

We believe a regulatory review should have two fundamental objectives: first, to help improve regulation so that the average welfare of consumers is improved; and second, to enhance regulatory accountability by making the regulatory process itself more transparent.<sup>52</sup> The principles identified below are designed to help achieve both of these objectives.

**Principle 1:** *The regulatory review should advance the public interest by placing greater emphasis on protecting the economic well-being of consumers and producers.* Unfortunately, regulatory agencies rarely deem the economic benefits and costs of a regulation a decisive factor in determining whether or not to implement the rule.<sup>53</sup> We think it is critical for policymakers to highlight the importance of economic impacts when evaluating a regulation.

**Principle 2:** *To ensure that the regulatory review serves the interests of all parties, each regulation under review should be required to pass a broadly defined benefit-cost test. Information on the benefits and costs of regulation prepared for the review should be presented clearly and succinctly for each regulation that is analyzed.*<sup>54</sup> To the maximum extent feasible, regulators should quantify and express all benefits and costs in monetary terms. We recognize, however, that some benefits can only be expressed in qualitative terms. But a benefit-cost analysis would at least require regulators to be explicit about what they count as benefits. Then voters could see for themselves what implicit values regulators placed on those benefits when allowing regulations to be implemented. Transparency is necessary if benefit-cost analysis is to inform decision making. It is very important in conducting a benefit-cost analysis that agencies spell out major assumptions clearly, highlight uncertainties, and summarize the results. Both the summary and the report itself should be easily accessible to people who are familiar with basic economic concepts. References for key estimates should be provided. The summary should include information on the net present value of costs and benefits.

---

<sup>52</sup> See, e.g., Hahn and Litan (1997).

<sup>53</sup>In some cases, the officials are statutorily prohibited from doing so. In other cases, it may not be in their interest to pursue regulations that would enhance economic efficiency. See Hahn (1996).

**Principle 3:** *If the expected quantifiable benefits of a regulation do not exceed the expected quantifiable costs, and the regulation is not modified or repealed, then the regulator should be required to present a clear explanation justifying the reasons for the decision.* There may be factors other than economic benefits and costs that the FCC will want to weigh in decisions, such as distributional concerns. However, it is important to make those concerns explicit.

Applying these principles in a regulatory review should make it easier for parties to hold unelected and elected officials accountable for regulations imposed on the public. In addition, making the economic rationale for regulatory decisions more transparent could help improve economic welfare. Regulations frequently involve decisions whose consequences can cost billions of dollars annually—more than is at stake in many direct government expenditure programs. At the same time, regulations can have an important impact on the well-being of the population. Many of those decisions are now made, to a large extent, by federal regulators with the tacit acquiescence of legislators, the President, or both.

Implementation of these principles in the context of a recurring review of regulation—as contemplated in Section 11 of the Telecommunications Act and in the Stevens Amendment—poses additional economic concerns. Regulatory agencies such as the FCC routinely cause vast sums of money to be transferred from one party to another and are thus subject to intense political pressure which raises significant problems for implementing an effective review of regulations. For any given regulation, there is likely to be a well-organized constituency that helps ensure it stays in place.<sup>55</sup> There are many ways discussed in the literature to address the problem of agency bias in regulatory reform. One is through peer review--using independent reviewers (such as the staff of

---

<sup>54</sup> Federal regulatory agencies rarely collect and provide information on the full range of regulatory activities. Such information provision is critical both for making the regulatory process more transparent and improving the regulations themselves. See Bliley (1997) and Hahn, (1998b).

<sup>55</sup> This tendency is no accident. Crop and import restrictions on the U.S. peanut market are estimated to transfer about \$225 million (in 1987 dollars) from consumers to producers. The cost to the average consumer is peanuts—about \$1.23 per year—while the benefit of the program to the average peanut farmer is about \$11,000 per year. We should not be surprised that farmers organize to sustain and expand the program while consumers appear to be indifferent.

the OMB) who are less likely to be subject to political pressures. A second is to conduct the review in an open manner, allowing for comments by interested parties.

A third alternative is to shift the focus of regulation from the prospective regulation of a firm's possible behavior to enforcement of rules regarding its actual behavior. As observed by Commissioner Powell, regulation has historically permitted companies to build facilities and provide services only after prior regulatory approval, a process that has often been resource-intensive and time-consuming and is only effective in monopoly markets. Instead, Commissioner Powell urges

enforcement as a means to protect the public against certain harms without hindering companies from entering new markets that lie outside their traditional regulatory boundaries. Also by doing so, we will cut down on the speculative predictions that characterize many of our deliberations presently. Rather than imagining all the dangers that might result if we let a company do what it has asked and then take equally speculative action to meet those speculative dangers, let's instead police conduct and make decisions based on real facts.<sup>56</sup>

Finally, both the perspective and the burden of proof should shift in the Biennial Review. Irrespective of the *degree* of competition in particular telecommunications markets, it is undeniable that *all* telecommunications markets have been opened to competition. Legal and regulatory barriers to entry into local exchange markets have been removed, and the availability of unbundled network elements, resold local exchange services and interconnection at regulated prices largely eliminates the sunk costs that entrants into the local exchange market would otherwise face. Requirements for opening the interLATA long distance market to entry by the former Bell Operating Companies are slowly being made explicit, and there is a strong possibility of full competition in the long distance markets before the end of the century. Thus, in appraising current and future regulation, the perspective must shift, so that the costs and benefits are weighed under the assumption that the market is open to competition. Some types of regulation impose high costs in markets open to competition—e.g., regulations that impose asymmetric burdens on particular firms (CLECs, ILECs, IXC, or CAPs) or technologies

---

<sup>56</sup> Powell (1998).

(wireline/wireless, packet/circuit switched services, or copper/fiber)—and the cost of those regulations in markets opened to competition must be taken into account.

Similarly, because regulation can be so costly in dynamic markets opened to competition, the regulator should bear the burden of proving that the benefits from certain categories of new or current regulations outweigh the costs. Under the best of circumstances, there is considerable uncertainty in forecasting the effects of regulations. Shifting the burden of proof thus implies that measurement uncertainty favors removal of regulations not their implementation or retention. So much uncertainty in economic regulation stems from having to predict what economic agents will do in particular changed circumstances. For example, will customers substitute away from a service if its price increases? Will firms invest less in network infrastructure if earnings are regulated? If the focus of regulation can be shifted away from prospective regulation of possible behavior towards enforcement of regulation regarding actual behavior, much uncertainty can be removed from the process.

In its pleading, USTA has proposed four elements of a standard under which it believes that regulatory relief should be granted. Paraphrasing, USTA would require the Commission to consider whether

1. the stated purpose of the regulation is still valid and relates to the implementation of the Telecommunications Act (as amended),
2. the conditions in the relevant market have changed since the regulation was implemented,
3. the benefits of the regulation outweigh the costs, and
4. elimination of the regulation serves aspects of the public interest other than the Commission's deregulation and pro-competition policies, such as universal service or the accelerated deployment of advanced telecommunications and information services.

In general, we find these standards roughly consistent with the broad economic principles laid out above. The analytic framework is a benefit-cost calculation applied to each regulation. The first two elements of the list are screens that identify specific conditions that signal when the cost of a regulation is likely to exceed its benefits. The fourth element reminds us that benefits and costs must be weighed in the full context of all the

Commission's public policy objectives. While economic efficiency is a compelling goal, there are other important concerns in the Act, including fostering competition in local and long distance markets and accelerating the deployment of advanced telecommunications and information services to all customers.

Missing from USTA's proposed standards is the question of uncertainty and the burden of proof. As discussed above (at 18), it is our view that the Biennial Review process should assume—i.e., treat as a rebuttable presumption—the fact that all telecommunications markets have been opened to competition. Thus, regulations that would fail a benefit-cost test when the regulated firm faces competitive entry would be candidates for rejection. In addition, it should be presumed—again subject to rebuttal—that imperfectly competitive markets can better allocate scarce resources among producers and consumers than even skilled and well-intentioned regulators. Thus, the burden of proof should shift to those parties who would implement new regulations or retain existing ones.

## **V. APPLICATION TO THE BIENNIAL REVIEW AT THE FCC**

Section 11 of the Telecommunications Act mandates a review of all Commission regulations to determine whether each regulation is no longer necessary in the public interest as the result of meaningful economic competition between providers of such service. Regulations not found to be in the public interest would be repealed or modified. Experience with past deregulatory efforts in the U.S. and elsewhere (outlined above) shows that large welfare gains can be expected from such an exercise, and current estimates of regulatory inefficiency indicate that economic regulatory reform can provide welfare gains on the order of 0.3 percent of GDP for the U.S.<sup>57</sup> So a serious, exhaustive and quantitative appraisal of the Commission's Regulations is not just the law; it is also manifestly in the public interest.

---

<sup>57</sup> See Table 4.

**A. At the outset, a process for the Biennial Review must be implemented.**

The Biennial Review process envisioned in Section 11 of the Telecommunications Act is not unprecedented. In early 1996, Thomas J. Bliley, Jr., chairman of the House Committee on Commerce, sent a survey to thirteen federal agencies under its jurisdiction,<sup>58</sup> asking how the agencies accounted for costs in the regulatory process for fiscal year 1995 and earlier years. Independently, Hahn (1998) analyzed thirteen federal agencies by interviewing current and past agency officials and examining agency dockets, annual reports, and individual rules and decisions.<sup>59</sup> The study focused on the procedures that federal agencies employ to catalog information regarding the costs and benefits of future and existing regulatory activities.

Many laws and executive orders govern the accounting of costs and benefits in the federal regulatory process. Generally, formal estimates of costs and benefits are only required for major regulations from executive branch agencies.<sup>60</sup> In addition, some statutes, such as the Clean Air Act (section 812), require analyses of the aggregate costs and benefits of programs. Other laws require agencies to estimate the impacts of rules on small entities as well as the burden hours associated with information-collection requests.<sup>61</sup> For the most part, Hahn found at least superficial compliance with those requirements. All executive branch agencies prepare Regulatory Impact Assessments

---

<sup>58</sup> The agencies include the Consumer Product Safety Commission, the Department of Commerce, the Department of Energy, the Environmental Protection Agency, the Federal Communications Commission, the Food and Drug Administration, the Federal Energy Regulatory Commission, the Federal Trade Commission, the Department of Health and Human Services, the Interstate Commerce Commission, the Nuclear Regulatory Commission, the Occupational Safety and Health Administration, the Securities and Exchange Commission, and the Surface Transportation Board.

<sup>59</sup> Hahn, (1998b). The agencies include the Commodity Futures Trading Commission, the Federal Trade Commission, the Consumer Product Safety Commission, the Department of Labor, the Department of Transportation, the Environmental Protection Agency, the Federal Communications Commission, the Federal Energy Regulatory Commission, the Department of Housing and Urban Development, the Department of Health and Human Services, the Nuclear Regulatory Commission, the Securities and Exchange Commission, and the U.S. Department of Agriculture.

<sup>60</sup> Those analyses are required under Executive Order 12886 (and previously under 12991) and the Unfunded Mandates Act of 1995.

<sup>61</sup> The Regulatory Flexibility Act of 1980 requires agencies to assess the impact of rules on small entities. The Paperwork Reduction Act of 1980 requires agencies to provide OIRA with estimates of the information-collection burden imposed on the public.

(RIAs) for major rules. In addition, some of those agencies, such as OSHA, many operating agencies within the DOT, and the EPA, estimate the benefits and costs of a subset of nonmajor rules and activities. Of the independent agencies, only the CPSC and the Nuclear Regulatory Commission generally estimate the benefits and costs of rules and licensing activities.<sup>62</sup>

Only a limited number of agencies systematically evaluate the benefits and costs of existing regulatory activities. None of the independent agencies provides such cumulative estimates.<sup>63</sup> Of all the executive branch agencies, only NHTSA and the EPA provide that information, although only partially. NHTSA along with the FHWA have routinely estimated the cumulative impacts of their programs over time.<sup>64</sup> The EPA has estimated the historical cost of environmental regulation as well as costs and benefits of particular programs.

Although agencies rarely provide estimates of aggregate benefits and costs, many review existing programs under statutory requirements, agency initiatives, legislation, and executive programs. While agencies have previously provided measures of success, such as the reduction in the number of pages in the code of federal regulations, they have generally not completed thorough assessments of the effectiveness of such review efforts. In what is probably the most rigorous review program among all agencies, NHTSA continually reviews the effectiveness of existing regulations and often examines whether it has realized the projected costs and benefits.<sup>65</sup> However, without a comprehensive examination of agency programs, it would be almost impossible to quantify the real savings that have resulted from agency reviews of their existing regulatory structure.<sup>66</sup>

---

<sup>62</sup> See Nuclear Regulatory Commission (1995). Although primarily a law enforcement agency, the FTC has requirements in place to examine the projected benefits and any adverse economic effects of rules: see Bliley (1997) at 114. In addition, FERC has completed benefit-cost analyses of recent rules associated with the restructuring of the natural gas and electricity industries.

<sup>63</sup> But both the CPSC and the NRC indicated that they could calculate the total costs of regulations to their agency, other government agencies, and the private sector: see Bliley (1997).

<sup>64</sup> See National Highway Traffic Safety Administration and Federal Highway Administration (1991).

<sup>65</sup> See Katzen (1994).

<sup>66</sup> As the Government Performance and Results Act of 1993 is fully implemented, we may have more complete information to assess the effectiveness of agency review programs. Under the act, agencies are required to prepare strategic plans, comprehensive mission statements, and annual program evaluations.

Thus, we remain skeptical of the benefits that agencies claim to have produced from those programs.

Table 7 summarizes the results from the surveyed agencies. The table is divided into two parts; the first covers executive agencies, and the second covers independent agencies. For executive agencies, the table reports the extent to which they estimate the benefits and costs of new major rules and nonmajor rules and activities. In addition, the table reports on whether the agency has attempted to provide aggregate estimates of the economic impacts of its regulations. The second part of the table is the same as the first except that it does not distinguish between major and nonmajor rules, since independent agencies are not subject to oversight under the executive orders. The table reveals that agencies provide very limited information on the costs and benefits of individual regulations. Moreover, only two agencies—the EPA and the NHTSA—attempt to provide aggregate estimates of the impacts of their regulatory programs.<sup>67</sup>

With this history, it is thus not surprising that in this precedential first Biennial Review at the FCC, there appears to be a lack of enthusiasm for the thorough spring-cleaning that the Act requires on its face. Specifically, to respond to Section 11, the FCC issued a list of 31 current and future proceedings derived from an “internal review ...and informal input from the industry and the public,” which will examine regulations that are overly burdensome or no longer in the public interest.<sup>68</sup> However, the FCC is silent regarding the method and standards by which all Commission Regulations, numbering in the thousands of pages, were reduced to the list of 31. It is certainly not the case that all FCC regulations were subjected to a meaningful, public review and comparison of regulatory costs and benefits. Whether the process that actually occurred satisfies the letter of Section 11 is a legal question which we are not inclined to address. However, as an economic matter, piecemeal deregulation of the sort undertaken here has all of the inefficiencies of piecemeal *regulation* against which economists have fulminated for years.

---

<sup>67</sup> Agencies most likely have some of that information available but have not compiled it because they have not seen a need to do so.

<sup>68</sup> Kennard (1998).

First, many FCC Rules are obviously interconnected in complex ways: for example, most changes cannot be made independently to the Uniform System of Accounts, the Jurisdictional Separations Procedures or the Cost Allocation Manuals<sup>69</sup> because at least one purpose of the whole—to assign a fully-distributed cost to each interstate regulated service—depends upon each part: e.g., the determination of a proper interstate rate of return obviously depends on whether regulatory or economic depreciation is used to value the rate base. Thus review of individual rules or even different Parts of the Rules cannot generally be undertaken in isolation.

Second, if all Rules are not subject to the same scrutiny, it is important to control the type of screen the agency uses to classify rules as benign or malignant. It is relatively painless for the Commission to identify outdated rules that are no longer applicable<sup>70</sup> because the fact that the rule no longer applies means that it is unlikely to affect behavior. Unfortunately, it is not by eliminating the unused or irrelevant rules that large welfare losses are to be avoided. Of greatest concern are rules that are all too relevant—rules which currently bind firms and customers and distort their actions in telecommunications markets in ways for which the costs exceed the benefits. And, to make matters worse, these are the rules about which parties are most likely to have passionate disagreement in pursuit of self-interest.

Third, it should not be surprising that an agency, no matter how skilled and motivated, would find it difficult to undertake a meaningful review of its own rules. The FCC Rules, as currently written, are affected by many competing forces. Intensely litigated, many of the Rules reflect a balance of the interests of competing firms, agency organizations, classes of customers, and the opinions of technical experts. It is easy to understand an agency's reluctance to sweep away those outcomes merely because the benefits of the regulations do not exceed the costs.

In our view, the only satisfactory process by which a review of an agency's rules can occur requires that all elements of the process be explicit and public. While a

---

<sup>69</sup> Parts 32, 36 and 64 of the Commission's Rules, respectively.

<sup>70</sup> For example, the Part 41, rules regarding telephone and telegraph franks identified in Chairman Kennard's June 10, 1998 statement.

benefit-cost analysis in 31 proceedings is a beginning, it is not enough. The goals of accountability and transparency would only be satisfied if analysis were provided of the decisions not to review the vast majority of the Commission's Rules. The internal process by which the FCC staff winnows its Rules down to the chosen 31 proceedings must also be subject to objective analysis and public scrutiny.

As noted by Commissioner Furchtgott-Roth,<sup>71</sup>

the FCC has no plans to review affirmatively **all** regulations that apply to the operations or activities of any provider of telecommunications service and to make specific findings as to their continued necessity in light of current market conditions. Indeed the comprehensive and systematic review of all FCC regulations required under Section 11 certainly would take many months to complete, yet we have not published a specific schedule to ensure completion of this task in 1998.

Nor has the Commission issued general principles to guide our "public interest" analysis and decision making process across the wide range of FCC regulations. I believe that, in addition to the direction given us with the law, the public interest determinations we eventually make pursuant to Section 11 should be made based on a straightforward analysis: regulations are in the public interest only if their benefits significantly outweigh their costs. We have not yet adopted any such guidance.

The USTA Biennial Review proposal provides a place for the process to start. It identifies virtually all of the Commission's Rules that apply to the activities of providers of telecommunications services; thus, applying rigorous analysis to that list of regulations would avoid the tendency of an agency to focus on rules that do not necessarily have a large impact on economic efficiency.

Three other elements of the review process (identified earlier) would greatly improve the outcome. First, shift the burden of proof to the party arguing for the retention of a rule. Because telecommunications markets have been opened to competition—and competition has developed at different rates in different markets—it is wiser policy to rely on imperfect market forces rather than on imperfect regulation to

---

<sup>71</sup> *In the Matter of Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services and 1998 Biennial Regulatory Review – Review of Computer III and ONA Safeguards and Requirements, Further Notice of Proposed Rulemaking* (CC Docket Nos. 95-20, 98-10), Separate Statement of Commissioner Harold W. Furchtgott-Roth January 30, 1998.

control firm behavior in circumstances when the costs or benefits of particular regulations are difficult to quantify. Second, discourage at the margin rules that prospectively regulate possible behavior in favor of enforcement of rules that regulate actual behavior. Third, consider oversight review by an agency such as the Office of Management and Budget as a mechanism for reducing agency chauvinism.

**B. The opening of telecommunications markets to competition has shifted the balance of benefits and costs for large groups of FCC Rules.**

The focus of Section 11 is on rules whose efficacy has changed because competition has begun in telecommunications markets. To identify groups of FCC Rules whose costs are likely to exceed their benefits, it is useful to review the intended welfare gains and likely costs from application of different types of regulatory rules to telecommunications providers. First, the intended benefits of particular FCC economic regulations generally fall into one of the following categories:

1. **Control of Market Power:** Reduction of welfare losses from the exercise of market power for services characterized by a natural monopoly technology. Such welfare losses can reduce allocative efficiency because of the markup of price above forward-looking economic cost. Examples include Part 69 Rules constraining prices for price cap and non-price cap companies.
2. **Control of Anticompetitive Behavior:** Reduction of welfare losses from anticompetitive behavior by the regulated firm. Reducing the incidence of such behavior reduces losses in dynamic technical efficiency, as entry incentives correctly encourage entry by efficient firms and discourage entry (and encourage exit) by inefficient firms. Examples include Part 64 Rules allocating costs between regulated and unregulated services, Part 53 separate affiliate requirements for LECs and Part 69 price floor requirements.
3. **Control of Inefficient Pricing:** Control of welfare losses from social subsidies, including concerns for geographic and customer averaging of prices and universal service. Examples include Part 69 Rules regarding pricing flexibility, Part 61 Tariff requirements and the Part 54 Universal Service rules.
4. **Control of Service Quality:** Welfare gains thought to derive from discouraging the exercise of market power through quality reductions, through the anticompetitive supply of different levels of quality to retail and wholesale customers or through supposedly improper price discrimination. Related to the control of market power, examples include Part 43 ARMIS regulations to track levels of service quality, Part 51 Rules that mandate relative levels of service quality for retail and wholesale

services and Part 61 Rules that control terms and conditions for offering services (i.e., tariffing requirements).

5. **Control of Market Failures and Network Externalities:** Generally implements policy concerns beyond economic efficiency, including universal service and the accelerated deployment of advanced telecommunications and information services.

While these are generally the ostensible reasons why FCC regulations have been enacted, their effects have been somewhat different in the past and will be very much different in the future, as telecommunications markets are opened to competition.

On the other side of the ledger from these intended welfare gains, broad categories of FCC Rules appear to impose large efficiency losses on telecommunications consumers.

### **1. Rules that distort the relationship between prices and costs.**

A variety of FCC regulations distort the relationship between prices and economic costs or slow the transition over which prices move towards costs. In particular, Part 69 Rules for price cap LECs that continue and maintain the accounting framework of rate of return regulation, at best, impose needless process regulation costs and, at worst, are responsible for large annual allocative and technical efficiency losses persisting over the past 15 years.<sup>72</sup> Other vestiges of rate-of-return regulation in the FCC's Rules for price cap companies include regulations

- governing the prescription of allowed rates of return [Part 65] and the triennial represcription of service equipment lives for calculating allowed depreciation [Part 32],
- modifying generally accepted principles of accounting (as used by the Securities and Exchange Commission and the Internal Revenue Service) for regulated telephone companies [Part 32], and

---

<sup>72</sup> In a very real sense, the inefficiency of the level and structure of interstate carrier access charges gave rise to an entire industry. Competitive access providers ("CAPs") such as Teleport and MFS began life as bypass alternatives to switched access charges. We will never know if it would have made economic sense (but for regulated access charges) to build independent metropolitan area networks on top of the public switched network—and thus whether regulation induced massive investment in a higher-cost technology. However, the fact that these independent networks have been absorbed in larger, vertically-integrated networks (AT&T-TCG, MCI-WorldCom-MFS-Brooks Fiber) suggests that society would have been much better off if in 1984 carrier access charges had been set more closely to market levels.

- separating accounting costs between interstate and intrastate regulatory jurisdictions [Part 36].

A lesson readily learned from the response of CAPs to regulated carrier access prices set at (Part 69) fully-distributed-cost-based prices is that once markets have been opened to competition, the economic costs imposed by attempting to match regulated prices with accounting costs far outweigh any benefits from controlling market power.

During this period of transition to competitive telecommunications markets, market forces are not sufficiently developed to control market power in all geographic and product markets. For those markets which are effectively competitive, there are no longer any welfare gains to be had from economic regulation to control market power, while the adverse consequences of continued regulation on costs can be large. In markets where competition is particularly effective, the competitive advantage a firm can gain from asymmetric regulatory treatment can determine the competitive outcome—whether the firm prospers or fails—irrespective of the firm’s other competitive advantages or handicaps. Consequently, firms seek out such favorable treatment from regulators. Regulators are then reduced to refereeing among the rent-seekers while consumers pay for the whole circus, primarily through reductions in technical efficiency. Once markets are effectively competitive, economic regulation of firms should cease, as it has the potential for significant harm and no good.

## **2. Rules that raise the cost of providing services.**

Rules that impose unnecessary compliance costs on the industry ultimately raise service costs to customers. Moreover, rules that impose compliance costs asymmetrically across firms or technologies create additional reductions in technical efficiency by failing to discourage inefficient competition.

The structure of the FCC Rules was created, in part, to link costs in a regulated firm’s books of account to a specific service, so that prices of regulated, interstate services could be said to be based on cost. In this Through the Looking Glass world, a higher assignment of costs to a service was rewarded by permitting the regulated firm to set a higher price, so responsible regulation required that all elements of the firm’s

accounting costs and its allocation of those costs to services withstand scrutiny. The fact that regulated costs had no bearing on economic costs was irrelevant. Because a small increase in an interstate separations assignment factor (for instance) could cause the price of an inelastically-demanded service to increase significantly, the Commission had an almost fiduciary responsibility to ensure compliance with all components of its cost allocation system. As a result, the Commission now requires more information and more auditing of that information than would be the case if allocated costs had not been used to set prices of services not subject to competitive pressure.

Regulations which impose large compliance costs on regulated telephone companies include record keeping and audit requirements beyond those used for unregulated firms. Creation and maintenance of special books of account are required by Part 32 that differ from the accounts used for tax and securities and exchange compliance. Accounts are kept at a finer level of detail for large telephone companies than for small, and there appears to be no use made of the additional detail for those firms that provide it. In addition, Part 32 contains specific procedures for maintaining property records and records for retirement units that differ from GAAP. Records are routinely audited, and audits are time consuming and expensive. The incidence of routine Commission audits of company records should—in principle—be similar to the incidence of audits undertaken by other agencies such as the IRS or the SEC.

Commission regulations require the preparation of reports and special studies that firms classified as non-dominant do not have to prepare. For example, Part 36 requires annual studies to determine factors used to allocate costs—on a reasonable but arbitrary basis—between the interstate and intrastate jurisdictions even though the resulting costs are no longer used for pricing purposes by the price cap LECs. In addition, complex lead-lag studies [in Part 65] are used to measure the cash working capital component of the interstate rate base. The result plays only a small role in determining rate base and has no bearing on prices for price cap LECs. Finally, the ARMIS reports [Part 43] were designed to gather information used to measure costs and set prices according to Part 69 of the Commission's Rules. The information is no longer used to set prices (for price cap LECs) and simplification could reduce compliance costs.

In general, process regulation is an expensive holdover from rate-base rate-of-return regulation. Whatever the optimal levels of audit and record keeping requirements were for rate-of-return regulated LECs having monopoly franchises, those levels are surely reduced because of the adoption of price cap regulation and the opening of telecommunications markets to competition. However, the FCC's requirements have not been simplified since the implementation of price caps and the Telecommunications Act of 1996. Since the cost of these rules fall disproportionately on the ILECs, their continuation gives rise to inefficient competition and its associated reductions in technical efficiency.

Efficiency losses from regulations that impose costs differentially on competitors or technologies increase sharply when markets are opened to competition. Examples include delays and filing requirements for (former) Bell Operating Companies' Comparably Efficient Interconnection (CEI) Plans [Part 43], reciprocal local interconnection charges that depend upon technology or jurisdiction [Part 51], carrier access charges [Part 69] and universal service contributions [Part 54] that depend on the technology used to support the service. When markets have been opened to competition, the incumbent firm's prices—and ability to change prices—are used to identify potentially profitable services for entrants to provide. In unregulated markets, these signals guide investment in its most profitable direction and ensure that output is produced and sold by the suppliers most capable of meeting the customers' demands for service quality and price. Rules that distort these signals—and thus distort entry and exit decisions—carry a much heavier price tag measured in lost consumer welfare than do ordinary differences between price and cost in monopoly markets. Allocative efficiency losses stem from over- or under-consumption due to prices set below or above economic cost; if price distortions lead to small changes in demand, welfare losses will be small. In contrast, technical efficiency losses stem from supply by firms other than the low-cost supplier, and thus technical efficiency losses are incurred on every unit sold. Once markets are opened to competition, technical efficiency losses from regulatory pricing constraints on incumbents or entrants are likely to dominate benefit-cost analyses of particular regulations.

### 3. Rules that distort the availability of new services and technologies.

Rules that specify particular levels of service quality or cause needless delay in the introduction of new services are particularly egregious sources of welfare losses. First, there is general agreement in economic theory that quality of service needs to be regulated symmetrically with price: it is meaningless to mandate that an apple cannot be sold for more than a quarter unless you simultaneously specify the quality of the apple in question. However, it is also true that different customers make different choices among the price/quality combinations that suppliers are willing to sell. Thus rules that eliminate low quality-low price services from the market make consumers worse off.<sup>73</sup> Particularly when markets are opened to competition, all firms must be able to compete symmetrically for customers at all points on the quality-price continuum. Rules that restrict the quality levels supplied by particular types of firms or particular technologies impose large efficiency costs on consumers.

Second, control over service availability—technical requirements, facility investment permission, notice requirements for tariffing, or cost support—is one of the most visible and costly areas of regulation unsuited to markets opened to competition. Control over the provision of services—and the terms and conditions of such provision—is a vestige of the command-and-control regulation used in markets served by a franchised monopolist, where regulation was required to stimulate and direct the supply of new services and to prevent entry by nonfranchised suppliers. The incentive to introduce new services is currently well served by the (relatively unrestricted) entry of new firms, even in markets where the current level of competition is insufficient to warrant general deregulation or forbearance from particular regulations. Thus, it is unclear exactly what useful function the delay associated with the licensing and supplying of new services serves.

---

<sup>73</sup> In the early days of long distance competition, consumers could choose between a perceptibly inferior product supplied by MCI and Sprint and the high-quality Bell System service supplied by AT&T. As equal access was implemented, perceptible differences in service quality among long distance carriers were eliminated and so was the difference among their prices. It is not clear that there is not a market for a low-quality, low-price long distance option—the growth of Internet telephony is suggestive—and if minimum service quality requirements restrict the supply of such options, they impose hidden and often unrecognized welfare costs on consumers.

The economic costs of such delays can be staggering. The tool in economics for measuring such costs originates in the work of Sir John Hicks, which recognizes that when a service is unavailable, it cannot be purchased for any price. Then when the service comes on the market, consumers effectively have realized a price reduction equal, at least, to the difference between the market price and the price which would just have driven demand to zero. The gain in consumer surplus from bringing the service to market is thus (for linear demand curves) about half the product of the quantity of the service consumed and the amount of the effective price reduction. For popular, relatively price-inelastic telecommunications services, these welfare losses from delayed implementation far exceed any conceivable benefit from delay.

Two noteworthy examples of this type of calculation for telecommunications regulation are the licensing of cellular service and the provision of voice messaging services by the Bell Operating Companies. Cellular licensing has been estimated to have required about a ten to fifteen year delay in bringing the service to market. The costs of this delay—measured by forgone consumer surplus—amount to more than \$86 billion in total or about 2 percent of GNP in 1983 when cellular service began.<sup>74</sup> Similarly, Bell Operating Companies were not permitted to supply voice messaging services until 1988 when the MFJ Court vacated the restrictions on the provision of information services. The ten year delay in the supply of those services by the RBOCs reduced consumer surplus by roughly \$100 billion in total and more than \$25 billion in a single year.<sup>75</sup>

A second, conceptually distinct cost of tariff filing restrictions and delays in implementing new services, new features or new prices arises when markets have been opened to competition. Here, as recognized by the Commission, an unintended consequence of regulation may be to facilitate tacit price coordination among the relatively small number of firms competing in many telecommunications markets. In the Commission's words,

[t]o the extent, however, that tacit price coordination may be occurring, the Commission would view this as a matter of serious concern. We

---

<sup>74</sup> Rohlfs, Jackson and Kelly (1991).

<sup>75</sup> Hausman (1997).

believe, however, that this problem, to the extent it may exist, is a problem generic to the interexchange industry and not specific to AT&T. We thus believe these concerns are better addressed by removing regulatory requirements that may facilitate such conduct, such as the longer advance notice period currently applicable only to AT&T, and by addressing the potential issues raised by these concerns in the context of the proceeding we intend to initiate to examine the interstate, domestic, interexchange market as a whole.<sup>76</sup>

Thus an unintended cost of licensing and tariff filing requirements that delay competitive responses and the introduction of new services is to reduce, to some extent, the vigor of price and quality competition as it develops in the market. Measurement of the efficiency loss from such regulations is difficult because it is hard to forecast the levels of prices and quality and the mix of services that would be offered absent the oligopoly coordination function served by the regulatory process. Nonetheless, the observation that such regulations do entail costs is surely reason enough to warrant removal of those regulations that have no clear and quantifiable benefit.

### C. Conclusion

By opening markets to competition, the Telecommunications Act has altered the balance of costs and benefits for a large number of FCC Rules and procedures. Those regulations were adopted under different circumstances to address concerns that may no longer be relevant to telephone customers. Examples of rules that have outlived their usefulness are legion, and potential welfare gains from correcting these public policy errors represent savings of billions of dollars per year. The FCC currently appears engaged in a casual, piecemeal examination of rules it thinks may no longer be relevant. Such a process is inherently incomplete and inefficient—because the welfare gains from simultaneous removal of all rules that fail a cost-benefit test is not addressed—and biased—because rules that are truly irrelevant are the very rules whose elimination would have little effect on economic agents' behavior and ultimately on economic welfare.

The task is not a simple one and is largely unprecedented for the FCC or other government agencies. It is easy to understand how the addition of new rules to attempt to

---

<sup>76</sup> Order, *In the Matter of Motion of AT&T Corp. to be Reclassified as a Non-Dominant Carrier*, CC Docket No. 95-427, released October 23, 1995 at ¶ 83.

pigeonhole new technologies into old regulatory categories (e.g., the classification of Internet telephony) appears to be a more attractive and responsive task than the wholesale removal of rules written at considerable cost and reflecting a delicate balancing of interests among industry and regulatory participants. Nonetheless, it is our conclusion that economic welfare would increase significantly if such a housecleaning were undertaken and that delay in modifying and eliminating key regulations would lead to increased welfare losses as markets are further opened to competition.

## Table of Contents

I.	Introduction.....	1
II.	An overview of regulation .....	2
	A. Definition .....	2
	B. Benefit-cost analysis provides the economic framework for appraising regulation.....	3
	C. In deciding whether or how to regulate, policymakers should compare the potential for market failure with the potential for “regulatory failure” .....	3
III.	The Gains from Deregulation and Regulatory Reform.....	5
	A. The overall gains from economic deregulation have been substantial .....	5
	B. Measures of aggregate impacts of regulation suggest it can have a significant impact on the economy .....	6
	C. Deregulation and regulatory reform in developing countries is having a positive economic impact .....	13
IV.	Economic Principles for A Regulatory Review.....	15
V.	Application to the Biennial Review at the FCC.....	20
	A. At the outset, a process for the Biennial Review must be implemented.....	21
	B. The opening of telecommunications markets to competition has shifted the balance of benefits and costs for large groups of FCC Rules.....	26
	1. Rules that distort the relationship between prices and costs.....	27
	2. Rules that raise the cost of providing services.....	28
	3. Rules that distort the availability of new services and technologies. ....	31
	C. Conclusion .....	33

<b>Table 1</b> <b>Welfare Gains from Deregulation in the United States in 1990</b> <b>(in Billions of 1990 Dollars)</b>				
<i>Industry</i>	<i>Consumers</i>	<i>Producers</i>	<i>Total</i>	<i>Further Potential Gains</i>
Airlines	8.8-14.8	4.9	13.7-19.7	4.9
Railways	7.2-9.7	3.2	10.4-12.9	0.4
Road Freight	15.4	(4.8)	10.6	0
Telecommunications	0.7-1.6	-	0.7-1.6	11.8
Cable Television	0.4-1.3	-	0.4-1.3	0.4-0.8
Stockbroking	0.1	(0.1)	0	0
Natural Gas	-	-	-	4.1
<b>Total</b>	<b>32.6-43.0</b>	<b>3.2</b>	<b>35.8-46.2</b>	<b>21.6-22.0</b>

Source: Winston (1993).

<b>Table 2</b>			
<b>Annual Costs of Economic Regulation in the United States in 1988</b>			
<b>(in Billions of 1988 Dollars)</b>			
<i>Regulated Sector</i>	<i>Efficiency Costs</i>	<i>Transfers</i>	<i>Sources<sup>b</sup></i>
International Trade	17.3	85.6-110.6	Hufbauer (1986)
Telecommunications	<14.1	< 42.3 <sup>a</sup>	Wenders (1987)
Agricultural Price Supports	6.7	18.4	Gardner (1987)
Airline	3.8	7.7	Morrison & Winston (1986, 1989)
Rail	2.3	6.8 <sup>a</sup>	Winston (1985)
Postal Rates	NA	4-12	President's Commission on Privatization (1988)
Milk Marketing Orders/Price Supports	0.4-0.9	0.9-3.5	Ippolito & Masson; Buxton & Hammond ( <i>reported in</i> MacAvoy (1977))
Natural Gas <sup>c</sup>	0.2-0.4	5.0	Loury (1983)
Barge	0.2-0.3	0.6-0.9 <sup>a</sup>	Litan & Nordhaus (1983)
Davis-Bacon Act	0.2 <sup>a</sup>	0.5	Thiebolt (1975) (updated)
Credit	0.05-0.5	0.15-1.6 <sup>a</sup>	Litan & Nordhaus (1983)
Ocean	0.05-0.08	0.15-0.22 <sup>a</sup>	Jantscher (1975)
Trucking	0 <sup>d</sup>	0	
Oil Price Controls	0	0	
Cable TV	0	0	
<b>Total</b>	<b>\$45.3-46.5</b>	<b>\$172.1-209.5</b>	

Source: Hahn and Hird (1991).

<b>Table 3</b> <b>Annual Costs of Federal Regulation in the United States</b> <b>(in Billions of 1991 Dollars)</b>				
<i>Regulations</i>	<i>1977</i>	<i>1988</i>	<i>1991</i>	<i>2000</i>
Environmental Regulation	42	87	115	178
Other Social Regulation	29	30	36	61
Economic Regulation-Efficiency	120	73	73	73
Process Regulation	122	153	189	221
<i>Subtotal of Costs</i>	<i>313</i>	<i>343</i>	<i>413</i>	<i>533</i>
Economic Regulation-Transfers	228	130	130	130
<b>Total Costs</b>	<b>540</b>	<b>473</b>	<b>542</b>	<b>662</b>

Source: Hopkins (1992).

TABLE 4 Costs of Regulation and Gains from Deregulation <sup>a</sup> (as a Percentage of GDP)			
Country	Cost of Regulation	Projected Benefits of Further Economic Deregulation	Source
United States	7.2-9.5%	0.3%	Hopkins (1992) <sup>b</sup> ; Winston (1993) <sup>c</sup>
Australia	9-19%	5.5%	OECD (1996) <sup>d</sup> ; Industry Commission (1995) <sup>e</sup>
Canada	11.8%		Mihlar (1996) <sup>f</sup>
Japan		2.3-18.7%	OECD (1997) <sup>g</sup>
European Union		4.5-7.0%	Emerson et al. (1988) <sup>h</sup>
Germany		0.3%	Lipschitz et al. (1989) <sup>i</sup>
Netherlands		0.5-1.1%	OECD (1997) <sup>j</sup>

Source: Hahn (1998b).

- <sup>a</sup> These numbers are underestimates of the effects of deregulation since the studies do not include all sectors where deregulation can be beneficial.
- <sup>b</sup> The cost estimates, as of 1991, include process costs. The range reflects the inclusion of economic transfers.
- <sup>c</sup> Winston estimated the gains of deregulation in the United States at 0.7-0.8% of GDP in 1990. The 0.3% estimate represents the potential gains if the industries could achieve optimality.
- <sup>d</sup> The costs of regulation, as of 1986, are derived from Commonwealth (1986).
- <sup>e</sup> Projections of savings from deregulation are based on both the Hilmer and related reforms. These reforms essentially cover legislative and regulatory changes in order to provide a national competition policy framework and to broaden the coverage of competition policy instruments. They also reflect moves to foster competition in national infrastructure areas such as electricity, gas, water and road transport. Results are estimated using a large-scale multisectoral model of the Australian economy. The timing of the effects are unclear.
- <sup>f</sup> The costs estimates are calculated in 1993-94. Based on an assumed ratio between private compliance costs and regulatory program spending, the author extrapolated national regulatory costs from federal and provincial administrative budgets. While the calculation is crude, it provides a rough estimate of the size of the regulatory burden.
- <sup>g</sup> Projections of savings from deregulation are based on reducing the price and productivity gap with the United States.
- <sup>h</sup> Projections of savings from deregulation are based on dismantling technical trade barriers and custom formalities, enhanced economies of scale and lower profit margins from enhanced competition. Using both a microeconomic and a macroeconomic model, the authors find similar results. The larger part of the effects might take five or possibly more years to be reached.
- <sup>i</sup> Projections of savings from deregulation in 1990-91 are based on more market oriented pricing in agriculture and mining, the dismantling of tariff and non-tariff barriers in selected industries and reforms in product and labor markets. The authors combine a dynamic macroeconomic model and a comparative-static, multisector microeconomic model of the German economy.
- <sup>j</sup> Projections of savings from deregulation are based on the reduction of product market rigidities in 20 major sectors of the Dutch economy.

**Table 5**  
**Fare Comparison of Similar U.S. and European**  
**Airline Routes**

<b>Route</b>	<b>Miles</b>	<b>Fare</b>
<b>Boston to New York</b>	187	\$153
<b>London to Paris</b>	211	\$263
<b>Washington to New York</b>	216	\$153
<b>Houston to New Orleans</b>	302	\$89
<b>Copenhagen to Oslo</b>	311	\$315
<b>Dallas to Minneapolis</b>	853	\$435
<b>Frankfurt to Madrid</b>	887	\$720

Source: Guasch and Hahn (1997).

**Table 6**  
**Gains from Private Operation of Public Utilities**

Income Class	Saving from Operational Gains (A) (in millions of 1993 US\$)	Saving from Effective Regulation (B) (in millions of 1993 US\$)
1 (poorest)	197	138
2	259	142
3	373	121
4	403	214
5 (richest)	1047	302
<b>Total</b>	<b>2279</b>	<b>915</b>

Note: These figures represent annual gains. (A) is the equivalent variation computed in terms of the dollar revenue of each income class. It is calculated by applying the total gains in the fixed price simulation to the income in the base year. (B) is computed by applying the differences in gains between the fixed priced and the flexible price simulations. In net present value and over a period of 10 years, the (A) gains represent a total varying between US\$8.2 billion and US\$14.4 billion with discount rates varying between 12% and 18% and amortization rates between 0% and 10%. The gains from efficient regulation under similar assumptions vary between US\$3.3 billion and US\$5.8.

Source: Chisari, Estache and Romero (1997).

**Table 7**  
**Federal Regulatory Agencies' Efforts to Catalogue Cost and Benefit**

Agency <sup>a</sup>	Estimates of the future costs and benefits of new regulatory activities		Aggregate estimates of the costs and benefits of regulatory activities <sup>b</sup>
	<i>Major rules<sup>c</sup></i>	<i>Non-major actions<sup>d</sup></i>	
<i>Executive</i>			
Department of Agriculture	Partial	No evidence	No
Department of Commerce*	Partial	No evidence	No
Department of Energy*	Partial	No evidence	No
Department of Housing and Urban Development	Partial	No evidence	No
Environmental Protection Agency	Partial	Partial	Partial
Food and Drug Administration	Partial	Partial	No
National Highway Traffic Safety Administration	Partial	Partial	Partial
Occupational Safety and Hazard Administration	Partial	Partial	No
<i>Independent</i>			
Commodity Futures Trading Commission	No		No
Consumer Product Safety Commission	Partial		No
Federal Communications Commission	No		No
Federal Energy Regulatory Commission	Partial		No
Federal Trade Commission	No		No
Federal Reserve Board	No		No
Federal Deposit and Insurance Corporation	No		No
Nuclear Regulatory Commission	Partial		No
Securities and Exchange Commission	No		No
Surface Transportation Board* <sup>e</sup>	No		No

Source: Hahn (1998b).

- a. For agencies marked with a (\*). Hahn relies primarily on Bliley (1997).
- b. This category does not imply that an agency does not have enough information to estimate aggregate costs and benefits, but rather that an agency does not provide this information. For example, executive agencies may be able to put together a rough calculation of aggregate costs and benefits by compiling RIA estimates.
- c. All executive branch agencies are required to prepare RIAs for major or significant rules. However, the analyses do not always include comprehensive or complete estimates of costs and benefits. Hence, they are characterized as "partial".
- d. Some agencies often estimate the costs and benefits of non-major actions. Unfortunately, Hahn's examination of the non-major universe is not exhaustive. Thus, he is unable to describe the size of the subset of non-major rules for which costs and benefits have been estimated. For other agencies, he has found no evidence that estimates are provided for non-major actions.
- e. Interstate Commerce Commission was abolished and replaced by the Surface Transportation Board in 1996 (Public Law 104-88, December 29, 1995).

## References

- Arrow, Kenneth J., Maureen L. Cropper, George C. Eads, Robert W. Hahn, Lester B. Lave, Roger G. Noll, Paul R. Portney, Milton Russell, Richard Schmalensee, V. Kerry Smith and Robert N. Stavins (1996), *Benefit-Cost Analysis in Environmental, Health, and Safety Regulation: A Statement of Principles*, AEI Press, Washington, D.C.
- Bliley, Thomas J., Jr. 1997. Survey of Federal Agencies on Costs of Federal Regulations. Staff report prepared for the Committee on Commerce, U.S. House of Representatives. Washington, D.C.: Government Printing Office.
- Braeutigam, Ronald R. and Roger G. Noll (1984), "The Regulation of Surface Freight Transportation: The Welfare Effects Revisited," *Review of Economics and Statistics*, 56, 80-87, February.
- Caves, Douglas W., Laurits R. Christensen, Michael W. Tretheway and Robert J. Windle (1987), "An Assessment of the Efficiency Effects of U.S. Airline Deregulation via an International Comparison," in *Public Regulation: New Perspectives on Institutions and Policies*, ed. Elizabeth E. Bailey, MIT Press, Cambridge, Massachusetts.
- Caves, Douglas W., Laurits R. Christensen and Joseph A. Swanson (1981), "The High Cost of Regulating U.S. Railroads," *Regulation*, 41-46, January/February.
- Chisari, Omar, Estache, Antonio, and Romero, Carlos (1997) "The Distribution of Gains from Utility Privatization and Regulation in Argentina," in *The Private Sector in Infrastructure*, The World Bank, Washington, D.C., 41-44.
- Christensen, Gregory B. and Robert H. Haveman (1981), "Public Regulations and the Slowdown in Productivity Growth," *American Economic Review*, 71, 320-25, May.
- Crandall, Robert W., Christopher DeMuth, Robert W. Hahn, Robert E. Litan, Pietro S. Nivola, and Paul R. Portney (1997). *An Agenda for Reforming Federal Regulation*. Washington, D.C.: AEI and Brookings, Washington, D.C.
- Crandall, Robert W. and Leonard Waverman (1997). "In the Matter of Application of Ameritech to Provide In-Region Inter-LATA Services in Michigan," An affidavit submitted on behalf of Ameritech. FCC Common Carrier Docket No. 97-137.
- Electricity Association Services Ltd. (1996), "International Electricity Prices," Issue 23, London.
- Emerson, Michael, Michel Aujean, Michel Catinat, Philippe Goybet, and Axaxis Jacquemin (1988), *The Economics of 1992: The E.C. Commission's Assessment of the Economic Effects of Completing the Internal Market*, Oxford University Press, Oxford.

- Estache, Antonio (1997), "Multimodal Transport Sector Reform and Issues in Brazil." *World Bank Report*, Mimeo, World Bank, Washington, D.C.
- Gardner, Bruce L. (1987), *Protection of U.S. Agriculture: Why, How, and Who Loses?*, University of Maryland Department of Agricultural & Resource Economics Working Paper No. 87-15.
- Good, David H., Lars-Hendrich Röller and Robin C. Sickles (1993), "U.S. Airline Deregulation: Implications for European Transport," *Economic Journal*, 103, 1028-1041, July.
- Guasch, J. Luis (1996), "Lessons for Port Reforms," in *New Port Policies in Latin America and Caribbean*, eds. J. L. Guasch and Leandre Amargos, New Press, Barcelona, Spain.
- Guasch, J. Luis and Hahn, Robert W. "The Costs and Benefits of Regulation: Implications for Developing Countries," Policy Research Working Paper 1773, June, 1997, Background paper for the 1997 *World Development Report*, forthcoming in the *World Bank Research Observer*.
- Guasch, J. Luis and Pablo Spiller (1998), *Managing the Regulatory Process: Design, Concepts, Issues and The Latin America and Caribbean Story*, World Bank, Washington, D.C.
- Good, David H., Lars-Hendrich Röller and Robin C. Sickles (1993), "U.S. Airline Deregulation: Implications for European Transport," *Economic Journal*, 103, 1028-1041, July.
- Hahn, Robert W. (1996) "Regulatory Reform: What do the Government's Numbers Tell Us?" in *Risks, Costs, and Lives Saved: Getting Better Results from Regulation*, ed. Robert W. Hahn, Oxford University Press and AEI Press, New York.
- Hahn, Robert W. (1998a), "Government Analysis of the Benefits and Costs of Regulation," *Journal of Economic Perspectives*. forthcoming.
- Hahn, Robert W. (ed.) *Reviving Regulatory Reform: A Global Perspective*. New York: Cambridge University Press and AEI Press, 1998b.
- Hahn, Robert W. and John Hird (1991). "The Costs and Benefits of Regulation: Review and Synthesis," *Yale Journal on Regulation*, 8, 233-278, Winter.
- Hahn, Robert W. and Robert E. Litan (1997). *Improving Regulatory Accountability*. Washington, D.C.: AEI and Brookings. Washington, D.C.
- Hausman, Jerry A., "Valuing the Effect of Regulation on New Services in Telecommunications," *Brookings Papers on Economic Activity: Microeconomics*, Brookings Institution, 1997.
- Hausman, Jerry and Timothy Tardiff (1996). "Valuation and Regulation of New Services in Telecommunications." MIT Discussion Paper. June.

- Hazilla, Michael, and Raymond J. Kopp (1990) "The Social Cost of Environmental Quality Regulations: A General Equilibrium Analysis." *Journal of Political Economy*, 98(4), 853-873.
- Hopkins, Thomas D. (1992), *Costs of Regulation: Filling the Gaps*, Report prepared for Regulatory Information Service Center, Washington, D.C.
- Huber, Peter W. and John Thorne (1998), "Economic Licensing Reform," forthcoming in *Reviving Regulatory Reform: A Global Perspective*, ed. Robert W. Hahn, Cambridge University Press and AEI Press, New York, New York.
- Hufbauer, Gary C., Diane T. Berliner and Kimberlie A. Elliot (1986), *Trade Protection in the United States: 31 Case Studies*, Institute for International Economics, Washington, D.C.
- Industry Commission (1995), "The Growth and Revenue Implications of Hilmer and Related Reforms," A Report by the Industry Commission to the Council of Australian Governments, Belconnen ACT, March.
- Jantscher, Gerald R. (1975), *Bread Upon the Waters: Federal Aid to the Maritime Industries 52*, Brooking Institution, Washington, D.C.
- Jarrell, Gregg A. (1984), "Change at the Exchange: The Causes and Effects of Deregulation," *Journal of Law and Economics*, 27, 273-312. October.
- Jorgenson, Dale W., and Peter J. Wilcoxon (1990), "Environmental Regulation and U.S. Economic Growth," *RAND Journal of Economics*, 21, 314-40.
- Katz, Michael L. and Carl Shapiro (1991). "Systems Competition and Network Effects," *Journal of Economic Perspectives*, 8(2), 93-115. Spring.
- Katzen, Sally, (1994). "The First Year of Executive Order No. 12866." Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C., December 20.
- Kennard, William E. (1998). Statement before the Senate Subcommittee on Communications, on the Reauthorization of the Federal Communications Commission, June 10, 1998 at 8-9 (<http://www.ff.gov/speeches/Kennard/statements/stwek843.html>) .
- Klein, Michael (1996), "Competition in Network Industries." Policy Research Working Paper, no. 1591, World Bank. Private Sector Development Department, Washington, D.C., April.
- Liebowitz, S.J. and Stephen E. Margolis (1994). "Network Externalities: An Uncommon Tragedy," *Journal of Economic Perspectives*, 8(2), 133-150. Spring.
- Lipschitz, Leslie, Jeroen Kremers, Thomas Mayer, and Donogh McDonal (1989), "The Federal Republic of Germany: Adjustment in a Surplus Country." Occasional paper, no. 64, International Monetary Fund. Washington, D.C.

- Litan, Robert, and William Nordhaus (1983). *Reforming Federal Regulation*, Yale University Press. New Haven, Connecticut.
- Loury, Glenn C. (1983), "Efficiency and Equity Impacts of Deregulation," in *Public Expenditure and Public Policy Analysis*, eds.. Robert H. Haveman, Julius Margolis, Houghton Mifflin, Boston, Massachusetts.
- MacAvoy, Paul (1977), *Federal Milk Marketing Orders and Price Supports*, American Enterprise Institute, Washington, D.C.
- MacAvoy, Paul W. (1992), *Industry Regulation and the Performance of the American Economy*, W.W. Norton & Co., New York, New York.
- McMullen, B. Starr and Linda R. Stanley (1988), "The Impact of Deregulation on the Production Structure of the Motor Carrier Industry," *Economic Inquiry*, 26, 299-316, April.
- Mihlar, Fazil (1996), "Regulatory Overkill: The Costs of Regulation in Canada," Fraser Institute, Vancouver, British Columbia, Canada.
- Morrison, Steven and Clifford Winston (1986), *The Economic Effects of Airline Deregulation*, The Brookings Institution, Washington D.C.
- Morrison, Steven and Clifford Winston (1989), "Enhancing the Performance of the Deregulated Air Transportation System," *Brookings Papers on Economic Activity: Microeconomics*, 61-123.
- Morrison, Steven A. and Clifford Winston (1995), *The Evolution of the Airline Industry*, Brookings Institution, Washington D.C.
- National Highway Traffic Safety Administration and Federal Highway Administration (1991). *Moving America More Safely: An Analysis of the Risks of Highway Travel and the Benefits of Federal Highway, Traffic, and Motor Vehicle Safety Programs*. Washington, D.C.: Government Printing Office.
- Navarro, Peter (1996), "Electric Utilities: The Argument for Radical Deregulation," *Harvard Business Review*, 74(1), 112-125. January-February.
- Noll, Roger (1998), "The Economics and Politics of the Slowdown in Regulatory Reform," forthcoming in *Reviving Regulatory Reform: A Global Perspective*, ed. Robert W. Hahn, Cambridge University Press and AEI Press. New York.
- Nuclear Regulatory Commission (1995). *Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission*. Final report. NUREG/BR-0058 Revision 2. Washington, D.C.: Government Printing Office.

- Office of Management and Budget (1997). "Report to Congress on the Costs and Benefits of Federal Regulations," Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C., September 30.
- Organization for Economic Cooperation and Development (1996), "Regulatory Reform: A Country Study of Australia," PUMA/REG(96)1, Paris.
- Organization for Economic Cooperation and Development (1997), "The Economy Wide Effects of Regulatory Reform," *The OECD Report on Regulatory Reform, Volume II: Thematic Studies*, Paris, France, Chapter 1, 21-190.
- Powell, Michael K. 1998), "Technology and Regulatory Thinking: Albert Einstein's Warning," speech before the Legg Mason Investor Workshop, March 13, 1998.
- President's Commission on Privatization (1988), "Privatization: Toward More Effective Government," Report on the President's Commission on Privatization, Washington, D.C., March.
- Robinson, James C. (1995), "The Impact of Environmental and Occupational Health Regulation on Productivity Growth in U.S. Manufacturing," *Yale Journal on Regulation*, 12, 387-434.
- Rohlf, Jeffrey, Charles L. Jackson and Tracey E. Kelly (1991), "Estimate of the Loss to the United States Caused by the FCC's Delay in Licensing Cellular Telecommunications," NERA Discussion paper, Washington, D.C., November.
- Secretaria De Comercio Y Fomento Industrial (1997). "Economic Deregulation in Mexico," mimeo, December.
- Spiller, Pablo T. and Carlo G. Cardilli (1997). "The Frontier of Telecommunications Deregulation: Small Countries Leading the Pack." *Journal of Economic Perspectives*, 11, 127-138, Fall.
- Taylor, William E. and Lester D. Taylor (1993). "Postdivestiture Long-Distance Competition in the United States," *American Economic Review*, 83, 185-90, May.
- Thiebolt, A.J. (1975). "The Davis-Bacon Act." Labor Relations & Public Policy Series, Report No. 10. Industrial Research Unity. The Wharton School. University of Pennsylvania.
- Wall Street Journal (1991). "Special Report: Telecommunications," *Wall Street Journal*, Section R, October 4.
- Weidenbaum, Murray, and Robert DeFina (1978). *The Cost of Federal Regulation of Economic Activity*. American Enterprise Institute Reprint No. 88. American Enterprise Institute, Washington, D.C.
- Wenders, John. T. (1987) *The Economics of Telecommunications: Theory and Policy*, Ballinger, Cambridge, Massachusetts.

- White, Lawrence J. (1998), "U.S. Public Policy Toward Network Industries," forthcoming in *Reviving Regulatory Reform*, ed. Robert W. Hahn, Cambridge University Press and AEI Press, New York.
- White, Lawrence J. (1991), *The S&L Debacle: Public Policy Lessons for Bank and Thrift Regulation*, Oxford University Press, New York.
- Willig, Robert D. and William J. Baumol (1987), "Using Competition as a Guide," *Regulation*, 1, 28-35.
- Winston, Clifford (1985), "Conceptual Developments in the Economics of Transportation: An Interpretive Survey," *Journal of Economic Literature*, 23(1), 57-94.
- Winston, Clifford, Thomas M. Corsi, Curtis M. Grimm and Carol Evans (1990), *The Economic Effects of Surface Freight Deregulation*, Brookings Institution, Washington, D.C.
- Winston, Clifford (1993), "Economic Deregulation: Days of Reckoning for Microeconomist," *Journal of Economic Literature*, 31, 1263-89.
- Winston, Clifford (1996), "U.S. Industry Adjustment to Economic Deregulation," paper presented at AEI conference, *Regulatory Reform: Making Costs Count*, Washington, D.C., December.
- Winston, Clifford (1998), "U.S. Industry Adjustment to Economic Deregulation," *Journal of Economic Perspectives*, 12(3), 89-110.