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REGULATORY ACTIVITIES BY GOVERNMENT AGENCIES*

Paul L. Joskow

Number 171

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Chapter III-14

Regulatory Activities by Government Agencies

By Paul L. Joskow

INTRODUCTION

Despite the preoccupation of American economists with competitive market models, an ever-increasing proportion of the gross national product in most western economies is attributable to public enterprise, non-profit organizations, or private firms subject to extensive government regulation. More often than not the intervention by government has occurred in key sectors of these economies: energy, communications, transportation and finance. The imposition of government regulation or public ownership is often considered to have had profound effects upon the structure, behavior and performance of the industries in question. This essay seeks to present and evaluate the recent literature dealing with government regulation of industry in the United States. The emphasis will be on the kinds of policy instruments used by regulatory agencies, the effects of alternative policy instruments on industry behavior and performance, and possible alternatives to existing regulatory institutions.

The discussion presented here is primarily a presentation of perspectives on regulation by economists. Legal scholars, historians, political scientists, sociologists, etc. often have their own viewpoints on regulatory institutions and have come to their own conclusions about their effects. These analyses often differ in emphasis, content and

conclusion from the work done by economists. While the viewpoints of economists differ, they tend to be primarily concerned with considerations of economic efficiency and the distribution of income. They are less concerned with broader questions of equity, due process, the effects of regulation on the nature and stability of communities and social groups, and the place of regulatory institutions within the larger American social and political context. I will try to deal, at least superficially, with some of these differences when I discuss the evaluative tools used by economists.

A review and discussion of the economics literature on government regulation seems especially appropriate at this time. The last several years have witnessed an increased interest in the causes, nature, and effects of government regulatory institutions. Narrow analyses of the ways in which the prices charged by "natural monopolies" are determined have been supplanted by more sophisticated analytical and empirical analyses which have dealt not only with price regulation, but also with entry restrictions, quality control, safety standards and, more recently, environmental controls. The pervue of the student of regulatory institutions has thus expanded well beyond the traditional concern with "controlling monopolies" to more general concerns with all kinds of policy instruments that affect production and pricing decisions of firms subject to some form of government control. The boundaries of the "regulated sector" and the "market sector" have become more and more blurred as economists have come to realize that no industries are completely free from government regulation nor completely isolated from market forces.

There are perhaps three major areas in which considerable academic work has been done during the past two decades. First, a number of economists, especially those associated with the "Chicago School," began to explore the reasons why government regulation emerged in particular markets in the first place. This kind of question, often associated more with the work of political scientists and historians, has drawn both the attention and the analytical and empirical tools of economics. Traditional views of regulation "in the public interest" have been replaced with a variety of "self-interest" theories linking together the potential gains of monopoly power with the ability of government action to provide such power.

The second and by far most important segment of the economics literature on regulation takes the existence of regulatory institutions as given and seeks to understand the effects of different regulatory instruments, used in different economic settings, on the behavior of and performance of regulated firms. This literature deals with a variety of market structures, ranging from pure monopoly or natural monopoly to what appears to be pure competition. This body of work consists of the development of theoretical models of regulatory processes as well as industry-specific studies of actual regulatory instruments, how they have been used, and what their effects have been. A prime characteristic of these industry studies is the use of fairly traditional "neoclassical" economic models of firm behavior along with the use of available empirical evidence to compare behavior in the regulated world with the behavior that might emerge in a world without

the particular regulatory institutions under consideration.

A third area of research has concentrated on the behavior of regulatory authorities themselves. This literature concentrates on existing regulatory institutions and seeks to understand how they administer their statutory responsibilities. Questions of how prices are actually set, how entry and scarce resources (like the radio spectrum) are allocated, how administrative procedures change and administrative authority spread are the kinds of inquiry that have been made here. While some of this literature could easily fall under "theories of regulation," its concentration on the regulatory process itself often gives it a very different flavor and calls forth the use of the tools of organization theory and theories of bureaucratic and administrative behavior that warrant its being treated separately.

THEORIES OF GOVERNMENT REGULATION

Analyses of why we get government regulation in particular industries are conveniently grouped under the heading "theories of regulation". Two excellent discussions of alternative theories of regulation have recently been completed (Noll 1974 & Posner 1974) and provide, from somewhat different perspectives, a fairly comprehensive view of current thinking in this area.

The most traditional views rationalizing the need for government regulation may be referred to as the "public interest" or, as I prefer to call them, the "market failure" views of government regulation. These theories recognize that the market mechanism will yield desirable

equilibrium properties only if several key conditions are met. If for one reason or another the necessary conditions for the efficient operation of competitive markets do not exist, then some form of intervention is needed either to correct the market imperfection or to impose a countervailing distortion that will lead to efficient (pareto optimal) equilibria. The failure of one or more of the conditions necessary for efficient market performance to hold is usually referred to as a market imperfection or market failure.

There are many possible market failures that could arise. A number of these have figures prominently in economists' justifications for government intervention. The most important market failure that has played a key role in the area of "public utility" or "natural monopoly" regulation is "economies of scale" (Kahn, 1970, Vol 1: 11). When economies of scale exist over the entire range of possible market demands, minimum cost production will be achieved when there is only one firm producing output. But if this one firm is not regulated it will behave as a monopolist, charging prices above marginal cost, and yielding the associated allocative distortions. Government regulation is viewed as a solution to this problem. One firm is allowed to produce all of the output in the market by being given an exclusive franchise to operate there. In return, the prices that the monopolist can charge are regulated by the regulatory agency to minimize monopoly pricing distortions while allowing sufficient profits for the firm to continue production.

The presence of economies of scale, however, presents a dilemma for regulation. When average costs are declining, marginal cost is

less than average cost. Economic efficiency (in the absence of price discrimination) requires not only that there be one cost-minimizing firm producing all of the output demanded, but also that price be equal to marginal cost. With price set equal to marginal cost, however, the firm will lose money, since long-run average cost will not be fully covered. The regulatory agency has several alternatives open to it. First it could set prices equal to marginal cost and request that deficits be made up out of general tax revenues. However, in the absence of lump sum taxes elsewhere in the economy, this must impose a distortion somewhere else and is therefore a "second-best" rather than a first best solution. A second alternative, and the one normally used for establishing rates for the "traditional" public utilities like electricity, gas, water and telephone, is to charge average cost but still allow only one firm to produce output. Once again this involves a residual distortion, although the distortion is usually thought to be less than would arise from an unregulated monopolist.

A third alternative is to set prices equal to marginal costs and then charge entry fees sufficient to make up the deficits. These two-part tariffs (Feldstein 1972) are, however, only efficient if the entry fees do not lead some consumers to forego the service. In advanced economies such as the U.S., modest fees for electricity, water and telephone service are almost certainly non-distortionary, since the saturation rate for such services is virtually 100% and small entry fees are unlikely to deter even low-income consumers in these countries from "hooking-up". However, this is certainly not true of

natural gas, where good substitutes exist, and is also not true in developing countries where incomes are so low that many homes and businesses may still be without such services and the imposition of the entry fee would further deter consumers from adding the service.

These "efficiency" or market failure arguments are troublesome for a number of reasons. The superiority of the two "second-best" approaches over the results from pure monopoly essentially assumes that the monopolist cannot price discriminate. The greater the possibilities for price discrimination, the more efficient the monopolist will become. Admittedly, the consequences for income distribution for a perfectly discriminating monopolist are far different from those of a regulated firm constrained to set prices equal to average costs; but at least in terms of the economists' notion of economic efficiency, the perfectly discriminating monopolist could easily be more efficient than the regulated firm. To the extent that the government can in fact establish efficient two-part tariffs, the more likely is the monopolist to be able to do a similar thing, extracting considerably more than enough to cover the deficit arising from marginal cost pricing alone. Narrow efficiency arguments are therefore insufficient justifications for government regulation in the situation of economies of scale. Since the perfectly or near perfectly discriminating monopolist may be more efficient than the regulated monopolist, the argument in favor of government intervention in this situation must at least take account of important distributional and equity issues associated with monopoly power. Many statutes establishing regulatory authorities explicitly forbid price discrimination

and seek fair and equitable prices. Considerations other than economic efficiency not only are important motivating forces for monopoly regulation, but may even be over-riding.

Demsetz (1968) questions the whole natural monopoly justification for regulation. He suggests that even in cases where technological characteristics indicated that one producer would be efficient, the initial franchise right could be opened to competitive bidding. The competitive bidding solves half the monopoly problem -- excess profits -- under the Demsetz scheme. This scheme does not solve the other half of the monopoly problem -- price greater than marginal cost, but presumably some multipart tariff could be designed which would eliminate all or most of the exchange distortion.

Williamson (1975) and Goldberg (1976) criticize this approach because of its simplistic and idealized notion of private contracting and the problems that might arise in structuring and administering private contracts for traditional industries thought to possess natural monopoly characteristics. Both authors try to examine the nature of the private contracting problems that may result and suggest that many of the private contracting problems that will arise in reality are similar to the kinds of problems that regulatory agencies must deal with. Goldberg suggests that regulatory agencies may be an efficient substitute for private contracting institutions in certain circumstances.

The more expansive conceptualization of private contracting institutions that Williamson and Goldberg introduce raises serious questions about the utility of comparing the performance of actual regulated

markets with idealized models of competitive market behavior which ignore the problems and costs of private contracting.

Externalities, in the form of pollution for example, are another set of conventional market failures generally thought to cry out for some form of government intervention. Proposed regulations take a variety of forms such as taxes, subsidies, rules etc., which lead to an internalization of the externalities. The need for some kind of government intervention to deal with externalities is accepted by most economists. There is a general feeling that the best way of dealing with such externalities is through the use of appropriate commodity taxes that force all agents to face the true social costs in making production and consumption decisions (Mushkin 1972). Yet even here, there are dissenters. Coase (1960), Posner (1974b), Demsetz (1967) and others essentially deny the existence of important externalities in most situations. Since the essence of an externality problem is that no effective market exists for the good in question -- like clean air or water -- critics raise the question of whether or not such situations are likely to occur in reality. They argue that in the absence of transaction and enforcement costs an efficient allocation of resources will continue to be achieved as long as property rights and liability rules are well defined. Yet, in a sense the disagreement is a non-issue. The proponents of the conception of externalities essentially assume that for some reason property rights are difficult to define (as for air) and/or that transactions and enforcement costs, arising under existing (common

law) institutional arrangements, are so high that trade in the commodity in question does not take place to the extent it would under alternative institutions. Taxes, subsidies, rules, etc. are viewed as means to bypass transaction difficulties that exist and to achieve an efficient allocation of resources. By assuming the transactional problems away, the proponents of common law remedies yield conclusions that are certainly correct, but do not deal with the essence of what lies behind the traditional conceptualization of an externality. This is not to say that such work is worthless. On the contrary, the common law view which emphasizes exchange also emphasizes the fact that an efficient allocation of resources does not mean that there will be no pollution. On the contrary there will generally be some unless cleanup costs are extremely low or the costs of pollution very high at all pollution levels. The implication is that by merely observing that there is some pollution is not sufficient to argue that government intervention is called for. One must first look to see whether there are basic structural and institutional problems in the market in question which leads it to function poorly, so that social costs remain which could more easily be taken into account by economic agents if institutional or policy changes could be made.

As we move from a focus on the externality rationale for government intervention to the actual implementation of government controls in such designated industries, it is important to observe that the economists' preferred solution to the problems are rarely utilized. Corrective tax and subsidy schemes have almost entirely taken a back seat to direct

control of effluent levels or the specification of particular technologies to be used (See Jacoby and Steinbrunner, 1973). Part of the problem is that the economic analysis underlying the justification for the use of particular policy instrument ignores the costs of information and administration required for the effective implementation. But this is not the entire explanation. There appear to be both administrative and social biases towards rules and requirements and away from prices. In fact we might argue that in certain cases it is the market process itself that regulation seeks to eliminate rather than "correct" in the traditional meaning of the term. There appear to be "market failures" from the viewpoint of consumers that are not related to either monopoly or externality problems. Some may be related to problems of uncertainty that have not generally been considered as a rationale for regulation while other "public interest" motivations may simply not fit comfortably into the economists' toolkit.

Recent literature on uncertainty (Arrow 1971) emphasizes the necessity of a complete set of futures markets for the efficient performance of competitive markets. Although the absence of futures markets in the presence of uncertainty has not generally been used as a market failure rationale for government intervention, it would seem that it could be used in this way. For example, consider the consumption of electricity. To use electricity consumers must purchase durable goods (appliances) having fairly long useful lifetimes. In the absence of government regulation of prices and supply availability, it is possible that electricity prices would have fairly high variability over time. Since the consumer installing electric heat has no way of stockpiling

electricity at current prices or buying insurance against price fluctuations or shortages, couldn't one argue that a legitimate role for a regulatory agency would be to stabilize prices and ensure adequate supply? The regulatory agency serves as an institution that "simulates" long term contracts that consumers themselves cannot negotiate. I suspect that an important set of market imperfections that has been overlooked in developing the market failure or public interest rationale for regulation are institutional failures which lead to the inability of consumers to fully diversify risk. It is exactly issues like this that the "contractarian" perspective of Williamson (1975) and Goldberg (1976) is able to consider much more clearly. It raises serious questions about the economist's traditional appeal to competitive markets if the competitive markets models utilized ignore private contracting problems that might emerge if regulation were eliminated.

The market failure or public interest theories are essentially normative theories or justifications for government intervention. An efficient allocation of resources is viewed as being the primary social goal, and imperfections which lead competitive markets to deviate from efficient equilibria should be eliminated by government action where possible. This view of government intervention is naive in at least three respects. First, it equates the public interest with economic efficiency without mentioning such social goals as income distribution, due process, and social stability. Second, it assumes that the government or government agency can be instilled with the public interest goal of economic efficiency and will not deviate from it over time.

Third, it takes the enforcement and administration costs associated with implementing the desired objectives as being essentially zero.

In fact, regulatory agencies are often set up with goals other than economic efficiency. While economists claim that many of these objectives can be better handled using other instruments they have certainly been less than successful in convincing others of this. Moreover, even if a regulatory agency was set up with narrow public interest goals there is absolutely no guarantee that such goals will continue to be unique or even overriding as the regulatory agency evolves over time and responds to the changing economic, political and judicial environment in which it must operate. Finally, implementation costs are often quite high and the choice among alternative policy instruments, some of which appear inferior in the zero administrative cost world, often depends critically on the actual costs of administering the different instruments.

A second important group of theories asks what regulatory authorities will do rather than what they should do. These theories have been referred to as "capture theories", "Capture-Cartel theories" or more recently as the "Economic Theory of Regulation" (see Stigler 1971, Posner 1971 and 1974a.) Let us simply call them "self-interest" theories. While these theories have evolved over time, their basic motivating force has remained unchanged. Government is viewed as an institution with certain coercive powers which can be used to benefit particular interest groups. By using its power to set prices, control entry, specify product quality, etc., the government can enrich one group within society at the expense of other groups. For example, MacAvoy (1965) views the Interstate Commerce Commission regulation of the railroads in the late 19th century as the use of government powers to establish a stable cartel in place of the unstable cartel that the railroads themselves tried to create. Government intervention was not a response to improve economic efficiency or to transfer income from rich property owners to deserving consumers (western farmers in this case). Rather it was a blatant attempt to enforce cartel arrangements through law which could not be enforced by outright collusion. Kolko (1965) and many Marxists take a similar view of government regulation. The Leviathan is always under the control of big business interests who use it at will to produce monopoly profits. The associated view that regulators are tools of those whom they regulate flows through a great deal of the economic history of government regulation.

The notion that government regulation is merely the extension of business' desires to cartelize their industries is almost certainly too naive. The natural gas producers have certainly been unable to capture the Federal Power Commission with regard to natural gas price regulation (Breyer and MacAvoy, 1974). The powerful automobile industry has not been particularly successful in fighting off safety legislation, nor have the drug companies. Regulation that may have been beneficial at one point in time for a particular group may become extremely harmful when that group's economic environment changes. Joskow (1974) and Joskow and MacAvoy (1975) have explored the effects of rapid inflation on electric utilities and have found that they have been seriously disadvantaged relative to their pre-inflationary performance. These and other examples point to the fact that regulation is certainly not always designed to establish a legal cartel for the industry being regulated. Indeed, most regulatory agencies had the strongest backing of liberal and consumer groups when they were established. To the extent that they have been captured it appears that this occurs after their creation, as the agencies evolve, rather than capture being a prime motivating force for their establishment. To the extent that capture is a reality it isn't necessarily the producers being regulated who capture the commission; it could be some other interest group. In addition the evolution of the agency after its creation has important implications for which of many interest groups benefit from the agency's decisions.

The fact that there are many counterexamples to the theory that government regulators act to help enforce cartel pricing in industries in which self-cartelization is difficult has led to an expansion of this political view of government regulation. Posner (1971) views regulation as an alternative administrative means of taxing some groups to benefit others. Stigler (1971) develops a more general theory which Posner (1974b) has called the "economic theory of regulation". As in the industry capture-cartel theory, government again is viewed as having coercive powers than can be used to the advantage of particular groups. The government (exactly what composes the government is very vague) can be induced to "sell" its services if the price is right. Presumably the price involves lobbying efforts, contributions to political campaigns and the delivery of votes at election time. The government is ready to supply varying kinds and levels of regulation and associated benefits to groups that can get up the required ante. On the other side are the demanders of government regulation. All groups should be able to benefit somewhat from favorable legislation. Some groups would presumably benefit more than others. For example a loosely knit oligopoly in an industry with low barriers to entry could benefit greatly from legislation restricting entry and requiring adherence to certain minimum prices. A duopolistic industry with high barriers to entry that has already succeeded in obtaining near monopoly profits would benefit less. Large industries benefit more than small industries.

If this were the only consideration the theory might be thought to have good predictive power. However, it is not. Not only must an industry be able to obtain substantial benefits to go to the trouble of obtaining government regulation, but it must also be able to organize and pay the prices that are required to get legislators to listen. For example, competitive industries may find organization for a common goal more difficult and costly than oligopolies even though the competitive industries have more to gain. In this context, Wilson's (1974: 141-146) analysis of the concentration of the costs and benefits of regulation is perhaps the most cogent statement of the general view put forth by the "economic theory of regulation". In the end, while it is difficult to disagree with this theory as a statement of how many political decisions are made in the United States, it is so general that it is able to explain almost any kind of government regulation ex poste, quite easily, while really having very little predictive power of its own. There are so many considerations inherent in this theory, often operating in different directions, that it does not appear to be particularly useful for predicting who will be regulated and how.

Perhaps a more unfortunate characteristic of the self-interest theories are their emphasis on the legislative process establishing regulatory agencies. Statutes establishing regulatory agencies are generally very vague and the kinds of regulation that actually takes place, within fairly broad bounds, depends more on the regulatory agency and the courts than it does on the legislature and the executive. The executive may even have more power than the legislature to the

extent that it gets to appoint the members of the commission. (In some states, however, utility commissioners are elected). A useful theory of regulation must deal with the evolution of the regulatory process itself once it has been established and be far less concerned with merely the origins of regulation. This is especially true in the interesting kinds of economic regulation where prices, entry, quality of products, etc., are under the control of the regulatory agencies rather than simple statutory regulation like licensing barbers or physicians. Even in the latter case those authorities that have the final responsibility for administration should be given far more consideration than is inherent in any of these theories. Analyses of the regulatory process (discussed below) appear to be critical.

While the "market failure" theories generally view government intervention as a good thing, the self-interest theories proposed by economists generally view government regulation as being bad. At least in the more sophisticated "economic theory of regulation" it is not logically clear why government regulation should be viewed this way a fortiori. Any kind of government regulation will almost certainly make some people better off and others worse off without some kind of compensation scheme. Regulation which captures some benefits for one group at the expense of others and in the process introduces distortions would only necessarily lead to a diminution of economic welfare if one believes that the status quo situation is itself efficient. This in fact appears to be the view of many proponents of the capture theory in all its incarnations. In addition, arguments that government regulation serve other goals than increasing economic efficiency, are met with the

response that price, entry, quality and other kinds of specific industry and commodity regulations are not the best way to achieve them. As a result, proponents of government regulation to ameliorate market failures can be comfortable with the politically oriented positive theories of regulation as long as the process works in such a way as to benefit the "right groups". However, the proponents of capture type theories in the economics profession appear to be exceedingly uncomfortable with the idea that government regulation could lead to desirable outcomes (see Coase 1974). Political scientists such as Wilson (1974), however, cast a somewhat caustic eye at the implicit value judgments regarding the normative implications of "self-interest" theories primarily because they do not believe that narrow economics efficiency arguments are the sole set of criteria for evaluation.

Perhaps a more telling criticism of the anti-regulation view underlying the proponents of the "self-interest" theories lies in the emerging expanded view of private contracts. As Goldberg (1976) points out, it makes little sense to total up the costs associated with regulation without also totaling up the costs associated with the realities of private contracting institutions which would in fact emerge in a real unregulated market. Assumptions of zero transactions costs and free and perfect contracting institutions may be very powerful ways of debunking government regulation but they may also miss the essence of the cost benefit tradeoff that exists in the real world.

The Effects of Government Regulation on Industry Behavior and Performance

There have been literally thousands of studies of the effects of government regulations of various types on the behavior and performance of the regulated industries. This literature, including both theoretical modeling of particular regulatory institutions as well as detailed empirical analysis of particular industries, is far too vast to be adequately discussed or evaluated in an essay such as this. As a result I have chosen to discuss a series of studies that encompasses different methodologies that have been used over the past twenty years both to regulate industry and to study the effects of regulation. The discussion in this section will be broken up into three broad topic areas. First we will examine "traditional" public utility regulation where the regulated industry consists of one firm given legal monopoly status. The monopoly firm is subject to price regulation and other forms of control by an independent state or federal regulatory commission usually using some type of "rate base" or rate of return regulation for establishing prices. The industries covered by this type of regulation, and industry structure are generally electricity, retail natural gas, natural gas pipelines, telephones and water supply systems. Regulatory authority is normally divided between state public utility commissions which regulate intrastate operations and federal agencies such as the Federal Power Commission (interstate wholesale electricity contracts and natural gas pipeline rates) and the Federal Communications Commission (interstate telephone rates) which regulate interstate operations.

The second area of discussion will focus on price, entry and quality regulation in multifirm industries which appear to have competitive or oligopolistic market structures, but do not have compelling natural monopoly characteristics. The problem of drawing boundaries between regulated and unregulated sectors becomes more difficult here. Studies of surface transportation, airlines, natural gas field prices, and financial institutions such as insurance companies and banks indicate diverse approaches to regulation as well as demonstrate the problems of regulating prices, entry and product quality in regulated industries that continue to retain a competitive or oligopoly market structure.

Finally, a brief discussion is presented of the evolving literature dealing with government regulation that is not directly concerned with the prices charged for products or the structure of the industry. Regulations dealing with product safety, such as auto safety legislation, product quality, such as the 1962 Food and Drug act amendments, and the control of air pollution through clean air legislation are included in this category.

If one had to point to one overriding conclusion of the studies represented in each group it would have to be that government regulation has been a failure, disadvantaging large segments of both industry and consumers.

Price Regulation of Traditional Public Utilities

The oldest area of research and teaching in the area of regulatory economics deals with commission regulation of monopoly industries such as electric utilities, gas utilities and telephone companies. The historical evolution of both the legal and economic rationale for state commission regulation of process, service territory, quality of service, etc. for traditional public utilities has been well documented in a number of texts, especially Troxel (1947) and Kahn (1970). In this traditional "public utility" area firms are given legal monopoly franchises for particular territories. Entry of firms producing the same service into this service territory is forbidden. In return for the legal monopoly position, firms give up their right to set prices as they choose and must normally supply service to all who demand it in their service territories at the prevailing prices established by the regulatory commission. Prices, service quality requirements, service extensions and abandonments are controlled by independent regulatory commissions. However, economists have given primary attention to the process of price regulation.

Statutes normally require that public utility prices established by such commissions are to be "fair" and "non-discriminatory" from the viewpoint of consumers and yet high enough to allow firms a level of profitability sufficient to attract capital and to maintain "high quality" service and "adequate" supply.

Various procedures have evolved over time for establishing the relevant rate base, determining the relevant costs, arriving at a "fair" rate of return on the rate base, and producing a price structure consistent with the rate of return (see Garfield and Lovejoy). These procedures have changed over time and vary from state to state, but the important structural characteristics of this type of "fair rate of return" regulation is basically similar from one jurisdiction to the next.

Rate of return regulation of monopolies is one of the few areas within the regulatory economies area for which a well developed body of theoretical models for evaluating the effects of a rate of return constraint on firm behavior and performance has evolved. The models developed in this area have been called Averch-Johnson (A-J) models after the authors who presented the first analytical specification of the behavior of the firm under a rate of return constraint in 1962. The original work of Averch and Johnson (1962) has been extended and corrected by a number of authors (see Baumol and Klevorick, 1970). For many economists the A-J type model has become the accepted conceptualization of rate of return regulation as it actually proceeds and the proper vehicle for predicting and evaluating firm behavior. However, exactly how good the implications of the model are obviously depends critically on how well the model captures the essence of the actual regulatory process.

A-J models specify a monopoly firm producing output with a neo-classical production function employing two resource inputs-capital

and labor. The firm is assumed to have some objective function—usually profits—that it tries to maximize. The regulatory commission comes into the picture as a constraint on the firm's behavior. It is normally assumed that the firm is constrained to earn some "fair" rate of return on its capital stock, greater than the cost of capital, but less than the unconstrained profit maximizing rate of return. Implicitly, the objective of the regulatory commission is viewed to be the constraining of earned rates of return to the allowed rate of return. The problem then becomes a constrained profit (in the standard case) maximization problem with the binding constraint being the allowed rate of return on capital. The primary result of the basic model is that such a constrained firm will produce output at other than minimum cost. In particular, the expansion path of the constrained firm implies a capital labor ratio that is higher than a cost minimizing producer would use—the often referred to A-J capital bias.

Extensions of this basic model have included the examination of different firm objective functions as well as different types of regulatory constraints (Bailey and Maloney, 1970). Not surprisingly, changing the nature of the objective function and the nature of the constraints alters the basic conclusion. Since a firm can never do better than minimize cost, changing the model around either changes the size or direction of the production inefficiency or returns the firm to the cost minimizing expansion path. As a result, most work continues to make the classical assumptions of profit maximization and a binding rate of return constraint.

Some richness has been added to this model by freeing the regulatory commission from constant regulatory review. A number of attempts to introduce "regulatory lag" into the model have been made. These models normally give an active (deterministic or probabilistic) role to the regulatory agency. During the "lag" period the firm is allowed certain behavior (depending on the particular model) but there is always the regulatory commission sitting out there ready to pounce on the firm, forcing its earned rate of return back to the allowed rate of return. Such pouncing may occur at set intervals or probabilistically according to some known (by the firm) probability distribution (Bailey and Coleman 1971 and Klevorick 1973).

The welfare implications of rate of return regulation have been examined in the "optimal fair rate of return literature." (Klevorick 1971 and Sheshinski 1971). In these models, the optimal rate of return is derived by replacing the firm profit maximizing objective with some social welfare maximizing objective. The idea is then to pick that allowed rate of return which yields a constrained (by the rate of return constraint) welfare maximum. Bailey (1973) indicates that "some regulation" will always be optimal. This strain of the literature is important because it recognizes that cost minimization cannot be the only criterion for judging a regulatory system. If it were we would simply be satisfied with no regulation since a neoclassical monopoly firm uses its resource inputs efficiently.

Bailey (1972) and Bailey and White (1974) have investigated the effects of rate of return regulation on a firm's pricing decisions in

situations in which demand is periodic (the peak-load pricing problem). For certain restricted classes of production and cost functions they show that pricing reversals are possible (off-peak prices higher than peak prices) and that firms may have an incentive to set peak prices well below the marginal social opportunity cost of providing service at peak times.

Until recently, the A-J literature had been almost entirely theoretical with no empirical verification of the results being forthcoming. Studies by Spann (1974), Courville (1974), and Peterson (1975) have sought to test the A-J results regarding production inefficiency. All of these studies use data on the regulated electric power industries and all find that the production distortions predicted by the A-J model do in fact have empirical validity. For example Peterson (1975) found that as regulation tightens (tightness is measured by whether a state has a regulatory commission or not, whether fair value or original cost rate bases are used, and inversely the rate of return on equity earned - not allowed as Peterson leads us to believe) total costs increase and the share of costs attributable to capital also increases. All three studies assume that the earned rate of return observed for firms is the allowed rate of return in the sense of the regulatory constraint. Joskow (1974) has argued that for the 1960's such an assumption is probably incorrect and represents a fundamental misconception of what regulators were doing during this period of time. Joskow contends that the A-J model does not at all capture the essence of state commission regulation of electric

utilities during the 1960's. Hendricks (1975) has examined the validity of alternative models of regulated firm behavior by examining the wage contracts negotiated by electric utilities. He sets up three alternative models of what regulatory commissions do. The first is a strict regulation model consistent with the conceptualization underlying the A-J model. The second is a "two-bounded" A-J model similar to that suggested by Joskow (1973a) and the third is a "lower bound" A-J model where the regulatory agency fixes a floor, but not a ceiling on allowed rates of return similar to that suggested by Joskow (1974). He finds that the wage behavior is generally consistent with the third model and perhaps the second, but not the first.

In addition, all of these studies rely on data for the electric utility industry and Joskow and Mishkin (1974) point out profound data problems arising from peculiarities in natural gas prices and contracts so that where natural gas is a boiler fuel alternative, input biases may appear where none exist in reality. In addition, none of the studies attempt to perform the welfare analysis that would compare the costs of regulation (in terms of production distortions) with the benefits of regulation (in terms of lower prices), consistent with the "optimal" fair rate of return literature.

A classic study which does attempt to estimate the benefits accruing to consumers from state commission regulation is that of Stigler and Friedland (1962). Using state data for the period 1912 - 1937 they relate electricity prices of different classes of consumers to a set of variables determining the costs of electricity and a dummy variable indicating whether a particular state had price regulation or not. The authors conclude

from the analysis that regulation did not have a statistically significant effect on average electricity prices. Statistical analyses which seek insignificant coefficients always present problems for the reader. The interpretation of the results actually presented here is even more troublesome. For several of the regression equations rates were found to be lower in regulated than in unregulated states, significantly lower in many cases if a 90 percent rather than a 95% confidence level is chosen. Moreover, if the independent variables are set at their mean values and the maximum likelihood predicted electricity price calculated, regulation is always found to lead to lower prices, sometimes by as much as 20%. It must be concluded that the actual empirical results presented by Stigler and Friedland do not support their very strong conclusions regarding the effects of regulation on electricity prices.

Turning from state to Federal regulatory commissions, Breyer and MacAvoy (1974) performed an extensive analysis of Federal Power Commission regulation of interstate natural gas pipeline companies, natural gas field prices, and interstate electric power operations. While there are serious questions about whether natural gas pipelines or interstate power operations have important natural monopoly characteristics (natural gas production certainly does not while the other two areas may have "natural oligopoly" characteristics yielding 2 or 3 firms of efficient size in the market), FPC regulation in these areas has been of the rate base-rate of return type used in traditional state public utility regulation. The Breyer and MacAvoy study of the FPC is one

of the few in the area of regulatory economics which attempts a comprehensive calculation of all costs and benefits, including administrative costs, associated with regulation.

With regard to the regulation of the natural gas pipeline industry, Breyer and MacAvoy conclude that the price reductions brought about by regulation were not much larger than the administrative costs of litigation. If this conclusion were based solely on their comparison of requested prices with final regulated prices, it would not be very convincing since there is no guarantee that requested prices are as high as the prices that could be charged if there were no regulatory authority (Joskow 1972). However, they also found that a comparison between actual regulated and unregulated transactions yielded little difference in prices when account is taken of the differences in the costs of transmission and the demand for natural gas.

In evaluating FPC regulation of interstate electric power, Breyer and MacAvoy concentrate on the FPC's planning function rather than on its regulation of interstate wholesale rates since that latter represent such a small proportion of total electricity sales in the U.S. They conclude that the FPC has been an abysmal failure in performing its rationalizing function that is supposed to lead to the creation of a reliable and efficient generating and transmission system in the U.S. This failure is not attributed to a lack of statutory authority (although the concerns of the Justice Department's antitrust division are not adequately presented by the authors) but rather from inherent difficulties of having an independent regulatory authority make complex managerial

decisions or in giving the proper incentives for managers to make these decisions themselves. In addition they point to the tendency of the FPC to face problems as they come before it rather than in engaging in long term planning.

Another area in which there has been great interest is the effects of public utility type regulation on innovation and technological change. This is one of those areas that everyone knows is important, suggest that further research be done, but for which very few generally accepted theoretical or empirical results have been forthcoming. Part of the problem is that the rate and direction of innovation, on a micro-economic level, is not particularly well understood in general, despite the considerable amount of research effort that has been devoted to it. This is not very surprising since the process of innovation is very complicated and since innovation can take many forms, from factor neutral reductions in the costs of production to the creation of new or higher quality products.

Westfield (1971) has attempted to provide an analytical framework for examining the impact of three types of regulatory practices--rate of return regulation, profit markup regulation, and ceiling price regulation on three types of innovations--Hicks - neutral, Harrod - neutral, and "the capital augmenting abverse" of Harrod - neutral. Westfield assumes that the objective of regulatory commissions is to yield lower prices and larger output than would result from an unconstrained monopolist. He finds that all three types

of regulation give some incentive for a firm to take advantage of technological change as long as the demand for the firm's product is elastic and that firms subject to rate of return regulation have a bias toward capital using innovations. No further general results are forthcoming and further results derived depend on specific assumptions about the demand curve and the production function. Once again the validity of Westfield's (1971) results depends critically on his characterization of the regulatory process, and his specification of the objectives of both regulators and firms. Regulatory lag has obvious implications for incentives to innovate for example. Regulatory commissions may have explicit objectives regarding innovation in general and particular types of innovations in particular. In addition, it is likely that regulated firms have more complex goals than pure profit maximization and may be able to pursue them in the insulated regulatory environment where the discipline of survival of the fittest is not important.

Bailey (1974) focuses on the use of regulatory lag to provide incentives to innovate. The longer are the lags between regulatory review the greater are the benefits that accrue to the regulated firm from cost reducing technical change and the larger the incentive to innovate. The shorter are the lags the closer are prices to costs, but the smaller are firm incentives to invest in R & D. Bailey's (1974) analysis is very similar to the optimal patent work of Nordhaus (1965) and depending on innovation opportunities, discount rates, etc. an "optimal" lag policy can be formulated. Bailey's (1974) work provides the dynamic framework that Westfield's (1971) lacks, but is also a

far less rich specification of technical change itself.

Empirical work on innovation by monopoly firms subject to rate of return regulation has not been extensive. Hughes (1970) has provided a very complete description and discussion of technical change and economies of scale in the electric power industry. He concludes that unrealized scale economies account for 4 to 10 percent of wholesale power costs. His conclusions, as those of Weiss (1975), and Breyer and MacAvoy (1974) result more from the present structure of the industry and implicitly FPC planning and Justice Department Antitrust policy than from the process of rate of return regulation itself. None of the implications of the Westfield and Bailey work are really observed by Hughes. His policy recommendations are directed more toward industry structure than towards the effects of particular policy instruments themselves. Further work with the large quantities of data available for electric utilities will almost certainly yield some richer results regarding technical change and innovation. Questions related to the diffusion of innovation in this industry are especially ripe for further analysis. Furthermore, why does an industry which makes use of so many innovations do so little research and development itself?

Hughes' paper does bring home some of the ambiguities associated with the traditional static micro economic dichotomy between technological change and economies of scale. The prevalence of new innovations to also imply larger optimal sizes raises profound questions about the utility of this dichotomy and the possibility that important forces linking size and innovation in a dynamic context are being overlooked in much of this analysis (Levin 1974).

The problems of empirical analysis of the effects of regulatory instruments on the behavior and performance of regulated monopolies is starkest in the case of technological change, but exists for static welfare analysis also. In most cases we are forced to perform an exercise in counterfactual history. What would the world look like if some regulatory institution did not exist? Unfortunately we are rarely given two bodies of comparable data to compare; one for firms subject to the regulatory institutions in question and a second set, identical to the first, except for the particular institution under investigation. We are left to "guess" at what the world would look like without the particular institutions. The guess usually consists of constructing a theoretical model of the "unregulated" firm and then simulating its behavior and performance rather than observing it in the real world. Such procedures are always open to serious questions, especially for industries which are either monopolies or oligopolies with high entry barriers. Since static and dynamic behavior of such industries are not well understood. Firms existing in such environments may adopt a wide range

of objectives and behavior since profit maximization is not necessary for survival. In addition the contractarian view of Williamson (1975) and Goldberg (1976) implies that such simulations are not very meaningful if they do not include attempts to capture the realities of private contracting institutions that would exist in such unregulated markets. This abstract simulation approach may be a crucial stumbling block to the implementation of "deregulation" recommendations since the nature of behavior and performance under alternative institutional arrangements remains uncertain without a more convincing specification of what the unregulated market would look like. Perhaps further attempts at international comparisons of industry behavior and performance will give us both a better feeling for the effects of regulatory instruments and suggest alternative institutional forms that lead to more desirable results.

Regulation In Industries With Competitive Market Structures

Any separation of regulated industries into "monopoly" and "competitive" market structures is naturally artificial. I base the separation on two factors that predominate in the regulatory economics area. First, a number of regulated industries have been continually pointed to be economists as sectors in which a movement away from regulation and toward competition would significantly improve industry performance; economies of scale and other market imperfections are not large enough to forestall workable competition. These industries include the airlines, surface freight transportation, taxicabs, railroads, insurance and deposit banking. Second, regulatory techniques regarding prices and entry are often different in these industries from the traditional rate of return -- legal monopoly orientation of traditional public utility type regulation. For example rate regulation in the property insurance industry is based on a return on sales formula (see Joskow 1974) and in trucking on an operating ratio basis.

Some of the most interesting analytical and empirical studies in the general area of regulation of competitive market structures has been in the air transport industry. Comprehensive studies of the air transport industry, its regulations and the effects of regulation have been produced by Caves (1972), Jordan (1970), Eads (1972 and 1974), Keeler (1972) and Douglas and Miller (1974). Virtually all studies conclude that the effects of CAB regulation of fares, routes and service quality has been to increase the costs of airline service and the prices charged for service far above what would be optimal given

consumer preferences. In addition the CAB has fostered rather than impeded price discrimination and encouraged substantial amounts of cross-subsidization among routes. CAB policy has been to fix minimum prices, but not flight frequency and other aspects of service quality, by firms authorized to operate on a particular route. As a result, competitive rivalry on multifirm routes has taken the form of service rivalry, often in the form of flight frequency and, where not controlled directly, in the form of service amenities such as meals, seat width, and lounge facilities. Competition occurs in dimensions other than price leading to suboptimal load factors, high average costs and prices, (Douglas and Miller, 1974: 90) and unnecessary frills, while at the same time continually driving earned rates of return to competitive levels or below. The analytical treatment by Douglas and Miller (1974), Eads (1974) and Devaney (1974) of competitive rivalry when minimum prices are fixed is especially interesting and provides a useful framework for analyzing the general problem of regulating multi-firm markets where entry and all dimensions of service quality are not controlled by the regulators. This general model is applicable to regulation of other multifirm markets such as trucks, taxicabs, property insurance and deposit banking.

Another interesting aspect of analysis in this area is the ability to actually observe the behavior and performance of an airline market not subject to CAB regulation, since unregulated intrastate operations exist between important city-pair markets in California. In comparing the California city-pair markets with markets of similar distance it is

found that average fares are lower and average load factors higher. Jordan (1970) and Keeler (1972) base their estimates of the losses from regulation by comparing fares or price-cost margins on regulated and unregulated routes. Douglas and Miller (1974: 42 n.9 and: 145) correctly point out that fares or price-cost margins cannot themselves give a correct measure of the inefficiency caused by regulation since load factors are higher on the unregulated routes and hence service quality (in terms of scheduling delay) lower. One must look at the price-quality combination and compare it with the optimum.

Because fares are higher than optimal, and load factors lower on many scheduled routes, the CAB has found itself in the position of continually fighting effective price decreases by placing strict regulations on cheap charter flights and on special discount fares aimed at particular classes of customers. Since fares are high and service quality high (in terms of flight frequency and the availability of scheduled flights) there are many customers who would gladly forego the high quality for lower fares. Scheduled and nonscheduled carriers have continually attempted to serve this market under the umbrella of high CAB controlled minimum prices. The existence of cross-subsidization among routes makes the situation even worse, with competition attracted to the "excess revenue" routes. The CAB thus finds itself in the unpopular position of protecting existing carriers (whose monopoly profits are eroded away by non-price rivalry) by opposing attempts to reduce fares through non-scheduled or quasi-scheduled flights and other innovations.

Scheduled carriers are themselves opposed to the cream-skimming since it reduces their profits even further than would occur through non-price rivalry. Perhaps more than any other American regulatory institution, the results of CAB regulations appear, over the long term, to benefit neither the airlines, nor the vast majority of consumers, but to result in very substantial welfare losses.

Most economists who have examined the air transport industry have recommended the elimination of regulated minimum fares and the suspension of entry restrictions on the major routes. Even in markets that can support only one or two carriers it is thought that easy entry will forestall serious monopoly price gouging (Eads 1970). While perfect competition may not result, it is thought that the performance of a competitive air transport market will be far superior to the performance under regulation. Improvements could theoretically be made in the current situation through mergers, capacity agreements, etc. (effecting non-price rivalry) plus detailed regulatory surveillance of these industry activities and associated fares, the task is thought by most to be inachievable in practice given the administrative and political difficulties of regulation in this area. In short, the solution of more regulation is thought to be far inferior to the solution of less regulation (Kahn (1970) vol. 2: 216).

Perhaps the largest body of literature analyzing and evaluating the effects of government regulation is in the area of surface freight transportation as regulated by the Interstate Commerce Commission (ICC). (See Meyer et. al, 1959, Adams, 1958, Friedlander, 1969, and Harbeson

1969 for example). Virtually all of these studies have been highly critical of government regulatory policy in this area.

The major industries over which the ICC has complete or partial jurisdiction over rates, routes and operating rules, and entry are railroads, trucking, water carriers and pipelines, with railroads and common carrier trucking being the most important. In general, the dissatisfaction with ICC regulation stems from a persistent attempt by ICC to restrict competition both between and within modes rather than to promote it. Ratemaking based more on value of service criteria and relative prices between modes rather than on costs, controls on entry and restrictions on the commodities that can be carried as well as controls over both investment and disinvestment (or abandonment) have reduced competition and led to serious economic distortions.

The ICC regulations make price competition between motor carriers impossible. In much the same way as in the CAB regulated air transport sector, minimum price regulation of a multifirm industry has led to non-price rivalry among competing carriers. This has caused increases in capacity, low load factors, increased average costs, and associated increases in service quality. Analytically the situation in this industry is identical to that in the air transport industry and the associated economic losses of the same type, although an analysis as sophisticated as that of Douglas and Miller (1974) has not been done for trucking. Moore (1975: 71) estimates that the minimum increase in cost due to regulation is \$1.4 billion per year in 1968 dollars, with much of this increase in trucking costs accruing to

Teamster union members in the form of higher wages.

ICC regulation of railroad rates and strict restrictions of railroad abandonments of unprofitable routes has led to substantial distortions here also. Friedlander (1969) estimated that the excess capacity caused by regulation cost \$2.4 billion dollars.

The ICC's preoccupation with preserving competitors rather than competition has retarded innovation and increased costs and prices over what they might be in a competitive market. MacAvoy and Sloss (1967) examined the effects of regulation on innovation and found that it seriously retarded innovation and thus led to higher costs. When the Southern Railway developed the "Big John" freight car and sought to use it to carry grain at reduced rates, reflecting the increased efficiency of the new large freight car, the ICC opposed the company's proposal in order to protect carriers who would lose business to the Southern Railway.

The ICC's regulation of rates seems more concerned that prices are not decreased and that prices of competing modes equalized than that consumers get the lowest cost and lowest priced service possible. The ICC allows carriers to file rates through legal cartels called "rating bureaus," which are essentially owned and operated by the industry. In 1974 only five percent of the rate increases proposed were even investigated. The ICC pays much more careful attention to attempts by individual carriers to deviate from bureau rates by filing rate reductions for certain services. When certain commodities have been removed by court order from ICC jurisdiction, rates have

invariably fallen (Moore, 1975: 59).

One major aspect of ICC rate policy has been to equalize rates for competing modes even when costs would justify lower rates for one mode than another. For example many commodities traveling long distances can be moved more cheaply by rail than by truck (Meyer et. al. and Friedlander). By using value of service criteria for establishing rates, rather than cost criteria some freight that would be more economically moved by rail gets shifted to trucks. Harbeson (1969) has estimated the loss from shipping by truck rather than by rail at between \$1.1 and \$2.9 billion.

It is not only through its rate policy that the ICC has caused distortions. Entry restrictions and operating rules lead to further increases in costs. The ICC's "Gateway" rule is a case in point. ICC regulated trucks may not be permitted to use the most direct route between two points so as to reduce competition on those routes. Instead they must pass through a "gateway" city, which may be far from the most direct route, to transport their cargo between the two desired points (Moore, 1975: 58).

All things considered, the efficiency loss from ICC regulation of surface freight transport appear to be very large. Economists' dissatisfaction with ICC regulation has been considerable and of long duration. Even the stated public interest motivation of creating the ICC to regulate the monopoly profits and discriminatory practices of railroads is viewed by students on all sides of the political spectrum with a jaundiced eye (Kolko, 1965 and MacAvoy, 1965). The extension

of ICC regulatory authority into the trucking (1935) and water transport (1940) industries to protect railroad interests has been viewed even less favorably. Moore (1975:72) estimated that nearly one third of the revenue generated in this sector may be pure waste. I think it is safe to say that most economists favor a significant amount of deregulation of prices, entry restrictions, operating restrictions, etc. Deregulation of trucking, where the arguments for regulation based on industry structure are weakest (Meyer, 1959) is almost certainly called for. Ample experience with exempt agricultural shipping and observations from other countries indicate that the industry would perform quite well. Similar deregulation arguments can be made for water transport where only a small proportion of the business is regulated now anyway. Even for railroads competition appears to be workable in many routes. Many regions of the country are served by three or more railroads (Moore 1975: 79). Trucks will provide effective competition for most short haul commodities and water transport, when available, effective competition for long hauls. The problems would lie primarily in long haul rail transport where water carrier competition does not exist. One possibility would be to restore competition to all areas except those in which monopoly appears to be an important problem, like in certain long haul rail routes. Moore (1975: 72-79) presents an excellent summary and evaluation of the policy alternatives.

Despite considerable rhetoric regarding deregulation in many sectors of the economy there has to date been considerably more talk than

action. There are a number of reasons for this. First there are legitimate uncertainties regarding the eventual behavior and performance of unregulated industries. This is especially true for deregulation proposals in industries which many people view as natural monopolies such as electric power. But it is also true in industries like air transport and railroads where unregulated industry structure will include no more than a handful of firms in most geographical markets. One's faith in deregulation depends on one's feelings about the ability of such oligopolies to keep prices far above costs.

The regulated industries themselves also tend to resist deregulation. In most cases it is not because they are earning high monopoly profits--over the long term airlines, railroads, and truckers have not had fantastic rates of return. Rather, it is the effects of deregulation on existing firms in the industry. One of the characteristics of each of these industries is that regulation has led to significantly more capacity than would exist in a competitive market. An immediate elimination of minimum price and entry regulation will lead to price wars and bankruptcies. This is the way the excess capacity will be shaken out of the market in the short run. The regulated industries naturally are reluctant to encourage such a situation. They are in a kind of "regulatory trap" (Tullock, 1975). Non-price rivalry and cream-skimming under regulation has driven profits to or below competitive levels at the same time it drives up costs and prices. In the long run firms in these industries would probably be no worse off without regulation, but in the short run they would be. From the viewpoint of existing firms there are transitional costs associated with

deregulation. For example, the current owner of a taxi medallion in all likelihood did not receive the benefits of entry limitation but would bear the capital losses associated with deregulation. Consumers would certainly be better

off with lower prices in both the short run and the long run. A scheme to compensate firms for the short run dislocations of deregulation paid for by the consumers who gain may be necessary to eliminate the opposition.

Regulators resist deregulation for two related reasons. Their own services would be in excess supply with the elimination of many of their responsibilities. In addition, many regulators have become more concerned with protecting existing competitors than with protecting competition. They are sympathetic to firm complaints that deregulation will drive some of them out of business or at least be financially painful and that service quality will be reduced even though such results may be economically efficient. Such a position derives in part from statutory and judicial requirements that themselves favor competitors rather than competition.

Despite these problems there are a few areas in which deregulation has been proceeding. Joskow (1973b) discussed the elimination of state regulation of property insurance rates. Joskow indicates that the favorable performance of competitive ratemaking in California, combined with serious performance problems for consumers, certain sectors of the industry, and the regulators themselves, led to the introduction of open competition in other states as well. Kahn (1970, vol. II) points to a number of rulings by the FCC regarding interstate telephone service that will increase competition for certain services. Recent activity by the Ford administration to establish a National Commission on Regulatory Reform as well as efforts to promote price competition in the transportation area and the energy area (See MacAvoy (1970) for a discussion of distortions from natural gas field price regulation, another market that many have pointed to as being at least workably competitive) have demonstrated a serious executive branch initiative for deregulation.

Other Areas of Industry Regulations

A number of important pieces of legislation passed during the last 25 years have moved government into areas of industry regulation which had beforehand been left to the workings of common law institutions such as property, torts and contracts. These statutes include the 1962 Amendments to the Food and Drug Act, environmental legislation passed over the last 2 decades, auto safety legislation, and various consumer protection laws. These laws are different in many ways from other forms of economic regulation that had traditionally been of interest to economists. Product prices, market structure, and profit levels are not being directly regulated, but rather the nature of the products themselves and how they are produced. In addition, these laws tend not to be administered through traditional quasi judicial independent regulatory commissions, but by administrative agencies with very different administrative procedures. Economic analysis of these regulatory institutions is just beginning and as a result, the literature to date is fairly small. But since this is an interesting area that is likely to attract considerable additional research, some examples of existing attempts at analysis are worth presenting.

Peltzman (1972) has tried to quantify the costs and benefits of the 1962 Amendments to the Food and Drug Act. Peltzman hypothesizes that the benefits from regulation can be measured by the extent to which drug purchases, arising from "misperception" of the efficacy of the drug, are reduced. In Peltzman's model drugs either perform less

well than advertised or not at all, but are not harmful. Presumably as a result of the amendments' requirements for more careful screening, the FDA keeps ineffectual or falsely advertised drugs off the market. Peltzman argues that in comparing regulated and unregulated periods of time (after adjustments to make them comparable) the effect of regulation will be observed as a change in the time pattern of demands. If regulation is effective the demand for drugs introduced in a particular year will decline less rapidly over time under regulation since the regulatory agency will do the "learning" and screening that consumers would have to do without regulation. The benefits of regulation can thus be deduced by comparing the changes in demands for drugs over time before and after the introduction of regulation. The major cost of regulation is the reduced flow of efficacious drugs to the market resulting from FDA regulatory procedures which delay the introduction of new drugs and screen out those that have some benefits.

Peltzman concludes that the costs of FDA regulation far exceed the benefits and that consumers have been made far worse off by the 1962 Amendments. In a devastating attack Nelson et. al. (1975) point out a number of critical problems with Peltzman's methodology. They argue quite persuasively that almost nothing can be concluded from the analysis of the aggregate demand for new drugs. Among other things, they question Peltzman's assumption that all consumers make the same kind of error in choosing new drugs. For example, without FDA scrutiny physicians may not prescribe a new drug until more evidence of its effects are known. Such behavior

would lead to movements of individual demand functions over time which are just the opposite of those proposed by Peltzman and could simply cancel out the behavior of some individuals who act as Peltzman suggests when the aggregate demand function is observed. This and other criticisms made by Nelson et. al. each points to an underestimation by Peltzman of the gains from the 1962 Amendments. One could also raise questions of the relevance of welfare analysis in a situation such as this where advertising has an important influence on consumer preferences and where there is no necessary link between actual drug consumption and physical effects. Is it a social loss if consumers are foreclosed from buying pink sugar pills which have no medical effect but which might be readily purchased for long periods of time just because advertising has convinced consumers that they are good for them?

Those who favor government actions like the 1962 Amendments to the Food and Drug Act, increased consumer protection legislation, safety legislation, etc., on public interest grounds, usually argue that there are consumer misperceptions that exist in certain cases. This situation arises where it is difficult, expensive or impossible for consumers to obtain the information necessary to make informed choices. Proponents of such regulation argue that the government can collect such information and help with screening more cheaply and in this way lead to an improvement in social welfare. Unfortunately very little theoretical research has been directed toward the consumer misperception problem. A paper by Spence (1974) deals very nicely with risk

misperceptions by consumers, but until further basic theoretical work is done in this area, empirical work seeking to quantify costs and benefits may fall off-target, if it must depend on traditional static welfare analysis where the informed consumer is taken as given.

Peltzman (1975) has examined certain aspects of auto safety legislation and concluded that regulation has not decreased highway deaths. His time series analysis indicates that deaths of the occupants of automobiles have declined but that this has been at the expense of more pedestrian deaths and more nonfatal accidents. Given the tremendous amount of research in the more traditional areas of government regulation and the increasing importance to the economy of these newer types of government control, I suspect that we will see considerably more research directed at evaluating the implementation of these statutes and other like them.

The Behavior of Regulatory Commissions

So far we have examined several theories of regulation and the effects of various regulatory institutions on the behavior and performance of particular industries. The theories of regulation that were discussed, whether they were "public interest" theories or "self-interest" theories were essentially "black box" theories. That is to say, the organizational structure of the regulatory institutions, the nature of decision making processes, and the way the behavior of regulatory institutions change over time were not developed in any depth. In a fundamental sense the treatment of the behavior of regulatory institutions, especially under the self interest theories, is much like the treatment of the firm in neoclassical economic theory. Regulatory commissions are assumed to have certain objectives (like reducing monopoly distortions or maximizing some more complicated objective function) subject to some set of economic or political constraints. Similarly, the literature on the effects of regulation on industry behavior and performance assumes the existence of some fairly simple instruments or constraints on firm behavior and analyzes the profit maximizing response of particular firms and industries. Neither strand of the economics literature has given much attention to the decision making processes or administrative behavior of regulatory institutions themselves. This is especially true with regard to feedback between firm behavior, performance, the economic environment and regulatory behavior itself. It is the belief of the author that one cannot understand the effects of regulation or pursue regulatory reform without a better understanding of how the regulatory process itself works.

Most regulatory institutions are established under statutes prescribing authorities, organizational structure, and particular policy instruments which are not particularly precise. A mandate that the regulatory commission should ensure that rates be "just, reasonable, and nondiscriminatory" does not give too much guidance to the regulatory commission regarding the precise definition of these terms. Nor does it specify in detail the procedures that the commission should follow in arriving at decisions once some kind of operational meaning is given to the statutory mandates. Once a regulatory organization is established it develops behavioral patterns and a dynamic of its own. Political and economic circumstances which led the legislature to establish the regulatory authority may have very different effects on the actual regulatory organization itself. Perhaps more importantly, over time, the political, economic and underlying legal environment may change, in part from forces that are not subject to the control of the regulatory authority and in part from endogenous political and economic consequences of regulation itself which result from the effects of regulation on the behavior and performance of the regulated industry.

In reality, regulatory commissions have objectives, motivations and responsibilities far more complex than "setting price equal to marginal cost subject to a profit constraint" or "maximizing the present worth of the incomes of commissioners." In addition many regulatory commissions are themselves complex organizations. Not only are there regulatory commissioners, who may be appointed or elected

and whose terms of office may or may not be coterminous with the executive, but also a Civil Service staff including attorneys, accountants, engineers and other administrative staff. As in any complex organization or bureaucracy, individuals and groups within the organizations have differing conceptions of what they should be doing and what their contribution to the output of the organization as a whole is or should be. In addition, regulatory commissions are themselves intimately related to the judicial systems at both the state and federal levels. Procedures for making decisions on such things as the price of a KWH of electricity, the siting of a pipeline, or the location and structural characteristics of a nuclear power plant must not only be consistent with statutory requirements as interpreted by the courts, but also adhere to complex and changing due process requirements (Stewart, 1975). Regulatory commissions cannot adopt just any procedures that they might choose, but are constrained by court-enforced constitutional due process requirements. To say that a regulatory commission has made a decision which leads to some inefficiency in a narrow economic sense is not to say very much without proper consideration of constraints of equity, justice and due process within which decisions must be made. American regulatory procedures and behavior increasingly reflect requirements that the process by which decisions are made be "fair" not only to the regulated firm but to other concerned parties as well. Stewart (1975) indicates that administrative law has moved steadily away from recognizing the rights of property interests regulated to a more expansive conception of balancing the interests of many different groups affected directly or indirectly by regulatory commission actions.

Complex organizations are often thought to behave according to a

logic internal to the organization itself. Organizations do not act independently of the economic environment, but develop stable behavioral patterns to process information and to perform actions, at least in the short run. Organizations like firms, government agencies or regulatory commissions develop these decision making rules along with and according to their own conceptualization of the environment in which they operate. They perceive the environment as having a particular structure. This structure includes a notion of who the relevant economic actors are, how they behave in response to various stimuli and how they relate to one another. The organizations not only possess decision rules for processing information but their conceptualization of the world -- the organization's perceived structure of the world (or that of its constituent parts) defines the kinds of information that are observed and digested for processing. For all intents and purposes the organization's perceptions constitute the reality in which the organization operates. The structure of the environment that the organization perceives may be quite different from the "objective reality" of the environment. But this structure or model of the economic and political environment "works" from the viewpoint of the organization, in that it consistently explains the behavior that is of concern to it.

In the longer run, many students of organizations view organizational structure and behavior as adaptive, responding, often slowly, to changes in the external environment in which the organization operates as short run decision rules no longer seem to "work" satisfactorily (March and Simon, 1959: 168-70 and Cyert and March, 1963).

It is not only the decision rules which must often change over time, but the structural conceptualization of the environment as well. If decision rules are not easily modified in the context of the organization's perception of the structure of the world, serious adaptive problems can arise. A new conceptualization of the world may arise and a new set of decision rules consistent with it developed. Alternatively the organization could become disfunctional if it does not possess the capability to deal effectively with changed circumstances in the "real" environment.

As Allison (1972) has nicely demonstrated the "conceptual window" through which we view organizations, in particular bureaucratic processes, has critical implications for our ability to predict behavior, especially behavior that is not routine. Work by Niskanen (1971) and Downs (1967) dealing with government bureaucracies argue persuasively that the complex patterns of goals and behavior which characterize government organizations makes it extremely difficult to predict the outcomes of such processes by merely looking at the motivating forces behind their initial establishment. So even if one variant of the "market failure" or "capture" theory correctly captures the raison d'etre for the establishment of regulatory commissions, these theories may not be particularly useful for understanding the behavior of such agencies over time. In addition, the pluralistic character of much regulation in the U.S., involving overlapping and often ambiguous jurisdictions among different regulatory agencies and between regulatory agencies and the judicial, executive and legislature branches, seems to make a more expansive conceptualization of regulatory

processes imperative. Such conceptualization would include more of an emphasis on regulatory tasks and goals regarding a particular regulated industry, how they are transformed into regulatory procedures and how they change over time.

Extensive attempts at modeling the behavior of regulatory agencies and regulatory processes have not as yet been forthcoming. Joskow (1972) examined the behavior of the New York State Public Service Commission with regard to the process of setting the allowed rates of return in formal regulatory proceedings. He found the commission's behavior to be stable and predictable but uncovered some adaptive behavior in response to problems engendered by rapid inflation. In a more general study of state public utility regulation Joskow (1974) presents a model of a "passive" state regulatory agency whose behavior adapts to pressures from the economic and political environment in which it operates and shows how rapid inflation and the recognition of environmental groups as intervenors in administration procedures cause change in the behavior of the commission and the results of the regulatory process. The inter-relationship between commission tasks, the economic performance of the regulated firms, and specific regulatory procedures is emphasized in this study.

Joskow also points to another important aspect of regulatory behavior that has often been overlooked in analysis of the effects of government regulation on industry behavior and performance. Much of what we know about what regulators do comes from hearings, court cases, commission opinions (MacAvoy 1971) and the statutes authorizing the regulatory authorities. These documents and the process they describe

represent the formal regulatory process; the documented legal process open to the public eye for inspection. It represents the occasional contacts between the regulators and the firms that they regulate in formal regulatory or court procedures of one form or another.

Joskow (1973a) suggests that there also exists an informal regulatory process representing the day to day contacts between the agency and the firms. This process may involve discrete prior consultation between the firms and the agency regarding the size or timing of a proposed rate increase, the site for a proposed power plant, moral suasion regarding service quality, executive salaries, etc. Joskow (1973a) points to the price reductions filed by many New York State electric utilities during the 1960's, in the absence of formal regulatory reviews or other overt legal acts of the regulatory commissions, as the result of moral suasion and behind the scenes bargaining between the staff of the public utilities commission and the firms concerned. This informal regulatory process represents an attempt to short-circuit many of the time consuming procedures inherent in the due process oriented structure of American regulatory institutions. Commissions view such ongoing informal activities as being necessary if they are to perform their tasks efficiently. Commission staffs seem to believe that many of the formal legal procedures would waste time without altering any of the final outcomes and that the informal regulatory process is in the public interest. Without making any normative judgment regarding whether such informal regulatory processes are good or bad, it must be said that in many cases they are extremely

important for understanding both agency behavior and the behavior and performance of regulated firms.

As a general matter, there is a growing tension in American regulatory institutions between due process oriented "open regulation" and bureaucratic discretionary "closed regulation." The requirements of open hearings, testimony and cross examination by all interested parties, court review, etc. in some sense represents a "fair" set of procedures for making decisions. At the same time it can be very time consuming, cause costly delays in policy implementations, and some would say (although this author would disagree) have little effect on the final decisions of the commission (See Joskow 1972, for the effects of intervenors on allowed rates of return). Critics of the quasi-judicial orientation of American regulatory institutions see these procedures as being very costly and inefficient and have recommended the elimination of many of these due process structures (See Noll 1971, on the Ash Commission Report) replacing them with more authoritative bureaucratic "closed" decision making structures. A tendency to try to eliminate as much of the regulatory process from the open or formal regulatory procedures and to replace it with ad hoc decision making by bureaucrats or formal decision rules (perhaps like automatic fuel adjustment clauses for electric utilities) is part of the dynamic of most regulatory agencies. A countervailing force is the increased requirements by the courts that decisions be more open and that more interest groups be recognized as having standing. Whatever the motivation of the commissions -- whether it be the accumulation of bureaucratic power, overt attempts to keep certain groups from being heard or an honest belief that the tradeoffs between due process and administrative efficiency are weighted too heavily

toward due process -- the phenomenon is an important one for understanding the dynamics of regulatory processes and why regulators may do certain things that on the surface seem to be either stupid or venal. In addition, since the regulatory agency depends on the firms that it regulates and other interest groups that appear before it regularly to provide it with information and policy alternatives, there is a natural bias towards considering those interests that have the money to make their cases heard and the necessary information to help the commission arrive at legally acceptable decisions.

The time consuming nature of hearings, court reviews, etc., inherent in American regulatory institutions can cause delays in decision making that can themselves have important effects on industry behavior and performance. Such effects are often undesirable from the viewpoint of the commission or one or more interested parties. Initial attempts by the FPC after 1954 to regulate every contract between pipelines and natural gas producers using traditional case by case regulatory techniques led to fantastic backlogs, required continued use of temporary contracts and was generally an administrative nightmare. To deal with this problem the FPC instituted area rate proceedings in 1961, the legality of which were challenged in the courts and not finally decided on until 1968. As a result final legal prices went into effect in 1968 based on cost, demand and other information from 1960. Regulated prices have continued to lag behind those that would equate supply and demand, causing supply shortages and forcing the FPC to get into the rationing business as well as the price regulation business.

Similar administrative delays have emerged in state public utility commissions during the 1970's as a result of rapid inflation (Joskow 1974). Historical cost rate making procedures, the necessity of using the formal hearing process to continually adjust price upwards to meet

using costs have led to a situation in which prices lag behind the costs of production. Electric utility industry financial performance has deteriorated significantly as a result during the 1970's. Joskow and MacAvoy (1975) predict serious financial problems and possible supply shortages if current regulatory procedures continue in the presence of rapid inflation and high interest rates. The commissions have tried to adapt by using automatic adjustment clauses, future test years, etc., but at least for a period during the 1970's the regulatory process for electric power became essentially dysfunctional, with the commissions knowing that something was wrong, but not quite knowing what to do about it.

The institutionalization of "contestation" or controversy in American regulatory institutions has important effects on the regulatory agency's perception of itself, its role, and its behavior. Breyer and MacAvoy (1974: 55) contend that in regulating natural gas pipelines the FPC took on the role of arbitor, seeking to reduce controversy between the pipeline companies, busying itself assembling information about expenses that could be documented by its accountants. When it absolutely had to act in the more controversial matter of setting profit limits, the FPC proceeded as "inoffensively" as possible, choosing rates of return by reference to estimates outside the regulatory process (such as 'comparable earnings'). Taking this means to reduce controversy closes off the possibility of achieving significant

economic results through regulation. Joskow (1974) has observed a similar tendency to reduce controversy on the part of state public utility commissions in their regulation of electric utility rates.

In studying the behavior of regulatory institutions over time, a number of authors have pointed to the tendency of regulatory authority to spread beyond its original boundaries (Kahn, 1970 vol II: 28). In many instances, this tendency demonstrates what McKie (1970) has called the "tar-baby effect." A regulatory agency may attempt to implement some policy using a particular regulatory instrument, but the effect of the application of the instrument is not what is expected or is undesirable in terms of some other objective of the regulatory commission. The agency then tries to correct its initial inadequacy or mistake by extending its regulations to other aspects of firm or industry behavior or even to other industries.

The behavior of the CAB represents an interesting example of the tendency of regulation to spread in a situation where regulation tends to limit competition instead of to promote it. Since price regulation alone can be evaded in regulated multifirm markets by rivalry in service and quality, it led to regulation of seat configurations, meals and other amenities, lounge space, etc. Regulating competitive market structures is like trying to plug a leaky dike. The hand of regulation plugs up one hole only to find that a leak springs up somewhere else. Regulation in the U.S. often seems to be at least one leak behind.

The history of the expansion of ICC regulation of surface freight transport provides further examples of how competition can thwart regulators' attempts to preserve uneconomic activities and to subsidize some services by raising prices above marginal costs in other markets (Kahn, 1970 vol II: 11-28). When the trucking industry began to take large amounts of traffic away from the railroads during the 1930's, the ICC, with the encouragement of the railroads, sought to suppress such competition. As a result, in 1935 Congress gave the ICC the power to regulate large segments of the interstate trucking industry. The power to regulate segments of the water transport industry which competed with rail and truck transport was given to the ICC in 1940.

FPC attempts to regulate natural gas field prices have not only led to an excess demand situation, but has also caused a diversion of dedicated natural gas supplies to intra-state markets where the FPC does not have jurisdiction. As a result there have recently been several suggestions to extend FPC jurisdiction to such intra-state markets. It should be recalled, however, that the FPC did not want to regulate natural gas field prices, but that the responsibility to regulate sales to pipelines was thrust upon it by the Federal courts in 1954. The justification for regulation to spread in this case was in part that FPC responsibilities to control the prices charged for gas by interstate pipelines could only be effective if the prices paid by pipelines for gas in the field could also be controlled, since the cost of this gas was such a large part of the final cost of gas delivered to consumers. The FPC resisted such increased regulatory

authority because it realized that the task presented enormous administrative problems and would likely make its other tasks more difficult to achieve.

There appears to be a tendency for regulation to spread in another dimension also; from state responsibility to Federal responsibility. Technological changes in such areas as pipeline transmission, power transmission, telecommunications advances, etc. have tended to turn once local markets into regional or national markets. State and local authorities do not possess the powers to properly regulate markets which extend across state lines. Federal authorities such as the Federal Power Act of 1935 and the Natural Gas Act of 1938 have evolved to deal with such changing spacial market structures. Technological change can also change once monopolistic industries into potentially competitive industries or in an economic sense even replace particular industries. Weiss (1975) suggests that increasing size of electricity markets, advances in long distance transmission, and computer techniques for central dispatching of electric generating facilities has changed the optimal structure of the electric utility industry and has made increased competition both feasible and desirable. Since regulatory commissions seem to have a statutory and administrative bias toward the protection of industries in being, much distortionary regulatory behavior in areas like transportation and communications has been the result of attempts to thwart "creative destruction" via technological change. American regulatory institutions have been generally unable to simulate the changing market structures and economic "destruction"

of particular firms and industries that would occur, to the benefit of consumers, in competitive markets.

Finally, the ability of regulatory agencies to expand their regulatory authorities, whether for general bureaucratic tendencies, to accumulate more power or authority, or to attempt to plug more of the leaks in the dike is facilitated by government budgetary policies. Noll (1971) contends that many regulatory agencies do not use additional budgetary allocations to improve their performance in existing tasks, but rather to expand the tasks that they perform.

Viewing regulatory commissions as organizations and concentrating on the process of regulatory decisionmaking gives important and useful insights into what is actually happening. The attempts to model and understand regulation from this perspective often give researchers a more complete static and dynamic structural model of regulation rather than just a reduced form. For those interested in incremental policy reform within the context of prevailing institutions as well as exploring possible institutional alternatives such structural models are extremely useful for positive policy analysis.

While both the market failure and capture theories have fairly specific normative implications, the organizational approach to understanding regulatory processes seems to be much more descriptive. Depending upon which theoretical conception is to be used, this is not necessarily a drawback of the organizational approach. If it is a predictive or "manipulative" theory that we seek; a theory that allows us to predict the effects of exogenous shocks on the system in

terms of actual behavior and endogenous feedback mechanisms, a good positive theory is really what is called for. To the extent that the organizational approach can provide such positive models (and I believe it can) it should be pursued more vigorously as a way of understanding regulatory processes at points in time as well as over time.

Conclusion

American experience with government regulation of industry as reviewed through the eyes of American economists has taught us a number of important lessons. The lessons concern both the effects of government regulation on industry behavior and performance and the methodology used by economists for evaluating such institutions. In concluding this essay let me sketch out that some of the important lessons to be learned seem to be.

1. Most American economists continue to believe the market imperfections exist in many sectors of the U.S. economy. While in theory there exist policy instruments that could deal with such imperfections and improve resource allocation in the economy, practical implementation through independent regulatory commissions is much more difficult than many had once thought. Whatever the public interest justification for regulations might be, regulatory institutions in the United States are inherently political institutions embedded in a judicial review system that has certain important behavioral characteristics. As a result, regulatory agencies often become heavily involved in questions of the distribution of the benefits and costs of regulation, seek to avoid controversy, are constrained by judicial principles of due process and "fairness" in performing these tasks and often lose sight or cannot contend with issues of economic efficiency narrowly defined.

2. While unregulated, but imperfect markets may lead to resource misallocations, the medicine of regulation often leads to results that are worse than the original disease. In many industries regulation has both hurt the vast majority of consumers and given little long run benefit to the regulated industries themselves. Regulation performs worst in multifirm industries such as those in the transport sector, and performs best in those sectors that seem to have natural monopoly characteristics. We don't yet know enough about the effects of government regulation of the environment, product safety and product quality to come to a verdict on regulatory efforts in this area.

3. Regulation has a tendency to spread. Both because of the "tar-baby effect" and because of the natural tendencies of many bureaucracies to extend their power, once a regulatory authority is established it will, over time, extend the scope of its regulatory authority.

4. Regulation doesn't go away even when the original reasons for its adoption no longer exist. Instead of encouraging changes in market structure and technical innovations that might reduce the need for government regulation, many regulatory commissions thwart both. This is partially for reasons of self-protection, but more importantly the result of a pervasive bias in regulatory procedure, arising in part from due process requirements of American law, that protects firms and industries in being (existing competitors), rather than competition.

5. The quasi-judicial character of American regulatory institutions favors interest groups which have the resources to participate in regulatory proceedings and to provide resources and information to the regulatory commission. Since regulatory statutes are vague and commission decisions can be appealed to the courts, the commission's perceptions of the "public interest" are often shaped by the views of the groups that appear before it.

6. Regulatory organizations possess a dynamic of their own. They respond to changes in the political and economic environment in which they operate, but often quite slowly. It often takes some kind of a "crises" resulting from commission actions or inaction for significant changes in regulatory behavior to take place.

7. Economists have concentrated on the performance of regulatory institutions based on narrow economic efficiency considerations, paying little attention to regulatory processes and how they work and change, ignoring other considerations besides economic efficiency. Their calls for reform have generally been for deregulation rather than improved regulation and have generally fallen on deaf ears.

8. The basis of economists' condemnation of regulatory institutions is often far less convincing than the profession itself might think. Most empirical work must be based on "simulating" an unregulated world, rather than on direct comparison of the behavior in regulated and unregulated sectors. One's faith in the validity of such simulations depends on how closely to the idealized competitive market model one believes the actual deregulated market will be. The deregulation alternative has been most convincing where actual examples of unregulated markets, which have

performed well, could be pointed to.

9. The failure or inability to recognize the actual institutional realities of firm behavior and performance in "unregulated" markets such as the nature of private contracting institutions makes the general case for deregulation very unconvincing to many outside of the economics profession. Further work along the lines of the "contractarian" view of Williamson (1965) and Goldberg (1966) is important for clarifying and conceptualizing these issues more clearly.

All things considered, the general case for deregulation is unconvincing. The economists' analysis of the free market alternative to government regulation can be convincing only on a case by case basis. One cannot adequately condemn the diseases of regulated markets without also considering carefully the diseases that would accompany unregulated markets. And even if we can conclude, as I believe we can in many regulated markets today, that the medicine of regulation is worse than the diseases of unregulated markets, it doesn't necessarily mean that no other medicine is available and that we must suffer with the disease of unregulated markets. I am continually impressed by the fact that most of the important regulated industries in the United States are either Public Enterprises or regulated in other developed western economies. Perhaps there are technological and social characteristics of these sectors other than narrow scale economy issues which lead to poor market performance. Perhaps particular social goals can only be effected with regard to particular commodities. If such is the case, the poor performance of existing American regulatory institutions should not necessarily lead us to abandon the field to market forces entirely, but to search for alternative institutional arrangements for achieving the specified social goals. Perhaps a greater understanding of

the behavior of regulatory institutions, and a more complete understanding of the institutions that go along with so called unregulated markets, will make more socially and politically acceptable regulatory reform proposals possible.

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