form or another, the criticism lingers on. For example, Congressman John Dingell, the Senior Democrat on the Commerce Committee in the US House of Representatives, reportedly described the FCC as being “so enamored with some of the industries it is assigned to regulate that it has become unable to act as the aggressive consumer advocate that is so needed at this time.” As quoted in Communications Daily, Tuesday, June 13, 2003.

Regulatory accomplishments. Regulators have been able to crudely limit monopoly earnings.⁴⁹ Regulators have managed to outlaw restrictions on resale, thereby allowing arbitrageurs to eliminate some monopoly rents.⁵⁰ In some cases, a regulator can prevent a firm with monopoly power from extending that power to other lines of business or prevent unreasonable restrictions of interconnection. Thus, we have now outlawed the tying of telephone equipment to service--although some would argue that it should not have taken a hundred years to prevent.

Comparative hearings do not work; auctions do. Comparative hearings were once used by the CAB to award new airline routes and by the FCC to award licenses to use the spectrum. Such hearings involve a comparison of competing applications and decision on which applicant is best qualified to receive the award. Typically presided over by an administrative law judge, each applicant presented evidence on why it was the “best.” The proceedings often dragged on for years; the outcomes of such “beauty contests” were inherently subjective; and the awards sometimes suspected of political influence.

At the FCC, it was clear the agency would never be able to complete enough of the proceedings to establish a competitive cellular industry. We next tried lotteries—which worked but drew so many applicants that structural engineers had to be called in to make sure the building would not collapse under the paper. Finally, we moved to auctions. Auctions work. They not only raised large sums of money, but cellular service growth accelerated and prices fell dramatically as having multiple vendors rather than just two in each market increased competition.

The failure of cross subsidies. Regulators have been generally unsuccessful in compelling the use of cross subsidies to accomplish whatever goals are desired by the regulators. Firms that have managed to acquire earnings from whatever source are naturally reluctant to fritter those earnings on whatever the regulator might wish. The best a regulator can expect to accomplish is lousy service churlishly provided.

Direct subsidies work. The CAB’s efforts to improve the financial health of the airline industry failed to prevent the abandonment of some 200 small towns. Direct payments to replacement carriers have eliminated such abandonment at a relatively small cost.⁵¹ The FCC’s Lifeline and Link-Up programs, provide direct assistance to poor households, and have a small but statistically significant impact on subscribership levels. In contrast, the

⁴⁹ Historically, this was most commonly done through regulating a firm’s “rate of return” which, in turn, has a variety of other problems. Recently, at least in telecommunications, we have attempted to apply “price caps” as an alternative.

⁵⁰ An opportunity to buy and resell offers arbitrageurs the opportunity to prevent a monopolist from fully exploiting its power.

⁵¹ The Essential Air Service Program has been criticized for high costs per passenger, but the subsidies are transparent, and at about \$100 million per year, are very small in relation to any possible system wide subsidy.

impacts on subscribership of the much larger, “high cost support mechanisms” are unknown.⁵²

Regulation has not helped service to small towns. In both trucking and airlines, regulated carriers tended to grow and concentrate on larger markets, leaving small town service to others. Service to small towns was often provided by private carriage, small aircraft, or other operators exempted from regulation. Small communities ceased losing air service after deregulation (assisted in part by the new Essential Air Service Program) and service levels improved. After deregulation, truck service to small towns stayed constant or improved⁵³ and relatively little rail service was lost despite widespread abandonment by major railroads.⁵⁴

SUGGESTIONS FOR ANY NEW REGULATORY REGIME:

It may be presumptuous, given our experience with economic regulation, to make suggestions to others. Thus, my list of suggestions is short.

1. Flexibility. Because legislation, at least in the United States, tends to have a relatively long life, regulators need the flexibility of abstaining from applying the law where it makes no sense. In the absence of such flexibility, regulators have to require firms to do things that they know makes no sense, and are harmful to both the industry being regulated and their customers. The CAB used its exemption authority to avoid wasting resources trying to make flight schools and crop dusters follow the provisions applied to airlines. ICC used their exemption authority to allow specialized carriers to move fragile computer equipment. The FCC used its “forbearance” authority to relieve small carriers of tariff requirements.

2. Information. A great deal of information can be collected by a government regulatory body in a manner that places little burden on either the industry or the government. There are good reasons for a government agency to devote resources to doing so: Information has many of the characteristics of a “public good;” and, at least in the United States, few other organizations are capable of producing consistent information over a lengthy period of time.

⁵² The “high cost” programs provide funds to small local telephone companies with higher than average costs. Economists might suspect that any program designed to assist monopolists on a “cost plus” basis will not be enormously effective. The programs are a legacy of AT&T’s practice of sharing revenues from overpriced toll services with the rest of the industry. Expenditures on high cost programs now total \$3 Billion annually. For program costs, see FCC, Joint Board Monitoring Reports, section 1. The high cost programs have been criticized by economists (for example, Wimmer and Rosston) but remain enormously popular with representatives of rural states.

⁵³ Winston et al 1990 p. 40.

⁵⁴ Ibid. Short line railroads picked up some of the lines and in some cases government subsidies assisted.

We live in what has been called the information economy. If this is an overstatement, it is at least true that information is the oil that lubricates modern economies. Information allows better investment decisions, lowers the likelihood of wrong decisions, and thus lowers barriers to entry. For consumers, better information allows more informed choices. Information is also a great prophylactic—keeping corporate management and regulators on their toes.⁵⁵

3. Alternatives to traditional entry and exit regulation. In addition to their other benefits, contracts can protect against the consequences of unexpected service termination. Notice requirements can protect customers from the shock of sudden termination. Insurance requirements can protect customers from harm or compensate them if it occurs. Where “bottleneck” facilities exist, the opportunity for customers to purchase abandoned facilities offers a measure of protection with little burden on the carrier. In situations where deposits or advance payments are involved, firms may be required to place funds in escrow or purchase a bond against default. All of these approaches move toward achieving legitimate goals of protecting consumers from unscrupulous firms and sudden service termination without generally restricting either licensing or exit and without placing great burdens on carriers.

4. Benchmarks. It seems a good idea to always leave some sectors unregulated to serve as benchmarks. Except for the fact that a major sector of the trucking industry was deregulated—agricultural products—we might have never recognized how inefficient and in need of reform the remainder of the industry was. Similarly, but for the existence of intrastate airlines in Texas and California, we might never have gotten around to deregulating the airlines.

5. Independence. In the United States, there has historically been an effort to provide regulators some measure of independence from political pressures and the industries they regulate.⁵⁶ It also seems useful to separate regulators from responsibilities to promote

⁵⁵ It is no accident that the airlines were far more studied and better understood than the other transportation industries. The CAB did a magnificent job of collecting information from carriers, and making that available to the public. In contrast, the ICC devoted less attention to similar information on surface transportation and the industries were less well understood. AT&T carefully guarded and controlled similar information so long as it monopolized the telephone industry. I believe telecommunications deregulation would have occurred far sooner had we more fully understood the cost of the old regulatory regime.

⁵⁶ At the federal level, this was traditionally done by legislative requirements specifying that the members appointed to a regulatory board not all be chosen from a single party; that appointments be made for fixed terms; and that appointees could be dismissed only for bad conduct and not for regulatory decisions; requiring that appointments expire on different dates so that not all members of a regulatory body would come up for

industries they supervise.⁵⁷ The rationale for this separation is that regulators who are faced with prospect of being blamed for industry failures do not necessarily perform well—and may focus on promoting a financially healthy industry rather than an efficient one.

6. Transparency and impartiality. Just as regulators should be independent of undue political pressure, they should be free of the suspicion that they can be easily corrupted or unduly influenced by those they regulate. In the U.S., a two-pronged approach has generally worked: First, rules of conduct prohibit or severely limit such things as bribes, gifts, and entertainment. Second, administrative procedures generally require openness. When undertaking the development of new rules or regulations, the usual sequence is to announce the possible rules, seek public comment on those proposed rules, give all interested parties a chance to provide a second round of reply comments, announce the final regulations, offer the opportunity for reconsideration, then, finally, provide an opportunity for review by the courts.⁵⁸

7. Auctions and direct subsidies. Having proved themselves superior to their alternatives, at least in the U.S., these measures are worthy of serious consideration.

* * * * *

In closing let me add two final notes of caution. First, I stress again, the views presented here are merely my own impressions of the themes running through a broad history across several industries. Second, the initiators of regulation (Legislators) should keep in mind that they cannot imagine what regulators will actually do or how individual firms or even whole industries will react. What the law says is not necessarily what the regulators do. Recall that the statutory language on entry, exit, and pricing for airlines, trucks, railroads, and communications is not just similar—but many provisions are word for word identical. Each administrative agency developed its own procedures, practices and interpretations and regulatory environment. All this is simply to say that agencies, like children, are often not what the parent imagined.

reappointment when a new political party took power; and placing the agency outside the executive branch.

⁵⁷ Thus, the building of airports and task of promoting aviation was placed in the Federal Aviation Administration rather than the CAB. Similarly, the task of subsidizing rural telephone companies was traditionally left to the Department of Agriculture. The universal services provisions of the 1996 Telecommunications Act are a departure from this tradition.

⁵⁸ An unfortunate byproduct of these administrative procedures to guard against corrupting influences is, of course, that it causes the regulatory process to work very slowly.

Gerald W. Brock, *The Telecommunications Industry: Dynamics of Market Structure*, Harvard University Press, 1981.

Robert V. Delaney and Rosalyn Wilson, "State of Logistics Report." Annual. Most recently, June 2, 2003. <http://www.cassinfo.com/bob.html>.

Department of Transportation, Office of Aviation and International Affairs, *Study of Air Service to Small Communities: 1978-1995*, May 1996.

Federal Communications Commission, Joint Board Monitoring Reports on Universal Service, available at www.fcc.gov/wcb/iatd/monitor.

Robert E. Gallamore, "Regulation and Innovation: Lessons from the American Railroad Industry," in Gomez-Ibanez, Tye, and Winston, 1999, pp. 493-529.

Jose A. Gomez-Ibanez, William B. Tye, and Clifford Winston, editors, *Essays in Transpiration Economics and Policy*, Brookings, 1999.

Curtis Grimm and Clifford Winston, "Competition in the Deregulated Railroad Industry: Sources, Effects, and Policy Issues," in Peltzman and Winston, 2000, pp. 41-72.

Jerry Hausman, Timothy Tardiff and Alexander Belinfante, "The Effects of the Breakup of AT&T on Telephone Penetration in the United States," in the *AEA Papers and Proceedings*, May 1993, pp 178-184

Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions*, MIT Press, 1988 edition.

James C. Miller and George Douglas, *Economic Regulation of Domestic Air Transport: Theory and Policy*, 1974.

Steven A. Morrison and Clifford Winston, "The Remaining Role for Government Policy in the Deregulated Airline Industry," in Peltzman and Winston, 2000, pp. 1-40.

Steven A. Morrison and Clifford Winston, "Regulatory Reform of U.S. Intercity Transportation," in Gomez-Ibanez, Tye, and Winston, 1999, pp. 469-492.

Sam Peltzman and Clifford Winston, editors, *Deregulation of Network Industries: What's Next?* AEI-Brookings Joint Center for Regulatory Studies, Washington, D.C., 2000.

Surface Transportation Board, Office of Economic, Environmental Analysis, and Administration, Rail *Rates Continue Multi-Year Decline*, December 2000. Available at www.stb.dot.gov.

W. Kip Viscusi, John M. Vernon, and Joseph E. Harrington, Jr. *Economics of Regulation and Antitrust*, third edition, MIT Press, 2000.

Leonard W. Weiss and Michael W. Klass, editors, *Regulatory Reform: What Actually Happened*, Little, Brown and Company, 1986.

Wesley W. Wilson, "Market-Specific Effects of Rail Deregulation," *Journal of Industrial Economics*, 42 (March 1994): 1-22.

Clifford Winston, Thomas M. Corsi, Curtis M. Grimm, and Carol Evans, *The Economic Effects of Surface Freight Deregulation*, Brookings, 1990.

Bradley S. Wimmer and Gregory L. Rosston, "Winners and Losers from the Universal Service Subsidy Battle, draft available at www.stanford.edu/~grosston.