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The public, the business community, the Congress, and the President have expressed concern about the current state of Government regulatory activity. Findings/Conclusions: Issues of concern in the current debate over Government regulation include: the continued appropriateness of some regulatory objectives; the ability of regulation to produce specific results; the alleged imposition of substantial economic costs on society; the effect of regulation on the distribution of income; the best administrative structure for regulation; and the range and feasibility of regulatory reform alternatives. A study of the actual effect of organization and process on regulatory activity would be useful in a Government evaluation of regulation. Thorough regulatory reform requires a complete review of regulation. The review process should be designed to determine the cause of regulatory failure, its extent, and the best reform alternatives. Reform alternatives include complete deregulation, partial deregulation, standards and alternatives, awarding monopoly franchises, subsidies, nationalization, and antitrust enforcement. Recommendations: The costs of regulation should be weighed against its benefits as well as the costs of alternatives. In an evaluation, both the organization and the nature of regulation must be considered. (Author/SC)

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REPORT TO THE CONGRESS

BY THE COMPTROLLER GENERAL
OF THE UNITED STATES

Government Regulatory Activity: Justifications, Processes, Impacts, And Alternatives

This report reviews the debate over Government regulation and develops a structure for reviewing regulatory problems. These include

- the continued appropriateness of some regulatory objectives,
- the alleged imposition of substantial economic costs on society,
- the effect of regulation on the distribution of income,
- the administrative structure of regulation, and
- the range of regulatory reform alternatives.



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-163628

To the President of the Senate and the
Speaker of the House of Representatives

This report is an overview of the current debate on Government regulation. It raises questions to be considered when the activities of regulatory agencies are reviewed. We believe that the major concerns are the following:

- What are the reasons for regulation?
- What is the economic impact of regulation?
- What are the organization and process of regulatory activity?
- What regulatory reform is appropriate?

The report develops a structure for reviewing regulatory activities and gives a perspective to the many arguments--both for and against regulation--that have been made.

Our review is an outgrowth of background material prepared at the request of the Senate Committee on Governmental Affairs for the Senate's study of regulatory reform pursuant to S. Res. 70 (94th Cong., 1st Sess.).

We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

We are sending copies of this report to the Director, Office of Management and Budget, and the major Federal regulatory agencies.

A handwritten signature in black ink, reading "Thomas R. Stedley".

Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

GOVERNMENT REGULATORY ACTIVITY:
JUSTIFICATIONS, PROCESSES,
IMPACTS, AND ALTERNATIVES

D I G E S T

The U.S. has a mixed economy in which the public and the private sectors interact in many ways. The Government buys and sells goods and services, collects taxes, implements monetary policy, and directly intervenes in the workings of the private sector.

This direct intervention developed simultaneously along two paths. On the one hand, the Government attempts to bolster competition among firms through Federal laws designed to eliminate restraint of trade. On the other hand, the Government directly regulates certain activities, thus substituting Government decisionmaking for the normal workings of the marketplace.

Government regulation has expanded to the point where virtually every industry and household is affected in some visible way. Examples are the recent controversies over the automobile seatbelt-ignition interlock and the effect of pollution-control and safety equipment on gasoline consumption and on the price of automobiles.

This report reviews the debate over Government regulation and develops a structure for reviewing regulatory problems. The examples in this report are drawn from scholarly literature and do not reflect original GAO analysis. GAO has not examined the raw data underlying the studies and, therefore, neither endorses nor rejects any individual's work.

The public, the business community, the Congress, and the President have all expressed concern about the current state of regulation. Issues being questioned include

--the continued appropriateness of some regulatory objectives,

- the ability of regulation to produce specific results,
- the alleged imposition of substantial economic costs on society,
- the effect of regulation on the distribution of income,
- the best administrative structure for regulation, and
- the range and feasibility of regulatory reform alternatives. (See ch. 1.)

REASONS FOR REGULATION

Economists accept "market failure" (when a naturally occurring flaw interferes with the workings of market forces) as a justification for Government intervention. Examples of market failure and its consequences are

- natural monopoly, resulting in high prices, reduced output, and excess profits;
- interdependencies in natural resource extraction (when one producer's activities affect a second producer's access to a natural resource), resulting in the inefficient use of resources and inequitable sharing of costs;
- inadequate information in the marketplace, resulting in poor decisions and wasted resources;
- externalities (production or consumption costs or benefits that fall on society, not the person causing them), resulting in wasteful use of resources and unfair costs shifting to third parties; and
- destructive competition, resulting in chronically sick firms unable to satisfy consumer demand.

Regulation is often adopted to correct such market failures.

Regulation is also used to achieve social policy or other objectives when the Congress determines that this is desirable. For example, regulation has been used to

- alter the distribution of income,
- enhance national security,
- allocate scarce resources,
- provide service to small communities, and
- advance macroeconomic policy objectives (such as price stability). (See ch. 2.)

COSTS AND BENEFITS

Both costs and benefits of regulation are difficult to measure. Costs include direct costs (such as administration and compliance costs) and indirect costs (such as inefficient production and a retardation in the rate of technological change). In addition, regulation often redistributes income. The benefits include correcting a market failure or achieving some social policy objective.

The decision to regulate should be carefully evaluated because it may not be cost effective. The costs of regulation to achieve social policy objectives should be weighed against its benefits as well as the costs of alternative ways of achieving the same objectives. (See ch. 3.)

ORGANIZATION AND PROCESS

In an evaluation, both the organization and nature of regulation must be considered.

To assure accountability, the public and its representatives must have information on

- the means by which a decision is reached,

- the bases for that decision,
- the identity of the person responsible for the decision, and
- the means by which action can be taken to change or reverse the decision.

The goal is regulation that is in the public interest.

The regulatory process (the way decisions are made) depends on both the organization and procedures of the agency; and, the process itself is likely to affect regulatory decisions. A study of the actual effect of organization and process on regulatory activity would be useful in a Government evaluation of regulation. (See ch. 4.)

REGULATORY REFORM

Because of the diversity of Federal regulatory activities and organizational structures, generalized discussion of reform is difficult. Regulatory activities include

- regulating price, entry, and rate-of-return;
- setting standards (safety, product quality, pollution, employment practices, and business behavior);
- letting franchises; and
- influencing industrial planning.

However, if regulation does not efficiently achieve its stated or desired objectives, reform is appropriate.

Thorough regulatory reform requires a complete review of regulation. The review process should be designed to determine the cause of regulatory failure, its extent, and the best reform alternatives.

The cause of regulatory failure may lie with the regulation's justification, mandate, or

process. The extent of regulatory failure is measured by benefits and costs, to the extent that they are identifiable, with a special note required on its effect on income distribution.

Reform alternatives include complete deregulation, partial deregulation, standards and alternatives, awarding monopoly franchises, subsidies, nationalization, and antitrust enforcement and are evaluated on their respective trade-offs between regulatory impacts, costs, and benefits.

Reform that begins by studying the basic justifications for regulation and ends with an analysis of operational alternatives would require the commitment of substantial resources; but, it should be well worth the costs. (See ch. 5.)

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ABBREVIATIONS

CAB	Civil Aeronautics Board
CPSC	Consumer Product Safety Commission
EPA	Environmental Protection Agency
ERDA	Energy Research and Development Administration
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FDA	Food and Drug Administration
FEA	Federal Energy Administration
FPC	Federal Power Commission
GAO	General Accounting Office
HEW	Department of Health, Education, and Welfare
ICC	Interstate Commerce Commission
NHTSA	National Highway Traffic Safety Administration
NRC	Nuclear Regulatory Commission
OPEC	Organization of Petroleum Exporting Countries
OSHA	Occupational Safety and Health Administration

CHAPTER 1

INTRODUCTION

The United States has a mixed economy in which the public and the private sectors interact in many ways. The public sector purchases over 20 percent of total output and collects one-third of personal income in taxes. Government also influences the economy through monetary policy and by regulating the private sector. Thus, the Federal Government affects the functioning of markets by buying and selling goods and services, altering private incentives, determining the availability of credit, and directly intervening in firms' activities.

Direct Government intervention in the workings of the private sector developed simultaneously along two paths. On the one hand, the Government attempts to enhance competition among firms through Federal laws designed to eliminate restraints of trade. This type of legislation dates from the Sherman Antitrust Act of 1890. On the other hand, the Federal Government directly regulates certain activities, thus substituting Government decisionmaking for the normal workings of the marketplace. The first independent regulatory agency, the Interstate Commerce Commission (ICC), was created in 1887. Today, Government regulation has expanded to the point where virtually every industry and household is affected in some way.

Government regulation has recently generated great interest. The public, the business community, the Congress, and the President have all expressed concern about the current state of regulation. There are many ready examples of this increased interest, including the coverage of regulatory problems by the news media and a large number of conferences and panel discussions devoted to the topic. Former President Ford, on May 13, 1976, proposed that the Congress adopt a 5-year timetable for forced review of regulation across major sectors of the economy. ^{1/} President Carter has given regulatory reform high priority. Over 100 bills concerned with regulatory reform were introduced into the 94th Congress. And, a number of bills have already been introduced into the 95th Congress.

Discussion about Government regulatory activities is often muddled by the lack of a common understanding as to what constitutes regulation. There is no single universally

^{1/}Richard E. Cohen, "Out of the Closet, into Debate--Regulatory Reform Is Here to Stay," National Journal, May 22, 1976, p. 704.

accepted definition of regulation. A narrow definition including only the control of economic variables, such as market entry and price, would exclude the substantial regulatory effort in the health and safety area. The broadest definition would probably be of little use because it would include most Federal activities. Nevertheless, the first requirement of any study of regulation is to define what is meant by the term. The Congressional Budget Office faced this problem recently in preparing a staff paper and resolved the problem with a useful definition. The definition includes as regulation, those activities which:

"Impact on the operating business environment of broad sectors of private enterprise, including market entry and exit; rate, price, and profit structures; and competition;

"Impact on specific commodities, products, or services through permit, certification, or licensing requirements; and

"Involve the development, administration, and enforcement of national standards, violations of which could result in civil or criminal penalties, or which result in the types of impact described above. 1/

A list of Federal Government agencies fitting this definition, and the staff-year and budgetary costs of regulation, are included in appendix I.

The recent public interest in regulatory reform is probably based on several factors. First, there is a natural antagonism toward Government regulation in a society which, for generations, has praised a market system. Second, the recent increase in the scope of Government regulation now directly affects many citizens, often in ways viewed as unsatisfactory. Third, the public has been made increasingly aware of the costs of regulation.

1/Congressional Budget Office, "The Number of Federal Employees Engaged in Regulatory Activities," Subcommittee Print of the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, House of Representatives, Aug. 1976, pp. 15-16.

The increased scope of Federal regulation is illustrated by the growth of regulatory agencies and their activities. Since 1970 many regulatory agencies have been established, including: the Environmental Protection Agency (EPA) in 1970, the Occupational Safety and Health Administration (OSHA) in 1970, the Consumer Products Safety Commission (CPSC) in 1972, and the Federal Energy Administration (FEA) in 1974. Unlike most of the older regulatory bodies, these agencies directly and visibly affect many individual citizens. Examples are the recent controversies over the automobile seatbelt-ignition interlock and the effect of pollution-control and safety equipment on gasoline consumption and on the price of automobiles.

Public discussion of the costs of regulation has occurred in Government, in the broadcast media, and in articles in newspapers and popular magazines. Very large dollar estimates of the annual costs of regulation to individual families and the country as a whole have been suggested. Although the largest figures lack firm substantiation, the debate has sharpened public awareness of substantial costs associated with regulation.

The new concern over regulation has prompted a debate which covers a wide spectrum of issues ranging from the purposes of regulation through its results. Questions have been raised regarding the continued appropriateness of some regulatory objectives, the ability of regulation to achieve its stated goals, the alleged imposition of substantial economic costs on society, the impact of regulation on the distribution of income, the best administrative structure for regulation, and the range and feasibility of regulatory reform alternatives.

Our report reviews the debate over Government regulation and attempts to answer its major questions.

Chapter 2 addresses the question, "What are the reasons for regulation?". The discussion includes the economist's justification for regulation, as well as the social, political, and other reasons for regulation. The economist's justification is based on the concept of market failure. A

market failure exists when a naturally occurring flaw interferes with the workings of market forces. Regulation is adopted to correct this flaw. Examples of market failure and its consequences are

- natural monopoly, resulting in high prices, reduced output, and excess profits;
- interdependencies in natural resource extraction, resulting in the inefficient use of resources and an inequitable sharing of costs;
- inadequate information in the marketplace, resulting in poor decisions and wasted resources;
- and destructive competition, resulting in chronically sick firms unable to satisfy consumer demand.

When regulation is used to achieve social, political, or other objectives, it is because it is the policy tool of choice. For example, regulation has been used to alter the distribution of income, enhance national security, allocate scarce resources, provide uneconomical service to small communities, and advance macroeconomic policy objectives (such as price stability).

Chapter 3 addresses the question, "What is the economic impact of regulation?". The discussion considers regulation's costs and benefits and the impact on the distribution of income. The costs of regulation include both the direct and indirect costs to Government and the private sector. In other words, in addition to the administrative and compliance costs of regulation, there are other consequences, such as inefficient production and a retardation in the rate of technological change.

Chapter 4 addresses the question, "What are the organization and process of regulatory activity?". This chapter discusses the organizational issues regarding the different types of regulatory machinery, such as independent commissions, administrative courts, and executive branch administrators.

Chapter 5 addresses the question, "What regulatory reform is appropriate?". The discussion considers the topics of deregulation, regulatory reform, and alternatives to regulation. The circumstances warranting deregulation or reform are examined, the various policy options are developed, and

the transition problems associated with any change are outlined.

Our report uses examples from the economics literature. These examples and the implied conclusions are not the result of our analysis. We have not examined the raw data underlying the studies and, therefore, neither endorse nor reject the validity of any individual's work.

CHAPTER 2

WHAT ARE THE REASONS FOR REGULATION?

The Federal Government's reasons for regulating the private sector of our economy can be divided into two broad groupings.

The first grouping consists of examples of market failure, a term which economists use to designate a flaw in the marketplace which produces undesirable consequences. Examples of market failure and its effects are

- natural monopoly, resulting in high prices, reduced output, and excess profits;
- interdependencies in natural resource extraction, resulting in the inefficient use of natural resources;
- destructive competition, resulting in chronically sick firms unable to satisfy consumer demand;
- externalities, which impose costs on society but not on the person who causes them; and
- inadequate information in the marketplace, resulting in poor decisions and wasted resources.

Economists often recommend Government intervention, such as regulation, when a technical analysis reveals a market failure. The specific objective of such regulation is to repair a poorly functioning market and reduce the accompanying undesirable effects.

The second grouping consists of social, political, and other reasons for Government regulation. For example, regulation has been used to alter the income distribution; strengthen national security; promote infant industries; protect those deemed worthy of special protection, such as small businesses and family farms; and provide service to small communities. Regulation used for such purposes is conceptually different from regulatory activities designed to correct market failure. It is only one of the tools the Government employs to accomplish policy objectives. For example, as an alternative to such regulation, the Government can change the tax laws, alter Government spending, directly provide subsidies or services, or conscript personnel or equipment. Each alternative means may successfully

achieve the desired policy objective, but the mechanisms themselves might differ with respect to administrative ease, popularity, cost to the Government or the public, and the extent of unintended consequences. The Congress chooses regulation to achieve social, political, or other objectives when it determines that regulation is the most desirable mechanism.

Both of these justifications for Government regulation raise different types of questions. The market failure justification is based on a technical analysis of whether in specific instances the forces of competition function well enough to allocate resources efficiently and protect consumers and workers. Therefore, the market failure justification for regulation focuses on the types of situations that warrant corrective regulation. If the objectives are not related to market failure, the decision to use regulation rather than the taxing, spending, or other powers of the Federal Government is a matter of political choice and cannot be judged right or wrong based on market failure arguments. Thus, the focus of the discussion of this type of regulation is its usefulness as a policy tool, that is, its costs and effectiveness.

The distinction between market failure and other reasons for regulation is useful in evaluating both the need for regulation and reform alternatives. For example, the maintenance of market failure correcting regulation is required only if the original market failure endures. Therefore, periodic studies of the workings of the marketplace are worthwhile. Similarly, the fact that social policy objectives evolve over time necessitates periodic examination of the continued efficacy of regulation intended to achieve these objectives. The distinction between the two types of regulation is useful in regulatory reform studies because the basic justification limits the reform options. Alternatives to regulation to achieve social policy objectives include all governmental means that have an equivalent outcome. Alternatives to market failure correcting regulation are circumscribed by the need to correct the market failure.

The following discussion develops these topics at greater length.

THE MARKET FAILURE JUSTIFICATION FOR GOVERNMENT REGULATION

The market failure justification for Government regulation is derived from the economist's model of a freely competitive market. Under specified assumptions, the competitive market yields the "best" answers to the questions of what should be produced and how. In this context the best means that society's resources are used efficiently to make products that consumers want. The model tells us nothing about the desirability of the income distribution that results. This competitive model of economic behavior has great appeal in a democratic society because it does not require that economic activities be directed by a central authority. Individuals acting in their own self-interest maximize society's economic well-being.

When certain crucial assumptions of the competitive model are violated, however, the market solution is not optimal. Economists call such a defect in the working of a market a market failure and accept it as justification for Government intervention. Such failures can result in inefficient use of society's scarce resources, output and prices being either too high or too low, and those who bear the costs of producing goods or services not receiving the benefits.

The value of the perfectly competitive model is its ability to identify and isolate major economic forces and causal relationships. However, its simplifying assumptions do not form a normative ideal. Rather, they call attention to failure in real-world markets that have the potential to seriously impair the workings of the marketplace.

The extent of a market failure can be either partial or complete. A partial market failure is a potentially rectifiable deficiency in the functioning of a market. Government intervention should be designed to correct the failure, thus enabling the market to function efficiently. Two examples of this type of partial failure are imperfect information and externalities, that is, costs that fall on society but not on the person who causes them.

A complete market failure exists when market deficiencies are so extensive that there is no way the market can be made to function in a satisfactory manner. Regulation attempts to correct this type of failure by substituting Government

decisionmaking for some of the market forces. One such example is the natural monopoly.

The economics literature contains many examples of market failures that warrant regulation. Unfortunately, it offers much less guidance on building an efficient regulatory structure and process. There is no costless mechanism for correcting market failures. Thus, the cost of an uncorrected market failure must be weighed against the costs of regulation to correct the failure.

The discussion which follows highlights the different forms of market failure.

Natural monopoly

A natural monopoly exists when the production of a commodity is characterized by increasing returns to scale; that is, per-unit production costs decrease as the firm becomes larger. Consequently, the largest firm in the industry is also the most efficient; that is, it has the lowest cost per unit of output. Such a firm has the ability to underprice competing firms and drive them out of business. The surviving firm then becomes a monopolist, the sole producer of the product. And, in order to maximize profits, it pursues price and output objectives which are not considered desirable.

Unregulated monopolists usually produce too little output and charge prices that are too high when compared to a competitive regime, engage in discriminatory pricing behavior, and reap monopoly profits. This situation is usually remedied with classic public utility regulation in which a public utility commission determines what the monopolist may charge for output, the minimum quality of the service, and what profit the monopolist is entitled to earn.

The primary attribute of a natural monopoly is that one firm can supply the entire market for a good or service more cheaply than any combination of smaller firms. Local telephone service is a textbook example of a natural monopoly. The value of telephone service is a function of the number of people with whom a subscriber can talk. A single firm can interconnect large numbers of local subscribers at lower cost because the presence of more than one firm would require wasteful duplication of facilities.

Pipelines are another example in which the cost of providing a service declines with the scale of the operation.

While pipelines are not a pure monopoly, their scale economies provide an argument for regulation. ^{1/} The capital or capacity cost associated with laying a pipeline is the major share of the total cost of providing the service. And, the capacity of a planned pipeline can be increased at a much less than proportional increase in construction cost. The costs of a right-of-way are essentially the same for a narrow pipeline as for a wide one; excavation costs for a wide trench are only marginally more than for a narrow one; and a proportional increase in a pipeline's radius results in a twofold proportional increase in the line's capacity.

Neither the natural monopoly aspects of an industry nor the resulting justification for regulation are fixed over time. Changes in the extent of the market or changes in technology can eliminate the natural monopoly status of an industry. Such changes would make continued regulation unnecessary and injurious because the costs of the regulation would not be offset by any benefits.

Railroads were natural monopolies in the 19th century. The industry's economies of scale followed from the costs of assembling the rights-of-way and laying the track. Consequently, although some large cities were served by several railroad companies, most communities were served by a single company. The railroad monopoly was secure at that time because there was no competition from trucks or planes.

However, the situation has changed markedly over the past 50 years. The development of motor trucks, coupled with the construction of a national highway system, produced in the trucking industry an intermodal competitor for the railroads. Railroads would now be incapable of exercising substantial monopoly power were there no Government regulation of freight transport. A price equal to the cost of shipping freight by truck (or barge if available) would be the maximum tariff an unregulated railroad could charge.

Interstate telecommunications is a more recent example of an industry in which changing circumstances have called into question its designation as a natural monopoly. First, there has been a sharp increase in demand for communication services--such as data transmission--that has exceeded the

^{1/}The definition of the market is important in these cases. A pipeline may offer the only service between two points. However, its monopoly power may be constrained at the market terminus by supply from other sources.

single firm economies of scale of microwave transmission. 1/ A monopoly is not needed for efficient point-to-point specialized services. The Federal Communications Commission (FCC) recognized this in the "above 890" decisions (1959-60) 2/ and allowed the creation of competing firms. Second, the new technology of satellite communications has sharply reduced scale economies when compared to long lines and microwave transmission. Although a satellite will carry many more circuits than a microwave facility, a single satellite will serve many communities with an average number of circuits for each pair of cities that is less than an efficiently sized microwave facility. Future technological change in interstate telecommunications could restore the natural monopoly designation to the industry. Some experts believe that the newest transmission medium--optical fibers--has such extensive economies of scale that it will do just that.

Natural resource regulation

The regulation of natural resource extraction can be justified for two reasons: the existence of either a natural resource monopoly or interdependencies in the exploitation of a resource. The consequences of the natural resource monopoly are closely related to the preceding discussion. Exclusive control over an essential raw material can be a source of monopoly power. The unconstrained behavior of this type of monopolist is subject to the same criticism as the natural monopoly; that is, a monopolist will raise prices and lower output. The case can be well illustrated with an international example.

The Organization of Petroleum Exporting Countries (OPEC) is an international cartel created by the leading crude oil

1/Waverman, Leonard, "The Regulation of Intercity Telecommunications" in A. Phillips, Ed., Promoting Competition in Regulated Markets, The Brookings Institution, Washington, D.C., 1975.

2/FCC concluded in these decisions that "* * * there were adequate frequencies above 890 megacycles to take care of present and reasonably foreseeable future needs of both common carriers and private users * * *." See Kahn, Alfred E., The Economics of Regulation: Principles and Institutions, Vol. II, John Wiley & Sons, Inc., N.Y., N.Y., 1971, p. 130.

exporters so that they can jointly price petroleum as if they were a single monopolist. ^{1/} OPEC's price and output activities in recent years are an example of a monopoly in action. A monopolist's price and output decisions are subject to the law of demand, which states that price and quantity are inversely related. Not even a monopolist can independently determine both the price he or she charges and the quantity he or she sells. A higher price can be commanded only if the quantity offered for sale is reduced, and this fact explains OPEC's activities. OPEC took advantage of a tight world petroleum market in 1973 to transform marginal cutbacks in production into a fourfold increase in the world price of crude oil. The new high price was artificially maintained during slackened demand in 1975 by carefully restraining production. Major OPEC members, such as Saudi Arabia and Kuwait, reduced their production to levels as much as one-third below capacity.

Government intervention may also be justified if interdependencies result from the exploitation of a natural resource. Interdependencies exist when one producer's activities affect a second producer's access to a natural resource. Efficient utilization of the resource may be possible only with Government regulation. For example, the electromagnetic spectrum suitable for radio and television broadcasting is quite limited. Early unregulated use of the airwaves resulted in a disruptive overlapping of signals. Effective use of this scarce resource requires a careful assignment of wavelengths, broadcast power, and geographic areas served. FCC has been criticized for the way it distributes broadcast licenses, but the need for regulation is not generally disputed.

The development of crude petroleum fields is a second case of production interdependencies requiring Government regulation. The total quantity of oil that can be recovered from a field is a function of the number of wells in the field and the rate at which the oil is pumped. Too many wells in a single field and excessively rapid pumping will lower the field pressure and reduce the quantity of recoverable oil. Large oil fields are often covered by many separate leases and worked by more than one firm. Early unregulated pumping was an economic version of the game of

^{1/}The fact that OPEC is a cartel means that the source of its monopoly power is the cartel agreement and, unlike a natural monopoly, there are economic forces that can break the cartel and destroy its monopoly power. Furthermore, the fact that OPEC is a multigovernment cartel alters the range of desirable and feasible policy alternatives. If the example in the text were a domestic cartel, the appropriate Government intervention would be antitrust litigation.

musical chairs. Oil that one firm was slow to extract was recovered by its competitors. Hence, all firms had a private incentive to overpump and damage the oil fields. Regulation was required to oversee the efficient recovery of this resource.

Destructive competition

Destructive competition exists when destabilizing price wars result in an industry's inability to satisfy consumer demand. The two key industry characteristics that can lead to destructive competition are a high ratio of fixed costs to total costs and a slow adjustment of production capacity to changing circumstances.

Firms potentially subject to destructive competition are typically in highly capital-intensive industries. For such firms fixed costs (costs that are incurred irrespective of the level of production) are a large percentage of total production costs. Variable costs (costs that vary directly with the level of production) are a relatively less important category. ^{1/} In the short run, a firm that ceases production will lose an amount equal to its fixed costs. Therefore, a firm will lose less money if it produces some output and is able to sell it at a price that at least covers its variable costs. Any revenue greater than variable costs will reduce the loss associated with the fixed costs. Vigorous competition between high fixed cost firms can result in sharp price reductions and unrecovered total costs, with the firms becoming chronic money losers, unable to maintain their capital or consistently satisfy demand.

Capital in an industry subject to destructive competition is characteristically immobile. Excess capacity in healthy competitive industries triggers a sequence of events which shifts capital to other uses. In industries subject to destructive competition, it triggers price wars. Capital is frozen in its current use and efforts by competitors to minimize losses result in long periods of sustained losses and excess capacity. Capacity is eventually slowly reduced

^{1/}There is no simple formula that converts the economist's conceptualization of fixed costs and variable costs into the accountant's income statement. Therefore, the discussion is best understood with reference to these variables as defined in the text.

by attrition. If capital is also slow to enter an industry in response to increased demand (because of long-required lead times), price wars may be followed by periods of sharp price increases. This results because demand exceeds available supply. The market failure arises because although consumers are willing to pay a price that equals the cost of production, producers are unable to satisfy demand because of a shortage of capital with which to produce the product.

Consumers and producers are injured by destructive competition. Prices and product quality fluctuate widely, sustained losses are incurred, wants go unsatisfied, and planning becomes difficult to undertake. However, destructive competition is an unusual situation with unique characteristics. Examples such as the railroad price wars that raged in the decades before the creation of ICC are not plentiful. Poor profit performance and the failure of firms per se are not evidence of destructive competition. Existing firms fail and new ones are created in the normal course of economic events as markets change and as more efficient firms supplant less efficient producers.

Externalities

Externalities, also known as spillovers and neighborhood effects, are the cause of much recently instituted Government intervention in the marketplace. Negative externalities--the type most pertinent to a discussion of regulation--are costs of production or consumption that fall on society but not on the person who causes them. Regulation is warranted because the presence of externalities gives rise to the wasteful use of resources and the inequity of costs shifted to third parties. For example, the automobile pollutes the air, impairing general health. The driver pays for the car and gasoline used, but not for the consequences of the degraded air quality. Inefficient overconsumption follows because the driver pays less than the full cost of the resources consumed. Federal intervention to correct negative externalities includes environmental protection and some aspects of the regulation of nuclear power generation, health and safety, and financial intermediaries.

Environmental pollution--air, water, and noise--is a clear-cut example of a negative externality. Polluting firms, in the absence of Government intervention, use the environment as a free input in the production process, and consequently the operating costs of the firm do not include

the costs of the pollution. Therefore, the firm's output will be underpriced from a social point of view. The free market will yield an inefficient solution because the consumer of the good pays less than the full cost of production and some costs are borne by others who do not derive benefits from the product.

The analysis of the justification for nuclear power regulation is similar to the preceding discussion. This case differs only in the categorization of the external costs. Many of the costs of air and water pollution are readily apparent--even if it is difficult and, in some cases, impossible to measure them. A river or beach that is lost to recreation is visible; respiratory difficulty during an air pollution alert can be felt; and studies have shown that excessive noise levels can cause hearing loss and personality changes.

The external costs of nuclear power generation--as distinct from the nuclear waste problem--are not observable because they take the form of risk of bodily harm and property damage. The possibility of a nuclear mishap imposes a cost on all those who might be injured by it. That cost is the expected value of the damage produced by a nuclear accident, that is, the probability of a mishap times the injury that would be inflicted. Well designed Government standards would reduce the hazard and, in the process, internalize to the firm some of the external costs. Under such circumstances, the price of nuclear generated electricity would rise to reflect the otherwise external costs.

Some health and safety regulations can also be justified by the presence of externalities. Automobile standards that specify tire, brake, and other handling requirements reduce the risk of injury not only to drivers, but to third parties as well. Construction standards reduce the risk of a building's collapsing and the spread of fires. Health standards reduce the spread of disease from the careless to the more prudent.

The regulation of financial intermediaries is justified because of the vulnerability of the banking system to panic runs and the subsequent impact of bank failures on the rest of the economy. Insolvency of financial intermediaries contributes to real economic difficulties for nonbank firms and employees.

Nothing in the preceding discussion should be taken as support or approval of any particular regulatory technique. It merely offers examples of negative externalities warranting corrective action. There are a number of alternatives available for correcting negative externalities, but the devices actually in use are not necessarily the best. Some believe that pollution taxes are a better solution to environmental problems than mandated emission standards. Some feel that nationalization of nuclear power generation is the preferred solution to that industry's complex problems. And some argue that deposit insurance is sufficient to guarantee the required stability of the banking system. The question of what is the most appropriate regulatory alternative will be dealt with at some length in chapter 5.

Inadequate information

Government intervention in the areas of consumer product attributes and occupational safety can be justified on the basis of inadequate or insufficient information in the marketplace. Private markets do not function well when adequate information is lacking. Consumers need to know the attributes and prices of a wide range of products in order to make the best use of their moneys. Workers need to know and be able to evaluate occupational hazards in order to determine whether they are appropriately compensated. While in many instances markets are reasonably efficient providers of information, the existence of a serious deficiency in the provision or processing of information can justify Government regulation.

Adequate information might be lacking either because the production of information may be characterized by economies of scale, or because it may yield positive externalities. The presence of scale economies means that the average cost of the information will decline with the amount produced. The cost of individually acquiring information will be high, and insufficient information will be available without some Government intervention. The presence of positive externalities means that the individual who bears the cost of acquiring needed information does not capture all its benefits. Some of the benefits accrue to others who pay none of the cost. The individual bearing the cost of acquiring the information undervalues it because the external benefits that others receive are not counted. Consequently, a private comparison of the costs and benefits of acquiring information may result in too little being produced. This condition

confers on information a quasi-public good 1/ designation and is a justification for regulation or Government provision of the information.

Defects in the processing or use of information may be another justification for regulation. A firm which is the dominant employer in an area may have substantial monopsony 2/ power in hiring workers. Workers may lack the power to either capture wage differentials that compensate for work hazards or effectively alter the safety of the workplace. On another level, evaluating the risk of injury or illness may involve a level of complexity that exceeds the technical capabilities of consumers or workers. Lastly--and this point is at variance with standard economic assumptions--the consumer or worker may be psychologically unequipped to rationally evaluate alternatives involving risk of bodily harm. People often underestimate the risks to which they are exposed because they believe accidents always happen to the other person.

In the area of consumer product attributes, the consequence of inadequate information is that consumers are unable to maximize their welfare or well-being. Consumers will feel they have been overcharged for a product if its quality is less than it is claimed to be. Also, if the risk of injury is greater than believed when the product was purchased, the consumer is subject to a higher than expected cost of injury.

The problem of insufficient product information can be remedied in two different ways. The first alternative is to increase the flow of information to consumers so they can make efficient decisions. Examples of this kind of activity relating to both product safety and quality are

1/Economists define a public good as a good or service which, if provided to anyone, is freely available to all; that is, no one can be excluded from enjoying its benefits whether he or she pays for it or not. National defense is an example of a public good.

2/A monopsonist is the only buyer in a market and, as a consequence, can force his or her purchase price below the level that would exist in a competitive market with many buyers. As with monopoly, quantity is less than it would be when compared to the competitive solution.

- labeling requirements ("The Surgeon General of the United States has determined * * *.");
- grading standards ("All of our steaks are U.S.D.A. 'Choice' or 'Prime.'");
- the policing of correct weight and size information ("This product is sold by weight, not volume, any settling * * *."); and
- truth-in-advertising enforcement ("* * * however, nothing can prevent colds.").

The second alternative is for the Government to set minimum acceptable safety standards which must be met by products if they are to gain entry to the marketplace. Products that are too dangerous are banned. Two different arguments support these bans on excessively risky products. The first is that the costs associated with banning such products are less than the costs of a "wrong" decision, or, alternatively, less than the cost of producing and diffusing information necessary to eliminate wrong decisions. The second argument is that consumers are unable to evaluate complex statistical information involving risk of bodily harm.

Government intervention in occupational or job safety may be justified by both insufficient information in the labor market and related cost and price distortions. A worker subjected to a job-related danger to physical well-being bears a cost of production. That cost is the expected loss resulting from anticipated work-related sickness and injury. If workers were able to accurately estimate the actuarial value of the risk, and if they were fully compensated for it, the need for Government intervention would probably be absent. Work-related risks would be removed to the extent that it was less expensive for firms to reduce the risks than to compensate the employees.

However, some workers, due to information problems or differences in bargaining power, probably do not receive full compensation for their risks. The news media frequently carry reports that are examples of this situation. The reports of Kepone poisoning of workers in Virginia and lead poisoning of workers in Indiana are two recent cases. Both producers and consumers share the benefits derived from this worker-borne production cost. Producers capture extra profits and consumers receive lower prices.

It may be useful to distinguish between risk of accidental injury and risk of work-related illness. Predictable accidents are more readily adjusted for by the market. There has been some preliminary work indicating that workers in jobs with high risk of accidental injury receive compensating wage differentials. The decision of a worker who knowingly accepts such a job is in certain respects not conceptually different from virtually everyone's daily decisions. A driver who speeds trades the increased risk of an accident for the time saved. The individual who smokes in bed trades a sharply increased risk of a fatal fire for the pleasure of the cigarette. (Let us ignore, for the purpose of these examples, the danger to innocent third parties.) Health hazards are less clearly understood and involve cause-to-effect time periods stretching into decades. The complexity of health hazards--coupled with a full range of informational problems--suggests that larger benefits may be associated with Government intervention in this aspect of occupational safety. 1/

The lack of adequate information, which in the abstract may justify Government intervention, does not provide support for specific regulatory practices. For instance, there may be better ways of increasing job safety than those employed by OSHA. A complete evaluation of that agency would look at the effectiveness of its activities as well as its justification for existence. Occupational safety regulations generally increase costs of production and product prices. If the increase represents a shift in production costs from workers to ultimate consumers, then the price increases can be desirable. However, there is nothing beneficial about regulations if the increased costs do not effect a decrease in the incidence of work-related injuries and illness.

1/Smith, Robert S., The Occupational Safety and Health Act, Its Goals and Its Achievements, The American Enterprise Institute for Public Policy Research, Washington, D.C., 1976.

OTHER OBJECTIVES OF REGULATION

Although market failure is a theoretical justification for Government regulation, the evidence indicates that guidelines from economic theory are not the only ones used to determine regulatory activity. In fact, it can be said that regulation has rarely been imposed with the sole intended objective of correcting a market failure. Regulation has more often been adopted to achieve other policy objectives. Indeed, at times regulation has also been enacted in response to the requests of special interests. These objectives have been pursued through regulation even when it has resulted in substantial costs, unintended effects, and inefficiencies.

This section discusses the noneconomic reasons for regulation. The type of analysis to which this type of regulation can be subjected is outlined; and the uses, limitations, and shortcomings of pursuing regulation for these purposes are highlighted.

Regulation to achieve broad social policy objectives

The Government can often achieve a particular policy objective with any one of several different program options. The Congress can change the tax laws, vote to spend public funds, pass laws to encourage specific behavior, or decide to regulate a particular activity or industry. Each program alternative may successfully achieve the desired policy objective; but the programs themselves might differ in administrative ease, popularity, cost to the Government and public, and the extent of unintended consequences.

For example, providing air service to small communities might be desired although it is uneconomical. This service could be provided in any number of ways. Subsidies might be given by the Federal Government to the private airlines that provide the desired service. The subsidies might come out of the Federal Government's general tax revenues or be generated by a special tax. A quasi-public corporation might be set up to provide the service. Alternatively, the industry might be regulated. The regulation could limit entry into the industry and require that each airline allowed to operate serve a combination of profitable and unprofitable routes. The extra profits from the best routes could be used to subsidize service that otherwise would not be provided.

Several broad social policy objectives that have led to the adoption of regulation are

- concern over the distribution of income,
- considerations of national security and the national interest,
- considerations of equity or fair play,
- protection of those deemed worthy of special protection (such as small businesses and family farms),
- provision of service to small communities (such as airline and surface freight service),
- allocation of scarce resources,
- protection of consumers from specific price increases (such as for natural gas and petroleum distillates), and
- considerations of macroeconomic policy (such as overall price stability).

The decision to use regulation instead of the taxing and spending powers of the Federal Government to achieve some objectives is a matter of political choice. As previously noted, such a decision is subject only to the judgments of the decisionmakers and cannot be judged wrong based on market failure arguments. Nevertheless, this regulation can be analyzed for its usefulness as a policy tool. Some questions that might be considered in the analysis are:

- What objectives are specified?
- Are the objectives in concert with the current conception of the public purpose?
- Does the regulation achieve the objectives?
- What are the unintended consequences?
- What are the total costs of using regulation to achieve these objectives?
- Who bears the cost of the regulation?

--What alternative mechanisms can achieve the objectives?

--Are any of these alternatives less costly (more efficient) ways of reaching the objectives?

This type of critical analysis is important because regulation can be a difficult if not unwieldy policy instrument to use. Regulation, for any number of reasons, may not produce the desired result. And, even if successful, it can be a very costly undertaking for the economy as a whole, if not for the Government directly. Several examples of the difficulties and questionable effectiveness of using regulation follow.

Regulation may not actually realize the intended objectives. One objective of airline regulation was the extension of scheduled service to as many communities as possible. Consequently, the regulation restricted entry into the industry and developed route structures that allocated each existing trunk line a combination of potentially profitable routes and unprofitable routes. The losses on the unprofitable routes were to be covered by profits earned on the profitable ones. The technical name for this is a cross subsidy. However, recent studies have indicated that these cross subsidies do not exist in civil aviation. Service competition on the supposedly profitable routes resulted in lower than anticipated load factors. It competed away the potential profits, and few if any subsidies appear to exist. 1/

One objective of FCC regulation is the promotion of local television broadcasting. FCC allocates licenses to provide as many communities as possible with local outlets. 2/ The advantage of local outlets is their supposed responsiveness to local interests. The number of compatible stations is increased by restricting the broadcast power and areas served of all stations. Consequences of

1/Douglas, George W. and Miller, III, James C., Economic Regulation of Domestic Air Transport: Theory and Policy, The Brookings Institution, Washington, D.C., 1974, p. 97.

2/Noll, Roger G.; Peck, Merton J.; McGowan, John J., Economic Aspects of Television Regulation, The Brookings Institution, Washington, D.C., 1973, p. 5.

this policy are a reduction in the potential number of stations each community can receive and a restriction in the number of viable commercial networks to three. 1/

The cost of original television programming is so high that few local stations can afford to engage in it. New programs are mainly offered by the networks, which capture programming economies of scale. Locally originated programming, except for local news-type programs, has been dominated by reruns of old network series and movies. 1/ There is an apparent conflict between the objectives of this regulation and the end result.

The promotion of residential construction is a popular social goal. Home construction is encouraged in several ways, including the regulation of a class of financial intermediaries--the savings and loan associations--designed to provide mortgage funds. The asset portfolios of savings and loan associations consist predominantly of long-term residential mortgages. However, these institutions do not necessarily insure an adequate supply of loanable funds to the housing market. The nature of their assets prevents them from substantially increasing in the short run their income and the interest rate they pay depositors. Consequently, periods of rising interest rates have resulted in a severe shortage of mortgage money which adversely affects the housing industry. As funds leave the savings and loan associations in search of higher interest rates, new mortgage money is not available, home sales lag because of a lack of financing, and new construction declines.

Regulation which may have been effective at some time in the past may no longer be needed. The passage of time can remove the justification for the regulation or eliminate its effectiveness. For example, according to some economists, one of the original objectives of railroad regulation was to promote the development of the West. 2/ ICC supported

1/Noll, Roger G.; Peck, Merton J.; McGowan, John J., Economic Aspects of Television Regulation, The Brookings Institution, Washington, D.C., 1973, pp. 101 and 109 respectively.

2/Friedlaender, Ann F., The Dilemma of Freight Transport Regulation, The Brookings Institution, Washington, D.C., 1969, p. 2.

"value-of-service" pricing to that end. The low-value bulk products of the frontier--grains and other raw materials--were shipped at low, unprofitable rates, enabling the frontier to compete with other regions. The East's high-value industrial goods were shipped at tariffs sufficiently high to raise the railroads' total revenues to profitable levels. This practice of price discrimination worked successfully because industrial shippers in the 19th century had no alternative to using the railroads.

Economic circumstances have changed over the years, but the value-of-service rate structure was retained. The development in the 20th century of the motor truck and the interstate highway system offered shippers an efficient alternative to the railroads. Retention of high freight rates for high-valued industrial goods prompted the shippers of these goods to switch to trucks. These ICC pricing policies made the higher quality truck service price competitive with trains. Railroads continue to ship low-value bulk products while trucks have captured the high-value industrial trade. ^{1/} This circumstance is one of the factors which contributed to the decline of the railroads. The original objectives of ICC regulation may no longer be warranted, yet the operation of ICC continues to pursue regulatory policies that perpetuate the original course of action.

Other regulatory goals may simply not be adequately specified. The regulation of natural gas seeks to secure "just and reasonable" prices for that fuel. The definition of just and reasonable implies a price that is uniquely and correctly determined by regulation. However, concern with price--without an equal concern with quantity--is certain to create problems. Price and availability of the fuel cannot be independently determined. It is generally agreed that the Federal Power Commission (FPC) regulation kept the price of natural gas below the market clearing level and may have caused the serious shortage of that fuel. Consumers with gas supplies pay a low price. However, gas users whose supplies are curtailed and consumers who are unable to receive gas hookups bear the cost of having to use higher priced electricity and fuel oil. The end result is that

^{1/}Friedlaender, Ann F., The Dilemma of Freight Transport Regulation, The Brookings Institution, Washington, D.C., 1969, p. 5.

some consumers pay less, but others pay more. In a real sense, current gas users, irrespective of their economic needs, receive the equivalent of a subsidy. Those unable to obtain gas pay the equivalent of an added tax.

In some cases regulation may not be the best tool for achieving broad social policy objectives. First, as previously discussed, specifying a goal does not assure that the goal will be reached or can be reached. The complex way that the U.S. economy responds to regulation makes it an extremely difficult policy instrument to use effectively. Regulation cannot repeal economic forces, and regulatory efforts that ignore these forces are likely to yield undesired consequences. Secondly, regulation itself may impose many costs on society. These problems indicate that any proposed regulation should be subjected to careful analysis to evaluate its potential effectiveness and costs. Any new and ongoing regulation should be subjected to rigorous and timely review.

Regulation for the benefit of special groups

There are instances in which regulation has resulted in substantial benefits accruing to the regulated industry. The costs of these benefits are generally borne by the public. One interpretation of these observations is that they are a consequence of regulatory failure. This explanation is rejected by some who believe that after almost a century of regulation (and regulatory failure), there has been ample opportunity to correct genuine errors; and they believe the perceived outcomes are, in fact, the intended outcomes. According to this analysis, they reflect the success of special interest groups in using the political system to their own advantage. This analysis has developed into a theory of public decisionmaking. ^{1/}

According to the theory, successful interest groups convince the Government to adopt regulations that redistribute income in their favor. This regulation allows the favored group to earn supranormal profits. For instance, one such type of regulation limits entry into a competitive industry so that outsiders cannot capture or compete away

^{1/}Stigler, George J., The Citizen and the State, Essays on Regulation, The University of Chicago Press, Chicago, Ill., 1975.

industry profits. Regulation of trucking, banking, and airlines is of this type. A second type of regulation legalizes cartelizing rate bureaus which allow several firms to jointly pursue monopoly pricing policies. The motor freight and maritime rate bureaus are examples. Government regulation of the interest that financial intermediaries are allowed to pay is a similar activity.

The theory of public decisionmaking attempts to explain the optimal size and characteristics of groups that are successful in extracting benefits from the Government. The existence of the older regulatory agencies might be explained as successful endeavors on the part of compact interest groups. These groups' gains are extracted from the population, but the costs of the regulation are so broadly diffused that, individually, none of the losers has a sufficiently strong incentive to take counteraction.

The sources of support for regulatory agencies gives an indication of how the benefits of regulation are divided. Most of the older agencies are supported by both the employers and the employees of the industries they regulate, indicating that not only the employers, but the employees as well, believe they have gained. Employee support may mean that their unions have succeeded in capturing some of the regulatory gains for their members.

The existence of the newer regulatory agencies presents a more complex problem for the theory. The gainers and losers from the activities of EPA, OSHA, CPSC, and the National Highway Traffic Safety Administration (NHTSA) appear to differ from the earlier examples. The creation of these regulatory bodies is more difficult to explain with this methodology. In any event, an explanation so broad that it explains all outcomes would in all probability explain very little.

The divergence between the theory of public decisionmaking and mainstream economics centers on the causes of regulation. The new theory of public decisionmaking explicitly recognizes the importance of distributional factors in the creation of regulation, while the mainstream literature considers any undesirable income redistribution the consequence of improperly functioning regulation. However, they both retain a convergent interest in the estimation of the costs and benefits of Government intervention. No differences exist between the two regarding

the desirability of clarifying the consequences of regulation as well as minimizing its costs.

This new theory is important to any discussion of regulatory reform. To the extent that the theory has validity, a different interpretation must be given to some regulatory outcomes that are now considered failings. Reformers must be aware of the elements of the public decision-making process when formulating reform proposals. These proposals, in order to be viable, may have to include some benefits for those who currently gain from existing regulation.

CHAPTER 3

COSTS AND BENEFITS:

THE ECONOMIC IMPACT OF REGULATION

The evaluation of regulatory activities comes down to answering two fundamental questions. What costs are imposed by the regulation? And, what benefits follow from the regulation? Comparing the answers to these questions gives an indication of whether a regulatory agency is, on balance, beneficial or not. However, answering the questions is more difficult than posing them. The costs and benefits of regulation do not conveniently appear in a ledger or an annual report. Estimation of the amounts involved often requires sophisticated models and complex statistical techniques. Dollar figures for some costs and benefits cannot be estimated at all. Consequently, disagreements in evaluating regulation cannot be resolved with reference to a generally agreed upon number.

The following discussion classifies costs and benefits in a way that sheds light on the issue even if all the categories are not quantifiable. The costs of regulation are divided into six categories. The benefits of regulation are the gains from correcting a market failure or the achievement of other social or political objectives.

COSTS

Administrative and compliance costs

Administrative and compliance costs are the directly observable costs of Government regulation. The administrative costs are incurred by both the Government and the private sector. The costs to the Government consist of the budgeted regulatory activities of the independent commissions, agencies, and executive departments. They cover such diverse activities as visits of OSHA inspectors, rate-setting deliberations of ICC, automobile safety standards set by NHTSA, nuclear plant inspections by the Nuclear Regulatory Commission (NRC), investigations by the Federal Trade Commission, and energy allocation by FEA. A recent study by the Congressional Budget Office concluded that in fiscal

year 1976, 92,172 staff-years and a budgetary expenditure of \$2.9 billion were devoted to regulatory activities. 1/ (See app. I.)

The administrative costs to the private sector are the staff-hours spent filling out the application and reporting forms required to implement the regulations. The compliance costs are the billions of dollars of visible expenditures required to meet the regulatory standards. These include, for example, the increased costs of stack scrubbers and other equipment to cleanse factory effluents, the cost of factory safety equipment, and the costs of drug-testing programs.

Administrative and compliance costs are the most readily perceived and easily measured aspect of regulation. Their high visibility, compared to other costs and especially benefits, is the primary reason why support for regulatory reform in the business community is primarily concerned with reducing the high compliance cost activities of agencies, such as EPA, CPSC, NHTSA, and OSHA.

Static efficiency costs

Static efficiency costs result when Government intervention prompts the private sector to combine resources in inefficient ways. The regulatory incentives induce firms to abandon least-cost production methods. Examples of these inefficiencies can be found as a consequence of both old and new regulation. Society can benefit by the appropriate regulatory reform in these instances, because eliminating wasteful inefficiency reduces production costs. The following discussion mentions only a few of the many examples of static efficiency costs.

Many other regulatory commissions, such as the Civil Aeronautics Board (CAB) and ICC, regulate industries which in the absence of regulation would have a large number of competing firms. These agencies restrict competition by regulating entry to and exit from the industry, prices, and rates of return.

1/Congressional Budget Office, "The Number of Federal Employees Engaged in Regulatory Activities," Subcommittee Print of the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, House of Representatives, Aug. 1976, pp. 15-16.

Although the unregulated market is not perfectly competitive in a theoretical sense, the substitution of this type of regulation for workable market forces results in inefficiencies.

Those industries with sufficiently large numbers of firms usually exhibit healthy price competition. Consumers receive the lowest price possible for a product of a given quality because the number of firms is too large for implicit or explicit collusion. Furthermore, if there are no technical barriers to entry, new firms will appear if industry profits rise above a normal rate of return, thus assuring continued price and product rivalry.

Inefficiencies follow from the regulation of these industries for two reasons. First, it fosters collusion by conferring on firms in these industries, such as trucking and shipping companies, an exemption from antitrust prosecution allowing them to form rate bureaus. The resulting collusively determined regulated prices are too high and there is a loss to society. In the absence of regulation, a higher level of services would be produced at a lower price and society's resources would be more efficiently used. Second, restrictions on entry, such as in civil aviation and trucking, eliminate an important market mechanism which operates to insure that least-cost production methods are used. Free entry to an industry guarantees that inefficient firms will either reduce their production costs or be replaced by new more efficient firms. This valuable mechanism of forced efficiency has been abandoned by regulation that restricts entry. This regulation protects both the inefficient producer and the firm earning excess profits.

Rate-of-return regulation imposes another possible source of inefficiency--overcapitalization in pursuit of an enlarged rate base. Rate-of-return regulation operates by setting prices that generate sufficient revenue for a regulated firm to pay all its costs and earn a normal rate of return on its capital stock. One way to increase total firm profits is to increase the amount of the firm's capital and earn the allowed profit rate on a larger stock of capital. Inefficiencies result if the capital stock is increased beyond its most efficient level. This problem was first discussed in the academic literature in the early 1960s and received substantial attention. Current research, however, has identified other forces which tend to nullify the tendency toward overcapitalization and has called into question the severity of the problem.

Excess capacity is another example of regulation-induced inefficiency. ICC's regulation of motor freight is alleged to have produced substantial excess trucking capacity. Common carrier trucking firms operate with ICC certificates and approval specifying the areas to be served, the routes to be driven, the commodities to be carried, and the rates to be charged. Route certificates have required circuitous routes, excluded service to intermediate points, and in essence promoted empty backhauls by limiting the commodities (and their destinations) each firm is allowed to carry. These limitations on truck utilization increase the number of trucks in service and the amount of capital needed by the industry. Industrywide excess capacity is increased beyond that of the common carriers because a substantial amount of freight is moved by private trucking, that is, trucks owned by nontrucking firms which are used to move a firm's own freight. These trucks are forbidden by ICC from carrying other cargo, such as on return trips, and consequently travel an unnecessarily large number of miles empty.

In the area of civil aviation, many studies have shown that CAB regulation of fares and entry and exit has resulted in an excessively costly organization of the industry and needlessly high fares. Service quality, defined primarily as the number of scheduled flights on a given route, is the only substantive area of competition not regulated by CAB. The regulation of entry and fares, but not quality, produced a situation in which airplanes fly, on the average, half empty; the skies over major airports are congested; vast amounts of fuel are consumed; and the airlines are saddled with excess capacity. The free entry of new firms into the industry--the usual market source of forced efficiency--has never been permitted by CAB since its inception. 1/

These examples of excess capacity are but one of the costs associated with nonprice competition. Others are wasteful persuasive advertising and service quality that exceeds what consumers would be willing to buy if they had a choice.

1/Douglas, George W. and Miller, III, James C., Economic Regulation of Domestic Air Transport: Theory and Policy, The Brookings Institution, Washington, D.C., 1974, p. 97.

FPC's regulation of the wellhead price of natural gas is a case in which regulation has resulted in too little capacity. FPC regulation has kept the wellhead price of gas below the market clearing level for that fuel. Recent sharp increases in the prices of other fuels have left natural gas greatly underpriced relative to its substitutes. The low price of natural gas encourages the consumption of energy in general and encourages customers who do have gas to use it, possibly inefficiently, in place of more expensive fuels. The pollution-free characteristic of natural gas adds to its relative advantage over other fuels, because firms using natural gas do not have to invest in expensive pollution-control equipment. Hence gas, the superior fuel, is underpriced and overconsumed. The impact of regulation on the supply side of the market may also have contributed to the shortage. It is argued that the low price of interstate gas discourages the shift of resources into the exploration and development of new gas fields.

Other inefficiencies are imposed by the formulas used by regulatory commissions in setting prices. For example, ICC regulation of railroad freight rates has discouraged efficient pricing and rail operations. Railroad rates are based on the "Formula for Use in Determining Rail Freight Services Costs," called rail form A, whose main data input is historical average cost. The computation of average cost is an undertaking in which the substantial fixed costs of the rail industry are allocated almost arbitrarily to various categories. The true costs of serving light-density routes are understated and the efficiencies in serving high-density routes are not reflected in the averages. Also, no allowances are made for differing costs incurred over the phases of the demand cycle, that is, peak and off-peak demand. The inefficiencies have been compounded because in addition to the inefficient operation of the individual modes, the pattern of regulated prices has induced the movement of goods to shift from low-cost modes to high-cost modes. ^{1/} This happens when the regulated price for shipping a good by one mode is higher than the price charged for shipping the same good by a second mode, but the economic cost of

^{1/}Nelson, James C., "The Changing Economic Case for Surface Transport Regulation" in J. C. Miller, III. (Ed.), Perspectives on Federal Transportation Policy, American Enterprise Institute for Public Policy Research, Washington, D.C., 1975, p. 22.

shipping by the former is less than the latter. The purchaser of the service sees only the prices charged and chooses the lowest priced alternative (assuming no off-setting considerations).

Examples of the same types of efficiency problems can also be found in the regulation of the newer regulatory agencies. For instance, the approach to cleaning up the environment used by EPA may not be the most efficient alternative. Let us assume that it is decided that a given percentage, say 90 percent, of pollutants should be removed from discharges into the environment. The current method of controlling pollution is to order all firms to eliminate 90 percent of their pollution. The same level of environmental quality could be achieved if one half of the firms cleaned up 85 percent of their pollutants and the other half cleaned up 95 percent of theirs. (There are an infinite number of such combinations.) Total pollution control costs would be reduced if the decrease in costs of the first group was greater than the increase in costs of the second group. A system of well designed effluent charges could result in the desired level of environmental quality while minimizing the resources invested in pollution control. 1/

Dynamic costs

The gains from technological change and entrepreneurial creativity have been important elements in the growth of the American economy. The significance of those forces is reflected in the impressive increases in output per hour of the American worker. Some regulated industries have innovated rapidly while others have been very slow to change. However, the situation on balance is summarized by the belief held by nearly all the participants at the Brookings Institution's Conference on Technological Change in Regulated Industries, "* * * that the performance of regulated industries falls far short of the ideal and even of a reasonable target for public policy." 2/

1/Kneese, A. V. and Schutze, Charles L., Pollution, Prices, and Public Policy, The Brookings Institution, Washington, D.C., 1975.

2/Capron, W. M. and Noll, R. G., "Summary and Conclusion" in Capron, W. M., Ed., Technological Change in Regulated Industries, The Brookings Institution, Washington, D.C., 1971, p. 221.

Many of the incentives built into the regulatory process discourage research and development and retard the rate of technological change. The regulation of prices and rates of return, entry, and the decisionmaking processes of the regulatory commissions can have this outcome. On the other hand, it is also possible for aspects of regulation to result in an acceleration in the rate of technological change. Therefore, any final evaluation of these influences must try to determine the sign of their net impact.

The potential to earn supranormal profits has long been recognized as a powerful incentive, promoting technological change. These profits are compensation for the risks associated with innovation but are a temporary phenomenon because they are eventually competed away. The regulatory control of profits--to the extent that it eliminates excess profits--removes one incentive that promotes innovation.

However, a regulatory commission that responds slowly to changing circumstances can have the opposite effect. Cost-reducing technological change can be encouraged by the existence of a regulatory lag. The lag--the time interval between the adoption of a cost-saving innovation by a firm and the regulator's actions to eliminate the resulting profits--can be an interim period of supranormal profits. Long lags allow the firm to capture substantial excess profits and are an incentive for innovation.

The permissible profits of a regulated firm are compensation for the opportunity cost of its capital. These profits are computed by multiplying the allowed rate of return times the firm's rate base, that is, the depreciated value of its capital stock. The firm's other costs are reimbursed on a dollar-for-dollar basis. Each industry has many alternative recipes for combining capital and other inputs to produce its products. A dynamic variation of the problem of overcapitalization mentioned earlier is a possibility. Regulated firms may tend to reject the most efficient innovations if they are low capital and choose instead less efficient high-capital alternatives that will expand the firm's rate base. Two examples from the telecommunications industry help to illustrate the point.

The first case is the selection in the early 1960s of one of two alternative communication satellite technologies. One involved a random-orbit system of fifty satellites coupled with expensive and complex ground stations. The second used a small number of high altitude synchronous-orbit satellites and less complex ground stations. The former

alternative was more costly and much more capital intensive than the latter. Some have suggested that the Bell System strongly supported the random-orbit technology because of its greater potential for expanding Bell's rate base. The synchronous-orbit system was eventually adopted, but only after it was fully developed by a noncommunications firm, Hughes Aircraft, for its own projects. 1/

A second example involved FCC's approval in 1968 of TAT-5, a new transatlantic cable. Satellite technology was by that time well developed, reliable, and less costly than cable. Nevertheless, the Bell System was a strong advocate of the new cable. One reason was that it would represent a significant increase in the company's rate base and allowable profits. Use of satellites in place of the cable would have required the Bell System to lease channels from the Communications Satellite Corporation, COMSAT, for which it would only be compensated on a dollar-for-dollar basis. 1/

On the other side of the argument, it is contended that rate-of-return regulation has in some instances tended to increase research and development expenditures and the rate of innovation. A regulatory commission that allows compensation for all expenditures removes the element of risk from innovation. Research and development expenditures become just another legitimate reimbursable expenditure. A rate increase is in order if there are insufficient revenues to cover these costs. Similarly, the risk of innovation is reduced if all capital expenditures are included in the rate base. The purchase of new capital equipment, even if it turns out to embody an unsuccessful innovation, expands the rate base and allowable profits.

The price and cost formulas used by some regulatory agencies have resulted in less than optimal innovations or slowed technological change. Two examples from the rail freight industry and one from the pipeline industry illustrate the difficulty of substituting a regulatory process for the decisionmaking of the private sector.

1/Shepard, William G., "The Competitive Margin in Communications" in Capron, W. M., Ed., Technological Change in Regulated Industries, The Brookings Institution, Washington, D.C., 1971, pp. 106 and 107 respectively.

The development of piggybacking, vans on rail flatcars, demonstrates the deleterious side effects of rail form A and ICC regulation on innovation in surface freight transportation. Many rail firms preferred a piggyback configuration that used small flatcars designed to carry a single van or container. Analysis indicated that this alternative was in many cases less costly than using larger flatcars designed to carry two vans. Rail form A led to the adoption of the more costly configuration because essentially the same average cost per flatcar per mile was used to compute ICC-approved rates for both alternatives. This meant that the freight rate per van riding on a single van flatcar would have been greater than the freight rate per van riding on a double van flatcar, although it was less costly in the strict economic sense. Regulatory procedure resulted in a nonoptimal innovation that was more costly than necessary, more prone to derailment, too large for some yards, and less flexible. 1/

Rail form A was also misleading in evaluating other costs associated with piggybacking. The form showed no cost difference between moving trailers on flatcars and carrying containers lying flush on the decks of the flatcars, although the latter presents less wind resistance and is consequently more economical. A train consisting of trailers on double length flatcars uses much more fuel than an identical train with containers flush on the decks of the flatcars. 1/

A second example from the 1960s concerns Southern Railway's introduction of "Big John" grain hoppers. The Southern set out to capture some of the growing grain shipments moving to the southeastern United States by purchasing specially designed high-capacity, light-weight, aluminum hoppers, called Big John, to move grain at sharply reduced costs. It proposed to translate these

1/Gellman, A. J., "Surface Freight Transport" in Capron, W. M., Ed., Technological Change in Regulated Industries, The Brookings Institution, Washington, D.C., 1971, pp. 169-174 and 173 respectively.

lower costs into lower freight rates in order to compete more effectively. These lower rates were needed to attract sufficient grain traffic to make use of the hoppers profitable. 1/ The Southern spent four years taking its case to the Supreme Court in order to counter ICC objections to its reduced freight rates before final approval was granted. The time, cost, and other obstacles involved in gaining ICC approval for innovations are hardly incentives that encourage managerial creativity.

Another disincentive to innovation is a consequence of basing the rate-of-return regulation on the reproduction cost of capital. One such case is petroleum pipelines. The rate base used in computing allowable profits is not the depreciated historical cost of the pipelines, but the capital cost of replacing them. The rate base for existing facilities rises in inflationary periods, and the real rate of return on existing pipelines jumps sharply. The combination of inflation and a reproduction cost rate base makes it worthwhile for firms to continue using existing facilities much longer than would be the case without regulation. 1/

Additionally, other types of regulation can reduce the level of research and development and the associated introduction of new products. The 1962 Kefauver-Harris amendments to the Food, Drug, and Cosmetics Act added the requirement that firms must provide documented scientific evidence that new drugs are effective as well as safe; gave FDA discretionary power over the clinical research process; and imposed controls on the advertising and promotion of prescription drugs. Recent studies of the drug industry have concluded that these amendments have reduced research and development efforts below what they would have been otherwise; induced multinational firms to divert research efforts abroad; sharply increased the time and cost of meeting all requirements for FDA approval of a new entity; and reduced the number of new prescription drugs currently being introduced below what they would have been otherwise. 2/

1/Gellman, A. J., "Surface Freight Transport" in Capron, W. M., Ed., Technological Change in Regulated Industries, The Brookings Institution, Washington, D.C., 1971, pp. 175-178 and 183 respectively.

2/Grabowski, Henry G., Drug Regulation and Innovation, American Enterprise Institute for Public Policy Research, Washington, D.C., 1976

Costs imposed on secondary markets

Government regulation alters both the price level of regulated goods and services and their relative prices. The decisions of producers and consumers are affected by both of these consequences. Inefficiencies in secondary or unregulated markets can be a result. Two examples follow.

ICC-mandated rates for shipping newly extracted natural resources are less than rates for shipping processed materials. For example, the tariff for shipping iron ore is lower than the tariff for shipping scrap iron and steel. This rate differential alters the relative price of these substitute inputs of the iron and steel industry, increases the mining of iron ore above what it would be otherwise, and affects the location of iron and steel plants.

FPC's regulation of the wellhead price of natural gas has simultaneously discouraged the exploration and development of new fields and encouraged overconsumption of that fuel, resulting in a genuine shortage. There is, however, a plentiful supply of intrastate gas sold in the States where it is produced. This gas is not regulated by FPC and sells at a much higher price than regulated gas. The higher price of the unregulated intrastate gas has induced gas producers, where possible, to shift gas supplies to the intrastate markets. The location of some new factories has reportedly been influenced by their inability to obtain natural gas supplies at their most preferred locations and the availability of unregulated natural gas at otherwise less desirable locations in producing States. The artificially created dual market for natural gas imposes real resource costs on firms which chose inefficient locations for their plants in order to insure gas supplies.

Shifted costs

Much concern has been voiced over the substantial costs involved in complying with regulatory requirements. The cost argument is quite often raised with respect to the standards of EPA and OSHA. Many of these costs are not, in fact, new; they appear new because they have gained visibility only as a consequence of regulation. These costs have been shifted from a type of cost that is not normally recognized to one which is highly visible.

Compliance with OSHA regulations involves the shift of a cost of production from the worker (the expected loss from injury or illness) to the firm (the cost of removing the hazard). The compliance with EPA standards involves the shift of a cost of production from society (the loss due to environmental degradation) to the firm (the cost of pollution control equipment). Much of the cost shifting that takes place is beneficial, at least in the sense of promoting economic efficiency, because the prices of products are increased to reflect the full cost of production and, consequently, overall efficiency improves.

The fact that a cost is not readily visible does not reduce its significance. Regulation that shifts costs should not impose new costs on society. And, the increase in cost to one party should be balanced by at least an equal decrease in cost to a second party.

Transfers

An important distinction must be made between economic costs (or real costs) and what are known as transfers. Economic costs involve the use of real resources, that is, energy, labor, raw materials, and capital goods. For example, static efficiency costs discussed earlier are economic costs because they involve the wasteful use of resources and, consequently, the economic pie is made smaller. Transfers, on the other hand, involve taking money from one individual and passing it on to another, without using up real resources. In other words, the economic pie remains the same size, but it is divided up differently.

Not all of the unnecessarily high prices that are the result of regulation are caused by real costs; some are merely transfers. Those who pay the higher prices are worse off, and those who receive the benefits are better off. These consequences are the result of regulation's impact on income distribution. Regulatory reform that minimized these transfers would be beneficial to some interests and harmful to others.

Much regulation, in fact, generates transfers as well as waste. Studies have demonstrated that unions representing airline pilots and other employees have negotiated higher wages than would be the case without regulation. Similarly, other studies have suggested the same conclusion about truck drivers. To the extent that firms engaged in trucking, broadcasting, and other regulated

industries earn excess profits, there are transfers from consumers to the corporate shareholders, and in some cases to the employees and suppliers of the regulated industries. Much opposition to regulatory reform, especially in transportation, can be traced to the fact that those who receive income-enhancing transfers from regulation would lose them. Supranormal profits--the source of the transfers--can only exist on a sustained basis in a naturally competitive industry if regulation restricts entry into the industry.

BENEFITS

The benefits of regulation result from the correction of a market failure or the achievement of some social or political objective and can be quite large. The difficulties in evaluating benefits are pervasive. Measurement problems are so substantial that in many cases no reliable estimates of benefits can be computed given the current state of the art. In other cases, where ex post benefit evaluation is technically feasible, it is not useful in determining the correctness of past regulatory decisions. This is true in regulatory areas in which all the possible consequences of a decision are not known and a wrong decision can have catastrophic results, that is, in the regulation of nuclear reactor safety, drug safety, the environment, and occupational health hazards. Evaluating regulation under such circumstances may be reduced to simply identifying the desired benefits that are achieved and deciding whether they are worth the identifiable, but not necessarily measurable, costs. However, even evaluating the fulfillment of objectives is complicated because much enabling legislation specifies objectives that are vague or even contradictory.

Benefits from the correction of market failures

Benefits from the correction of a market failure require that a market failure actually exists. Lack of conditions requiring regulation is a priori proof that there are no benefits in this category. When functioning correctly:

- Regulation of a natural monopoly captures the efficiency of scale economies without the undesirable and costly practices of an unregulated monopoly.
- Regulation of natural resources promotes an efficient exploitation of our scarce natural resources.
- Regulation in the presence of destructive competition insures the adequacy of the industry's capital and its ability to satisfy demand.

--Regulation in the presence of externalities promotes a more efficient use of society's resources and an equitable shouldering of costs.

--And, regulation in the presence of inadequate information improves the efficiency of private markets.

Benefits from other objectives

A long list of other objectives of regulation was discussed in chapter 2. The list includes strengthening national defense, considerations of equity, alteration of the income distribution, provision of service to small communities (surface freight transport, aviation, and telephones), and regulation to further macroeconomic goals, such as price stability and full employment.

Use of regulation to achieve any of these objectives should prompt careful evaluation even if the potential benefits are substantial. Regulation is not the only way to reach these objectives. In these cases regulation is a policy instrument used in place of the taxing and spending powers of the Government. Recognizing this point should make this type of regulation the subject of close scrutiny. First, it should be determined if, in fact, the desired objectives are fulfilled and what they cost. Second, there should be careful consideration of alternative mechanisms for achieving the same objectives and their associated costs. Regulation may be far from the least costly way of achieving the desired ends.

CHAPTER 4

WHAT ARE THE ORGANIZATION AND PROCESS

OF REGULATORY ACTIVITY?

One approach to the study of regulatory activity has been to evaluate the impact of the organization and structure of a regulatory agency on the nature of the regulation that occurs. Studies using this approach attribute the problems of a particular regulatory agency to its administrative machinery and propose, as a solution, a reorganization of the agency.

A brief review of the history of regulation by the Federal Government indicates that there are several types of organization that have been used for regulatory agencies. The independent commission form, as exemplified by ICC and CPSC, is often perceived as the prototype for all regulatory agencies. But there are other structural forms established within the Federal Government for the purpose of regulating economic activity. Included among these are the independent agency with a single administrator who reports directly to the President, such as EPA and FEA, and the regulatory agency with a single administrator that operates as part of a regular department of the executive branch, such as the Food and Drug Administration (FDA) of the Public Health Service of the Department of Health, Education, and Welfare (HEW) and OSHA of the Department of Labor. Finally, there are several regulatory activities that have their own unique organizational structures; among these are the Federal Reserve System and the Federal Deposit Insurance Corporation.

Many of the proposals for the organizational reform of regulatory agencies have concentrated on the perceived problems of the independent commissions, but there have also been proposals for structural reform of agencies with single administrators. While frequently useful, such studies are inherently inadequate. Undoubtedly some regulatory problems are caused by inadequate administrative machinery, but some problems are also the result of more fundamental failings. Any evaluation that emphasizes only the organizational component of the regulatory activity, and does not consider the nature of the regulation, is likely to reach incorrect or at least inadequate conclusions.

ORGANIZATIONAL ISSUES

Although the ultimate impact of structure may be less substantial than is perceived by many would-be reformers, there are organizational issues that are relevant to a discussion of the activities of the regulatory agencies.

Accountability

A primary feature of democratic or representative government is that government decisionmakers can and should be held responsible to elected officials and ultimately to the electorate for decisions made and policies followed. It is this accountability, rather than the good will of the decisionmaker, that must serve as the basis for assurance that activities are conducted in the public interest. In the case of economic regulation, official accountability is essential to both the substance of a decision and the means by which it is reached. To assure such accountability, it is necessary that the public and its representatives have information regarding the means by which a decision is reached, the bases for that decision, the identity of the person(s) responsible for the decision, and the means by which action can be taken to modify or reverse the decision. From the perspective of accountability, the merit of a particular form of agency organization can be determined by the extent to which it meets these conditions.

A further concern involves the accountability of the President for the capability and integrity of persons appointed to serve in regulatory capacities. Because of the substantial discretion delegated to regulators, the nature and direction of the regulatory activity can be greatly affected by the personnel involved. For that reason the personal attributes of the appointees are important considerations. To the extent that the organizational structure of the agency encourages public awareness of the qualifications of an appointee and an open and effective consideration of those qualifications during the confirmation process, the structure can be said to contribute to effective accountability.

Independence

The question of independence involves the ability of the regulatory decisionmakers to operate in an environment free from outside pressures. The aim is to achieve regulation that is in the interest of the Nation and not a

particular industry, firm, region, or partisan group. Of particular concern is undue influence from outside parties who are in no way accountable to the electorate.

Another perspective on independence involves the intent of the Congress to establish certain regulatory bodies that were to the greatest extent possible independent of the President. The President must make all appointments to such agencies and is responsible for submission of budget requests for the agencies, but it was the intent of the Congress to prevent the President from having direct control over the policy formulation and decisions of these agencies. To some extent, of course, such independence is incompatible with accountability, since the latter is based upon the ultimate ability of the electorate to select or remove its policy-makers.

A final component of this issue is the independence of the agency from the Congress itself. Because a regulatory agency is dependent on the Congress for appropriations and because there are individual Members of Congress who have substantial power to determine the authority and appropriations of the agency, there is a significant potential for congressional influence on regulators and regulatory policy.

Since the independence of a regulatory agency is related to its organization and structure, evaluation by this criterion is difficult because it is likely to be influenced by the evaluator's preference for limiting or expanding Presidential or congressional influence.

Coordination

Related to both accountability and independence is the problem of coordinating the policies of one regulatory agency with those of other regulatory agencies and with non-regulatory policies of the Government. A strong argument for such coordination is frequently countered, however, with an equally persuasive argument opposing concentration of power because it is perceived as a violation of the spirit of the constitutional system of checks and balances. Whether one approves of such coordination or not, the extent of it can be determined and organizational factors play a role in fostering or undermining broad policy level coordination.

Coordination is equally important at the implementation level. There are currently many stories being told about

businesses caught in catch-22 situations because of conflicting regulations. For example, OSHA may require that the floors of a meat processing plant be rough in order to reduce the danger of accidental falls, while the Animal and Plant Health Inspection Service may require that the floors be smooth so that they can be sanitized. Businesses are caught in difficult situations because of the lack of coordination between Federal regulators. However, the appropriate operational coordination would only solve businesses' problems. The basic problem would continue to exist because conflicts would still remain between mutually inconsistent sets of regulatory objectives. Organizational reform that would eliminate conflicting regulations would make the situation easier for businesses, but these same reforms might tend to hide from public view the nature and extent of trade-offs that, of necessity, would be made in achieving different policy objectives.

Staff management

Another issue frequently raised in the context of evaluation of the organization of regulatory agencies is that of effective use and control of staff resources. The efficient development of standards and regulations, scheduling and processing of cases, and avoidance or elimination of backlogs are important components of effective and fair regulation and are frequently functions of the agency's organization.

DECISIONMAKING PROCESS

The way in which decisions are made is a function of both the organization and procedures of the agency. And, the process itself is likely to have a significant impact on the substance of regulatory decisions. For example, it has been argued that group decisionmaking requires compromises which inevitably lead to weaker or more ambiguous policies and decisions. A counterargument holds that group decisions are far less likely to be arbitrary and offer a means for expressing dissenting opinions which can form the basis for later policy modifications or reversals.

It has also been argued that group decisionmaking by its very nature encourages case-by-case deliberations rather than ex ante policy formulation. In other words, it encourages judicial-type rather than legislative-type

activities. This case-by-case judicial approach is viewed by many as slow and inefficient in comparison with ex ante policy formulation. The regulatory process is thus accused of being unresponsive to changing public demands and improved technology.

Related to a judicial approach is the reliance by many regulatory agencies on legalistic procedures. This legalistic process frequently requires large expenditures for legal costs by those involved in the case, thereby favoring the corporate sector and adding to both governmental and social costs. Of course, the legal procedures involved in regulatory activity were imposed to maintain the rights of the regulated parties and to protect them from undue or unfair Government interference in their activities. Thus, what some view as delay and inefficiency can also be seen as an appropriate implementation of due process of law.

CONCLUSION

Some proposals for reform of regulatory activity are based on disagreements with existing policies of specific regulatory agencies rather than on considerations of the purpose of the regulation involved and the effectiveness with which it is accomplished. These proposals are frequently couched in organizational or procedural terms because impressive arguments can be made for organizational modifications. But equally impressive cases can be made in favor of organizational modification in the opposite direction or in favor of the status quo by those favoring the existing policies of the agencies involved.

A study of the actual impact of organization and process on the nature and outcome of regulatory activity, using the criteria discussed previously, would be a useful component of an evaluation of regulation by the Federal Government. However, such a study would produce its most useful findings only after more fundamental questions have been addressed.

CHAPTER 5

REGULATORY REFORM AND POLICY ALTERNATIVES

If regulation does not efficiently achieve its stated or desired objectives, some type of reform is appropriate. Choosing the best reform alternatives requires a thorough understanding of the causes of regulatory failure. Any reform effort should begin with an evaluation of all aspects of existing regulation and end with a consideration of a comprehensive range of reform alternatives. This chapter describes the composition of a comprehensive review of regulation, highlights the categories of reform recommendations that can be drawn from such a study, discusses specific regulatory reform alternatives, and considers the problems of transition that are likely to arise when a change is effected.

REVIEW OF EXISTING REGULATION

A complete assessment of existing regulation would include the following ordered elements. There would be a review of the justifications for regulation, an effort to establish the extent of regulatory failure, and a determination of the operational causes of that regulatory failure.

1. The first stage of a study should examine the justifications for the regulation. It is important to clarify whether it was created primarily to correct a market failure or designed to achieve some social or political objective. A study of regulation created in response to a genuine or perceived market failure would proceed with an examination of current market conditions. A determination that a market failure does not exist in the current economic environment is a prima facie argument for a careful consideration of deregulation. The opposite finding implies continuing to the next step of the review. A review of the second type of regulation should initially examine the desirability of its objectives. The case for deregulation would be made if the original objectives were no longer worth retaining; otherwise, the study should continue to the next stage.

2. The second stage of a study should establish the extent of regulatory success or failure with an evaluation of its costs and benefits. The benefits of regulation measure the extent to which its objectives are reached. However, the net impact of regulation on social welfare is determined by the magnitude of its costs relative to its benefits. This segment of the study should carefully

separate real costs and benefits from transfers, offset costs with associated benefits, and examine the distribution of all types of costs and benefits. The most deleterious examples of regulation will be spotlighted by these studies and they implicitly establish a priority ranking for reform efforts.

3. The last step of the review process should determine the operational causes of regulatory failure. The fault may lie with the regulatory mandate or the regulatory process. The regulatory agency's enabling legislation should be examined to determine whether it provides an explicit and consistent mandate. No regulatory body can function well if it is charged with vague, contradictory, or unattainable goals. Regulatory reform in some cases may primarily require the revision of a deficient mandate. Lastly, careful attention must be directed to the regulatory process--the way the regulation is administered.

The design of an effective regulatory process is a most important but often neglected aspect of regulation. Many volumes have been written on the practice of administrative law, but the research and literature on the theory of the regulatory process itself is minimal. Most work in this area has concentrated on enumerating examples of the many failings and costs of the regulatory process--such as regulatory delay, judicial procedures, capture of the regulating agency by the regulated industry, flexibility in the face of changing circumstances, the questionable qualifications of the regulators--and providing palliative recommendations for treating the problems individually.

In recent years, for instance, there have been several studies of regulation by Presidential commissions. A major review of the regulatory process was undertaken in 1971 by the President's Advisory Council on Executive Organization (commonly referred to as the Ash Council) ^{1/} at the request of the Nixon Administration. The analysis focused specifically on the independent regulatory commissions. However, the study had a basic shortcoming because it concentrated on the organization and management of the regulatory agencies, completely excluding questions about

^{1/}President's Advisory Council on Executive Organization, A New Regulatory Framework: Report on Selected Independent Regulatory Agencies, U.S. Government Printing Office, Washington, D.C., 1971.

what should be regulated and why. The Ash Council concluded that regulatory failings were a consequence of the operating procedures and collegial form of the commissions, the isolated place of Government that followed from independence, and the vague and inconsistent legislative mandates with which the commissions are charged. The Council recommended that the commissions be replaced by agencies within the executive branch. The agencies would then be rationalized according to their program responsibilities, they would be headed by a single administrator, and a sharply streamlined review process would be instituted.

The failure of the Ash Council to consider the proper role and scope of regulation is one of the major shortcomings of its work. ^{1/} Improvements in the organization, management, and process of regulation cannot overcome fundamental problems with respect to the purpose and nature of regulation. The Ash Council failed to distinguish between problems that are a consequence of unwarranted or undesirable regulation and problems that follow from failures of the regulatory process. Therefore, its conclusions are of questionable validity.

The design of an effective regulatory process requires an understanding of the way in which decisionmakers respond to the environments within which they function. Firms are in business to make a profit. The profit motive is a driving force, and business firms are likely to respond to a regulatory regime by adapting to its system of rewards and punishments. Firms familiarize themselves with all the incentives and levers of the regulatory process and work within the system to their own betterment. Others in the regulatory process behave accordingly. The incentives offered by a poorly designed regulatory process generate activities undertaken in self-interest that lead to an undesirable outcome. Undoubtedly, some firms and individuals make a conscious attempt to subvert the regulation, but much regulatory failure would exist without this type of behavior. The failures more often result from a poorly designed incentive structure.

The free market organization of an economy is desirable from the perspective of most economists because the incentives

^{1/}Noll, Roger G., Reforming Regulation, The Brookings Institution, Washington, D.C., 1971.

given to individuals as they attempt to maximize their private welfare lead to activities that are beneficial to society. Unfortunately, many of the incentives which exist in the regulatory environment as it is now structured do not have this same virtue. For example, many electric utilities have no incentive to search for the lowest cost generator fuel since they can automatically pass higher fuel prices on to consumers by means of the fuel adjustment factor. Detailed mandatory safety standards can redirect primary attention from improving safety to compliance with the standards. An unrealistically low regulated price of natural gas sold in interstate commerce creates two artificially separated markets. Disruptions follow from the resulting shortage of interstate gas and the abundance of intrastate gas. Regulators, to the extent that they try to minimize the review and reversal of decisions by the courts, try to give something to each of the vocal vested interests. Any number of examples are available from ICC rulings. These decisions are rarely best from society's perspective.

A central challenge of regulatory reform is to design a new regulatory process. The incentive system of this ideal process would be structured so that the combined activity of individuals attempting to work within the system to their own advantage simultaneously moves the outcome toward the regulatory objective. Careful attention should be paid to the signals and incentives extended to regulators and their staffs, regulated industries (managers, workers, and shareholders), and consumers. Regulation administered in this way should correct many of the well-known regulatory failings.

REGULATORY REFORM ALTERNATIVES

The wide diversity of Federal regulation with respect to activities and organizational structures makes generalized discussion of reform difficult. Regulatory activities include price, entry, and rate-of-return regulation; standard-setting with respect to safety, product quality, pollution, employment practices, and business behavior; franchise-letting; and influence over industrial planning. Regulation is administered by independent commissions, quasi-independent agencies, and the executive branch. Decisionmaking responsibility may rest with a group of coequal commissioners or a single administrator. The courts may be called on to intervene consistently in some areas and rarely in others. Regulations may apply to most aspects of an industry or very few. Some regulatory agencies have little ability to enforce their decisions, while others have substantial punitive

powers. Any discussion of a subject with such heterogenous components cannot be generalized to all elements. Specific reform proposals apply only to specific regulatory problems.

Nonetheless, reform proposals fall into several broad categories: complete deregulation, partial deregulation, standards and alternatives, awarding monopoly franchises, subsidies, nationalization, and antitrust enforcement.

Complete deregulation

Complete deregulation is the logical reform alternative when the original justification for regulation no longer exists. If there is no market failure or enduring social or political objective, then there is no apparent reason to perpetuate regulation. A review of the economic literature reveals a substantial number of studies that recommend on these grounds the deregulation of surface freight transportation, civil aviation, and the wellhead price of natural gas. ^{1/} Two objections to deregulation, when regulation is not warranted, are the potential for disruption inherent in such a step and the redistribution of income and wealth associated with deregulation.

Deregulation is a fundamental change in the rules by which business is conducted and, as such, is potentially disruptive to the orderly conduct of economic activities. These disruptions are real, but they persist only during the transition following deregulation. Costs are incurred in the time period between the end of regulation and the establishment of a new unregulated equilibrium. These transition costs should be kept to a minimum, but in most cases they are not an overwhelming argument against deregulation. Transition costs were anticipated when all the new regulatory agencies of the 1970s were created, yet they did not deter the passage of their enabling legislation. Furthermore, such transition costs that do exist need not be large.

Recent experience with deregulation provides interesting counter examples to the direst predictions. The two instances of deregulation in the 1970s took place with little noticeable difficulty. The first, the shift from a regulated fixed exchange rate for the dollar to a system of freely fluctuating exchange rates, was a change of major proportions. Many

^{1/} T.G. Moore in A. Phillips (1975), G.W. Douglas and J.C. Miller, III (1974), and S.G. Breyer and P.W. MacAvoy (1974).

warnings were voiced prior to the collapse of the Bretton Woods System ^{1/} predicting that chaos could result from just such a step. It was alleged that world trade and international investment would be adversely affected. The predictions were not borne out by events. The shift to fluctuating exchange rates solved persistent balance-of-payments problems without the predicted disruptions. The financial community promptly developed institutional mechanisms for the new system. And, the many firms engaged in international business quickly learned how to conduct business with units of account whose relative values were not constant. The major adjustments were associated with the currencies that had been fixed at artificially high or low exchange rates. Those currencies experienced large changes in their relative values as they moved to market-determined levels. Day-to-day fluctuations were not large once these new levels were reached, but exchange rates did move over time as fundamental economic conditions changed.

The second recent example of deregulation, the ending of fixed commissions for security transactions, was of less economic significance than the shift to fluctuating exchange rates. Yet, it was of major importance to those directly affected. Many in the securities industry claimed that fixed commissions were needed to keep competitive brokerage houses viable. Despite these claims the deregulation took place with little notice taken. The industry has survived intact and investors are currently benefiting from generally lower rates on large transactions.

Despite these encouraging events, any regulatory reform plans should explicitly consider and attempt to minimize potential transitional disruptions, such as learning to function in the new environment, access to capital markets of the affected industries, regional consequences, and the impact of regulatory reform on the distribution of income.

^{1/} The Bretton Woods System is the common name given to the international monetary arrangements that prevailed from the close of World War II until the early 1970s. The system consisted of fixed international rates of exchange for the world's currencies, the use of the dollar and pound sterling as international reserve currencies, and the creation of an institution, the International Monetary Fund, to lend money to countries with balance-of-payment difficulties.

Much regulation redistributes income and wealth. Permanent losses as a consequence of deregulation will be incurred by those who gain a special advantage from existing regulation. It is understandable that those whose income is enhanced by regulation would oppose deregulation. Those who stand to lose the most have been the most active defenders of the status quo. They have tried to enlist consumer support for their positions by predicting that deregulation would yield harmful consequences. Arguments are offered that there would be wholesale abandonment of rail lines, air service, and virtually everything else that is regulated. It is alleged that the remaining service would be unreliable and expensive. At present, there exists little evidence to support these claims.

The equity problem that would be caused by deregulation should be given explicit consideration when deregulation is contemplated. An example of this problem would exist in the trucking industry. The purchaser of an interstate trucking firm pays the value of both the real capital of the firm and the value of ICC route authorities that permit the firm to operate. The route authorities have value because ICC limits entry into the industry and excess monopoly profits can result. These operating rights have been called the motor carrier's single most important asset. Deregulation would wipe out these assets and the owners of trucking firms would suffer substantial losses. There could also be serious consequences for the banking industry because route authorities are often used as the justification and/or collateral for loans made to the industry. Secondly, truck drivers, to the extent that they have captured some of the monopoly profit in the form of higher wages, would see their relative position weakened. The discussion can be extended to a number of other examples in which any deregulation option is likely to receive strong opposition from both the firms and employees of the regulated industries.

A careful consideration of the income distribution consequences of deregulation may conclude that some compensation should be arranged for the injured parties. The problem is similar to that faced when protective tariffs were lowered in the 1960s. The tariffs created a situation in which employers and workers in protected industries benefited from the restrictions on foreign competition. Consumers as a whole were hurt because the protective tariffs resulted in high prices for the goods not freely traded. A movement toward freer trade would benefit consumers but hurt the employers and employees in the protected industries. The 1962 Trade

Expansion Act which authorized the Kennedy Round tariff reduction negotiations explicitly recognized this equity problem. It provided for assistance for the workers and owners of formerly protected industries who were adversely affected by foreign competition. This assistance can be viewed as a form of compensation for those materially injured by a change in the rules of the game.

The discussion of deregulation transition problems applies with equal validity to most other regulatory reform proposals. All such plans should explicitly recognize the potential equity problems and, where needed, include special transition periods designed to minimize the attendant disruptions.

Partial deregulation

Partial deregulation is the reform alternative when an industry or activity is overregulated. Regulatory activities in these instances can be divided into two categories--warranted regulation and unwarranted regulation. The warranted or necessary aspects of regulation should obviously be retained and the unwarranted activities should be eliminated, if at all possible. Partial deregulation is most useful in cases in which some regulation is deemed appropriate. The partial deregulation of an industry that should be totally deregulated may not necessarily yield an improvement. Several examples follow.

Most financial institutions are subject to regulation by Federal banking authorities and have their deposits insured by an agency of the Federal Government. Some bank regulations are designed to give the Federal Reserve System control over the money supply. Other regulations are intended to insure a financially sound banking system. These latter regulations are intended to prevent conditions that could produce panic runs on the banks and remove the potential for a chain of precipitous failures. Regulation to effect monetary policy is probably necessary, but the second type of regulation may be redundant in the presence of deposit insurance. A banking system with insured deposits is reasonably free from the panics that created so many problems during the Depression. However, an alteration in the current insurance system would probably be needed. The current system of level premiums would be somewhat of an incentive or subsidy for overly risky business practices. This problem could be corrected with variable premium insurance that reflected the risk associated with individual banks.

The electrical power industry is a case for which the full range of public utility regulation may not be necessary. Both the distribution of electricity at the local level and the transmission of bulk electricity are natural monopolies and do require regulation. However, there is potential for deregulation of the generation of electricity. This is attributable in part to the development of high voltage transmission technology which permits the economic transmission of electricity over much longer distances than in the past. One economist has concluded that eliminating the vertical integration of the industry and regulating the interconnection and wheeling (transmission) of electricity would provide the necessary conditions for workable competition in electricity generation. ^{1/} Such a system would enable most communities to purchase their electricity from any of several competing generating facilities.

Partial deregulation would not necessarily be the best reform alternative if deregulation were indicated. The Federal Aviation Administration (FAA) regulates the safety aspects of civil aviation, and CAB regulates its economic matters. Many studies of CAB regulation have concluded that it is costly and unnecessary. Eliminating CAB regulation and retaining FAA regulation would be partial deregulation in a broad sense. However, partial deregulation of CAB's activities would not necessarily solve its associated problems. Halfway alternatives such as a restricted range within which fares could vary without CAB approval (also called a zone of reasonableness) and easing entry on specific routes without freeing entry into the industry as a whole would not fully capture the desirable outcomes of a competitive market.

Standards and alternatives

Many compliance standards are issued which require specific behavior on the part of the regulated. Pollution, safety, health, business and financial practices, and many more activities are regulated by mandatory standards. Some standards achieve the regulatory objectives directly. For instance, gasoline consumption is reduced below what it would

^{1/}Weiss, Leonard W., "Antitrust in the Electric Power Industry" in A. Phillips, Ed., Promoting Competition in Regulated Markets, The Brookings Institution, Washington, D.C., 1975, pp. 135-173.

be otherwise by requiring that automobile manufacturers improve the fuel efficiency of their cars. Other standards are adopted because it is supposed that there is a strong causal relationship between complying with the standards and effecting the desired objective. Occupational safety standards are a case in point. Workplaces are required to comply with OSHA standards, and compliance is expected to reduce job related injuries.

Standards as a regulatory mechanism have been subject to much criticism. 1/ Among the points raised are:

- Standards are often difficult to enforce because their scope makes it impossible to monitor compliance. Some standards are so complex that they can only be enforced in part. Other standards apply to so many people and undertakings that there could never be sufficient personnel to enforce them. For instance, there is no way FCC can control abuses by the millions of citizens' band radio operators. Finally, penalties for noncompliance are often so small that they provide no coercive encouragement to conform.
- There is in some instances a tenuous relationship between required standards and the ultimate objective of the regulation. The standards, even if strictly enforced, may not achieve the regulatory objective because they are poorly chosen.
- Specific standards may be economically wasteful. There are often many ways of reaching a specific objective, and there is no guarantee that any particular set of standards is the least costly way of reaching that objective for all parties. The use of possibly less costly alternatives--even if they achieve the same objectives--is often foreclosed by the use of standards.
- Standards are often not comprehensive enough to satisfactorily cover all the diverse circumstances to which they will be applied. This weakness is often a consequence of the difficulty of the task

1/ Smith, Robert S., The Occupational Safety and Health Act, Its Goals and Its Achievements, The American Enterprise Institute for Public Policy Research, Washington, D.C., 1976.

rather than an indication of staff inadequacy. Designing standards that are equally applicable and effective in all circumstances is in some cases impossible.

- Standards are static and the world is dynamic. Technologies, products, materials, and processes are constantly changing. Standards require constant updating to keep them from becoming obsolete. However, rule-making procedures are usually time consuming and make timely updating difficult.
- Standards can be counterproductive if they deflect efforts from the ultimate objective to compliance with the standards. For example, management may feel that all obligations to perspective patients who use a new drug are fulfilled if FDA approves the drug's introduction. Or, resources for job safety may be exclusively devoted to meeting OSHA standards without giving careful attention to firm specific hazards. The attention and resources directed to satisfying standards which are intermediate to the ultimate objective might be better applied directly to the objective.

The use of standards as a regulatory tool should be entertained when there is a strong causal relationship between the standard and the ultimate objective, and when there are no alternatives. Robert S. Smith concludes that in the area of occupational safety, the control of health hazards is a problem that must be treated with standards.^{1/} The safety of nuclear power generation is a second regulatory area for which standards are applicable. However, there may be viable alternatives for many of the uses of standards. Among them would be:

- Mandatory insurance: There are situations in which mandatory insurance could efficiently substitute for standards. One example cited previously suggests that risk-related deposit insurance would be an adequate substitute for the regulation designed to maintain the financial soundness of financial institutions.

^{1/}Smith, Robert S., The Occupational Safety and Health Act, Its Goals and Its Achievements, The American Enterprise Institute for Public Policy Research, Washington, D.C., 1976, p. 85.

--Information production and dissemination: Some standards can be replaced with improved information flows. Better information is all that may be needed in place of a wide range of standards regarding product quality and safety and on-the-job accident hazards. People willingly subject themselves to many hazards, such as dangerous sports (hang gliding, scuba diving, skiing, football), medical neglect (unhealthy diets even in the presence of nutritional information, smoking, drinking), and dangerous occupations (firefighting, law enforcement, mining). In each case the individual subjects himself or herself to the risk because the associated benefits exceed the expected costs. The benefits in the case of sports are the pleasures of the activity. The benefits in the case of hazardous occupations should be higher salaries. Insuring accurate information regarding risk and quality in such cases may be sufficient to enable individuals involved to make good decisions.

--Taxes and fees: Some standards can be efficiently replaced by using taxes and fees to change the relative prices faced by consumers and firms. This alternative can have the advantages of both yielding efficient outcomes and minimizing enforcement activities. The behavior of decisionmakers is altered by changing the relative prices that they face. The socially desirable alternative is made relatively cheaper, and the socially undesirable activity is made more expensive. Desired goals are effected as individuals adjust their expenditure patterns to the new prices and attempt to maximize their welfare at any given level of expenditures. More of the socially desirable activity is undertaken because it is made cheaper, and less of the undesirable activity is undertaken because it is made more expensive. For instance, the use of unleaded gasoline would increase if the Federal excise tax on gasoline were greater on leaded gas than on unleaded gas. Raising the tax on leaded gasoline by a few pennies or lowering it on unleaded gasoline would make the unleaded gasoline the less expensive fuel. As a result, people wishing to minimize the cost of their gasoline purchases would buy unleaded gasoline without coercion.

Kneese and Schultze ^{1/} have recommended the use of a pollution tax in place of current mandatory standards for many environmental problems. Each firm would have the choice of paying for its pollution or abating it. The correct pollution tax is the one that would lead firms to voluntarily produce the desired level of environmental quality. Those firms for whom pollution abatement was less expensive than the pollution tax would reduce their pollution. Those firms for whom pollution abatement was very expensive would pay the tax and pollute. In the process the desired level of overall environmental quality would be reached in a more efficient way than with standards. The practical aspect of such a problem is not that complicated. Some sanitation districts charge industrial users for both the volume and content of their effluents, which are randomly sampled to determine content and the results used to compute each firm's sewage charges.

Robert S. Smith ^{2/} has proposed a similar approach to workplace accident hazards. The variable to be monitored by the Government would be the actual accident rate. The cost to the firm of an accident would be increased by means of full compensation to the injured party and a penalty charge. Firms would be left to minimize the accident rate in what they determine to be the best way. The Government might play a secondary role by insuring an adequate flow of information about hazards. The incentives of this alternative apply managerial initiative directly to the safety problem. Collecting actual performance data is a necessary ingredient in this approach. Insuring accurate reporting is a problem similar to insuring accurate financial and tax reporting by firms.

^{1/}Kneese, A.V. and Schultze, Charles L., Pollution, Prices, and Public Policy, The Brookings Institution, Washington, D.C., 1975.

^{2/}Smith, Robert S., The Occupational Safety and Health Act, Its Goals and Its Achievements, The American Enterprise Institute for Public Policy Research, Washington, D.C., 1976, p. 85.

Awarding monopoly franchises

The use of an auction to allocate monopoly or quasi-monopoly franchises is one alternative to the current system of determining who is permitted to do business in a regulated industry. Auctioning provides a mechanism for the Government to either capture monopoly profits from the firm or to limit subsidies paid to the firm. They are probably less useful in addressing the efficiency problems associated with the natural monopoly. Two examples, one from the broadcast industry and the other from local service aviation, illustrate this mechanism.

Prospective broadcasting corporations apply to FCC for permission to use the radio spectrum. Licenses are awarded, based on the relative merits of the applicants. There is currently no charge for the license which is issued for a 3-year period--and is in practice both renewable and transferable. (Nominal annual charges were assessed until a recent court decision declared them illegal.) This license confers upon the holder the opportunity in a large market to make substantial profits. Although FCC controls entry into the industry, there is no limit on corporate profits because FCC is forbidden from regulating what stations charge for customer advertising. The result is that the most profitable television stations have earned two to three times the value of their real capital stock in a single year. ^{1/} When these stations are sold, they generally command a price that is a multiple of the book value of their capital. The difference between the book value and the market value of a station reflects the value placed on the license, that is, the capitalized value of the profits the license enables the station to earn.

Some experts have questioned whether it is appropriate for the Government to confer these benefits on a small number of private businesses. One recommended alternative is the awarding of licenses by auction. Under an auction system the price that a license would sell for would be determined by the potential profitability of the station. Each prospective broadcaster would offer to pay a fee for the

^{1/}Noll, Roger G.; Peck, Merton J.; McGowan, John J., Economic Aspects of Television Regulation, The Brookings Institution, Washington, D.C., 1973, p. 17.

license that reflected the difference between a station's anticipated operating costs (including normal profits) and expected revenues. This system would enable the Government to simultaneously award licenses and capture the supranormal monopoly profits that license holders now earn.

The second example is drawn from the operation of the local service airlines--the class of airlines which specializes in providing short-haul, low-density feeder service. CAB both regulates and subsidizes the operation of these airlines, and these actions provide little incentive for efficient operation of the lines. The use of a negative price auction to allocate route certificates for this service would not only provide a mechanism for allocating the route certificates, but it would also encourage efficiency in the operation of the service.

CAB could identify the routes that should be subsidized and specify a minimum level of service for each. (It is assumed that the service in question would not be offered without a subsidy and that the service is for some reason desired.) Firms wishing to serve a particular route would bid by indicating the subsidy payment for which they would be willing to provide the service. The winning airline (or air-taxi service) would be the bidder offering to provide the service for the smallest subsidy payment. Under such an arrangement, the airlines would have an incentive to be efficient because they could retain any profits resulting from ticket sales and CAB subsidy. Competitive bidding for the subsidies would eliminate the possibility of sustained excess profits from the subsidized operations. Further, the need for regulatory oversight would be reduced. 1/

Subsidies

Subsidies are an alternative to regulation when a given quantity of a good or service is provided only because of the regulation. Regulation coerces provision of the good or service because revenues from its sale are insufficient to voluntarily yield the desired supply. Regulation generating cross subsidies is the most obvious case of regulation that could be replaced with direct subsidies. A cross subsidy exists when a regulated firm supplies a combination of

1/Eads, George, The Local Service Airline Experiment, The Brookings Institution, Washington, D.C., 1972, p. 199.

markets for which total revenues are sufficient to cover all costs and yield a normal profit, but some subsectors of the market are served at a loss and others yield excess profit. It is these excess profits that subsidize the unprofitable operations. For example, some claim that the provision of air service, rail-freight service, telecommunications, and electrical power involve some cross subsidies.

Subsidies can be extended to firms to underwrite the cost of production. Or they can be given to individuals to reduce the private cost of purchases. The subsidies can be direct or indirect, and they can be in the form of money or income in kind. Three principal categories of subsidies are direct subsidies, tax subsidies, and subsidies in kind.

- Direct subsidies: These subsidies involve the transfer of public funds directly to private firms or individuals to induce the provision of a good or service beyond what would be independently purchased. Positive aspects of direct subsidies are that they appear in the Federal budget and are subject to congressional review, they are paid by all taxpayers rather than some subset, and they minimize distortions in nonregulated sectors of the economy. In the maritime shipping industry the Federal Government directly subsidizes the construction of ships in American yards and the salaries of sailors on American flag vessels. Local service air carriers, Amtrak, and Conrail all receive direct subsidies for the provision of their respective services.
- Tax subsidies: These subsidies are provided by reducing tax obligations. They can be designed as a special reduction in taxable income or as a tax credit. The former method reduces the income on which Federal tax must be paid and, hence, the tax obligation. The latter method reduces Federal taxes directly by providing for certain expenditures to offset and reduce tax obligations. For example, investment in machinery and equipment is encouraged with a tax credit.
- Subsidies in kind: This type of subsidy involves Government provision of a good or service at less than the full cost of producing it. For example, barges use this country's improved inland waterways without any direct charge for the construction, operation, or maintenance of locks and dams.

Nationalization

A complete market failure is most often remedied in this country with classic public utility regulation. Most Western European democracies have taken a different approach to solving the problems posed by the natural monopoly; electrical power generation, telecommunications, rail transport, civil aviation, and radio and television broadcasting are nationalized industries. In addition, nationalization has been suggested as a possible solution to problems of natural resource extraction, industries with great external costs and benefits (such as nuclear fuel processing), and as a potential yardstick of efficiency for regulated firms.

Nationalization solves some regulatory problems, but it has its own set of drawbacks. Conflict between the public interest and the regulated private industry is removed. Direct Government initiative, which is lacking in a regulated industry, is feasible. And, the regulated industry's incentives for wasteful practices, such as excess capacity and overcapitalization, are removed.

However, with past history as a guide, it is likely that nationalization would be beset with its own serious weaknesses. Government-owned firms would not necessarily be more efficient than regulated industries. The potential for direct political pressure may lead to nonoptimal prices and outputs. And, there is no reason to believe that Government ownership would produce a better decisionmaking mechanism than regulation. Nationalization is an alternative to the regulation of monopolies, but it would most likely substitute a different set of problems for the weaknesses and drawbacks of existing regulation.

Antitrust enforcement

Antitrust litigation undertaken to increase market competition can play two different roles. On one level, it can be used to effect some reforms in existing regulation; and, secondly, it can be used as an alternative for some types of regulation.

Antitrust litigation, as a vehicle for regulatory reform, seeks to bar anticompetitive actions on the part of regulated firms. Such suits may seek to bar bank, railroad, or airline mergers that have been approved by regulatory agencies. Or, the suits might seek to alter the nature of a regulated industry, such as the Justice Department's

opposition to the vertical integration of American Telephone and Telegraph. Such litigation, as a vehicle for regulatory reform, is cumbersome and limited in the activities it can affect.

Much activity that would ordinarily be subject to anti-trust litigation is legally exempted from compliance with the antitrust laws. And, the litigation that is feasible is subject to typically long drawn-out court battles that are carried through the many layers of the court system. Furthermore, the changes that successful litigation can effect are primarily negative. Certain activities can be forbidden but, except in cases involving divestiture, the regulatory regime and the regulated industry cannot be restructured or made more competitive. 1/

Antitrust litigation can substitute for regulation or facilitate deregulation where deregulation is adopted by the legislature. Such a step would be the desirable alternative in industries that are workably competitive. Leonard Weiss, as mentioned earlier, believes that electricity generation could be deregulated if that step were coupled with the appropriate combination of antitrust enforcement and the regulation of transmission facilities. In addition, antitrust vigilance would generally be useful as an adjunct to any deregulation effort. It would be a valuable force in assisting firms with their transition from a cartelized regulated industry to a competitive one.

SUMMARY AND CONCLUSIONS

Thoroughgoing regulatory reform requires a complete review of regulation. The review process should be designed to determine the cause of regulatory failure, its extent, and the best reform alternatives. The cause of regulatory failure may lie with its justification, its mandate, or its process. The extent of regulatory failure is measured by its benefits and costs, to the extent that they are identifiable, with a special note required as to its impact on the income distribution. Reform alternatives are evaluated on their respective trade-offs between regulatory impacts, costs,

1/Zimmerman, Edwin M., "The Legal Framework of Competitive Policies Toward Regulated Industries" in A. Phillips, Ed., Promoting Competition in Regulated Markets, The Brookings Institution, Washington, D.C., 1975, pp. 378-380.

and benefits. A reform effort that begins by studying the basic justifications for regulation and ends with an analysis of operational alternatives would require the commitment of substantial resources. However, a reform program adopted in response to such a thorough review should yield benefits that are commensurate with its costs.

STAFF-YEAR AND BUDGETARY COSTS OFFEDERAL REGULATION,FISCAL YEAR 1976Staff-year and Budgetary Costs of Regulation
by Federal Government Agency, Fiscal Year 1976

<u>Department or agency</u>	<u>Staff-years under CBO general definition (note a)</u>	<u>Budgetary cost (notes b and c)</u> (millions)
Departments:		
Agriculture	20,470	\$ 500
Commerce	2,260	84
Defense (Corps of Engineers)	789	16
Health, Education, and Welfare	8,023	265
Housing and Urban Development	166	3
Interior	3,561	90
Justice	1,161	32
Labor	7,055	226
Transportation	9,317	402
Treasury	<u>5,028</u>	<u>102</u>
	<u>57,830</u>	<u>1,720</u>
Independent agencies:		
Board of Governors of the Federal Reserve System	277	(d)
Civil Aeronautics Board	708	<u>e/19</u>
Commission on Civil Rights	302	8
Commodity Futures Trading Commission	450	12
Consumer Product Safety Commission	935	48
Environmental Protection Agency	6,938	444
Equal Employment Oppor- tunity Commission	2,584	63
Federal Communications Commission	2,018	51
Federal Deposit Insurance Corporation	3,265	(d)
Federal Energy Administration	1,824	36

Independent agencies: (cont.)

Federal Home Loan Bank Board	1,205	(d)
Federal Maritime Commission	321	8
Federal Power Commission	1,398	38
Federal Trade Commission	1,678	47
Interstate Commerce Commission	2,142	52
National Credit Union Administration	602	(d)
National Labor Relations Board	2,570	72
National Mediation Board	105	3
National Transportation Safety Board	386	12
Nuclear Regulatory Commission	2,335	200
Occupational Safety and Health Review Commission	179	6
Postal Rate Commission	90	3
Securities and Exchange Commission	<u>2,030</u>	<u>12</u>
	<u>34,342</u>	<u>1,134</u>
Total	<u>92,172</u>	<u>2,854</u>

a,b/Source: Congressional Budget Office, The Number of Federal Employees Engaged in Regulatory Activities, Subcommittee Print of the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, House of Representatives, Aug. 1976, pp. VI and 16, respectively.

c/Costs do not reflect offsetting receipts from user charges.

d/These are self-supporting activities which do not require appropriation of U.S. Treasury funds.

e/Payments to air carriers are not included.

Summary of Fiscal Year 1976 Staff-years
Devoted to Regulatory Activities
under CBO General Definition (note a)

Economic regulation of commerce, transportation, agriculture, and communications	15,422
Health, safety, and environmental and consumer protection regulation	53,729
Regulation of banking and financial activities	13,193
Employment and civil rights regulation	<u>9,828</u>
Total	<u>92,172</u>

a/Source: Congressional Budget Office, The Number of Federal Employees Engaged in Regulatory Activities, Subcommittee Print of the Subcommittee on Oversight and Investigations of the Committee on Interstate and Foreign Commerce, House of Representatives, Aug. 1976, p. VI.

WORK PERFORMED BY GAO ON FEDERAL
REGULATORY ACTIVITIES

MAY 1, 1976, THROUGH JANUARY 31, 1977

This appendix updates the recent list of GAO publications on Federal regulatory activities published in Work Performed and Underway by GAO on Federal Regulatory Activities January 1, 1973, through April 30, 1976 (CED-76-122, July 20, 1976).

1. Status of GAO's Responsibilities under the Federal Reports Act, (Independent Federal Regulatory Agencies OSP-76-14, May 28, 1976).

GAO, under its Federal Reports Act responsibilities, has had limited success in affecting the paperwork requirements placed on the public by the independent Federal regulatory agencies. This limited success is due to:

- Poor performance by some of the regulatory agencies in developing and executing their information-gathering activities.
- Ambiguities in GAO's clearance responsibility and authority.
- Inadequate attention in legislation to the paperwork burden imposed by the Federal Government. GAO suggests that the regulatory agencies assume more direct responsibility for reducing burdensome and duplicate paperwork requirements. Further GAO recommends that the Congress change GAO's responsibilities under the Federal Reports Act.

2. HEW--Federal Fire Safety Requirements Do Not Insure Life Safety in Nursing Home Fires (Department of Health, Education, and Welfare, MWD-76-136, June 3, 1976).

Two Chicago nursing-home fires killed 31 people during early 1976. GAO was asked to investigate reasons for the severity of the fires and to suggest possible actions to avoid similar situations.

GAO reported that experts said automatic sprinkler systems would have extinguished the fires and saved lives. GAO recommends that the Congress enact legislation requiring all nursing homes to be fully protected with automatic sprinkler systems.

3. Federal Efforts to Protect the Public from Cancer-Causing Chemicals Are Not Very Effective (MWD-76-59, June 16, 1976).

Federal efforts to protect the public from cancer-causing chemicals have not been too successful. Although Federal agencies, including the Departments of Labor and Health, Education, and Welfare; the Environmental Protection Agency; and the Consumer Product Safety Commission generally have enough authority to regulate the chemicals, they have encountered scientific problems in relating the results of animal safety tests to humans.

The Director of the National Cancer Institute is responsible for the overall direction of Federal efforts. He should establish a Federal policy on cancer-causing chemicals, or carcinogens, with the cooperation, advice, and support of other Federal agencies. The policy should address the scientific issues that have hampered effective public protection from carcinogens.

4. OSHA and Department of Labor--Answers to Questions on the Issuance of an Emergency Temporary Standard for Certain Chemicals Considered to be Carcinogens (Released June 18 by Rep. Bill Archer, B-179768, Jan. 6, 1975).

An emergency temporary standard to regulate employee exposure to 14 chemicals considered to be carcinogens was published in the Federal Register. The standard was revised on July 27, 1973, to provide more definitive controls for workplaces and work operations and container labels. The report lists answers to other questions regarding issuance of the standard.

5. OSHA and Department of Labor--Emergency Temporary Standards on Organophosphorous Pesticides (MWD-75-55, Feb. 24, 1975).

This is GAO's second report in response to a September 24, 1973, congressional request. This report contains

--a chronological summary of events before and after the issuance of the emergency temporary standards for organophosphorous pesticides and

--information on the adequacy of the data used by OSHA in support of those standards.

6. FPC--Contract Award by the Federal Power Commission for Developing and Installing a Regulatory Information System (Released June 16 by Rep. John E. Moss, RED-76-59, Apr. 2, 1976).

FPC awarded a contract to Planning Research Corporation Information Sciences Company for developing and installing a regulatory information system.

The system is to provide the Commission prompt and ready access to data on financial and technical aspects of operations of electric and gas pipeline companies. The system is designed to assist in improving the effectiveness of the Commission's decisionmaking, decrease costs, and strengthen regulatory activities and interactions with utilities and the public.

The contract award by the Commission was in technical conformance with Federal procurement regulations on competition. However, certain Commission actions may have detracted from the competitiveness of the award, as discussed in the report.

7. The Energy Research and Development Administration (ERDA) and NRC--This Country's Most Expensive Light Water Reactor Safety Test Facility (Released June 11 by the Chairman, Senate Committee on Government Operations, RED-76-68, May 26, 1976).

This report discusses

- the reasons for the major changes in objectives of the Loss-of-Fluid Test Facility midway during the program,
- cost growth and schedule slippages,
- relationship between ERDA and NRC for managing and operating the facility, and
- opinions of five nuclear experts on several technical questions relating to the facility's objectives, design, and potential effects on reactor licensing.

8. Bureau of Land Management, Department of the Interior--Acreage Limitations on Mineral Leases Are Not Effective (Released June 28 by the Chairman, Subcommittee on Mines

and Mining, House Committee on Interior and Insular Affairs, RED-76-117, June 24, 1976).

The mineral leasing laws and Federal regulations limit the acres that can be held under Federal mineral leases. However, little is known about the basis and appropriateness of the current limitations. Moreover, the Department of the Interior has no system for monitoring compliance with the onshore oil and gas limitation and was not effectively enforcing the phosphate, potash, and sodium limitations.

The Department should

- make a study to help in determining whether limitations are needed;
- if they are needed, establish appropriate limitations and recommend that the Congress change the laws accordingly; and
- establish and implement an effective monitoring system.

9. NHTSA, Department of Transportation--Effectiveness, Benefits, and Costs of Federal Safety Standards for Protection of Passenger Car Occupants (Released July 19 by the Chairman, Senate Committee on Commerce, CED-76-121, July 7, 1976).

This report analyzes costs and estimated benefits of Federal motor vehicle safety standards developed to provide better protection for occupants of passenger cars in accidents.

Crash survivability standards introduced through model year 1970 were effective in reducing deaths and serious injuries in accidents. But, GAO found little, if any, further improvement--resulting standards introduced in 1971 to 1973 model cars.

GAO conclusions are based on analyses of information on over 2,000,000 cars involved in accidents in North Carolina and New York. GAO compared driver death and injury rates for model years of cars.

10. ICC--Better Information Needed in Railroad Abandonments (To the Chairman, ICC, CED-76-125, July 23, 1976).

ICC's abandonment process relies on some outdated precedents which treat railroads unfairly.

--The Commission has not established a uniform accounting system for determining branch line costs; instead potential abandonments are evaluated on the basis of criteria established from an unrepresentative abandonment case decided in 1939.

---Since 1972 the Commission has allowed railroads to file less detailed abandonment applications for lines annually handling less than the Commission's break-even criteria of 34 carloads per mile, which is also unrepresentative.

Also, the Commission does not consider return on net salvage value as an avoidance cost and depreciation of track structures as a cost. As a result, potential losses from lines seeking abandonment may be understated.

11. Work Performed and Underway by GAO on Federal Regulatory Activities January 1, 1974, through April 30 (To the Chairmen, Senate Committees on Government Operations and Commerce, CED-76-122, July 20, 1976).

This report summarizes GAO work dealing with regulatory activities of the Federal Government. It was prepared to assist the Senate Committees on Government Operations and Commerce in carrying out a joint study of the effectiveness of Federal Resolution 71, approved July 26, 1975.

The report shows the range of GAO's past and present work group by problem areas selected for specific study under the Resolution or by other broad categories of investigating regulatory activities. The report also may be of interest to other committees and Members of Congress.

12. FDA, HEW--Federal Control of New Drug Testing is Not Adequately Protecting Human Test Subjects and the Public (HRD-76-96, July 15, 1976).

FDA lacks assurance (1) that the thousands of human subjects used in tests of new drugs annually are protected from unnecessary hazards or (2) that the test data used in deciding whether to approve new drugs for marketing is accurate and reliable.

HEW did not dispute GAO's findings but questioned whether some of its recommendations provided the most appropriate solution. However, HEW agreed that regulation of clinical investigations needed strengthening.

13. CPSC--Better Enforcement of Safety Requirements Needed by the Consumer Product Safety Commission (HRD-76-148, July 26, 1976).

Safety requirements are issued by CPSC to protect consumers from hazardous products. However, the Commission (1) does not know whether its safety requirements have been effectively carried out and (2) has not been timely or successful in referring cases of those violating the requirements to the Department of Justice.

14. ERDA--Shortcomings in the System Used to Control and Protect Highly Dangerous Nuclear Material (Released July 27 by the Chairman, Subcommittee on Activities of Regulatory Agencies, House Committee on Small Business, unclassified digest of a classified report, EMD-76-3A, July 22, 1976).

As manager of Federal energy research and development programs, ERDA must be sure that nuclear materials held by facilities it sponsors are safeguarded properly against theft or unauthorized use. The basic systems used are

--accountability and material control systems for detecting thefts and

--physical security systems to prevent or respond to thefts or unauthorized uses.

However, accounting for nuclear materials is extremely complex, based on physical, chemical, and radio metric measurements. Accurate measurements cannot be obtained because of uncertainties in measurement instruments and difficulties in measuring nuclear materials held up in pipes, machinery, and filters.

GAO found that ERDA's accountability and material control system contains vague and outdated requirements, resulting in inconsistent inspection practices and lack of specific numerical criteria when responding to missing special nuclear material.

15. FPC--Actions Taken by the Federal Power Commission on Prior Recommendations Concerning Regulation of the Natural Gas Industry and Management of Internal Operations (Released July 9 by the Chairman Subcommittee on Oversight and Investigation, House Committee on Interstate and Foreign Commerce, RED-76-108, May 24, 1976).

The Chairman asked GAO to analyze actions FPC took to implement GAO's recommendations made in its report of September 13, 1974, on needs for improving the regulation of the natural gas industry and management of internal operations.

The Commission took action to implement most of GAO's recommendations in that report (B-180228), and these actions improved its ability to regulate the natural gas industry effectively.

16. U.S. Coast Guard, Department of Transportation--Increased Attention Needed to Insure that Bridges Do Not Create Navigation Hazards (CED-76-103, Aug. 25, 1976).

The Coast Guard is responsible for determining that bridges across the Nation's waterways do not create safety hazards or unreasonable obstructions to navigation. Weaknesses in its procedures for administering this responsibility, however, prevent the Coast Guard from fully and uniformly carrying out this obligation.

GAO is making recommendations to the Secretary of Transportation to correct weaknesses noted in the Coast Guard's program.

17. FAA--Problems with the Financial Disclosure System (FPCD-76-50, Aug. 4, 1976).

To protect itself, its employees, and the public from the appearance of possible conflicts of interests caused by employees' financial interests, FAA needs to develop an effective financial disclosure system.

GAO found problems in its

--criteria for reviewing financial disclosure statements,

--criteria to determine who should file financial disclosure statements, and

--procedures for collecting, processing, and controlling financial disclosure statements.

18. Department of Commerce--Problems Found in the Financial Disclosure System for Department of Commerce Employees (FPCD-76-55, Aug. 10, 1976).

The close relationship between the Department of Commerce and the Nation's business community calls for vigilance by the Department to have an effective financial disclosure system for its employees.

GAO reports weaknesses in the Department's system including the need to

--improve procedures for collecting, processing, and controlling financial disclosure statements;

--develop criteria and systematic procedures to review statements;

--improve procedures for timely followup on financial interests; and

--enforce and expand its criteria for identifying persons who should file financial disclosure statements.

19. Departments of Labor, Agriculture, and Interior; Veterans Administration; and Departments of Air Force, Army, Navy, Defense Supply Agency, Department of Defense--Hazardous Working Conditions in Seven Federal Agencies (HRD-76-144, Aug. 4, 1976).

Seven Federal agencies employing more than half of the Federal civilian employees do not have adequate procedures for identifying and correcting hazardous working conditions. The heads of Federal agencies and the Secretary of Labor should work together to make safety and health programs for Federal programs effective as required by the Occupational Safety and Health Act. The Congress should amend the act to bring Federal agencies under the inspection authority of the Department of Labor to supplement and strengthen agency inspections.

20. OSHA and Department of Labor--Better Data on Severity and Causes of Worker Safety and Health Problems Should Be Obtained from Workplaces (HRD-76-118, Aug. 12, 1976).

The Labor Department needs specific details on causes and potential causes of death and serious disabling injury or illness. This report describes the type of data the Department has compiled and analyzed. It includes recommendations for (1) improving the program for obtaining injury and illness data and (2) setting up a program to obtain data from employers on employee exposure to, and efforts of, toxic chemicals and other health hazards.

21. OSHA, Department of Labor--States' Protection of Workers Needs Improvement (HRD-76-161, Sept. 9, 1976).

State safety and health enforcement activities are deficient because OSHA permits States to operate during a developmental period using criteria less effective than the Department of Labor's.

The law should be changed so the States must use Labor's criteria until they have developed their own equally effective criteria.

22. FDA, HEW--Need to Resolve Safety Questions on Saccharin (Released Sept. 10 by Sen. Gaylord Nelson, HRD-76-156, Aug. 16, 1976).

In February 1972 FDA published an interim regulation to allow the continued use of saccharin in food for a limited time in order to resolve the question of its potential to cause cancer. Resolution of the question is not expected before mid-1978.

Allowing an interim food additive regulation to remain in effect for about 6 years while safety questions concerning the additive are being resolved seems contrary to FDA's intent of permitting use of such additives for a limited time.

Extended use of a food additive such as saccharin, whose safety has not been established and for which a question of carcinogenic (cancer-causing potential) has been raised could expose the public to unnecessary risk.

23. FPC--Management Improvements Needed in Federal Power Commission's Processing of Electric-Power-Rate Increases (Released Sept. 9 by Rep. John J. Moakley, EMD-76-9, Sept. 7, 1976).

The Commission took over 5 years to process a Boston Edison Company wholesale electric-rate-increase case and three additional Edison rate cases are still in process. Edison may have collected about \$8.7 million in potential overcharges, which are subject to refund with interest, under three of the four cases.

The potential overcharges have minimal impact on Edison's municipal customers. As of January 1, 1976, however, many of the municipal's retail customers were paying higher electric bills than similar Edison customers while historically municipal's retail customers have paid less. In addition, the Commission's fixed-interest rate on overcharge refunds does not assure equitable treatment of the parties involved.

The Commission should reduce delays in processing rate-increase cases, establish a more equitable interest rate on overcharge refunds, and take steps to provide that wholesale overcharge refunds are passed on to retail customers.

24. Federal Highway Administration, Department of Transportation--Management Actions Needed to Improve Federal Highway Safety Programs (CED-76-156, Oct. 21, 1976).

A 1972 GAO report said more Federal-aid construction funds should be used to improve highway safety. Although spending on highway safety had increased from \$100 million in 1971 to \$1.1 billion in 1975, neither the Highway Administration nor the States had assurance that the funds obligated were for projects offering the greatest safety benefit.

The Highway Safety Act of 1966 required the States to establish systematic procedures for selecting safety construction projects. None of the eight States GAO reviewed had fully met this requirement. Furthermore, the Highway Administration had not developed adequate procedures to measure the States' progress in implementing their systems and did not know what progress had been made or when the States would meet the spirit of the act.

25. EPA--Health Monitoring Needed for Laboratory Employees
(CED-76-160, Oct. 8, 1976).

EPA has not put into operation an agencywide program for the health monitoring of laboratory personnel even though numbers of its staff are potentially exposed on a continuing daily basis to harmful substances, fumes, dusts, and gases.

Of the 1,329 employees at laboratories GAO visited, Agency officials acknowledged 778 as potentially exposed to hazardous and toxic substances. On occasion, laboratory staff have experienced various harmful effects from exposure to dangerous substances without adequate provision for health monitoring by the Agency.

26. Export-Import Bank's Financial Disclosure System for Employees and Its Procurement Practices (ID-76-81, Oct. 4, 1976).

Standards of ethical conduct for Government officials are prescribed by Executive order of the President. In line with this, the Export-Import Bank established a financial disclosure system to monitor the financial interests of some employees. Although the system provides for full disclosure, the system could be improved.

GAO recommends followup action to monitor the effectiveness of the system and establishment of procedures for prompt collection of all required statements and for timely review and approval of statements submitted. GAO found that Export-Import Bank's procurement practices were adequate to protect the interests of the Government.

27. Inter-American Foundation's Financial Disclosure System for Employees and Its Procurement Practices (Released Oct. 22 by Rep. John E. Moss, ID-76-69, June 30, 1976).

Standards of ethical conduct for Government officials are prescribed by Executive order of the President. In line with this order, the Inter-American Foundation established a financial disclosure system to monitor the financial interests of certain employees. GAO noted weaknesses in this system and is recommending procedures to identify employees who should be required to file financial disclosure statements, to make sure of the timely collection of statements from all employees required to file, and to appoint a deputy counselor. GAO found that procurement practices were adequate to protect the interests of the Government.

28. Department of Defense--Adoption of Commercial Standards for Seating Spacing and In-Flight Food Service Would Reduce Contract Airlift Costs and Conserve Fuel (LCD-76-211, Oct. 5, 1976).

Adopting commercial coach seat spacing on military charter flights would increase aircraft capacity, thus reducing the number of flights required. In fiscal year 1975 the Department of Defense expended about \$10.2 million for charter flights which could have been eliminated had commercial standards been used. Adopting commercial standards for in-flight food service would further reduce charter airlift costs.

29. Department of Transportation--The Federal Aviation Administration Should Do More to Detect Civilian Pilots Having Medical Problems (CED-76-154, Nov. 3, 1976).

FAA's medical examination procedures do not identify all airmen who are medically unfit. Additional medical screening techniques are available and should be required.

In contrast to the medical examination required of civilian pilots, more extensive medical screening is required of air traffic controllers, military pilots, and those adhering to international standards.

Other sources of information are available, which could further help to identify pilots medically unfit to fly. FAA often is restricted from obtaining this information.

30. Federal Railroad Administration, Department of Transportation, and U.S. Railway Association--Improved Controls Needed over Federal Financial Assistance to Railroads (To the Chairman and Ranking Minority Member, Subcommittee on Federal Spending Practices, Efficiency, and Open Government, Senate Committee on Government Operations, CED-76-161, Nov. 15, 1976).

From January 1971 to March 1976, about \$826 million in Federal assistance was provided to railroads primarily in response to crises. The Federal Railroad Administration was responsible for monitoring the financial aspects of four or five assistance programs in progress.

The Railroad Administration's program monitoring did not provide sufficient information to assess adequately how the railroads used total available funds or to be sure

that internally generated funds were used to the fullest extent possible to continue rail service. GAO offers recommendations to the Secretary of Transportation and the Chairman of the U.S. Railway Association for improving administrative controls over future financial assistance programs.

31. FCC--Cable Television and a Regulatory Policy (Released Nov. 1 by the Chairman, Subcommittee on Interstate and Foreign Commerce, CED-76-124, July 16, 1976).

Both the issues and solutions facing cable television regulation are not clear cut; they are complex with no simple strategy for producing a wide variety of programs for the American television audience.

If cable television is to become an increasingly innovative mode of communication, a well-defined policy aimed at promoting program diversity on cable and preserving an effective system of over-the-air broadcasting must continue to evolve.

32. The Department of Housing and Urban Development--Homes in Santa Fe, New Mexico, Not Rehabilitated in Accordance with Federal Requirements (Released Nov. 19 by Sen. Montoya, CED-76-158, Nov. 4, 1976).

The Department and the Santa Fe Urban Development Agency did not administer rehabilitation loan and grant programs properly in Santa Fe. As a result, some rehabilitated properties did not meet local standards, and the work that was done did not comply with applicable grant or loan program requirements.

The Department should require Santa Fe to bring these properties up to standard. If these efforts are not successful, the Department should recover grant funds declared ineligible for reimbursement.

33. Department of Labor--Dissemination of Safety and Health Standards to Businesses Subject to the Occupational Safety and Health Act of 1970 (Released Nov. 1 by the Chairman, Senate Committee on Labor and Public Welfare, B-163875, Dec. 13, 1973).

As OSHA has gained experience, it has become aware of the problems in disseminating occupational health and safety standards and has acted to improve dissemination, including

printing larger numbers of copies of the revisions and distributing more copies to the regional offices.

In addition, the agency, in response to the subcommittee's recommendations, published a "Guide to Standards" which provided a breakdown by hazard of all standards and established a subscription service to provide businesses with copies of the standards.

The above actions taken and planned by the agency show an awareness of the problems and a desire to see that dissemination of the standards to businesses is improved. Reorganization of its Washington headquarters and the subscription service, if properly implemented, should insure that copies of the standards and the revisions are available to meet requests by businesses.

34. FDA, HEW--Radiation Exposure from Diagnostic X-rays Could Be Reduced (To the Secretary, HEW, HRD-77-22, Nov. 24, 1976).

The Radiation Control for Health and Safety Act provides for a program to protect the public health and safety from electric product radiation.

FDA, responsible for administering the act, has issued performance regulations for diagnostic X-ray equipment, implemented a program to insure compliance with those regulations, and conducted educational programs to improve operator techniques in the use of X-ray equipment.

The agency's program could be strengthened by

--establishment of a uniform nationwide operator credentialing program,

--full implementation of compliance programs to insure the safety of diagnostic X-ray equipment, and

--issuance of guidance on who should be given diagnostic X-rays.

35. FDA--Stronger Measures Needed to Insure that Medical Diathermy Devices Are Safe and Effective (Released Nov. 17 by the Chairman, Senate Committee on Government Operations, HRD-76-153, Sept. 2, 1976).

Although FDA is responsible for regulating medical diathermy devices, it has not established an effective program to be sure that these devices meet Federal requirements.

The devices, which produce various levels of deep heat in human tissue, are used by medical practitioners and physical therapists to treat patients with bursitis, tendonitis, backaches, stiff shoulders, tennis elbow, and the like.

36. Department of Transportation--Needs of the U.S. Coast Guard in Developing an Effective Recreational Boating Safety Program (CED-77-11, Dec. 3, 1976).

This report discusses the need for the Coast Guard, as the Federal Agency responsible for recreational boating safety, to provide greater leadership as well as the need for additional information to determine the effectiveness of programs being developed to accomplish safety objectives.

GAO supports Coast Guard efforts to improve its management and recommends additional actions so that funds available for the program will be used more effectively.

37. FAA, Department of Transportation--Issues and Management Problems in Developing an Improved Air Traffic Control System (PSAD-77-13, Dec. 15, 1976).

Through 1985 about \$25.5 billion will be needed for the Nation's air transportation system--\$18.8 billion to operate, maintain, and administer the system and \$6.7 billion to improve airports, equipment, and research and development.

As a part of this, a \$713 million program is underway to develop a better air traffic control system for the 1980s and 1990s to improve safety, hold down costs, and increase capacity. The degree of its success will have a long-range effect on the amount of future spending needed to improve, operate, and maintain the air transportation system.

However, there are unresolved issues and associated weaknesses in FAA's planning and appraisal of its development program.

38. Actions Needed to Improve the Federal Communication's Communication Financial Disclosure System (FPCD-76-51, Dec. 21, 1976).

The effectiveness of the Commission in serving the public interest depends on the extent to which it holds the confidence and esteem of the Nation's citizens. Therefore, an effective financial disclosure system must be maintained. Several problems with the Commission's financial disclosure system and actions needed to improve the system are discussed.

39. NRC and ERDA--Development of Inter-Agency Relationships in the Regulation of Nuclear Materials and Facilities (Released Dec. 27 by the Chairman, Senate Committee on Government Operations, RED-76-72, Mar. 10, 1976).

NRC has developed working relationships with other Federal agencies, chiefly ERDA.

The report shows a need to develop or modify existing or proposed relationships in the Commission's

--use of ERDA's research facilities and

--review of physical protection systems in its export license program.

40. The U.S. Fishing Industry--Present Condition and Future of Marine Fisheries (CFD-76-130, Dec. 23, 1976).

The United States has almost one-fifth of the world's marine fish resources within 200 miles of its coastline. It might be expected that with this abundance of resources, its fishing industry would be strong and prosperous, but this is not the case.

Catches of edible fish have remained constant since 1960. Some parts of the fishing fleet are in a chronically depressed state. The demand for fish has increased, but the U.S. fishing industry has supplied a declining share of the U.S. markets while imports have increased to 62 percent of the total U.S. demand. This resulted in a fish trade deficit of \$1.4 billion in 1974.

Opportunities exist to strengthen and expand the U.S. fishing industry by increasing the efficiency of harvesting operations and overcoming barriers in processing, marketing, and distributing fish and fish products.

41. ICC--Efficient Railcar Use: An Update of the Interstate Commerce Commission's Compliance and Enforcement Program (CED-77-21, Jan. 12, 1977).

ICC periodically inspects railroads to make sure they comply with Commission rules and railroad procedures which promote efficient handling of railcars. In 1974 GAO reviewed the Commission's compliance and enforcement program for railcar use and found that improvements were needed.

The Commission recognized many of the shortcomings noted and was taking positive steps to remedy them. GAO has reviewed these actions and found that, while improvements have been made, the railroad compliance and enforcement program could be further improved.