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The Political Economy of Industrial Regulations:
A Survey with Implications for Regulation Studies
in Developing Countries

Pablo T. Spiller
Senior Research Fellow
Hoover Institution, Stanford University

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Development Research Department
Economics and Research Staff
World Bank

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The purpose of this paper is twofold: On the one hand it surveys the main empirical findings (and their theoretical foundations and implications) of the last two decades of research in the political economy of regulation. On the other hand, this paper is also intended to help in the development of a methodological framework for future regulatory research in developing countries. Thus, it postulates several basic implications about the causes and effects of industrial regulations, and contrasts them with the available evidence on the extent and impact of several regulations in developing countries.

Three main implications can be derived from this survey and are then analyzed for specific cases of industrial regulations in developing countries: first, the enactment of a regulation requires the development of a political coalition. Thus, its enactment will require regulatory adjustments to the interests of the different groups of customers and producers. Second, regulations will have "side-" or "unpredicted" effects, such as the reduction in the extent of competition among the firms, inefficient use of inputs, suboptimal provision of quality, inefficient pricing policies. Finally, regulations adjust to changes in the environment. This adjustment, however, may be conditioned by the current political institutions, which may retard or facilitate the regulatory changes.
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Pablo T. Spiller*
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I. Introduction.

The purpose of this essay is twofold. On the one hand, it is intended to provide the reader with an updated survey of the main empirical findings (and their theoretical foundations and implications) of the last two decades of research in the political economy of regulation.

On the other hand, this paper is also intended to help in the development of a methodological framework for future regulatory research in developing countries. Thus, based on the survey of regulation studies, it postulates several basic implications about the causes and effects of industrial regulations, and contrasts them with the available evidence on the extent and impact of several regulations in developing countries. Moreover, it also identifies some industrial regulations that could serve as pilot case studies for future research.

Most of the recent empirical and theoretical regulatory research has been focused on the United States. Thus, the survey of recent research will necessarily concentrate on the analysis of regulatory institutions in the United States. Since regulatory and political institutions are peculiar to each country, the empirical findings about "causes and effects" cannot be simply transplanted to developing countries. A methodological translation is then required. This paper provides a first step towards that task.

The paper is composed of two parts. In the first part I present a brief description of the scope and development of regulations in the United States, and survey the main empirical findings of the last two decades of research, which followed the seminal work by Stigler and Friedland.¹ Since

¹George J. Stigler and Claire Friedland, "What Can Regulators Regulate? The (Footnote continued)
the purpose of the survey is to draw lessons from the recent empirical work, I will discuss the theories that provided the framework for the empirical analyses. Theories of regulation are of two types: those that analyze the development of regulations as an outcome of some sort of political process, and those that, by analyzing market failures, derive optimal regulatory schemes. Each set of theories imply very different questions to be analyzed empirically. Thus, a discussion of the theoretical framework is essential to the understanding of the subsequent empirical work. I will not, however, discuss theories of regulation that have not provided empirically testable implications.\(^2\) Undoubtedly, much will be left out, but it is my belief that in this way the reader will receive a coherent view of the recent developments in the field.

In the second part, I develop the implications for regulatory analysis in developing countries and survey some of the available evidence on the causes and effects of industrial regulations across developing countries. I concentrate the analysis mostly to trucking, pollution control and the regulation of the cement industry. The discussion in this section complements the discussion of the first part. On the one hand it presents evidence on the effects of regulations which are free of the idiosyncracies of U.S. regulatory and political institutions. On the other hand, it

\(^1\) (continued)


\(^2\) Because of the recent survey by Joskow and Noll (which covers published work mostly until 1977), I will not examine portions of the literature that were surveyed at length in their work (particularly models of optimal regulatory pricing, e.g. peak load pricing, optimal pollution control), nor discuss empirical work up to the mid 1970's which was covered in their survey. See Paul L. Joskow and Roger C. Noll, "Regulation in Theory and Practice: An Overview," in Gary Fromm (ed.), *Studies in Public Regulation*, Cambridge: MIT Press (1981).
outlines ways to study the political economy of industrial regulations that take advantage of cross-country differences in the type and extent of industrial regulations. This study should in principle, provide answers to many of the questions which single country - single industry studies, like most studies reviewed in the first section, leave unanswered.

Building Blocks of a Theory of Regulation.

Regulatory decisions are endogenous. They are the result of a process by which the revelation of private demands, constrained and motivated by technology and the environment, are translated, through a political filter, into regulatory policy and action. There are, then, two main building blocks to a theory of regulation: a) the demand side, that is, the identification of individuals' regulatory demands; and b) the political supply side, that is, the mechanism by which private demands are translated into policy.

A 'truly general' theory of regulation will start with the smallest possible set of assumptions about each side of the 'regulatory market,' and endogenously derive their workings. Our understanding of regulation has not yet reached such a level. Current theories of regulation emphasize partial aspects of the 'regulatory market' by assuming its remaining parts as neutral in determining regulatory policies and action. For example, the public interest view of regulation does not allow any role to the revelation of individuals' demands nor to the workings of the political supply side. Essentially, it presumes a benevolent government basing its decisions on technological and aggregate social demands. Similarly, the capture theory of regulation presumes a very peculiar demand revelation process, where only the demands of the regulated firms can be translated
into political decisions. On the other hand, while the 'self-interest' theory of the early 1970's allows the different sectors in the economy to influence regulatory decisions, the supply side is 'neutral:' it is assumed not to have the power to affect the regulatory outcome. Other theories, while recognizing the importance of the demand revelation process, emphasize the role of the political supply side in determining the regulatory outcomes, by either analyzing the political institutions that affect the translation of demands into policies, or by analyzing the effects of technology and the environment on the workings of the supply side.
II. The Scope of Industrial Regulations in the United States.

The federal regulation of industry in the United States is two years short of its 100th birthday. While already in colonial times industry and trade experienced some sort of federal regulation, the Interstate Commerce Act (1887) started the modern era of regulation by imposing detailed control of interstate rail rates and service (i.e. entry). Paralleling the start of the modern Regulatory era, starts the modern era of Antitrust with the passage of the Sherman Act in 1890. Since then, the regulation of fares and services was extended to the transportation of passengers and freight by air (1934), truck (1935), and water (1940), to interstate oil pipelines (1909), to interstate telephone and telegraph (1910), to radio and television broadcasting (1927), to interstate electricity (1935) and gas (1938) transmission, to financial institutions (1933), to the issue of new securities (1934), to natural gas field prices (1954), to cable television (1972) and to crude-oil and refined petroleum products following the OPEC oil embargo of 1973.4

Similarly, antitrust regulation was expanded to include price discrimination, tie-ins and interlocking directories (1914), unfair methods of competition (1914), deceptive commercial acts (1938), and mergers (1950).

The regulation of industries experienced a qualitative change in the late 1960's, when the regulatory emphasis changed from entry and price

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3 Telephone and telegraph services are also regulated at the state level. I will usually abstain from mentioning state regulation unless the industry is not regulated at the federal level.

4 It can be said that the regulation of crude-oil and refined petroleum products was the last important increase in the scope of 'traditional' price regulation.
regulations to (what for lack of better name could be called) 'social' regulations, that is, the regulation of information, health, safety and environmental quality. While such regulations existed well before the 1960's, most of the federal agencies engaged in 'social' regulation were established during the last twenty years.

Together with the increase in 'social' regulation, there has been a shift away from regulating entry and prices in several industries, particularly in transportation, telecommunications, energy and banking. The main deregulatory changes since the 1970's are presented in Table 1.

These regulatory changes have dramatically altered the regulatory scene. While entry and price regulations are still in effect in many sectors, the administration of price and entry regulations is performed mostly at the state level, while federal agencies devote themselves mostly to 'social' regulations.

As we will see below, the theoretical work in the field of regulation

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5 A partial list would include the regulation of meat products (regulated since 1916), labeling of foods and drugs (1931), most farm products (1937), and air-traffic safety (1938), as well as the FTC deceptive advertising policy.


7 An interesting exception is the Nuclear Regulatory Commission which licenses nuclear plants. Some federal regulatory agencies have even disappeared (e.g. the CAB). Another interesting pattern of agency behavior, (Footnote continued)
<table>
<thead>
<tr>
<th>Year</th>
<th>Deregulatory Decision</th>
<th>Agency</th>
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<tr>
<td>1971</td>
<td>Specialized Common Carriers Decision</td>
<td>FCC</td>
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<td>1972</td>
<td>Domestic Satellite Open Skies Policy</td>
<td>FCC</td>
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<td>1975</td>
<td>Abolition of Fixed Brokerage Fees</td>
<td>SEC</td>
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<td>1976</td>
<td>Railroad Revitalization and Reform Act</td>
<td>Congress</td>
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<td>1977</td>
<td>Air Cargo Deregulation Act</td>
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<td>1978</td>
<td>Airline Deregulation Act</td>
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<td>Standards Revocation</td>
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<td>Emissions Trading Policy</td>
<td>EPA</td>
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<td>1979</td>
<td>Deregulation of Satellite Earth Stations</td>
<td>FCC</td>
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<td>1980</td>
<td>Motor Carrier Reform Act</td>
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<td>Household Goods Transportation Act</td>
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<td>Staggers Rail Act</td>
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<td>Depository Institutions Deregulation and Monetary Control Act</td>
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<td>International Air Transportation Competition Act</td>
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<td></td>
<td>Deregulation of Cable Television</td>
<td>FCC</td>
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<td></td>
<td>Deregulation of Customer Premises Equipment and Enhanced Services</td>
<td>FCC</td>
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<tr>
<td>1981</td>
<td>Decontrol of Crude Oil and Refined Petroleum Prods.</td>
<td>Executive</td>
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<td>Truth in Lending Simplification</td>
<td>FRB</td>
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<td>Auto Industry Regulatory Relief Package</td>
<td>NHTSA</td>
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<td></td>
<td>Deregulation of Radio</td>
<td>FCC</td>
</tr>
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<td></td>
<td>Partial Relaxation of Vertical Restrictions</td>
<td>Justice Dpt</td>
</tr>
<tr>
<td>1982</td>
<td>Bus Regulatory Reform Act</td>
<td>Congress</td>
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<td>Garn-St Germain Depository Institution Act</td>
<td>Congress</td>
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<td></td>
<td>Deregulation of Resale and Transponders</td>
<td>FCC</td>
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<td></td>
<td>New Merger Guidelines</td>
<td>Justice Dpt</td>
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<tr>
<td>1984</td>
<td>Deregulation of Long Distance Telephone</td>
<td>FCC/Justice</td>
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Note: FCC = Federal Communications Commission; SEC = Securities and Exchange Commission; OSHA = Occupational Safety and Health Administration; EPA = Environmental Protection Agency; NHTSA = National Highway Traffic Safety Administration, FRB = Federal Reserve Board.

has not provided yet a consistent explanation for these drastic changes.

(continued)

is that half the regulatory changes presented in Table 1 were performed by

(Footnote continued)
There seems to be light, however, at the end of the tunnel.

7(continued)
the regulatory agencies themselves. Moreover, even in those instances where Congress legislated the regulatory change, the commission in charge was already deregulating the industry by itself. For an example see the discussion of the origins of the motor carrier transportation regulatory changes in Thomas G. Moore, "Deregulating Rail and Truck Transportation", Hoover Institution Working Papers in Economics No. E-84-5 (April 1984).
III. Theories of Regulation.

Two main theoretical approaches have provided the framework for empirical analyses in the field: the "public interest," and the "self-interest." This section discusses the empirical findings as they relate to the different theoretical developments.

a. The Public Interest Approach.

Early analyses of industrial regulations were a spin-off from the study of optimal taxation, and developed in what is now called the 'Public Interest' approach. This approach, which was the prevailing view on regulation until the 1960's, suggests that regulatory interventions respond to the presence of market failures.

Market failure is the basic rationale for the regulation of public utilities, which are, supposedly, characterized by strong economies of scale. In the presence of strong economies of scale, it is argued, setting entry and price limits would eliminate the duplication of facilities as well as the exercise of monopoly power that may exist.

This view, however, has been contested by Demsetz who argued that in the presence of economies of scale, bidding the right to serve the market

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9 In Munn v. Illinois [94 U.S. 113 (1877)] the U.S. Supreme Court stated that "private property affected by a public interest" can be subjected to regulation, thus opening the way for the regulation of public utilities.


would be a more efficient institutional alternative than straight regulation. A similar view is taken by the 'contestable markets' approach. This approach postulates conditions under which, in the absence of sunk costs, a natural monopoly will set prices that, while not promoting entry, will provide it with a normal return.

The 'contestable markets' approach, however, requires extremely stringent conditions so as not to regulate a market. Two types of conditions are presented. First, the absence of sunk investments provides free entry and exit into the industry, and makes it in principle 'contestable'. Second, a set of demand and technology conditions are presented so that the market equilibrium be 'second best' efficient: that is, there is no socially inefficient entry and the monopolist receives only normal profits. These conditions, however, would be extremely difficult to verify empirically. First, a scientific method to measure sunk investments has yet to be designed; second, the necessary cost and demand conditions are, in most cases, extremely difficult to estimate econometrically.

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13 That is, investments whose alternative use values are below their costs.

14 One of the main issues in the divestiture of AT&T of its Bell operating companies was whether the 'old' Bell system satisfied the conditions for a 'sustainable monopoly'. Answers to this question were tried through the estimation of cost functions for the Bell system. A serious problem in such estimation is the treatment of technological change that plagued the sector since the 1950's. Since there is no good way of modeling the extent of technological change, the empirical results concerning this case are questionable. For example, David S. Evans and James J. Heckman, "A Test for Subadditivity of the Cost Function with an Application to the Bell System," American Economic Review, (September 1984) find that the gains from multifirm rather than single firm production were around 50 to 60% in the late 1970's. This estimated large effect suggests the types of difficulties inherent in trying to econometrically verify the conditions required by the (Footnote continued)
Thus the application of the contestable market approach in determining the optimality of regulation is somehow questionable. On the other hand, for some industries its application is more straightforward than to others. For example, there is substantial evidence that airlines operate under constant economies of scale, even when there are economies of scale at the individual route level.15 Thus, in the absence of large sunk investments, air transport could be a case of a contestable industry.16

The 'public interest' (as well as the 'contestable markets' approach), however, is not restricted to natural monopoly industries. Rather, it can be extended to any activity where some extent of market power is present, or where there are informational differences among market participants. Early studies of the regulation of railroads emphasized that the main rationale for the creation of the ICC in 1887 was to protect farmers and other shippers against discriminatory practices by the railroads cartels.17 Similarly, the rationale for the regulation of air transport was to provide a

14(continued)
'contestable markets' approach.


'stable' markets, free from the effects of ruinous competition.18

While economic theory provides little support for the regulation of oligopolistic markets in the absence of significant entry barriers, government intervention in the presence of externalities and/or information ts is supported by a plethora of models deriving conditions for 'optimal regulatory policies'.19 The externality argument as a source of market failure is mostly used in environmental and safety regulations.20 Information costs, on the other hand, provide the rationale for consumer protection, occupational safety and licensing regulations.21 Few of those models, however, analyze why institutions do not appear to solve those problems. A standard argument is that since information is a public good, free riding by the part of consumers hampers the development of the 'optimal amount' of information. Thus, the government, by setting standards and minimum quality levels, essentially internalizes the public good nature of information. But, again, it is presumed that public agencies will process the 'optimal amount' of information in the 'right' way. That is,


19 See Joskow and Noll, op cit, supra note 2 for references.


21 See, for example, Ralph Nader, Unsafe at Any Speed: the Designed-in Dangers of the American Automobile, Grossman, New York (1965).
this approach sees governmental agencies as being agencies that mechanically solve a stipulated algorithm.

To summarize, the "Public Interest" approach to the development of regulations, sees the political process, and the regulatory agencies, as pursuing a welfare improving policy. In particular price and entry regulations will appear in industries where the potential for the exercise of market power is extremely high. Thus the introduction of these regulations should reduce profits and expand output.

Similarly, "social" regulation is predicted to appear when there are strong externalities or informational asymmetries. Thus, occupational safety standards should reduce the extent of workers' injuries in the same way that pollution control should reduce emissions or consumer protection measures should reduce the extent of consumer fraud.

The Evidence

The 'public interest' view of regulation was challenged in the 1960's and early 1970's by systematic empirical evidence that regulations were not showing the effects predicted by that view.

Early empirical research focused on price comparisons. It was found that regulated prices were not significantly below 'unregulated' ones, and for some instances they were even higher. This line of investigation started with Stigler and Friedland who, by estimating reduced form electricity price equations across states, found that until the 1940's regulated states had only slightly lower prices than did unregulated states.

\[22\] George J. Stigler and Claire Friedland, op cit, supra note 1.
This striking result was seen, at that time, as suggesting that regulations may not have an important effect on aggregate prices.\textsuperscript{24} A large body of research in other regulated industries assessing the price effects of regulation followed. For the air transport industries, the studies by Levine,\textsuperscript{25} Jordan\textsuperscript{26} and Keeler\textsuperscript{27} analyzed the effects of GAB regulation by comparing airline fares in the unregulated California markets to similar regulated interstate markets. Jordan, for example, found that coach fares in the unregulated California markets were, for 1965, around 40\% lower than what they would have been had the GAB regulation applied to those markets as well. Similar studies comparing rates for regulated and unregulated motor carriers by Farmer\textsuperscript{28} and Moore\textsuperscript{29} found substantial price differences between the regulated and the unregulated segments. For example, in the mid-1950's a series of Court decisions implied fare deregulation for the transport of some farm products. These regulatory changes implied fare reductions for poultry products of more than 30\% on average, and 20\% for

\textsuperscript{23}Electric Utility companies were regulated either at the State level or at the Municipal level. Stigler and Friedland call the latter unregulated utilities.

\textsuperscript{24}Gregg A. Jarrell, The Demand for State Regulation of the Electric Utility Industry," Journal of Law and Economics (1978) reports that this finding may not be warranted. Stigler and Friedland assume that in the absence of state regulation "prices under municipal regulation, holding demand and cost variables constant, would not differ between the subsamples" (p. 282). This assumption, however, is contradicted by Jarrell's results: states that in 1922 had state regulation would have had much lower prices under municipalities regulation. Thus, state regulation may be presumed to have raised prices at that time.


\textsuperscript{27}Theodore E. Keeler, "Airline Regulation and market Performance," The Bell (Footnote continued)
fruits and vegetables. Moreover, service quality increased for the shippers of the deregulated products. 30 Moore also predicted that trucking deregulation would reduce rates by around 20%, with fare reductions, as the one observed for airlines, being mostly related to cost reductions rather than to the elimination of profits. Regulation-induced cost increases appear because of inefficient scheduling, capacity, utilization, and non-price competition. 31 Similar large inefficiencies were also found for natural gas regulation. 32 Here, however, the inefficiencies arose in the form of substantial shortages in the interstate market, which eventually led to the regulation of intrastate markets as well.

A second line of criticism of the 'public interest' view of regulation was based on the 'actual' way regulatory agencies performed their regulatory duties, and the associated inefficiencies. On the one hand, Averch and Johnson 33 presented a model of a regulated firm subject to a binding rate of return constraint which was supposed to represent the way

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27 (continued)


30 See Thomas G. Moore, "Deregulating Surface..." op cit, supra note 29 for the court cases and other references.

31 See Thomas G. Moore, "Deregulating Rail...," op cit, supra note 7, for an analysis of the actual price effects of truck deregulation.

32 See, for example, Paul MacAvoy and Robert S. Pindyck, The Economics of the Natural Gas Shortage (1960-1980, Amsterdam: North Holland (1975). See also MacAvoy and Pindyck, "Alternative Regulatory Policies for Dealing with the Natural Gas Shortage," Ball Journal of Economics and Management Science, (1973), and P. W. MacAvoy and R. Noll, "Relative Prices on (Footnote continued)
Public Regulatory Commissions worked. Thus, it was concluded, public regulation will not be 'second best optimal' since firms will have an incentive to increase the capital intensity of their operations. Thus, regulated utilities will tend to overinvest in physical capital. This paper generated much theoretical work which analyzed the implications for overcapitalization and technological change of different regulatory processes. The empirical evidence on (what is called) the Averch-Johnson effect is scant, and, overall, does not seem to support the overcapitalization effect.\textsuperscript{34}

Joskow has argued that part of the reason for the weak empirical support this approach has received is that it does not properly represent the way regulatory agencies regulate.\textsuperscript{35} Regulated firms, it is argued, do not continuously face binding rates of return and therefore may not have the incentives to increase their capital intensity.

A third line of criticism of the 'public interest' approach was on its methodology for assessing the impact of regulations. Coase,\textsuperscript{36} for example, argued that proper institutional comparison (i.e. comparing an industry

\textsuperscript{32}(continued)


\textsuperscript{34}See Paul L. Joskow and Roger C. Noll, "Regulation in..." op cit, supra note 2, for references and a survey of this literature.


with and without a regulation) implies a comparative analysis of both institutional arrangements, each with its own inefficiencies, but holding constant the underlying features of the industry.  

b. Self-Interest Theories of Regulation.

The studies discussed above changed the economists' view of regulation. In the late 1960's the 'capture theory' of regulation was developed. This approach sees regulations as being developed so as to promote solely the interests of the regulated industries. Thus, the regulatory agencies while supposedly promoting the public interest, are "captured" by the industry they regulate. This simplistic view of the regulatory process shares some of the shortcomings of the public interest view. First, it does not provide an explanation as to why regulators should be "captured" as it is hypothesized. Second, the main prediction of the theory, i.e. that rates of return should be higher in regulated than in unregulated industries was not supported by empirical evidence. For example, in their seminal study of the regulation of air transport, Douglas and Miller found no evidence that regulated airlines were receiving an abnormal rate of return on average. Since there was evidence that regulated prices were above competitive levels the absence of abnormal profits implies that regulatory rents were dissipated. Thus, the regulators were not actually providing the airlines with abnormal returns. Douglas and Miller emphasize

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37 That is, it is not proper to compare, say, the inefficiencies that imperfect information generates to the market mechanism with the optimal regulatory outcome which assumes full information.


39 Douglas and Miller, Economic Regulation..., op cit, supra note 18.
the importance of non-price competition (i.e. capacity and flight frequency) in the dissipation of these rents. Moore presents evidence that part of those regulatory rents were also transferred, to some extent, to labor. There was also some evidence that public utilities price discriminated less than private utilities.

Both the weak theoretical underpinnings and weak empirical support made this approach short lived. By the early 1970's a more complex view of regulation (what has been called the "self-interest" theory of regulation) was proposed by Stigler and later developed by Peltzman and Becker.

The 'self-interest' theory of regulation is essentially an extension of the economic theory of government behavior. As such, regulatory agencies' main role is seen as the distribution of wealth among different groups in the society. Thus, groups with more political power (because of their size, homogeneity of interests, or ability to translate economic into political power) will be more benefitted than others from the working of

40 Thomas G. Moore, "U.S. Airline...," op cit, supra note 16.
the regulatory agency at hand. Thus, it is assumed, regulators respond to political pressure. Regulators, however, are not supposed to promote solely the interests of consumers or producers as a whole, but of particular groups at both sides.\footnote{Recently, Oster, and Salop, Scheffman and Schwartz, developed models by which firms use the regulatory framework to obtain benefits to themselves by improving their relative position vis-a-vis their competitors. See Sharon Oster, "The Strategic Use of Regulatory Investment by Industry Sub-Groups," \textit{Economic Inquiry}, (October 1982) and Steven C. Salop, David T. Scheffman and Warren Schwartz, "A Bidding Analysis of Special Interest Regulation: Raising Rivals' Costs in a Rent Seeking Society," FTC Working Paper #114 (September 1984).} Thus, the "capture theory" is a special case of the self-interest theory where regulators do not weigh in any relevant sense the interests of the other groups in the society. This could be the case if the differential political powers between the industry and other groups is extreme.

The demand for a given regulation starts, then, with a set of groups that could benefit from it, influencing, through different channels the regulators' decisions. In a legislative democracy a natural channel is the Congress. Since Congressmen are interested in being re-elected, they would influence the decisions of the regulatory agencies so as to promote their political interests. More direct channels have been proposed, where regulators promote the interests of a given group with the expectation of being compensated later on. In a legislative democracy, however, this more direct channel may not be able to generate outcomes that would differ much from Congress' own interests.\footnote{On this, see more below.} Thus, changes in the composition of the population, of the industry, or of the size of the dead-weight loss associated with the regulation, will change the demand for regulation, and
hence promote regulatory changes.

The Evidence.

The main empirical emphasis of this approach in analyzing a given regulation, is to assess the benefits that it provides to the different groups. The theory could then be tested by analyzing whether the pattern of gains and losses parallels the pattern of political support and opposition.

The empirical work in this framework has revealed that regulations have substantial differential effects across firms and consumer groups in a very predictable way.

Recent analyses of the effects of environmental and safety regulations suggest a strong differential effect across firms in favor of larger firms. Pashigian\(^4\) shows that the enactment, in 1970, of the Clean Air Act reduced the market shares of small firms in high pollution industries. This effect contrasts with a parallel increase in the market share of small firms in the low pollution abatement costs industries, and with an increase in the small firms market share for the high pollution abatement costs industries prior to the enactment of the 1970 Clean Air Act. A similar effect was found by Neumann and Nelson\(^5\) in their study of the 1969 Coal Mine Health and Safety Act. Maloney and McCormick\(^6\) present evidence suggesting that

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the enactment of the cotton-dust standards in June 1978 increased the stock market valuation of both cotton and synthetic users (these new standards were supposed to reduce the level of textile workers' exposure to cotton dust). The firms with the highest percentage of cotton use, however, experienced the largest stock market gains. The new standards, then, may have increased more the costs of producers with lower cotton use, thus, hurting their competitive position. In their interesting analysis of OSHA's impact, Bartel and Thomas estimate equations for accidents, industrial noncompliance and OSHA (the Occupational Safety and Health Administration) enforcement, which highlight the indirect effects of regulations through compliance costs and enforcement asymmetries across firm sizes. They find that the differential effects of OSHA regulations and enforcement across types of firms are significant. In particular, they found compliance and enforcement asymmetries against small and non-unionized firms. Linneman finds that while the enactment, in 1973, of the Mattress Flammability Standards by the CPSC insignificantly increased consumers' safety, it drastically reduced the market share, sales volume and average net income of the smaller firms in the sector. His


53 In her analysis of the effect of product quality regulations on consumer complaints to public (consumer protection) agencies, Oster also fails to find strong support to the hypothesis that product quality regulations significantly reduce consumers "mistakes." She studies mobile homes, auto repair and credit regulations, and only the regulation of mobile homes seem to have had a significant impact on the extent of consumers' complaints. On the other hand, she finds that the extent of regulations imposed on (Footnote continued)
results indicate that, holding constant all other effects, in the three years following the enactment of the Standards, the average sales (pre-tax income) of the smallest firms fell by eleven (sixty-six) percent, while the sales (pre-tax income) of the largest two categories of firms increased by eight (six) and forty-four (nine) percent respectively. In their study of water-pollution controls, Leone and Jackson\textsuperscript{54} report estimated manufacturing costs and compliance costs for the tissue portion of the pulp and paper industry for the 1977 'best-practice-technology' effluent control levels. The compliance costs range from $1.85 to $82.82 per ton. The authors find that the introduction of BPT controls substantially changed the structure of the industry. In particular, forty-three out of sixty-one mills in their sample experienced "a relative shift in competitive advantage that is due to BPT effluent controls" (p. 225). However, those that suffered the largest losses in competitive advantage were among the smallest plants. Pittman's\textsuperscript{55} estimation of a cost function for a sample of 30 pulp and paper mills in Wisconsin and Michigan reveals a positive relationship between pollution control intensity and economics of scale.

There is, then, a strong presumption that environmental and safety regulations imposed a non-trivial differential cost on small firms. Similar differential effects across firms and consumer groups have been

\textsuperscript{53}(continued)


\textsuperscript{54}Robert A. Leone and John E. Jackson, "The Political Economy of Federal Regulatory Activity: The Case of Water-Pollution Controls," in Gary Fromm (ed.), \textit{op cit, supra note 2}.

\textsuperscript{55}Russell W. Pittman, "Issue in Pollution Control: Interplant Cost Differences and Economics of Scale," \textit{Land Economics} (February 1981).
found for other types of regulations. Jackson\(^{56}\) finds that, for 1940 and 1950, regulated electricity rates for commercial and industrial users were lower than unregulated rates, while that was not the case for residential users. Similarly, Peltzman\(^{57}\) finds that public utilities price discriminate less than private utilities, thus favoring groups with relatively higher costs. Spiller\(^{58}\) finds that, since the mid-1960's, markets with low valuation of quality were among the most affected by the regulation of airlines. Moore\(^{59}\) finds that the deregulation of the airlines reduced (increased) average fares for the long-haul (short-haul and from small towns) trips, and increased the range of quality/price options available. The effect on airlines' stockholders is mixed. Spiller\(^{60}\) presents evidence suggesting that the effect of deregulation on airlines' stock market value was a function of their network characteristics. On the one hand the systematic risk of the airlines increased across the board,\(^{61}\) thus having a negative effect on their stock market value. On the other hand, the potential for achieving optimal price/quality combinations seem to have


\(^{57}\) Sam Peltzman, "Pricing in Private and Public Enterprises," op. cit. supra note 41.


\(^{59}\) Thomas C. Moore, "U.S. Airline...," op cit, supra note 16.

\(^{60}\) Pablo T. Spiller, "Assessing the Profitability Effects of Airline Regulation," Economics Letters (1984), and "Mobility Barriers...," op cit, supra note 16.

\(^{61}\) That regulation would reduce the systematic risk of the regulated industry is discussed in Peltzman, "Towards a More...," op cit, supra note 43.
increased the value of the firms with the 'right' network characteristic. Finally, Linneman, in his analysis of the minimum wage laws, finds that the greatest beneficiaries among the adult population are union members, while the burden falls most severely on females. The low-skilled, non-unionized worker, for whose well-being this regulation was supposedly introduced, does not, however, benefit from it and moreover, may have been substantially hurt.

These empirical results provide evidence that regulations affect different types of firms and consumers in very different forms. It does not, however provide a complete test of the theory, since the actual differential impact can be the 'social cost' of 'socially efficient' regulations. Thus, to fully test the 'self-interest' theory of regulation 'self-interest' itself has to be tested. In other words, is the imposition of a given regulation promoted by those groups that are going to benefit from the regulation and opposed by those that are going to be affected by it? If this question is answered in a negative fashion then the 'self interest' theory of regulation would be rejected.

The evidence concerning the latter test is not yet well documented, is very recent, and is quite mixed. Two types of research approaches have been followed. One approach is to analyze in a cross-section, the determinants

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62 On this see also Almarin Phillips, "Airline Mergers in the New Regulatory Environment," University of Pennsylvania Law Review, (1981) and Caves, et al, op cit, supra note 15. See also, Alfred E. Kahn, "Deregulation and Vested Interests: The Case of Airlines," in Noll and Owen, op cit, supra Table 1, for an analysis of the positions of the different interest groups in the airline deregulation process.

of the introduction of a given legislation and test whether it is correlated with consumer and industrial groups' characteristics. An alternative approach is to analyze the political process that actually generated a given regulation (or deregulation). Oster\textsuperscript{64} and Jarrell\textsuperscript{65} are examples of the first approach. Oster analyzes the determinants of four types of consumer protection rules across states\textsuperscript{66} and finds that the probability of a state legislating a particular consumer protection rule is a function of both firms' and consumer groups' characteristics. Jarrell analyzes the demand for State regulation of Electric Utilities. He concludes that the demand for the regulation of the industry by the state was greatest the more competitive and the larger the market for electricity was. Both studies, then, suggest that the interest of the industry and of consumer groups were important in determining the extent of regulations.

Following the second approach Leone and Jackson\textsuperscript{67} analyzed the voting pattern of legislators for the 1972 Water Pollution Control Amendments, and, for each legislator, built an index representing the extent of his or her support for the regulation.\textsuperscript{68} They, next, analyze whether the presence


\textsuperscript{65} Gregg Jarrell, "The Demand For...", op. cit., supra note 24.

\textsuperscript{66} The four types of consumer protection rules relate to consumer credit, door to door sales, sales of mobile homes and the advertising of prescription drugs' prices.

\textsuperscript{67} Leone and Jackson, "The Political...", op cit, supra note 54.

\textsuperscript{68} This index was built based on the proportion of times the legislator voted in favor of strong regulations through the different amendments. There were nine recorded votes in the House of Representatives, and the authors analyze six of those votes.
of pulp or paper mills in a legislator's district affects his or her pattern of support. Moreover, they ask whether a legislator whose district has a plant that is going to benefit from the regulation would vote in favor of the bill. 69 They find that the presence of pulp and paper mills, independently of the impact of the bill on that particular mill, decreases the likelihood that the representative would support the bill. While this result seems to contradict a "sophisticated voting" hypothesis, this conclusion is unwarranted because of the impact that the law could have on other industries in each district. Also, the analyses of the voting pattern for a single issue may not unravel all the long run considerations a sophisticated legislator may undertake. In particular, a legislator may enter into a coalition with other legislators which may require to vote against a bill that could benefit his constituencies as the condition to receive support for another bill that may provide even larger benefits to his constituency. This bias may be overcome by analyzing voting patterns over a whole array of issues.

A more systematic study is presented in Marshall and Weingast. They find that the economic characteristics of a congressman's district significantly affects (and in the predicted way) the probability that the legislator supports the different versions of the Interstate Commerce Act of 1887. 70 Party affiliation, however, seems to be important in explaining the pattern of the vote. Similar strong results are found in Kalt and Zupan's study of the enactment of the Surface Mining Control and

69 For a plant to benefit from pollution control regulations it is necessary that its pollution control costs increase by less than the average.

70 Marshall and Weingast, op. cit. supra note 17.
Reclamation Act, 71 and Kau and Rubin's analysis of the voting pattern of congressmen for the year 1974. 72 While both studies find an important role for economic (self-interest) variables in determining voting patterns, they also find that 'ideology' plays a major role. 73

Does Ideology Matter?

While the 'self-interest' theory does not necessarily reject the role of 'ideology' in the individual legislator choice, ideology is not supposed to have a significant effect on the aggregate. That is, in a political system like the U.S., where individual Congressman have to be re-elected by regional constituencies, it is expected that, on average a legislator would vote in his constituency's 'best interests.'

The role of ideology in voting, however, can be derived from the following theoretical framework. A legislator essentially competes with others for the right to be in Congress. Thus, a legislator can be represented as a monopolist facing potential entrants. To avoid being replaced, the monopolist-legislator must support its constituency's interests. The constituency, in return, provides him with votes and/or resources. If, however, the constituency does not closely monitor the legislator's voting pattern, the legislator may shirk.

Shirking, in this framework, means voting "one's conscience" rather than "one's constituency." Any other role for "ideological voting" would


not be shirking. As it is not clear what is the meaning of voting one's district. If both winners and losers are present among the voters in the district, the direction of the vote is unclear. Moreover, on a specific issue, it may be that a set of voters in the district could be harmed by the vote, but those voters may not belong to the legislator's winning coalition. Thus, there is no reason for the legislator to vote against the measure. The usual presumption, then, that the average effect for the district is what determines a legislator's vote may be wrong, and may substantially affect the credibility of the results obtained by studies like those of Kau and Rubin and Kalt and Zupan. Peltzman's analysis of the voting pattern of senators in the 96th congress deals precisely with these issues. While he follows the 'fishing expedition' approach of Kau and Rubin, he analyzes simultaneously (rather than individually) a large set of votes. His dependent variable is whether the congressman voted with the majority of the Northern Democrats (i.e. a measure of 'liberalism'). He has five types of explanatory variables: average state characteristics,

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74 For example, a legislator may receive large campaign contributions from a group which is strongly "ideologically motivated." Then, the legislator may be "ideologically captured." Thus, not voting for the "district" does not mean not voting in 'self-interest.' This caveat is particularly important in the study by Kalt and Zupan, where while they analyze in detail the interests of the legislators' districts, they fail to analyze the potential interests which are not necessarily in the district.

75 Kau and Rubin analyze, for 1974, the pattern of votes by congressmen for 26 issues. They differ from Kalt and Zupan in that they do not carefully model the way congressmen should vote in each issue. Rather, they use the same set of variables describing 'self-interest' motives for all 26 votes. Thus, their results are even less credible because of the certainty that in each one of the individual cases there were important missing variables, which could, in principle, be obtained, and which could be correlated with the 'ideology' variable.

supporter characteristics, contributions by labor unions, party affiliation and ADA ratings. The latter two represent the 'ideology' measures, while the former represent 'self-interest' measures. Peltzman findings are the following: first, overall, almost all of the explanatory power is provided by the self-interest rather than by the party-ideology variables. Second, except for the group of votes related to domestic social programs, "interest variables tend to do better and party/ideology worse at explaining votes on economic than on non-economic issues (p. 203)."

Peltzman also regressed ADA ratings on constituency characteristics. He found that when neither supporters' average characteristics nor the share of labor unions in contributions are introduced in the equation, the senator's party affiliation is the most important variable in predicting the senator's ADA rating. When those variables are introduced, however, the contribution of party affiliation to the explanatory power of the equation is marginal.

Peltzman's findings, then, raise substantial scepticism about the relevance of ideology in explaining voting patterns on important regulatory or income distribution issues in the United States. There is room, however, for more research in this area.

77 "Americans for Democratic Action" is a liberal lobby group which compiles the voting record of each Congressman for selected issues of its concern. For each Congressman it provides a score, with high values of the score representing strong support for the "liberal position."

78 The way Peltzman analyzes supporter's characteristics is a very imaginative one. For the last election won by each senator, Peltzman first regresses the percentage of votes received in each county on average characteristics for the county. Thus, for each senator a measure of 'constituency' can be derived by analyzing the differences between a senator's supporters (as defined by the regression analysis), and the average voter.
Do Political Institutions Matter?

The discussion so far provides strong support for the 'self-interest' view of regulation. Not only regulations have differential effects across firms and consumer groups, but the potentially affected groups are able to transform their economic interests into political action. This transformation process, however, is not free of friction. 79

To be effective, political action has to be translated into regulatory action. Case studies of regulatory agencies, however, seem to imply that the regulatory bureaucracies have significant discretion in their policy choice. 80 The rationale for such a discretion, it is argued, is that the regulatory agencies have superior information over the Congressional oversight committees. Since the issues are complex, Congress must delegate regulatory decision making to the bureaucracy. Only when regulatory policies are grossly far away from what Congress would like, does Congress act.

While this view gets support from casual observations, recent theoretical and empirical work has challenged it.

Much of the recent development in collective choice theory analyzes, what is termed, structure induced equilibria. 81 The basic idea of these

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81 See, for example, Kenneth A. Shepsle, "Institutional Arrangements and (Footnote continued)
models is the following. Majority rule does not provide, in general, a stable equilibrium. Moreover, it can be shown that for almost any chosen policy there is an alternative that provides a majority. Thus cycles may very well develop. Institutions then develop to provide stability to an otherwise unstable system. The role of those institutions is to restrict the set of possible alternatives available for comparison. Here lies the role of legislative committees in setting policy.\(^2\) The allocation of authority over issues to different legislative committees provides the Committees with the power to promote or block legislations related to issues in their legislative jurisdiction, providing stability to an inherently unstable system. This allocation of authority also provides the committees with the power to oversee the bureaucratic agencies whose actions may affect their jurisdictional interests. The power to promote or block legislation and to oversee agencies implies that legislators will self-select across committees with jurisdiction over issues which are most important to their own constituencies. Thus, committees will be manned by legislators with "strong feelings" about the issues under their jurisdiction.\(^3\) This process implies that Congressional committees will be strongly interested in the performance of the regulatory agencies under their supervision. Congressional committees may determine the actions of

\(^{81}\) (continued)

\(^{82}\) See, for example, Barry R. Weingast, "Regulation, Reregulation and Deregulation: The Political Foundations of Agency Clientele Relations," Law and Contemporary Problems (1981) and references therein.

the regulatory agencies they supervise through different channels. One way is through the appointment of its executives. Another is through direct budgetary and legislative decisions. Committees, however, may rely on their constituents' 'self-interest' in determining whether the agency is properly fulfilling its 'mission.' Thus, the informational asymmetry argument does not necessarily hold. Even if congressmen are less informed than the agencies about the technicalities of regulatory decisions, they are very well informed about the effect of regulatory decisions on their constituents' interests.

While there is no strong theoretical support for the view of bureaucratic discretion, recent empirical studies by Faith, Leavens and Tollison, and Weingast and Moran also challenge it.

These studies analyze the selection of cases by the Federal Trade Commission, trying to identify the influence of committee members' interests on case selection. Faith, Leavens and Tollison test the

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84 Fiorina and Noll, however, provide a theory in which legislators do not oppose bureaucracy's interests not because of informational asymmetries, but because the bureaucracy helps the legislators in serving their ombudsman's role. Morris P. Fiorina and Roger G. Noll, "Voters, Bureaucrats and Legislators: A Rational Choice Perspective on the Growth of Bureaucracy," Journal of Public Economics, (1978). See also Morris P. Fiorina, "Legislative Choice of Regulatory Forms: Legal Process or Administrative Process?", Public Choice, (1982) for an extension of that idea to the creation of regulatory agencies. A related view is presented by Owen and Braeutigan. They see the administrative decision making process which characterizes the U.S. regulatory commissions as providing both individuals and firms property rights to the status-quo. The process, however, is designed in a way that provides opportunity to its strategic use by the regulated firms. See Bruce M. Owen and Ronald Braeutigan, The Regulation Game, Ballinger Publishing Co., Cambridge, (1978).

hypothesis that the choice of cases by the FTC is "in favor of firms that operate in the jurisdictions of members of congressional committees that have important budgetary and oversight powers with respect to the FTC" (p.330). They test this hypothesis by analyzing, for each of the relevant committees, whether the proportion of cases dismissed is higher for those cases falling in the jurisdictional areas of committee members than for cases outside those areas. The results seem to imply that House Representatives are very effective in getting cases dismissed. Senators, however, are less so. Moreover, it seems that during 1961/1969 only the Senate Subcommittee on Antitrust and Monopoly was effective in dismissing cases, while during 1970/1979 only the Senate Committee on Commerce, Science and Transportation was effective in dismissing cases. These results may reflect the bias discussed in footnote 86 above. While during the 1970's the FTC's emphasis was on consumer protection, that was not the case during the 1960's. Consequently, we would expect the Senate Consumer Affairs Subcommittee to be very active during the 1970's, while the Senate

86 A plausible bias in their test is that different subcommittees have jurisdiction over different parts of the FTC activity. Thus, while the Senate Committee on Commerce may supervise all of the FTC's activities, the Senate Subcommittee on Antitrust and Monopoly of the Senate Judiciary Committee may control only its Antitrust part. Thus, by not separating the cases by (sub)committee congressional jurisdiction a bias against the hypothesis is introduced. Another possible bias arises in the regulation of activities with no clear geographical location. For example the regulation of Funeral Directors will affect Funeral Homes all over the country. Similarly with the regulation of Used Car Dealers. The authors do not explain how those nation-wide cases are treated. Presumably, since many of those cases were originated by in-house investigations, they were not taken into account.

87 For example, during 1970/1979, on average, 53% of the complaints within House subcommittees' areas were dismissed compared to 26% of complaints outside area cases. On the other hand, the percentages for the average of the Senate Committees and Subcommittees are 36% and 32% respectively. The latter percentages are calculated from the entries in Tables 2 and 4.
Subcommittee on Antitrust to be more active during the 1960's. The possibility that this bias is driving their results is supported by the results of Weingast and Moran.

Weingast and Moran analyze the determinants of cases brought by the FTC during the period 1964/1976. They analyze cases in four categories: mergers; Truth and Lending; fur, wool and textile labeling; and Robinson Patman.88 Their framework is the 'structure induced equilibria' discussed above. Thus, they consider separately the interests of the Senate and House Oversight Subcommittees Chairman, the Senate and House Oversight Subcommittees as a whole and of the Senate and House as a whole.89 While some of the estimated coefficients have contradictory values,90 overall, their results tend to support the hypothesis that the FTC responds to Congressmen's interests. First, Congressmen's interests, as measured by their ADA ratings, are significantly related to the FTC's choice of cases. Second, the Senate seems to have been more important than the House in

88 The authors use the Truth and Lending cases as the ones representing the new consumer protection orientation that the FTC embraced in the early 1970's, while the 'textile' and Robinson Patman cases represent the FTC of the 1960's. The choice of Truth and Lending cases as being the most representative of the 'new' FTC of the 1970's is unclear and may have biased their results significantly. An alternative candidate could have been the advertising substantiation program which the FTC started in 1971, or any (and perhaps all) of the other consumer protection programs. If, for example, the members of the House Subcommittee were very interested in the advertising substantiation program, but not on the Truth and Lending program (and unless we have more information about how each program affects each of the legislators individually, there is no good reason to reject this case off-hand), the authors' result (see below) that the House is essentially uninterested in consumer protection, while the Senate is, could be just be a result of their sample selection.

89 Following Feltzman's ("Constituent Interests...", op cit, supra note 76) approach that ADA ratings represent a mixture of constituents' interests, Weingast and Moran use those ratings to proxy for legislators interests.

90 In particular, the coefficients of the Senate mean in the determination (Footnote continued)
affecting FTC's selection of cases. Moreover, the interests of the Senate Subcommittee as a whole, and of the chairman of the Senate Subcommittee in particular, were important determinants of the FTC's case selection.

While neither of the two papers discussed above provides the definite answer to the 'agency discretion' question, their methodologies are undoubtedly improvements over the 'standard' case-study approach to the behavior of regulatory agencies. They show the role of a type of political institution in curtailing the extent of 'agency discretion.' While their work cannot predict what would happen in the presence of alternative political institutions, they have, nevertheless, opened new lines for fruitful research in testing the role of institutions in regulatory policy making.

c. What Explains Regulatory Changes?

In Section II, I presented some evidence on the drastic change in the structure of federal regulations in the United States. While there is not yet a complete explanation for its reason, a reasonable conjecture is that what determines the distributional characteristics of regulations also should determine their occurrences and changes. Therefore, shocks to either the 'demand' or the 'supply' side of the regulatory process should provide the rationale for regulatory changes.

Demand Changes.

The last sections provide strong evidence that economic 'self-interest'

90 (continued)
of the probability of selecting 'textiles' and 'Robinson Patman' cases have the opposite sign than the coefficients of the Subcommittee mean and Subcommittee chairman. See also supra note 88.

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is an important determinant of the regulatory outcome. Thus, changes in regulations, as well as in regulatory processes, could in principle, be the result of exogenous changes in the economic interests of different groups or in the size of the perceived dead weight loss associated with the regulation. Keeler\textsuperscript{91} extends the analysis of Becker\textsuperscript{92} to suggest that the deregulation of the airlines, railroad and telecommunications industries was the result of exogenous changes in population or in technology that increased the dead-weight losses of the different regulatory schemes, and thus promoted deregulation. He does not explain, however, why the regulatory agencies did not partially adjust the regulatory schemes so as to ameliorate the dead-weight losses, while continuing promoting the interests of the relevant constituencies.

Others explain regulatory changes as the result of changes in the net demands for regulation. For example, in his analysis of the introduction of the Robinson-Patman Act, Ross\textsuperscript{93} suggests that the changes in distribution technologies, that occurred during the late nineteenth and early twentieth centuries, and which threatened the smaller and high-cost retailers prompted legislative action so as to ameliorate the spread of the 'chain stores'. Similarly, in his study of the elimination of fixed brokerage rates at the New York Stock Exchange by the Securities Act Amendments of 1975, Jarrell\textsuperscript{94} maintains that the institution of fixed brokerage fees


\textsuperscript{92}Gary Becker, op cit, supra note 44.


\textsuperscript{94}Gregg A. Jarrell, "Change at the Exchange: The Causes and Effects of (Footnote continued)
served regulators' interests, which were mostly "pro-producer" (i.e. brokers), until the 1960's. However, in the late 1960's, it is suggested, the availability of low-cost, off-exchange, alternatives to block trading together with the dramatic increase in the volume of large institutional trading and their increased backward integration, reduced the net political demand for redistribution in that market. This explanation, is not, however, fully convincing. The SEC could have reduced the rates for institutions much more than it actually did before 1975, and consequently, it could have maintained some level of cross-subsidization. Thus, the evidence that large institutions benefited from deregulating rates is not enough to show that that was the reason for the total deregulation of rates. It seems to me that a 'supply side' explanation, i.e. an explanation of the SEC behavior and its ability to regulate that market, is needed here.\footnote{The need for a 'supply side' explanation is also evident by the relatively long lag between the 'demand changes' (around 1965) and the regulatory change (1975).}

Supply Changes.

That changes in demand are not immediately translated into regulatory changes is presented in Weingast's analysis of the deregulation of the fixed brokerage fees by the SEC, of the airlines, and of the regulation of nuclear plants.\footnote{See Barry R. Weingast, "The Congressional-Bureaucratic System: A (Footnote continued) (1984); see also Seha M. Tinic and Richard R. West, "The Securities Industry under Negotiated Brokerage Commissions: Changes in the Structure and Performance of New York Stock Exchange Member Firms," The Bell Journal of Economics, (1980).}

\footnote{(continued)}
demand for regulation. Given the institutional setting at the time of that change, the demand change may not promote any change in the existing structure induced equilibrium, if it is not first translated into a change in the composition of the particular subcommittee responsible for that specific regulation. Since this type of change is not immediate, lags in the translation of demand shocks into regulatory changes develop. Weingast shows that for the case of the SEC there was a significant change in the composition of the oversight subcommittee (the securities subcommittee of the Senate Banking and Currency committee) in the late 1960's. He sees then, the changes that the SEC implemented following that period as 'market' tests for the new policy that the 'new' subcommittee was eventually going to implement. In the case of the airlines, trucking and railroad deregulation, however, there was not an important change in the composition of the relevant subcommittee, nor is it clear what the exogenous demand changes were. 97 An additional 'supply side' theory is needed.

A different type of role for the supply side in motivating regulatory changes is presented in Joskow, 98 and in Knieps and Spiller. 99 Joskow

96 (continued)

Principal Agent Perspective (with Applications to the SEC)," Public Choice, (1984), and "Regulation, Reregulation,...," op cit., supra note 82.

97 There were however, important changes in the composition of the regulatory agencies. The CAB and the ICG received the influx to their Boards of "free market" economists like Alfred Kahn and Elizabeth Bailey to the CAB and Darius Gaskins and Marcus Alexis to the ICG. These appointments, however, were not random but represented a clear political will to deregulate. The source of this will, however, cannot be easily explained as a belated response to a demand change.

98 Paul Joskow, "Inflation and Environmental...", op cit, supra note 35.

99 Gunter Knieps and Pablo T. Spiller, "Regulating by Partial Deregulation: (Footnote continued)
presents a theory of regulatory change, based on changes in the environment in which regulators operate. Regulatory institutions develop so as to maximize the objectives of the regulatory agency given the constraints imposed by the law and the political system. Regulatory agencies can then be found in essentially two different modes of operation. In the first mode, an institutional arrangement has been developed which fulfills the objectives of the regulator. This institutional arrangement is well developed and is used repetitively and in a predictable manner. A second mode of operation is called the "innovation mode". Here a regulatory agency, facing some unexpected change in the environment, searches for the 'right' institutional arrangement that will serve its objectives. Thus, regulatory changes appear. For example, following the inflationary burst of the late 1960's, public utility commissions introduced temporary rate increases, automatic adjustment mechanisms and future test year budgeting, all institutions that did not exist before the 1970's. The main characteristic of these new institutions is that they allow the regulatory agencies to cope with the increased uncertainty about the regulated firms' costs that inflation generates.

A similar framework is used by Knieps and Spiller to analyze the FCC process of deregulation that started in the late 1950's. Here the FCC is seen as promoting partial entry so as to force the incumbent firm to introduce new products and to reveal its true costs. This policy is seen as the FCC's optimal response to an increase in its uncertainty about costs and technology, because of rapid technological change.

99(continued)
Demsiki, Sappington and Spiller develop a theory of endogenous regulatory change which extends the analyses of Joskow and of Knieps and Spiller. Their theory is a principal-agent model, where the regulator (principal) faces substantial uncertainty about the feasible costs of the regulated firm (the agent) because of rapid technological or relative input price changes. They then develop the conditions for the regulator to promote partial entry deregulation. The entry of new firms (which may, on average, be less efficient than the incumbent firm(s)) plays two major roles: first, new entrants' costs are signals of the incumbent costs. As such, they reduce the extent of informational asymmetries. Second, the threat of new entry creates incentives for the incumbent firm to show low costs. They find that the probability that the regulator will use a policy of partial entry deregulation increases a) the more rapid the technological change affecting the industry or the higher the rate of input price changes; b) the lower the sunk investments of the incumbent; c) the lower the minimum profit level that the regulator must provide the incumbent; d) the lower the entrants' fixed costs; e) the higher the correlation between the entrant and the incumbent's costs. This theory, then, may provide a rationale as to why, in the face of rapid technological and input price changes, we observe full deregulation of the airlines (low sunk costs) but partial deregulation of the railroads (higher sunk costs); why electricity regulation (high sunk costs) was adjusted through new regulatory mechanisms, while the SEC abolished fixed brokerage fees (low sunk costs); and why some cities deregulated taxi cab services (low sunk costs) during

the late 1970's and some reregulated them later on. While this theory is not a 'general supply-side theory' of regulatory changes, it provides some testable implications.

IV. Implications for Regulatory Studies in Developing Countries.

The purpose of this section is to develop implications for the analysis of regulation in developing countries, and contrast them with the available evidence of both the extent and the effects of domestic regulations. Thus, this section will also provide a short survey of regulation studies in developing countries.

The main thrust of section III is that the causes and the effects of regulations are the result of a political process by which the interests of the different economic groups are translated into regulatory decisions. Thus, to understand the causes, the forms, and the effects of regulations, an analysis of the underlying political forces is necessary.

Three main implications can be derived from the analysis of section III: First, the enactment of a regulation requires the development of a political coalition. Thus, even if the stated rationale for a regulation is the 'public interest' (e.g. to correct for externalities or for the inefficiencies arising from the exercise of market power), its enactment may need the support of one or more groups which, in turn, will require regulatory adjustments to their own interests. Thus, we should expect different groups of customers and producers to be affected differently by the regulation.

Second, regulations will have "side-" or "unpredicted" effects. Since to support a regulation, groups would usually require some regulatory features that benefit their members, the actual regulatory scheme will substantially differ from "the" optimal one. Among the "unpredicted" effects we may find, a) a reduction in the extent of competition among the firms (e.g. the creation of entry barriers and
an increase in the extent of oligopolistic interaction among the incumbent firms), b) inefficient use of inputs (excess capacity, wrong choice of technique), c) suboptimal provision of quality, d) inefficient pricing policies (which may usually imply a weaker relation between prices and marginal costs).

Third, regulations adjust to changes in the environment. This adjustment, however, may be conditioned by the current political institutions, which may retard or facilitate the regulatory changes. Thus, not all countries will adjust to the same changes in the environment in the same way.

In what follows I will analyze more in depth these three implications, and apply them to specific cases of regulations in developing countries.

a. Interest Groups and the Development of Regulations.

As discussed above, the enactment of a regulation requires a supporting coalition. If, for example, an externality provides the rationale for the regulation, then the group that is supposedly going to benefit is the 'public at large.' Since the 'public at large' is usually not a sustainable coalition, the introduction of that regulation will require the support of other groups. These may include: a) the industry itself, which could use the regulation to increase its profitability; b) suppliers of inputs or of competing products which could use the regulation to increase the demand for their goods; c) some buyers which could use the regulation to subsidize their purchases.

The extent by which the interests of the different groups is translated into actual regulatory measures depends on their relative efficiency in
translating economic interests into political power. Here, then, the
classifications of the different groups play a crucial role.

Consider the case of two industries where the rationale for regulation
is the divergence of private from social costs: pollution control and
trucking. While, in principle, there are 'optimal' regulatory schemes that
could be applied in both industries, the evidence from developing
countries, which is presented below, provides support to the hypothesis
that the actual regulatory schemes respond to the interests of the affected
parties.

Pollution control could take, as discussed in the previous section,
very different forms, each affecting the incumbent firms very differently.
For the polluting industry to support pollution control, the regulation
should be used to either limit entry or to improve the competitive position
of some of the firms in the industry.

Pollution control has not been a major regulatory issue in developing
countries. Brazil and Mexico, however, introduced, during the 1970's,
several regulations intended to control pollution particularly in their
major metropolitan areas, the Greater Sao Paulo and Mexico City areas
respectively. The form of the regulations, however, provides some

102 For analyses of the extent of pollution control regulation in
Brazil and its plausible effects see Vinod Thomas, "Pollution Control
in Sao Paulo, Brazil: Costs, Benefits and Effects on Industrial
and Peter M. Townroe and Vinod Thomas, "The Location of Industry and
Pollution Control Policies: A Case Study of Sao Paulo, Brazil," Report
No: UDD 8, Urban Development Department, World Bank, (March 1982). The
development of the Mexican pollution control programmes is presented
in The World Bank, Staff Appraisal Report: Mexico, Pollution Control
Project, Report No. 3815b-ME, (April 1982). This report, however, does
not present evidence on the impact of the Mexican pollution control
program on both the extent of pollution and on firms' location
decisions.
insights on the political coalitions that may have promoted the introduction of the regulations and their eventual effectiveness.

Since the mid 1970's the main form of pollution control in the Greater Sao Paulo area is based on the licensing of new, and the expansion of existent, industrial establishments. While the licensing usually requires some type of pollution control, this is not enforced (or required) for plants already in existence. Firms in heavy polluting industries (metallurgical, non-metallic minerals, chemicals and some textiles) may be allowed to expand, or new plants to open, only in some parts of the state.

On the other hand, the main form of pollution control in the Greater Mexico City Area was until 1979 based on a set of standards, enforced through nominal violation fees. In 1979, however, these fees were substantially increased and could reach up to $160,000.

Coupled with local and federal pollution control regulations, both countries developed policies of industrial decentralization. In Brazil it was directed towards the relatively undeveloped (and unpolluted) northeast. This policy, introduced, at the federal level, during the 1970's, provides significant fiscal and financial incentives for firms investing in that part of Brazil. Redwood presents evidence that the heavy pollutant industries were all among those that benefitted the most from the fiscal incentives. Finally, Townroe and Thomas present evidence that the

103 For an analysis of the impact of this policy on the relocation of industries, see John Redwood, "Industrialization Policy, Fiscal Incentives and Extraregional Establishments in Northeast Brazil: A Characterization Based on the SUDENE/BNB Survey," Report No: UDD 16, Urban Development Department, World Bank, (November 1982).

104 John Redwood, op cit, supra note 103, page 51.

105 Peter M. Townroe and Vinod Thomas, op cit, supra note 102.
licensing policy in the Greater Sao Paulo area had some impact on the choice of location of new establishments.

The Mexican regional development project adopted similar characteristics. This project provides substantial tax credits and direct subsidies for firms investing in designated areas outside the Greater Mexico City Area. These subsidies, however, vary with the type of product. In particular, the policy provides firms producing capital goods, steel, cement and agroindustries (e.g. fertilizers) higher subsidies than to firms producing consumer goods or intermediate products. The former set, however, consists of the heavy polluting industries. Small firms, moreover, receive a slightly higher relocation tax benefit.

This evidence suggests, then, that pollution control regulations as well as the fiscal incentives for relocation in both Mexico and Brazil may have been supported by, and therefore adjusted to the interests of, the heavy polluting industries (which, in Brazil and Mexico, are concentrated in the Greater Sao Paulo and Mexico City areas respectively). On the one hand, the licensing restrictions and pollution requirements for new (or expansion of existing) establishments imposed in Brazil implies a differential cost towards new entrants, thus raising the profitability of the incumbent firms. Similarly the potential for the imposition of high pollution violation fees in Mexico City, implies that small firms may be driven out of the most important Mexican market. On the other hand, the fiscal incentives for relocation towards the Brazilian northeast implies

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106 The areas are a set of 'industrial ports,' and the areas surrounding the Greater Mexico City Area.

107 See The World Bank, Staff Appraisal Report, op cit, supra note 102.
that once the expansion and pollution controls become binding for the incumbent firms in Sao Paulo, they would be directly subsidized in their relocation by the federal government. 108 Similarly, high pollutant firms in Mexico City would find their pollution control costs subsidized by the government, either through relocation subsidies, or through subsidies for direct pollution control investments. 109

The 'public interest' rationale for trucking regulation is related to the social costs of road transport that, in the margin, are not accounted for by the private sector. 110

While the 'optimal tax' required to eliminate such a divergence between private and social costs is relatively easy to implement, the evidence that is presented in the Appendix shows that such a device is rarely used in developing countries. In the Appendix it can be seen that the regulatory structure in twelve developing countries is either extremely cumbersome or is almost nonexistent. Thus, to understand that pattern of regulatory systems, the interests of the different involved groups (and their ability to transform interests into political pressure) has to be analyzed.

Shippers will usually oppose trucking regulation. Even if the regulation has 'optimality features,' in the sense of only increasing

108 Incumbent firms willing to undertake pollution control in their existing plants could also receive direct subsidies from the federal government. See Vinod Thomas, op cit, supra note 102.

109 See World Bank, Staff Appraisal Report, op cit, supra note 102.

110 While the marginal private costs of trucking include the marginal operating and capital costs, the marginal social costs also include the marginal road damage and congestion. Unless truckers are charged taxes or tolls according to their marginal contributions to social costs, there will be a divergence between private and social costs. Other rationales are the potential market failures in the provision of optimal safety.
private costs to a level just equal to social costs, shippers' transport costs will increase. The effectiveness of shippers in blocking trucking regulation would depend on the structure of their industries.

In many developing countries, much of the trucking business is agriculturally related. In this case, the type of prevalent agricultural enterprises may condition the political effectiveness of the sector in blocking adverse regulations. For example, if the sector is composed of many small farmers, it is expected that they will not have the ability to effectively coordinate their opposition to trucking regulation. If, on the other hand, large farms are the prevalent way of organizing the sector, it is expected that shippers would be able to impact the extent and characteristics of trucking regulation to their own advantage. For example, they may accept limits to trucking competition, if they receive service at relatively lower rates.

Domestic car producers may favor trucking regulation if it also involves limits on the imports of trucks. In this case, the demand for locally produced (or assembled) trucks is increased. Thus, if the domestic car producers form a highly concentrated industry, we would expect them to support the regulation.

Truckers, on the other hand, would usually support the regulation, even if it may seem as increasing their costs. First, if the industry is not perfectly competitive, an increase in costs may increase total profits.

111. In the absence of such an optimal regulation, shippers would have been subsidized.

112. That would be the case if regulated fares depend only on distance but not on volume, thus generating cross-subsidization from high-volume to low-volume areas.
Second, if the industry is characterized by different types of firms, the regulation may be used by a subset of firms to improve their relative competitive position. For example, if the regulation takes the form of high license fees, the consequent reduction in the number of firms could increase the profitability of the remaining ones. If, on the other hand, the regulation takes the form of restricting the import of trucks, and consequently raising their prices, imperfections in capital markets could raise entry barriers. Alternatively, entry can be blockaded by franchising the existing companies, and imposing heavy entry requirements for new companies.

The characteristics of the trucking industry should also affect the type of regulation that will be implemented. If the firms are homogenous, then they would promote regulations that restrict entry but that do not promote exit. That is, they would support regulations like licensing with proof of 'public need,' or minimum fare regulation, but they may oppose heavy increase in fixed costs through license fees or high increase in truck prices.

Trucking regulation in developing countries takes very different forms.\textsuperscript{114} While it is relatively unregulated in some countries (e.g. Argentina, Brazil, Uruguay, Paraguay, Chile and Honduras, henceforth called

\begin{itemize}
\item \textsuperscript{113} See J. Seade, "Prices, Profits and Taxes in Oligopoly," University of Warwick (1983) for an analysis of the relation between profits and costs in an oligopolistic industry.
\item \textsuperscript{114} In this section I will discuss trucking regulations in developing countries with relatively well developed transportation systems. For a study analyzing trucking regulations in developing countries with poor transportation systems see S. Carapetis, H. Beenhakker, and J. Howe, "Supply and Quality of Rural Transport Services in Developing Countries," World Bank Staff Working Paper, No. 654, (November 1982).
\end{itemize}
the "unregulated group"), it is heavily regulated in others (e.g. Bangladesh, Philippines, Colombia, Bolivia, Peru and Indonesia, henceforth called the "regulated group").

Some interesting differences in the pattern of regulations appear both between the two groups as well as within the highly regulated group. First, while among the "unregulated group" no country imposes import restrictions of trucks, their import is restricted in almost all the "regulated" countries.

Second, while in the "unregulated group" fares are not set by the government, they are in the "regulated group." Fare regulation, however, is not homogenous across all countries in the latter group. While fare regulation seems to be binding in Bangladesh, Colombia and Bolivia, that is not the case in Indonesia, the Philippines or Peru.

Third, while some type of licensing is required among countries in the "unregulated group," it has not become an important entry barrier. That is not the case, however, among countries in the "regulated group." Here


117 Bangladesh, however, has recently liberalized the importation of trucks, with a substantial increase in its fleet. See Bangladesh ..., op cit, supra note 116. Also, the "Unregulated" countries impose tariffs for truck imports.
countries like Philippines, Colombia and Bolivia impose substantial entry restrictions.\textsuperscript{118} Finally, while in the "unregulated group," small companies and owner operators compose the main source of supply, public and large private companies as well as syndicates\textsuperscript{119} play an important role in countries of the "regulated group."\textsuperscript{120}

There is, then, some evidence that the political system in countries with more stringent transportation regulations were responding to the interests of both the larger members of the industry and the suppliers of assembled vehicles. Thus, the interests of those groups should impact the actual effects of these regulations. Much research, however, remains to be done on this issue. First, shippers' characteristics and their impact on the nature of the regulation has not been analyzed. Second, the working of trucking syndicates in the different countries should be further analyzed. While they could certainly provide an efficient brokerage service, they could also serve either as enforcers of a cartel or as monopsonists (if entry of syndicates is restricted). In the cases surveyed there seems to be evidence that syndicates provide very different roles in the different countries, having, in some, a strong impact on the efficiency of the transportation system.\textsuperscript{121}

b. The Development of Unpredicted Regulatory Effects.

\textsuperscript{118}While the entry restrictions in Colombia and Bolivia take the form of a direct limit on entry through different requirements, in the Philippines it involves paying a substantial license fees.

\textsuperscript{119}Syndicates are what in the United States would be called "Rate Bureaus".

\textsuperscript{120}Syndicates, however, play an important role in Brazil. While in Brazil rates are not set by the government, large syndicates, which operate as brokers, set fares for their members.

\textsuperscript{121}This topic is further analyzed in the next section.
Because of the need to build political coalitions, regulatory effects are usually different from 'optimal regulatory outcomes.' This implication is supported by studies of, among others, the two regulations discussed above (i.e. pollution control in Brazil and Mexico and trucking regulation in developing countries).

For example, in the case of Brazilian pollution control regulations, the creation of a two tier scheme, by which existent plants were not affected by the regulation but additions or new plants were, provided rents to the incumbent firms and raised the entry costs of new firms. Given that the pollution control regulations were not going to have a major impact on the current extent of pollution, the whole regulatory program could have generated social costs well in excess of pollution control benefits. There is room, however, for further analysis of this topic.

The "unpredicted effects" in trucking regulation are pervasive. For example, different types of regulations may not only create serious excess capacity, but actually increase road damage, which the regulation was supposed to reduce.

Excess capacity may arise because of, for example, fare regulation. In this case trucking companies would have an incentive to compete by increasing their availability of trucks, making more frequent trips with

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123 See references in supra note 102.

124 On this see Vinod Thomas, op cit, supra note 102.

125 See the Appendix for a summary of transportation regulations in selected developing countries.
lower load factors. This effect seems to appear in Bolivia, where the combination of entry and fare regulation has generated an unusually low
load factor.\textsuperscript{126}

Inefficient fleet size could develop if the regulation restricts the number of trucks that each company can operate, as in Bolivia,\textsuperscript{127} or restricts the minimum truck size, as in Morocco or Chile.\textsuperscript{128} Each company, then, would have an incentive to have relatively large trucks. In the absence of entry barriers, the new equilibrium may have a larger number of companies, each with fewer but larger trucks.

Overloading, which seems to be a problem for some regulators in developing countries, is also the result of regulations devised so as to increase entry barriers or promote the relative competitive position of a subset of companies. For example, if the regulation takes the form of an increase in the price of trucks, then the fleet will have less trucks, each, however, being used more intensively. This effect seems to be particularly important in Bangladesh, Colombia, Bolivia, Indonesia and the Philippines, all countries with restrictions on the import of trucks.\textsuperscript{129}

Similarly, if the regulation takes the form of paying a fee per trip, companies will try to increase their load factor, and thus overloading could develop. Colombia has a route regulation system where for every trip

\begin{footnotesize}
\begin{enumerate}
\item See World Bank, \textit{Intermodal} ..., op cit, supra note 115.
\item See World Bank, \textit{Intermodal} ..., op cit, supra note 115.
\item This regulation of trucking in Morocco is refered to in M.E. Beesley, "Assessing Transport Regulation in Developing Countries," mimeo, (June 1984). Chile imposes an 80\% tariff for the import of relatively small trucks. thus, its fleet is characterized by relatively large vehicles. See World Bank, \textit{Intermodal} ..., op cit, supra note 115.
\item See references in supra notes 115 and 116.
\end{enumerate}
\end{footnotesize}
a bill of landing is required. This bill of landing is sold by the regulatory agency (INTRA) to licensed companies, which in turn resell them to affiliated truckers (with a premium of between 20 to 50%).\textsuperscript{130} Similar problems of overloading developed in Peru, where owner operators must use a brokerage firm to arrange for freight hauls. These licensed firms, however, charged up to 40% of the truck traffic.\textsuperscript{131}

Trucking regulation, then, may even increase road damage, if, because of the need to build political support, it implies a heavier optimal fleet, overloading, or too frequent trips.

That trucking regulation will usually imply higher prices is not inconsistent with 'optimal' regulation whose purpose is to raise private costs to social costs. The magnitude of the price increase, however, may differentiate between an 'optimal' regulation and one whose purpose is to redistribute wealth. There is, however, no quantitative evidence on fare differentials and fare structures across countries. Certainly, this is a very promising line of research.

Since the 'unpredicted' effects of trucking regulation are actually quite predictable, it is unclear whether trucking regulation will usually be 'effective' in equalizing private and social costs. It can, however, be very 'effective' in achieving other income distribution purposes.

Other regulated industries where quite predictable "unpredicted" effects have been documented are urban transport, cement, and banking.

The "public interest" rationale for the regulation of urban transport is a mixture of a 'natural monopoly' argument and the correction of an

\textsuperscript{130} See World Bank, Colombia ..., op cit, supra note 116.

\textsuperscript{131} See World Bank, Intermodal ..., op cit, supra note 116.
'externality.' The former rationale is based on the supposed existence of economies of scale. The latter is based on the presumption that competition in urban transport will generate too much road congestion. The regulation of urban transport in developing countries usually implies either straight municipal ownership, or, alternatively, strong licensing restrictions, coupled with minimum vehicle size requirements, fare regulation and subsidies. Walters presents evidence (from several different cities in developing countries where small mini-buses compete with large-licensed buses) in support of the hypothesis that unregulated minibus service would provide better frequencies and speeds, with relatively low average waiting time per passenger than the full-size-licensed-bus system. Thus, urban transit regulation may also show the "unpredicted" effects of increasing costs and price, and, perhaps, reducing the availability of service.

The rationale for the regulation of cement production is the "large" degree of economies of scale in production, and, given the relatively high transportation costs, the potential for the exercise of monopoly power. In many developing countries the regulation of the industry takes the form of public ownership. There is either a legal governmental monopoly, or a large

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133 For an analysis of the relative efficiency of public bus ownership in some developing countries, see Charles Feibel and A.A. Walters, "Ownership and Efficiency in Urban Buses," World Bank Staff Working Paper No. 371, (February 1980). On the general issue of the efficiency of public enterprises see below.

134 A.A. Walters, op cit, supra note 132.

135 Whether congestion will also fall, is still an open question.
public company in competition with a regulated private sector. Public ownership, then, is supposed to ameliorate the potential exercise of monopoly power. Lakshman,\textsuperscript{136} however, reports that in both Bangladesh and Sri Lanka, countries where the public cement companies enjoyed an almost complete monopoly, the public companies tended to price monopolistically. In both cases, the central government regulated prices and product distribution. Given that public ownership per-se does not eliminate a monopolist's incentives to charge monopoly prices, regulation through public ownership should have a very different objective than to curtail the exercise of monopoly power.

One feasible rationale for public ownership is to provide abnormal returns to both workers and managers of the public enterprise. If that is the case, then, public enterprises should be less efficient than private enterprises.

There is some indication from both developed and developing countries studies, that public enterprises are less efficient than private enterprises. This result, however, is very sensitive to the way the estimation of productivity is carried out. A good example of the plausible pitfalls of this line of research is provided by the study of productivity differences between private and public water utilities in the United States. Early cost studies of water supply found that public water companies seem to have lower costs than private ones.\textsuperscript{137} These studies

\textsuperscript{136} W.D. Lakshman, "Intercountry Comparison of Public enterprise Performance: An Application to the Cement Industry of South Asia," \textit{Bangladesh Development Studies.} (Winter 1979).

\textsuperscript{137} See, for example, Robert A. Meyer, "Publicly Owned Versus Privately Owned Utilities: A Policy Choice," \textit{The Review of Economics and Statistics}, (1975), Patrick Mann and John Mikesell, "Ownership and Water System (Footnote continued)
estimate costs for public and private companies through the estimation of standard cost functions, assuming that both types of firms supply essentially an homogenous product. In a recent study by Feigenbaum and Teeple, however, those assumptions are shown to be wrong. Most of the differences between public and private water supply firms are shown to be the result of assuming water supply to be an homogenous product. Once product homogeneity is not assumed, Feigenbaum and Teeple do not find any significant differences between private-regulated and government owned water utilities costs. That is, most of the cost differences arise because the two types of firms produce different products.

Krueger and Tuncer, and Levy estimate productivity differentials from industry-wide analyses. Krueger and Tuncer estimates show that the rate of growth of Total Factor Productivity over the period 1963/1976 is similar for private and public firms. Public sector enterprises, however, seem to have a higher input use than private sector firms. A somewhat

(continued)


139 Feigenbaum and Teeple, op cit, supra fn 138, estimate a hedonic cost function where the characteristics of the product are: whether treated water is used, whether metered water is provided, the density of the service areas, whether large-scale storage operations are performed, and whether many small users are served rather than a few large ones.

similar result is obtained by Levy. He estimates production functions for the two sectors and estimates both technological and allocational inefficiencies. He finds that while public firms may be more technologically efficient, they are less allocationally efficient. Thus both studies seem to show that public enterprises are more capital intensive than private firms.

The problems discussed in relation to the estimation of costs differentials in water supply apply also to these studies. Public ownership is not exogenous, but the result of a political decision that takes into account its costs and benefits. Thus, public enterprises may produce different products, or may locate in different areas than private firms, and therefore their costs differentials may be spurious and may not reflect any behavioral inefficiencies. Their choice of product or location, however, is not exogenous, but represent an explicit policy. In Turkey, for example, the public cement company locates its plants in low demand/remote areas. Since the regulated price, at which both the private and public companies are required to sell cement is set at the average cost across the industry, it is clear that Turkey uses its public ownership of cement plants to subsidize low demand/remote areas. Observe that since the private sector locates in high demand areas, it clearly benefits from this regulation. Moreover, the regulated pricing scheme is such that it reduces the extent of price differentials across customers (as predicted by Peltzman, see supra note 41).

140 (continued)

141 See Central Bank of Turkey, Cement Industry in Turkey, (1980).

-59-
The pattern of industrial ownership, then, cannot be separated from the rent seeking considerations discussed in Section III. There is need here for some more detail work.

A case where the product heterogeneity bias is mitigated, and where efficiency comparisons between private and public companies is relatively straightforward, is the Australian airlines experience.\textsuperscript{142} Since the early 1950's there are in Australia only two interstate airlines, TAA, the government owned airline, and ANA, a private company. Australia's "Two Airlines" policy (which was introduced in the early 1950's following a period of substantial restructuring of the industry where it seemed that the private airline would not be able to compete with TAA) promotes the development of two almost identical airlines.

The "Two Airlines" policy, systematically regulates routes, equipment acquisition, fares, entry, and scheduling in such a way that no airline can get a competitive advantage. For example, the same equipment has to be acquired simultaneously, time tables are almost identical, there is no price competition, and entry is effectively blockaded.\textsuperscript{143} This is, then, a unique experiment where regulation seems to eliminate almost any feasible bias because of product heterogeneity. Thus, a comparison of efficiency between the private and public companies seems straightforward.\textsuperscript{144}

\textsuperscript{142}See David G. Davies, "The Efficiency of Public versus Private Firms, the Case of Australia's Two Airlines," The Journal of Law and Economics, (1971), and references therein for a description of the "Two Airlines" policy.

\textsuperscript{143}David G. Davies, op cit, supra note 142.

\textsuperscript{144}Early efficiency comparisons were based on single productivity indexes, with somehow unclear results. A summary of that literature can be found in R. Millward, and D.M. Parker, "Public and Private Enterprise: Comparative Behavior and Relative Efficiency," in R. Millward, D. Parker, L. Rosenthal, (Footnote continued)
is, however, a pitfall in estimating only the productivity differential between the two airlines, namely, that such an exercise will not provide any evidence on the social costs of the "Two Airlines" policy. To jointly estimate the efficiency differentials and also the efficiency losses of the policy, Kirby estimates an hedonic cost function for the two interstate Australian airlines and 18 US local service and trunk airlines for the period 1971 to 1978. Airlines costs are postulated to depend on the operating environment (e.g. number of stops, average stage length, load factors, aircraft size) and factor prices. He estimates the cost function allowing different costs between Australian and the US airlines, as well as between the government and the private Australian airlines. He finds that while TAA's costs are 5% higher than ANA's, both airlines' operating costs exceed the operating costs of the US carriers by 44% before, and by 55% after the deregulation of U.S. Airlines. The costs of the "Two Airlines" policy are then extremely large and outweigh any productive inefficiency which may arise from public ownership.

This somehow lengthy discussion of the role of public ownership in the regulation of industries provides an interesting testable conjecture: the

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144 (continued)

145 This criticism could be applied as well to all other efficiency comparisons of public and private enterprises.


147 Observe also, that hedonic cost functions seem to provide substantially different results than just single productivity indexes.
main inefficiencies associated with public ownership are not derived from its alleged productive inefficiency, but from its impact on the enforcement of inefficient regulations. If this conjecture is empirically valid, then privatization of a public enterprise should be accompanied by a substantial "conduct" effect, realized through the breakdown of the regulatory status quo. Similarly, the creation of a public enterprise should be accompanied by a reduction in the extent of competition in the industry.

Finally, another sector where predictable "unpredicted" regulatory effects have been documented in developing countries is the banking sector. The 'public interest' rationale to limit entry and to restrict the expansion of banks is to avoid the monopolization of the sector. The presumption is, again, that there is a 'natural monopoly' feature in the supply of banking services. If banking consolidation is allowed cartel-like behavior would eventually develop. Spiller and Favaro\textsuperscript{148} analyze the competition effects of the partial relaxation of legal entry barriers in the Uruguayan banking sector. They estimate an oligopoly model where firms' conjectures are allowed to depend on their own and on the retaliating firms' sizes. They find that before legal entry barriers were relaxed, the sector was characterized as an oligopoly where the four largest firms held a high degree of coordination. Once entry restrictions are relaxed, however, the tight oligopoly of the four largest firms was substantially weakened. That is, the relaxation of entry barriers significantly increased the extent of competition. Here, again, the effect of the regulation was

very different from the "optimal regulatory schemes' outcome".

c. Regulatory Changes and Political Institutions.

Regulations are introduced or modified because of 'supply' or 'demand' changes. As discussed in Section III political institutions will tend to promote or deter these 'supply or demand' changes in affecting the regulatory status quo. I am not aware of any study of the effect of political institutions in the development of regulations, except for the pathbreaking work of Robert Bates on agricultural policies in Africa. 149

Bates presents evidence that the political system of colonialism brought very different patterns of agricultural regulations to Ghana and Kenya. 150 While in Ghana foreign nationals were important in the purchase and shipment of export crops, in Kenya they were producers. Thus, while agricultural regulations depressed the price of export crops in Ghana, they were increased in Kenya. Post-colonial regulations, however, differ substantially from the pre-colonial period. In particular, post-colonial political institutions have generated regulations that tend to depress the prices of food crops. 151

Thus, political institutions seem to be important in explaining both the occurrence and effects of agricultural regulations in Africa. My


150 See Bates, Essays on ..., op cit, supra note 149, chapter 3.

151 Bates discusses the importance of the urban sector in promoting this regulatory outcome. See Bates, Essays on..., op cit, supra note 149, Chapter 5; and "The Politics of...," op cit, supra note 150.
conjecture is that they are of equal relevance in the analyses of industrial regulations in developing countries. This conjecture, however, remains to be tested.
V. Final Comments.

The main theme of this survey is that regulations are endogenous outcomes of a process by which private regulatory demands are revealed, and affected by technology and the environment, a political supply side translates them into regulatory policy and action. Thus, to understand the origins and effects of regulations, it is necessary to analyze a) their effects on the individual sectors and firms, b) their efficiency and costs implications (which will be conditioned by the feasible regulatory technologies), and c) the political institutions by which the individual groups can translate their individual demands into policy. These three main issues, will have to be at the core of any systematic study of the causes and effects of regulations in developing countries.

This survey has presented promising directions for regulatory analysis in developing countries. Perhaps the most important is that a natural experiment is needed. Thus comparative analyses of the performance of the same industry across different regulatory environments, or alternatively, an analysis of the same industry in the same country before and after a regulatory change, would provide the necessary variation needed to assess the efficiency and distributional impact of a regulation. Moreover, the cross-sectional variation in both industrial structures and political institutions that characterize developing countries, would allow, perhaps, a more powerful test of the relevance of pressure groups and political institutions that has been performed using U.S. data. It seems to me that one of the lessons of this survey is that political institutions seem to have a larger impact in the development of regulations that was thought of ten or fifteen years ago.

Finally, this survey has identified industries where interesting

-65-
regulatory analyses have been performed in developing countries, and where further work would seem to be highly productive in understanding both the causes and effects of regulations. In particular, previous analyses of the regulation of transportation, cement and pollution control have presented substantial variation across developing countries to qualify as potentially good candidates for further study.
APPENDIX

SUMMARY OF TRUCKING REGULATIONS IN SELECTED DEVELOPING COUNTRIES

ARGENTINA

PUBLIC COMPANIES - No.

PRIVATE FIRMS - Owner Operators 18%
Owners on contract 47%; companies 20%; not for hire 15%.

EXCESS CAPACITY - No.

OVERLOADING - Overloading is a widespread practice: on average by 60% above the authorizing weight.

MAXIMUM WEIGHTS - the Transit Law deals with this matter. In order to reduce overloading, DNV proposed to implement a weight control program.

SYNDICATES - Owner operators group themselves into cooperatives who have leverage in the negotiation of tariffs. They compete with individual owner operators who tend to undercut their rates and with the established companies. The companies are grouped into associations that represent members at government levels and try to get better rates of interest, and negotiate international quotas. The cooperatives charge operators a commission in return for negotiating a contract.

FARE REGULATIONS - No. Certain agencies publish recommended tariffs as guidelines.

LICENSING BY ROUTES - International transport is governed by the Reciprocity Agreement of 1966, which covers licensing, quotas, vehicle requirements. But there's poor implementation.

MAXIMUM NUMBER OF VEHICLES/FLEET - No.

LICENSING OF COMPANIES - Yes, regulated by Road Freight Transport Regulations.

LIMIT TO IMPORTS - No.

PROFITABILITY - The financial situation of the companies is reasonably healthy, but that of the owner operators is more precarious. Financial costs are high and capital costs for fleet replacement are higher than in other countries.

BANGLADESH (1982)

PUBLIC COMPANIES - Small share, about 5%.

PRIVATE FIRMS - Private firms and owner operators are 95%.

EXCESS CAPACITY - No.

OVERLOADING - Common.

MAXIMUM WEIGHTS - Yes, but not enforced.

SYNDICATES - Many belong to the Truck Association which represents them before regulatory agencies.

FARE REGULATION - Yes.

LICENSES BY ROUTES - No.

MAXIMUM NUMBER OF VEHICLES/FLEET - No.

LICENSES OF COMPANIES - Granting of permits to companies. No procedural difficulties in getting it but non-technical considerations play a major role.

LIMITS TO IMPORTS - Pre-1980: One company assembled kits. In 1980 it was liberalized. Now they can import second hand trucks.

PROFITABILITY - Very High. The average unit price is 1.53, while the average unit cost is 1.14.


BOLIVIA (1982)

PUBLIC COMPANIES - NO.

PRIVATE FIRMS - Owner operators, who must join the syndicates 96%; companies, 1.5%; cooperatives, 2.5%. The two latter offer international hauls.

EXCESS CAPACITY - Yes, very low average load factor. Ease of entry.

OVERLOADING - Average load factor is under 40% for domestic transport and 49% for international transport.

MAXIMUM WEIGHTS - National Traffic Service regulates registration of all trucks, vehicle size and weights. The government is studying how to enforce it.

SYNDICATES - Owner operators are organized into syndicates and they comply with tariffs. For example, in 1980, one syndicate of 400 members of which 75% were owner operators and 25% were drivers on contract.
Members paid 5% of gross earnings to syndicate. There are 160 syndicates which belong to a national federation with a total of 70,000 members.

FARE REGULATIONS - Yes, for domestic hauls. International hauls tariffs are determined by the competitive market.

LICENSING BY ROUTES - the syndicates regulate cargo traffic according to routes by acting as cargo brokers. They don't operate international transport. Companies and cooperatives handle it. Trucks devoted to national transport can't be used for international hauls except during peak seasons. International trucks can't handle domestic cargo.

MAXIMUM NUMBER OF VEHICLES/FLEET - No more units than each owner can operate by himself or his family.

LICENSING OF COMPANIES - The government regulates the organization of the industry into syndicates and federations, and the licensing of companies to perform transport of international freight.

LIMIT TO IMPORTS - Yes, that led to a slow down in purchases of new trucks. Since 1975, importation is heavily regulated.

PROFITABILITY - Profit margins are low.

Source: World Bank, Intermodal...

BRAZIL (1982)

PUBLIC COMPANIES - NO.

PRIVATE FIRMS - Owner operators 75%; companies on their own 15%; corporations 10%.

EXCESS CAPACITY - No.

OVERLOADING - Load factor for owner operators is 59%. For transport companies it is 67%. High market share of owner operators on long distance hauls and high commissions charged by brokers to owner operators.

MAXIMUM WEIGHTS - Yes, but enforcement is lax. There are plans to install scales.

FARE REGULATION - Maximum tariffs well above market rates.

SYNDICATES - Companies are grouped in associations at state level and these join in the National Trucking Association (NTC).

LICENSING BY ROUTES - No.

MAXIMUM NUMBER OF VEHICLES/FLEET - No.

LICENSING OF COMPANIES - No.
LIMIT TO IMPORTS - No.

PROFITABILITY - Tariffs compare favorably with costs for distances of less than 1000 km, while the longer distance rates are below costs.

Source: World Bank, Intermodal...

CHILE (1982)

Pre 1975

PUBLIC COMPANIES - State owned transport agencies.

PRIVATE FIRMS - Free entry; owner operators or small fleet owners with fewer than 3 trucks.

EXCESS CAPACITY - N.A.

OVERLOADING - N.A.

MAXIMUM WEIGHTS - N.A.

SYNDICATES - Syndicates handled 95% of traffic.

FARE REGULATIONS - Fares regulated by Government.

 LICENSING BY ROUTES - N.A.

MAXIMUM NUMBER OF VEHICLES/FLEET - N.A.

LICENSING OF COMPANIES - N.A.

LIMIT TO IMPORTS - Low cost financing of vehicles.

PROFITABILITY - N.A.

Post 1975

PUBLIC COMPANIES - Privatized all agencies by making them semi-autonomous and cutting off subsidies.

PRIVATE FIRMS - 43% of the fleet is owned and operated by non transport firms off private carriage.

EXCESS CAPACITY - Yes, due to purchase of higher capacity trucks.

OVERLOADING - Syndicates report 50% load factor, companies report 60 to 70%.

MAXIMUM WEIGHTS - Yes, but no enforcement. There are only 5 scales. Legal limits were increased.

SYNDICATES - Membership information is not available.
FARE REGULATIONS - No. There was a decline of 33% in rates after deregulation.

licensing by routes - About 270 companies handle international cargo, but their share is low because of restrictions imposed by other companies.

maximum number of vehicles/fleet - No.

licensing of companies - No.

limit to imports - There's an 80% import tariff on vehicles with less than 25 tons capacity. Transport by companies increased since owner operators cannot replace vehicles.

profitability - The drop in tariffs leveled by 1977.

source: World Bank, Intermodal...

Colombia (1979)

public companies - No.

private firms - Few (396) companies provide for hire transport. Limited companies - 71%; cooperatives - 12%; companies by shares - 10%; individual companies - 7%.

excess capacity - No.

overloading - Yes, vehicles are too small and expensive.

maximum weights - In 1971 they were raised but still lower than other Andean countries.

syndicates - Owners must associate themselves with companies and use PUC (Planilla Unica de Carga). Companies group into syndicates.

fare regulations - The companies control tariffs and through affiliation, the rates for all affiliated operators. Syndicates also publish tariffs.

licensing by routes - Companies are licensed to operate at a departmental, interdepartmental or national level. About 63% operate on a national level.

maximum number of vehicles/fleet - No.

licensing of companies - Yes, in order to group owners and discourage them from operating individually.

limit to imports - INTRA determines vehicle imports and assembly quotas.

profitability - Very high tariffs, even for small trucks. Large costs are comparatively low. This is the reason for the large demand for trucks and the justification of control of supply by INTRA.
HONDURAS (1979)

PUBLIC COMPANIES - NO.

PRIVATE FIRMS - Independent operators with less than 3 vehicles per firm are the majority, 94%. Large scale freight transport service did develop around the specialized needs of specific sectors within the economy, 6%.

EXCESS CAPACITY - Most vehicles are underutilized which indicates that there is an excess of capacity during certain seasons of the year.

OVERLOADING - Mostly among truckers serving the lumber industry (during the off-peak season). 40% of all trucks on the road were (prior to 1977) more than 15% overloaded, with a high proportion of lumber truckers carrying 30 to 40% more than their vehicles design loads.

MAXIMUM WEIGHTS - In the case of lumber the government imposed weight limits and installed 13 weighing stations for enforcement.

SYNDICATES - In the case of the cement industry, transport is handled on a contract basis with one cooperative, many of whose vehicles are financed through locally owned cement companies. This cooperative has been able to restrict the entry of other operators. For international cargo movements the dominant type of organization is the cooperative. Rates are not fixed by the cooperative.

FARE REGULATIONS - The sector is unregulated, but in the case of lumber, petroleum and cement, by setting their prices, the government sets the price of transport which is included.

LICENSING BY ROUTES - No.

MAXIMUM NUMBER OF VEHICLES/FLEET - No.

LICENSING OF COMPANIES - In February 1976 the Ground Transport Law was signed. All public, for-hire, and contract operators must register with the DGT and request a "Permiso de Explotacion". This gives them the right to operate a trucking firm anywhere in the country. This permit is good for 5 years and it costs the operator one percent of the value of the vehicles. The operator must also request a "Permiso de Operacion" which allows him to use a specific vehicle for his operation. It is valid for a year. The DGT has the power to limit entry and capacity in trucking, but it doesn't use it.

LIMIT TO IMPORTS - No, a wide range of vehicles are imported from all parts of the world.

PROFITABILITY - N.a.

Source: J. Gutman, R. Rechel, "Observations of Unregulated Transport Service in Honduras," TRANSPORTATION RESEARCH RECORD 721, (1979) -72-
INDONESIA (1980)

PUBLIC COMPANIES - Government owned entities operate transport services in all modes (rail, bus, air, sea).

PRIVATE FIRMS - Private sector predominates in road transport. No data available. But in 1975 over 500 firms were engaged in interprovincial trucking in Java. In 1978, road transport for hire represented 45% of all trucks.

EXCESS CAPACITY - No.

OVERLOADING - No.

MAXIMUM WEIGHTS - A recent study recommended an upward revision of vehicle sizes and weights.

SYNDICATES - No.

FARE REGULATIONS - There is fare regulation, but no enforcement. There are general subsidies (e.g. on fuel, credit and taxes) and commodity price subsidies. Subsidies may reach 20% of costs.

/licensing by routes - Interprovincial trucking (3% of the fleet) is subject to some route restrictions.

MAXIMUM NUMBER OF VEHICLES/FLEET - No.

/LICENSING OF COMPANIES - Companies have to be licensed in order to obtain financing and to be able to operate for hire. Licenses are easy to obtain.

LIMIT TO IMPORTS - Commercial vehicle components are imported without any duty. It's prohibited to import fully assembled vehicles. They have to be assembled by a licensed company and requires the use of locally produced components.

PROFITABILITY - N.A.


PARAGUAY (1982)

PUBLIC COMPANIES - NO.

PRIVATE FIRMS - Owner operators ½%; small trucking companies; illegal operators from Brazil, who serve areas not served by local truckers.

EXCESS CAPACITY - No.
OVERLOADING - In 1979 domestic load factor was 55%. International load factor was 64%. Overloading is common with bulding materials.

MAXIMUM WEIGHTS - No enforcement. Scheduled system for 2983.

SYNDICATES - Unrestricted entry to industry. Owner operators group into cooperatives.

FARE REGULATIONS - Operators compete for hauls without cargo brokers. The government doesn't intervene.

LICENSING BY ROUTES - International freight: it is handled by foreign operators. It is licensed by the Government since 1980. Of the 1143 registered vehicles, 966 are owned by foreign interests.

MAXIMUM NUMBER OF VEHICLES/FLEET - No.

LICENSING OF COMPANIES - No.

LIMIT TO IMPORTS - No. Brazil and Argentina provide soft loans to purchase trucks.

PROFITABILITY - Profit margins appear to be adequate and are attracting a steady stream of new operators to meet the increasing demand.

Source: World Bank, *Intermodal*...

PERU (1982)

PUBLIC COMPANIES - Market share not available.

PRIVATE FIRMS - 60% of the fleet owned by owner operators with medium capacity vehicles for hire. Owner operators control 96% of the for hire fleet. 40% is owned and operated by industrial enterprises for the government.

EXCESS CAPACITY - No.

OVERLOADING - Yes.

MAXIMUM WEIGHTS - Yes, there are 5 scales but overloading is common practice.

SYNDICATES - Owner operators control 96% of the for hire fleet and are organized in cooperatives to facilitate marketing (they pay 60 to 20% of tariff). The other 4% is operated by companies averaging 8 vehicles per firm.

FARE REGULATIONS - ORETT establishes tariff ceilings. Enforcement is loose but there's adherence to the tariffs.

LICENSING BY ROUTES - Restrictions on international routes to Chile and Ecuador.
MAXIMUM NUMBER OF VEHICLES/FLEET - No.

LICENSING OF COMPANIES - Owner operators depend on brokerage firms to arrange hauls. There are 100 firms and charge from 10 to 40% of tariff.

LIMIT TO IMPORTS - Over 50% of fleet is assembled in Peru since 1970. The Government is trying to standardize the fleet with a limited number of models and makes. They also liberalized imports to introduce an element of competition in 1970.

PROFITABILITY - The profits/sales ratio among the small companies was 7.5%, while for large companies it's 5.5%.

Source: World Bank, Intermodal...

PHILIPPINES (1983)

PUBLIC COMPANIES - One large company.

PRIVATE FIRMS - a) small number of large companies, b) inter-island shipping companies 5%, c) family companies 14%, and d) owner operators 75%.

EXCESS CAPACITY - No.

OVERLOADING - Load factors are low 55%, although overloading is common.

MAXIMUM WEIGHTS - Yes, but there's no enforcement.

SYNDICATES - No. Trucking associations to communicate with the government.

FARE REGULATIONS - Yes, but no enforcement.

MAXIMUM NUMBER OF VEHICLES/FLEET - No.

LICENSING OF COMPANIES - Yes; granting of Certificate of Public Convenience; and fees.

LIMIT TO IMPORTS - Yes. Restrictions on imports favor local assembly.

PROFITABILITY - Not very good: a) poor collection of receivables, b) poor availability of return loads and c) high operating costs.


URUGUAY (1982)

PUBLIC COMPANIES - No.

PRIVATE FIRMS - Individual owner operators and not for hire trucks control 95% of the fleet; 5% small transport companies.
EXCESS CAPACITY - No.

OVERLOADING - No.

MAXIMUM WEIGHTS - Yes, regulations on size and weights.

SYNDICATES - A small proportion of the companies and owner operators are members of the Uruguayan Motorcar Transport Confederation (CUTA) for domestic services. For international services CATIDU (International Transportation Confederation). The association publishes tariffs but truckers negotiate actual rates.

FARE REGULATIONS - No. Competition causes wide seasonal and commodity variations.

LICENSING BY ROUTES - International transport is regulated by international agreements and supplemented by regulations limiting transit of foreign trucks to certain routes and governing the use of international bridges.

MAXIMUM NUMBER OF VEHICLES/FLEET - No.

LICENSING OF COMPANIES - The government regulates vehicle registration through the Municipalities and circulation through DNT.

LIMIT TO IMPORTS - Import tariffs have been very high (300%). In 1966 import of assembled vehicles was discontinued and assembly was done locally. Tariffs are being reduced to 35% in 1985.

PROFITABILITY - A comparison of published tariffs with estimated costs seem to show a financially stable industry.

Source: World Bank, Intermodal...