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A PREFACE ON MODELLING THE REGULATED U.S. ECONOMY

by

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Arrow's Theorem and its descendants tell us that there is no general satisfactory method of making social decisions in a society sufficiently rich in possibilities and preferences. Yet we do perforce make such decisions. Indeed our economic life seems to be dominated by the use of the power of the state to restrict, regulate and direct economic activity. Experience of contemporary economic life suggests that we are not doing it very well. The impossibility theorems of social choice theory while consistent with poor performance observed, do not in themselves provide a satisfactory basis for understanding the relationships and interactions between state power and economic life, nor does the formal structure of social choice theory provide a satisfactory basis for understanding those relationships. This paper puts forward a structure in which those relationships and interactions can, at least in principle, be expressed and analysed.

We present a view of the regulated economy, expressed partly in formal terms, in which governmental regulation is endogenous and which is broadly consistent with the history and development of our own regulated economy. What we present is a conceptual framework rather than a theory of regulated economies. We are attempting to understand, by a process of simplification and analysis that avoids the traditional separation between the private economic structure and government intervention, the political-economic process as it appears in the U.S. experience. We offer this framework in a spirit of positive thought rather than either of ideological purity or reformist zeal.

It is our hope and expectation that the abstract model of a regulated economy can be made more specific in various ways to permit analysis of more specific questions and eventually to provide theories of regulation capable of predicting specific outcomes from specific assumptions.

In what follows we first give a brief sketch of the history of regulation in the U.S., and discuss some of the problems of modelling a regulated economy. Following that we present the formal model. Finally, we present a reformulation of some relevant parts of U.S. economic history from about 1880 to 1940 as they appear in the light of our model.

I

Private ownership of productive resources and control over their management and disposition never was an unalloyed right in the United States. Police power, the protection of health and safety, was exercised by governments from the time of earliest settlements, and continuously during the colonial era. ^{1/} After independence the powers were usually expanded, and only rarely abandoned

^{1/} Jonathan Hughes, Social Control in the Colonial Economy, Charlottesville, University Press of Virginia, 1976.

by governments. ^{1/} As the country developed these powers, regulation of entry, prices and quality controls tended to proliferate. ^{2/} Beginning with the Interstate Commerce Commission (1887) regulatory power, traditional in the states, was elevated permanently to the Federal level. The Sherman Antitrust Act (1890) was a behavioral sumptuary law placed upon business organization, outlawing strategies and tactics which, however profitable for participating parties, were held to be against the public interest, and therefore were to be illegal. By 1914, with the Income Tax Amendment (1913), the Clayton amendment to the Sherman Act, establishment of the Federal Trade Commission, and the Federal Reserve System, the basic forms of Federal control over the private sector's decision-making processes were in place. Ensuing crises of war and depression produced extensions in all directions of these forms of Federal intervention. ^{3/} With the Employment Act of 1946, and what Herbert Stein called "the fiscal revolution" ^{4/} the police power role was fully augmented to include the

^{1/} A rare abandonment of controls occurred in the most unlikely place, the state of New York in its constitutional revision of 1846: "All offices for the weighing, gauging, measuring, culling or inspecting any merchandise, produce, manufacture or commodity whatever, are hereby abolished..." But in the same place (Article V, Sec. 8) the power to reintroduce such offices is retained, and was in later years abundantly employed. Francis Newton Thorpe, ed., The Federal and State Constitutions, Washington, D. C., Government Printing Office, 1909, p. 2662.

^{2/} James Bryce, The American Commonwealth, New York, Macmillan, 1941, Vol. II, ch. XCVIII. Jonathan Hughes, The Governmental Habit: Economic Controls from Colonial Times to the Present, New York, Basic Books, 1977, chs. 3-4.

^{3/} Gary Walton, ed., Regulatory Change in an Atmosphere of Crisis, New York, Academic Press, 1979, Ch. 3, "Roots of Regulation: The New Deal."

^{4/} Herbert Stein, The Fiscal Revolution in America, University of Chicago Press, 1969.

idea that government, at the Federal level, should play a stabilizing role in aggregate economic life. Both major political parties maintained the laws and agencies supporting this new consensus, and by the 1970's their numbers had been greatly expanded. The Chrysler "bailout" in 1980 was further evidence of the force of the new consensus.

The motivating forces behind these developments can be described in terms that make them apparently unassailable politically. These are protection of the public interest in terms of equity, health and safety, stability and security. In addition, economic theory provides a justification for regulatory intervention on grounds of economic efficiency in cases of "market failure." Providing for the national defense has long been recognized as a legitimate sphere of governmental activity. But with the introduction of the model of public goods, economists have helped make legitimate a broad sphere of activity for governmental enterprise and entrepreneurship.

Views of regulation held by economists and the treatment of regulation in economic theory deserve some comment. Not all economists agreed that the increase of politically-based decision-making about economic affairs sketched above was a good thing for the economy's health,^{1/} but such critics seem

^{1/} Many economists would have none of the arguments justifying the fiscal revolution. Among these are the staunch Austrians, Ludwig von Mises and F.A. von Hayek and their followers. Two influential books highly critical of the new consensus written nearly two decades ago were James Buchanan and Gordon Tulloch, The Calculus of Consent, Ann Arbor, University of Michigan Press, 1962, and Milton Friedman, Capitalism and Freedom, University of Chicago Press, 1962. A decade later the philosopher, Robert Nozick, won the National Book Award for Anarchy, State and Utopia, New York, Basic Books, 1974, which opposed modern ideas of equity through redistribution. By then, the 1970's literature written by economists who opposed the new consensus had grown considerably.

to have been a distinct minority in the profession. ^{1/} Critics tended to view laissez faire as the desirable state of affairs, and governmental intrusion as unnecessary, inefficient, and artificial. While views about the desirability of economic regulation differ, the basic conception of the regulated economy until the 1960's held both by supporters and critics of governmental intervention appears to be the same. This conception, at least as it is expressed in economic theories, was one of a (more or less competitive) private market economy into which government regulation intrudes distorting for good or ill the outcome of the private economic process. Regulation is seen as an outside intervention and not as a part of the economic system itself. This view long prevailed despite the observation that economic regulation is ubiquitous; business is now affected by licensing, quality, entry and other controls.

This view is natural and useful if one is interested in studying properties of a model of the private economy, e.g., existence and optimality of competitive equilibrium, or if one wishes to study the effect of a specific form of regulation in a partial equilibrium setting, e.g., the effect of profit regulation on the input mix employed by a public utility. But it does not seem adequate as a global view of the regulated economy. Here the problem includes explaining the regulatory interventions themselves; that is to say, an adequate model would make regulation endogenous and seek to explain regulation as at least in part a result of the interactions in social institutions of the agents in the society, each driven by his own interests.

It is a constitutional right to organize for the purpose of political actions and while there are some restrictions on the actions of such organizations, (e.g., limitations on campaign contributions by Political Action Committees) on the whole,

^{1/} The statement can be made with some confidence because of the almost incredible adoption rates of the two leading "liberal" basic economics texts, Paul Samuelson, Economics, New York, McGraw Hill, 1948 and 11 subsequent editions; and Campbell McConnell, Elementary Economics, New York, McGraw Hill, 1960, and several subsequent editions. At that level (textbook adoption) the voting by professional economists has been strictly no contest between supporters of the modern consensus and its opponents.

the scope of such an organization is considerably broader than would be permitted under anti-trust laws. An industry or trade association may informally "conspire" to lobby in favor of regulation to fix prices, where the members could not legally meet to consider fixing prices directly. More modern views of regulation see it as part of the larger economic-political system. Roger Noll and Morris Fiorina view the provision of regulation by politicians as part of their efforts to find what the public wants and give it to them. As Bruce Owen and Ronald Braeutigam observe, there are still too many explanations of the regulatory phenomenon to be an explanation of it. ^{1/}

In macroeconomics the governmental role has been accepted, and the idea of the "mixed economy" is now the norm: regulation apart, it is a basically free-enterprise economy which is skimmed by taxation and the proceeds redistributed enough to remove the harshest inequities. Theoretically, the redistribution is supposed to be "stabilizing." More recently both the growth and permanence of the government role has given rise to interest in its function as an ongoing part of the American economy, as well as to efforts to define more closely those areas in which there is some logical reason for the intrusion of governmental activity.^{2/}

To help see what a model of endogenous regulation has to cope with, we can examine briefly salient features of our historical experience.

^{1/} Bruce M. Owen and Ronald Braeutigam, The Regulation Game: Strategic Use of the Administrative Process, Cambridge, Massachusetts, Ballinger, 1978, ch. 1 for a discussion of Noll and Fiorina in the context of other important modern studies.

^{2/} William A. Niskanen, Jr., Bureaucracy and Representative Government, Chicago, Aldine, 1971; Richard E. Wagner, The Public Economy, Chicago, Markham, 1973; James Buchanan and Robert Tollison, eds., The Theory of Public Choice, Ann Arbor, University of Michigan Press, 1972; Peter Aronson and Peter Ordeshook, Causes and Consequences of Public Sector Growth (forthcoming). Susan Rose-Ackerman, Corruption: A Study in Political Economy, New York, Academic Press, 1978.

II

While our society's methods of nonmarket governmental control may seem at times to be irrational from a global viewpoint (the economy as a whole), they appear in fact to be the products of economic and political forces which are logical enough in relation to each other, case by case, within the framework of our traditions, laws and constitutions. It is important here to emphasize the congeniality of our regulatory methods with our basic ideas about such matters as property rights, equity, and freedom. Far from constricting these, nonmarket controls over business activity are most commonly believed to enhance freedom and property rights by constraining the few in the interest of the many. In particular, a "risk-averse" population seems to prefer the "equity" of administrative processes to the dangers of adverse "market decisions."^{1/}

How does our regulatory process continue to satisfy its clientele? Regulation is, after all, what we want, collectively. To deny this would be difficult indeed, given the record of presidential and congressional elections since 1932. In the past decade candidates for public office have found anti-regulation a successful stance during campaigns; but in fact the regulatory apparatus continues to expand, with "reforms" being at best cosmetic. The agencies of control are the creations of Congress, the members of which were elected in competitive political processes during the nine decades of active Federal nonmarket control. Had our techniques and agencies of control not been fundamentally congenial there was plenty of time and opportunity to change or abolish them. We have, it would seem, what we want collectively. The idea is really remarkable given that our form of government regulation has the following characteristics, among others.

- (i) It seems, at any point in time, to work at cross-purposes.
For example: inflation-producing agencies continue their work against a (stated) background policy of anti-inflation; e.g., programs and agencies designed to limit energy production and maximize consumption flourish against an overall policy of expanded energy output and restrained consumption.

^{1/} Owen and Braeutigam, op. cit., pp. 25-32.

- (ii) Each group benefiting from regulation approves its own regulatory "deal" but would prefer that the rest of the agents in the economy should compete with each other. So even though each part of the regulation is supported by those concerned, in sum, most of the regulation is disapproved of by most of those involved. The result is a paradox; massive support of a regulatory apparatus that is at the same time the object of widespread complaint and criticism. Indeed, at any moment each regulatory deal may well be the object of criticism by all the other sectors in the economy. Truckers approve of ICC regulation, but would prefer taxis to compete with each other. Cab-owners approve of their own licensing deal, but want the trucking industry to be competitive. Each part is both approved and disapproved, depending upon whose ox is being gored.
- (iii) Despite evident failure to achieve either specific or overall policy goals the system grows continuously. There is no significant movement inside the regulatory apparatus to reduce either the size or scope of regulation despite continuous criticism and opposition from the outside. This peculiarity has given rise to tax revolution (real and attempted), efforts to limit expenditures by constitutional amendment, and the like. Moreover, in the past thirty years the system has grown enormously without advocacy of its growth by either major political party or any presidential candidate. That is, regulation has sufficient internal strength and motivation to assure its expansion in the economy and intrusion into ever-widening circles of economic activity without major political support.
- (iv) Since laws establishing regulation tend to use purposely vague and imprecise language like "public interest and convenience," the outcomes of regulation tend to be the results of regulatory processes,^{1/} and cannot have been those that were the objects of originating legislation except by sheer accident. If economic efficiency should be an outcome, it must also be accidental.
- (v) Nearly all regulation involves an income and wealth transfer process, creating economic rents and a clientele of rent-seekers who benefit at the expense of others, [the public at large]. Those who lose in the process have the opportunity to seek relief in the courts and by political processes.

A phenomenon with these characteristics will not likely be captured by a model which attempts to explain regulation in terms of some global rationality, nor indeed by one in which individuals behave as simple maximizers, as is the case with, say, producers in competitive markets, or monopolists. In the presence of the conflicts of interest among economic

^{1/} Owen and Braeutigam, op. cit.; as they put it, in regulation "the procedure is the outcome." p. 26.

agents that are characteristic of economic life, the power of the government must inevitably become a focus of conflict among private agents. These agents, or groups of them, seek to use the power of the state to advance their interests and to prevent others from damaging them. We are led by this view to formulate a model in which the strategic elements of game theory play an important role.

Static Model

There are two types of agents explicitly in the model, (and an additional type implicitly modelled.) These are: 1) economic agents, numbered $\{1, \dots, n\} = I$. The set I includes both private economic agents, i.e., producers and consumers, and governmental economic agents, such as T.V.A., Defense Department agencies, etc. 2) regulators; the set J includes existing regulatory authorities. (In the subsequent dynamic version, J is taken large enough to allow for potential regulators as yet inactive.)

The Unregulated Economic Process

We begin by modelling an unregulated economic process. The adjustment process or resource allocation mechanisms model of Hurwicz ^{1/} and Mount/Reiter ^{2/} in its static version is used for this purpose. We separate those elements which are characteristic of the economic system, such as structure of markets or tax laws, from those that are given from "nature" or from the past, such as endowment of natural resources or stock of capital. The latter are called the "environment." A particular environment will be denoted by e ; the set of environments by E .

Given an environment e , the characteristics of each agent are determined, i.e., agent i 's production set, consumption set and preference relation being part of the data constituting e are given when e is

^{1/} L. Hurwicz, "Optimality and Information Efficiency in Resource Allocation Processes," in Mathematical Methods in the Social Sciences, edited by Kenneth J. Arrow, Samuel Karlin, and Patrick Suppes, Stanford University Press, 1960.

^{2/} Kenneth Mount and Stanley Reiter, "The Information Size of Message Spaces," Journal of Economic Theory, Vol. 8, No. 2, June 1974.

given. Denote by e^i the characteristic of agent i when the environment is e and by E^i the set of all such characteristics e^i corresponding to $e \in E$. ^{1/} It is assumed that agent i knows his own characteristic e^i .

Regulators have no direct knowledge of the environment. They must, in the static version of the model, choose their regulations in ignorance of the environment e , knowing only that it is one of a set, E , of possible environments. ^{2/}

The unregulated economic process is modelled (very abstractly) as follows. There is a communication process using some formal language of messages or signals; e.g., the competitive process can be viewed as using prices and quantities as messages, by means of which agents communicate their excess demands. This process results in stationary or equilibrium messages, which may be interpreted as encoding the economic plans or decisions of the agents. These are translated into actions, which, in turn, determine an allocation. We shall focus attention on the actions, evaluating them by the value of the allocations they lead to. This is represented formally as follows: ^{3/}

Let \mathcal{M} denote the space of possible messages. We may for the moment suppose that $\mathcal{M} = \mathcal{M}^1 \times \dots \times \mathcal{M}^n$ where \mathcal{M}^i is the space of messages of agent i , $i = 1, \dots, n$.

^{1/}Formally e^i is a projection of e on subspaces corresponding to agent i . If the environment is decomposable (absence of externalities) then $e = (e^1, \dots, e^n)$ and e^i is just the i th component of the data constituting e .

^{2/}This is an extreme assumption. Regulators may have partial information about the environment.

^{3/}See Hurwicz, L., op. cit., or Mount, K. and Reiter, S., op. cit., for a more detailed account of this model. This model is, of course, not confined to the competitive mechanism. A broad class of alternative economic processes can be represented in this way. Therefore, in modelling the unregulated economy in this way, we do not commit ourselves to the position that the economy is competitive, or even that markets and prices are the allocation mechanism in use.

Agent i is assumed to know only his own component e^i of the environment e . His response function, f^i , models the way agent i responds to information received from others in the light of what he knows about the environment. Thus,

$$1) \quad f^i(m_t, e^i) = m_{t+1}^i, \quad i = 1, \dots, n.$$

Where $m_t = (m_t^1, \dots, m_t^n)$.

Thus at any stage t of the communication process, agent i , knowing e^i , receives messages $m_t = (m_t^1, \dots, m_t^n)$ from all the agents and revises his message m_{t+1}^i at the next stage on the basis of what he then knows.

A message n -tuple

$$\bar{m} = (\bar{m}^1, \dots, \bar{m}^n)$$

such that $f^i(\bar{m}, e^i) = \bar{m}^i \quad i = 1, \dots, n,$

is called an equilibrium message. We suppose that the difference equation system 1) is such that its solutions converge to equilibrium messages.

Since equilibrium messages are given by

$$f^i(m, e^i) - m^i = 0 \quad i = 1, \dots, n,$$

we can define

$$\mu^i(e^i) \equiv \{m \in \mathcal{M} \mid f^i(m, e^i) - m^i = 0\} \quad i = 1, \dots, n,$$

and hence

$$\mu(e) \equiv \bigcap_{i=1}^n \mu^i(e^i) \equiv \{m \in \mathcal{M} \mid f^i(m, e^i) - m^i = 0, \quad i = 1, \dots, n\}.$$

We call μ^i the equilibrium message correspondence (set valued function) of agent i , and μ the equilibrium message correspondence of the process. Note that the

message correspondence formulation is more general than that using response functions, but response function model is a bit easier to interpret.

$$\text{Let } \mu^i : E^i \rightarrow \mathcal{M} \quad i \in I$$

be the (equilibrium) message correspondence of economic agent i .

Thus,

$$\mu^i(e^i) \subset \mathcal{M}$$

is the set of messages agent i "sends" when his environmental component is $e^i \in E^i$. For example, in a pure exchange environment e , e^i would denote agent i 's consumption set, preference relation and initial endowment. If μ^i is to represent i 's behavior according to the competitive mechanism, then $\mu^i(e^i)$ is the graph of agent i 's excess demand function, viewed as a set in the message space, $\mathcal{M} \equiv \mathcal{R}^l \times \mathcal{R}^l$, whose points (p, q) are price-quantity pairs. ^{1/}

The correspondence

$$\mu = \bigcap_{i=1}^n \mu^i$$

maps environments into equilibrium messages. Thus, in the pure exchange competitive case,

$$\mu(e) = \bigcap_{i=1}^n \mu^i(e^i)$$

consists of the market clearing price-quantity pairs, i.e., those that make aggregate excess demands equal to zero.

Finally, the outcome function

$$h: \mathcal{M} \rightarrow A$$

translates the equilibrium messages into actions or outcomes.

In this model of the economic process, the message space \mathcal{M} and

^{1/} Mount-Reiter, *op. cit.* gives an explicit formulation of the competitive mechanism as a formal resource allocation mechanism of this type.

the outcome function h may be interpreted as representing institutional arrangements, while the message correspondences μ^i , $i \in I$, represent the behavior of the agents.

Regulated Economy

We next model the regulated economy, including the set J of regulators. We suppose that the number of regulators is $m \geq 0$.

Regulatory instruments are of two kinds;

- 1) incentives,
- and,
- 2) direct constraints on behavior.

To model incentives, we suppose that each regulator $j \in J$ can choose a parameter θ^{ij} , $i \in I$ determining incentives confronting economic agent i .

Thus, let

$$\theta^{.j} = (\theta^{1j}, \dots, \theta^{nj})$$

and

$$\theta = (\theta^{.1}, \theta^{.2}, \dots, \theta^{.J}).$$

The vector θ is the parameter of choices made by all regulators.

We may regard the choices θ of regulators regarding incentives as messages to the private agents. Then the full message space is $\mathcal{M} \times \Theta$, where Θ is the space of possible vectors θ . Thus, the outcome function h maps $\mathcal{M} \times \Theta$ to A , i.e.,

$$h: \mathcal{M} \times \Theta \rightarrow A.$$

For each $\theta \in \Theta$, $h(\cdot, \theta)$ is a function from \mathcal{M} to A . We also write h_θ for $h(\cdot, \theta)$.

1/

We do not formally distinguish those agents i that regulator j has the authority to regulate. He issues regulations for all agents, ineffective for those outside j 's authority, i.e., h_θ will be independent of those components θ^{ij} for which i lies outside of j 's authority. Thus, each agent is "regulated" by all regulators.

The outcome function h_θ , jointly determined by the regulators, may reflect payment of subsidies or levying of taxes or other actions that influence the outcomes that result from the choices made by the economic agents. ^{1/}

To model direct constraints on behavior, let $\rho^{ij}: E^i \rightarrow \mathcal{M}$ $i \in I, j \in J$ denote a correspondence imposed by regulator j on economic agent i and interpreted as a constraint on agent i 's behavior. Thus, when agent i has environmental characteristic e^i , and the regulator j imposes ρ^{ij} , agent i must satisfy ^{2/}

$$\mu^i(e^i) \subset \rho^{ij}(e) \text{ for every } j \in J$$

or,

$$\mu^i(e^i) \subset \bigcap_{j \in H} \rho^{ij}(e^i) \equiv \rho^i(e)$$

($\rho^{ij}(e) = \mathcal{M}$ for all $e \in E$ would express the condition that i 's behavior is not constrained by j .)

Let $\rho^j = (\rho^{1j} \dots \rho^{nj})$ and write $r^j = (\theta^j, \rho^j)$ for $j \in J$. Then r^j is the full regulatory instrument chosen by regulator j .

Since regulator j cannot observe the environment directly, he cannot know which environment $e \in E$ obtains. How then can he know whether his regulation ρ^{ij} is complied with?

Regulator j may have some partial information about the environment.

1/

The entitlements program, which requires oil companies to make payments to one another depending on the use of domestic versus imported oil is a contemporary example.

2/

An alternative formulation would provide for penalties for detected deviations from the condition $\mu^i(e^i) \subset \rho^{ij}(e)$.

An example of regulatory constraints which depend on the environmental characteristic is provided by profit regulations which depend on the underlying technological constraints.

He may observe certain "signals" depending on the environment e . Say $\eta^j(e) = y_j$ is the signal j observes about the environment when it is e . His regulation could then be made conditional on y^j , say $\bar{\rho}^j(y^j)$. But then defining

$$\rho^j \equiv \bar{\rho}^j \cdot \eta^j$$

or

$$\rho^j(e) = \bar{\rho}^j(\eta^j(e)),$$

yields the constraint given above. Enforceability is, of course, relative to information. ^{1/} A special case, arising in particular when j knows nothing about e is that in which ρ^j is constant. I.e., the regulator may impose certain constraints on behavior which are independent of the environment e . Thus, $\rho^{ij}(e) = M^i \subset \mathcal{M}$ for all $e \in E$.

Outcomes

Thus, if (i) regulator j chooses $r^j = (\theta^j, \rho^j)$, (ii) economic agent i chooses μ^i and (iii) Nature chooses e , then the outcome of the economic process is

$$h_{\theta} \cdot \mu(e),$$

where μ^i must satisfy

$$\mu^i(e^i) \subset \rho^i(e) \text{ for all } i \in I \text{ and } e \in E.$$

^{1/} Baron, D., and Myerson, R., "Regulating a Monopolist with Unknown Cost," Discussion Paper No. 412, The Center for Mathematical Studies in Economics and Management Science, Northwestern University, have given an analysis of this type of situation in a specific regulatory context.

Constraints on Regulators

Regulators are constrained by

(i) legal and institutional constraints,

and

(ii) resource constraints.

If we suppose that regulator j knows that agent i knows the value of e^i when the environment is e and that agent i also knows that the regulator's information about e is $y^j = \eta^j(e)$, then regulator j may anticipate that agent i will choose his behavior optimally, in his own view, within the constraints of detectability imposed by j 's information. Therefore, regulator j can choose his regulatory instrument ρ^{ij} so as to bring i 's choice as near as possible to his own objective.

The legal and institutional constraints operating on regulator j are expressed by the requirement that r^j belong to a set R^j of legally available regulations.^{1/} The resource constraint on regulator j is expressed by his budget $b^j \in R_+$ (the non-negative real numbers) and the function K , which attaches to each element $r^j = (\theta^j, \rho^{\cdot j})$ a cost $K(r^j) = K(\theta^j, \rho^{\cdot j})$ in dollars, of administering the regulations r^j .

1/

In this country the legal restrictions on regulation evolved, culminating in the pivotal case of Nebbia v New York (291 US502). The modern effusion of governmental regulatory power over the private sector came from expansions of the police power first from the hands of state legislatures, and then by the elevation of those powers to the Federal level, beginning with the establishment of the Interstate Commerce Commission in 1887. The power of government regulation to expand beyond those areas sanctioned by ancient tradition had begun in the courts. The first augmentation came in the fateful case, Munn v Illinois (1877) when state regulation of a private warehouse was affirmed (and with it the power of state commissions to regulate railroad rates). (Munn v Illinois, 94 U.S. 113; Chicago, Burlington and Quincy Railroad v Iowa 94 U.S. 155; Peik v Chicago and Northwestern Railroad, 94 U.S. 164; Chicago Milwaukee and St. Paul Railroad v Ackley, 94 U.S. 179; Winona and St. Peter Railroad v Blake, 94 U.S. 180. All were reported together in spring of 1877 and known collectively as the Granger Cases.) Having opened the way, the courts then for

(Generally, the cost should depend on the environment e as well.

Here we are implicitly "averaging out" the environment.) Regulator j

is constrained to choose r^j in

$$R(r^j, b^j) \equiv \{r^j \in R^j \mid K(r^j) \leq b^j\} \quad \underline{1/}$$

We write $R = (R^1, \dots, R^m)$ and $b = (b^1, \dots, b^m)$.

(footnote continued) decades tried to hold back the flood by restricting the application of Munn criteria to other industries by control-minded legislatures. (Wolff Packing Company v Court of Industrial Relations of the State of Kansas, 262 U.S. 522 (1923); Tyson v. Banton, 273 U.S. 418 (1927). During World War I the legislation converting the U.S. economy to a command basis was couched in the language of Munn; for example, the crucial Lever Food-Control Bill of August 1917. Hughes, The Governmental Habit, pp. 139-140.) The floodgates, perhaps inadvertently, were finally opened wide by Nebbia v New York (1934). Again, it was a police-power decision at the state level which had reached the U.S. Supreme Court.

In Nebbia the Supreme Court upheld a New York law designed to reduce the price of fluid milk to processors ("large dealers") under the guise of stabilizing the incomes of raw-milk producers, farmers. The device was a three-man Milk Control Board with the power to set the minimum and maximum prices of fluid milk sold at wholesale and retail. Price on the farm was left free of control. All buyers and sellers of milk had to be licensed by the Board. It was held that (a) minimum wholesale and retail fluid milk prices would somehow raise farm incomes, and b) minimum prices would assure an adequate supply to consumers. The latter was irrelevant, since the problem at the time was surplus milk. The former appear to have been a primitive ruse which allowed big dealers to acquire their raw material cheaper than would have been true had retail milk prices been allowed to reach equilibrium levels. Prices controlled above market levels created excess supplies of fluid milk which then could be purchased for processing at lower prices to the farmers. Only a cut in milk production by farmers could have thwarted this outcome. Seen in this light the court case shows the footprints of a coalition of big dealers able to influence regulation in its favor trampling the interests of the less organized farmers, consumers and retailers. (It is possible, depending on elasticities of demand and conditions of supply, that farmers may also have been short-run beneficiaries and perhaps coalition partners at the expense of consumers and retailers.)

^{1/}The legal constraint on regulators is here modelled as absolute. This parallels the approach taken to the force of regulations on economic agents. Hence there is no role for the courts in this model.

Evaluation of Outcomes

Each agent, whether an economic agent or a regulator, has a utility function, expressing the agent's evaluation of outcomes (actions) which may (for economic agents generally would) depend on the environment. Thus,

$$U^i: A \times R \times E \rightarrow R \quad \text{for } i \in I \cup J$$

is the utility function of agent i .

(footnote continued) What Nebbia shows, as seen from our point of view, is the legitimacy of the use of state power to regulate economic processes constrained only by political decisions, in Nebbia specifically by legislative discretion.

The Court was not mainly concerned with the economics of the New York law (nor does the majority opinion imply any understanding of it), but rather, with the legislature's right to pass such a law. In its majority opinion the Court held that the police power was sufficient for such regulation (had always been), that due process was protected, and that private contracts could be restrained by police power: "The Constitution does not secure to any one liberty to conduct his business in such a fashion as to inflict injury upon the public at large, or upon any substantial group of people" (Nebbia, p. 539). The culprit, Nebbia, a grocer of Rochester, had sold two quarts of milk below nine cents a quart, the legal retail minimum. The constitutional (contract) limitation here quoted referred to the defense allegation that the transaction had been entirely satisfactory to both buyer and seller.

The Court, upholding the New York legislature, undid the efforts of previous courts to restrict the growth of regulation. Under the Munn doctrine police power controls over private economic life were restricted to private business "affected with a public interest." It was a vague barrier, but a barrier. Business successfully proved their private character in courts of law and freed themselves of regulation. (Examples are Wolff Packing Company, and Tyson v Banton cited above.) In Nebbia the court did indeed argue that milk production was an important industry in New York state, and that its regulation was consistent with the general welfare. And the Court further argued that 1932 was a crisis year and that further justified use of the police power to fix milk prices. But, apparently unconvinced by its own argument, the Court then eliminated Munn: "It is clear that there is no closed class or category of business affected with a public interest ... The phrase 'affected with a public interest' can, in the nature of things, mean no more than that an industry for adequate reason, is subject to control for the public good ..." (Nebbia, p. 536). Munn had pushed the gate ajar for the growth of

Suppose $(a, b^i, e) \in A \times R \times E$. Then $U^i(a, b^i, e)$ is the utility of agent i attaches to the outcome a where b^i is his institutional budget and e is the environment. If i is an economic agent his institutional budget, b^i , is zero. If i is a regulator then b^i denotes the budget of regulator i and U^i reflects his 'mission' as

(footnote continued) regulation; Nebbia heaved Munn aside and left legislative discretion as the only barrier to ubiquitous nonmarket control of the economy by government. Nebbia made the New Deal and subsequent regulation unassailable by private interests adversely affected. Justice Field, dissenting in 1877, had seen this coming in Munn. "The principle upon which the opinion of the majority proceeds is, in my judgment, subversive of the rights of private property, heretofore believed to be protected by constitutional guarantees against legislative interference... If this be sound law ... all property and all business in the State are held at the mercy of a majority of its legislature " (Munn, p. 136).

In Tyson v Banton (1927) the Court ruled that the New York legislature had been wrong to declare theatre-ticket scalping subject to regulation because theatre tickets were clothed in the public interest. Oliver W. Holmes, dissenting in Tyson, agreed with Field about Munn but for the opposite reason. "...the notion that a business is clothed with a public interest and has been devoted to the public use is little more than a fiction intended to beautify what is disagreeable to the sufferers. The truth seems to me that, subject to compensation when compensation is due, the legislature may forbid or restrict any business when it has a sufficient force of public opinion behind it " (273 U.S. 446)

Holmes was close to what Field feared most, that anything, from a city mansion to a calico gown, could be regulated in the public interest. It was left for Nebbia to finish the job. Dissenting from the majority in Nebbia, Justice MacReynolds could now see that Munn had actually served as a restraint against extension of the police power strictly at the discretion of legislatures. "Munn v Illinois ... has been much discussed in the opinions referred to [by the majority]. And always the conclusion was that nothing there sustains the notion that the ordinary business of dealing in commodities is charged with a public interest and subject to legislative control. The contrary has [now] been distinctly announced. To undertake now to attribute a repudiated implication to that opinion [i.e., Munn] is to affirm that it means what this Court has declared again and again was not intended " (Nebbia, p. 555).

But the rule of Nebbia was destined to hold. Private contracts for sale of commodities were subject to price control. "But neither property rights nor contract rights are absolute; for government cannot exist

well as "private" preferences he may have, e.g., he may prefer a larger to smaller budget, or wider to narrower authority. Writers on bureaucracy frequently comment on the existence of bureaucratic self-interest and its effects on the behavior of bureaucrats. A regulator's utility may not depend directly on e since he does not observe it.

A Game: Level I

The agents and regulators are modelled as players in a complex game. We present this game on two levels. On the first level, the behavior of economic agents is to observe r and choose μ . Therefore a strategy for economic agent $i \in I$ is a function

$$\alpha^i: R \times b \rightarrow M^i,$$

where

$$M^i = \{ \mu^i: E^i \rightarrow \mathcal{M} \}$$

(footnote continued) if the citizen may at will use his property to the detriment of his fellows, or exercise his freedom of contract to work them hard" (Nebbia, p. 523).

Whatever the government believed should be controlled could be controlled. The notion that private property was "absolute dominion" in Blackstone's classic phrase, would be dispensed with in modern America. "... the power to promote the general welfare is inherent in government ... a state is free to adopt whatever economic policy may reasonably be deemed to promote public welfare, and to enforce that policy by legislation adapted to its purpose. The courts are without authority either to declare such a policy, or, when it is declared by the legislature, to override" (Nebbia p. 524). Field lost in 1877, and ever after; the view of Holmes' dissent in 1927 was the majority opinion in 1934. Since Nebbia the expansion of government regulation has proceeded with few checks indeed emanating from the private sector. The game became not to resist, but to adapt, and to influence the regulatory innovations.

and $\alpha^i(r,b)$ satisfies

$$\alpha^i(r,b)(e^i) \subset \beta^i(e) \quad \text{for all } e \in E \text{ and } i \in I.$$

Regulator j chooses $r^j \in \beta^j(\rho^j, b^j)$. Thus, given (ρ, b) a certain game - form $\Gamma(\rho, b)$ is defined: [This is actually a parametric family of games with parameters $e \in E$]

The regulators generally do not have full information about the environment e , and hence do not know which particular game they are playing. In effect the regulators know that the economic agents have information relevant to the game that the regulators do not have. One model available for such situations is the game of incomplete information.^{1/} In such a situation the regulator's task is, in part, to formulate incentives and rules which will lead to outcomes he prefers even when he doesn't know the environment, e.g., the utility functions, of the other players.^{2/} Continuing the formulation, the set of players is $I \cup J$. The strategic domain of player $i \in I$ is the set of functions α^i from ρ to the set of correspondences μ^i from E^i to \mathcal{M} satisfy the regulations $r \in R$. The strategic domain of player $j \in J$ is $\beta^j(\rho^j, b^j)$. The payoff to player $i \in I$ when the strategies $(\alpha^1, \dots, \alpha^n, r^1, \dots, r^m)$ are chosen is

$$U^i(h_\theta \circ \alpha(\cdot), b^j, e)$$

^{1/}Harsanyi, J., "Games with incomplete information played by 'Bayesian' players." Parts I-III, Management Sci. 14 (1967-1968), pp. 158-182, 320-334, 486-502.

^{2/}See ibid.

that is, each private agent, knowing the regulations issued by all regulators, decides how he will behave in each environment he might find himself. Given the regulations of all regulators and the choices of the private agents, a correspondence μ , and a function h_θ are determined, hence the mechanism determined by μ and h_θ is specified and determines an outcome for any environment that might obtain. The payoffs are given by the utility functions, which we note also depend on the environment.

Now the games $\Gamma(\rho, b)$, (whether viewed as games of incomplete information, or as non-cooperative games in normal form), admit several solution concepts, e.g, Bayes equilibria for the games of incomplete information, Nash equilibria or other possibilities for the other case. We need not here resolve the question of which solution concept to use.^{1/} Interpretation of the experience of regulation may help shed some light on this question, since it is in part a question of modelling. For our present purpose we shall suppose that there is some concept that leads to the identification of good strategies $(\hat{\alpha}, \hat{r})$ in the game $\Gamma(\rho, b)$ and corresponding values to the players. We denote this value

$$V_{\hat{\alpha}}^i(e, \rho, b) \quad i \in I \cup J . \quad \frac{2/}{r}$$

^{1/} The appropriate solution concept here is a major issue, perhaps the major issue, of this sort of model.

^{2/} Pairs $(\hat{\alpha}, \hat{r})$ of "good" strategies are generally not unique. (E.g., this is the case with Nash equilibria in n-person cooperative games.) Moreover, different pairs need not necessarily be equivalent. Thus, the value $V_{\hat{\alpha}}^i(e, \rho, b)$ should also depend on the strategy pairs $(\hat{\alpha}, \hat{r})$. We denote r the dependence on \hat{r} explicitly. This may be interpreted as reflecting an assumption that the regulators' strategic choice determines which solution will arise as the agents adjust to the regulations. The possibility of multiple solutions can be related to the commonplace

It is the value (in a sense corresponding to the underlying solution concept) to player i of playing in the game $\Gamma(\rho, b)$ for each $e \in E$. Thus, it reflects to player i the effect on him, allowing for

(footnote continued) observation that the regulatory apparatus often nullifies itself because of its own internal conflicts. Hence it really is not so much a government as it is a congeries. This outcome could hardly be avoided since the agencies go back some nine decades in age, each one established with its own separate mission, connected to each other only vaguely by the idea that the "public interest" be somehow discovered by them and served. Since that interest cannot be known, each agency is left to fend for itself, and for those whose business fall within their purview. Administrations come and go with presidential elections and it is not certain to whom the more general policy directives of these transient White House occupants are addressed. The big permanent agencies are "independent," and indeed were mostly meant to be impervious to passing fashion in the Executive branch, and in Congress as well. The staggered terms of the top appointees were meant to assure such independence. The agencies are of course bound to adhere to court rulings in cases involving agency rulings. But the courts themselves are meant to be, at least so far as judicial appointments are concerned, sanitized from direct political influence. The result, naturally enough, is a history rich in conflict between the various parts of total government. Perhaps the single most glaring historical example was the Treasury and Federal Reserve Board effort in 1936 and 1937 to offset the potentially inflationary consequence of the gold inflow, after four years of persistent and sometimes constitutionally questionable efforts by the Roosevelt administration to force prices and wages to rise.

Fear among Treasury and Federal officials that the gold inflow would produce inflation produced Keynes' famous quip: "They profess to fear that for which they dare not hope." The "tight money" episode of 1936-37 and its role in the 1938 recession is discussed in Milton Friedman and Anna J. Schwartz, A Monetary History of the United States 1867-1960, Princeton University Press, 1963, Ch. 9. The rest of the Roosevelt government was still pursuing income-support policies. The NRA fiasco of 1933-34 had been an attempt to create inflation by industry cartelization. New agencies in agriculture, housing, conservation, and public works were attempting to achieve the same goals.

Less dramatic examples of such conflict occur with regularity. In the 1970's efforts by the entire sequence of presidential establishments of both parties to fight inflation were sandbagged by continuously rising spending programs emanating from Congress and by agencies of New Deal origins like the Commodity Credit Corporation and the Federal

"intelligent" or "correct" strategic behavior of all players, of being in the regulated economy with the legal and budgetary framework (P,b). This permits the agents and regulators to evaluate, each from his own viewpoint, alternative legal and budgetary frameworks of regulation.

(footnote continued) Federal Home Loan Banks, whose historic missions, income supports, were to maintain and raise prices. Some agencies have a police warrant to guard against unfair practices or the sale of unsafe or substandard products without regard to the price effects of their actions. These controls have greatly expanded since 1960. Murray Weidenbaum, Business, Government and the Public, Englewood Cliffs, New Jersey, 1977, Ch. 2. In the traditional agency-industry set-up the regulatory body has traditionally been responsible for the regulated industry's general health, leading to charges that the agencies were "captured" by the regulatees. The newer regulations have been dubbed "intrusive" by Morris Fiorina, "Facilitation of Government Growth: Universalism and Reciprocity Practices in Majority Rule Institutions," Peter Ordeshook and Peter Aranson, eds., The Causes and Consequences of Public Sector Growth, (forthcoming).

In the fall of 1979 a large group of Chicago building developers announced an agreement not to raise their prices for 60 days. The action was, they said, an anti-inflationary move undertaken in the public interest. Alfred Kahn, the chief "inflation fighter" of the Carter administration praised the agreement, saying it takes "the efforts of all of us, working together, to bring inflation under control." The FTC saw the agreement to fix prices as a combination in restraint of trade, and threatened the builders with anti-trust prosecution if their price-fixing pledges were not withdrawn. Professor Kahn represents in this episode the Carter administration's highest-priority economic policy, and the FTC its ancient warrant to enforce the Sherman Antitrust Act of 1890. The motives are unrelated, the powers separately established, the actions conflicting. Such conflict within the regulatory sector, illustrated by Professor Kahn and the FTC in the case of the Chicago builders, are natural outcomes of diverse origins and motivations of the regulatory apparatus. Overlapping regulatory jurisdictions are of course other sources of conflict.

For example, steel imports bring revenues to shippers but are opposed by U.S. steelmakers. Hence in 1978 a proposed change in the transportation allowance to help shippers in the calculation of the trigger price governing steel tariffs was opposed in Treasury Department hearings by Inland Steel. Both the shippers and the steelmakers gain a rent from the Tariff. But there remain areas for dispute over the distribution of the rents. Chicago Sun Times, 13 June, 1978. Congress established protection for steel. But how many agencies influence the distribution of the resulting rents?

Political Processes

All players in I U J participate in a political process. E.g., coalitions are organized, political parties or factions are formed, action groups organize and function, etc. This process also involves political agents such as congressmen, senators, members of the administration etc. We do not model the political process in detail here. It suffices for the present purpose to note that the outcome of that process, however complex and interdependent its details, is the legal and budgetary framework of the game - form Γ . This outcome is influenced by the strengths of the agents, including the economic agents and the regulators, through their ability to influence the politicians. ^{1/}

1/

The use of group political action to influence regulatory actions by influencing the framework given to the regulators by the government authorities is exemplified by the recent experience of the Federal Trade Commission. The Federal Trade Commission, an old-time agency originally created (1914) to enforce the antitrust laws, was over the years given other duties including the power even to stop deceptive advertising.

After some decades of relative inaction and criticism by consumer groups for being a captive of those it is charged with regulating, the new political strength of the consumer movement led to a more active policy by the agency. Its more aggressive approach to its responsibilities has led to alienation of a growing portion of the country's businesses and business groups. By the late 1970's the FTC was under fire from many directions. The FTC had planned to impose restraints and guidelines on advertisers of products for children, the costs of funerals, information provided by used-car-dealers and standard-setting practices of trade associations. Offended industry groups could fight extension of FTC power through Congress, which controls the FTC's budget, and that by the fall of 1979 became the instrument to clip the FTC's wings (Wall Street Journal, 18 Oct., 1979).

An old agency, loaded down with decades of accretions of its authority, the FTC had become ensnarled in its own obligations. By 1974 its regulations covered some 20,000 different products, all in addition to its obligations under the Wheeler-Lea Act of 1938 to block "unfair or deceptive acts or practices" (H.H. Liebhafsky, American Government and Business, pp. 217-218) together with its original obligations

The political process is here modelled as a game, Π , which is played cooperatively. Let ζ denote the set of all partitions of $I \cup J$. A partition represents a structure of coalitions of the players. Let a structure of coalitions $C = (C_1, \dots, C_q) \in \zeta$ be specified. Suppose that each coalition C_v chooses a joint strategy π_v . Then the political process determines an outcome given by the function

(footnote continued) to enforce the Sherman and Clayton antitrust acts.

Its obligations could be general or minute. A new product, a slice and hook-reducing golf ball, failing to gain approval of the relevant trade association, its manufacturers appealed to the FTC. Its policy that standard-setting groups have fair procedures is the relevant avenue of appeal, but the U.S. Golf Association objected that it should not be subjected to such general rules (Wall Street Journal loc. cit.). So the FTC gained yet another opponent.

The battle over the FTC is of course welcomed by Congressmen and Senators, as a potent source of concentrated support. The administration, on the other hand, defended the FTC as part of the Federal establishment. Consumer groups continue to back the FTC's activism, as do those manufacturers who stand to gain by enforcement of FTC rules. By the political process, primarily through financial support offered or refused on the voting power of large organized blocs, the private sector can make its views felt in Congress. The regulators themselves attempt to adhere to their primary warrants in addition to accommodating and placating those to whom the consequence of regulation necessarily accrue. Failure, for any reason, to maintain an adequate base of political support could lead to disestablishment -- a rare happening, but always a possibility. Murmurings against the FTC now have been matched in the past by similar discontent with the Federal Reserve System, the Nuclear Regulatory Agency, the Federal Power Commission and others. In the case of the Civil Aeronautics Board, some of its powers (control of routes) actually were removed in 1978. It was believed that the CAB's protection of trunk carriers from competition by new entrants was not "in the public interest." The proposal to cut the Interstate Commerce Commission's control of long-distance trucking was opposed vehemently by the controlled truck owners and the Teamster's Union, both of whom would face competition from new entrants if the trade were thrown open. It is believed by many economists that the abolition of trucking regulation would reduce inflationary pressures,

Such conflicts are built into regulation. Congressman Russo (Dem., Illinois), Chairman of the House Small Business Committee's regulatory agencies subcommittee contends that FTC rules for the funeral industry are unwarranted. FTC moves against the packaged cereals industry, which involve actions forcing the major producers (Kellogg Co., General Foods, and General Mills) to sell mills to their competitors in the

$$P(\pi_1, \dots, \pi_q) = (\varphi, b) .$$

The ultimate payoff to player i is the value to him of the game $\Gamma(\varphi, b)$ which results. This is

$$V_r^i(e, P(\pi_1, \dots, \pi_q))$$

(Footnote continued) public interest are opposed by other congressmen on the ground that such sales could cost as many as 650 jobs in the Chicago area. It is proposed that the FTC's rulings become subject to Congressional veto as a method of politicizing its behavior, i.e., making it more cautious. (Chicago Tribune, 28 October, 1979.) In recent years pressure against the FTC has been intensified by industry trade association lobbyists. As the Congress and the regulatory agencies have expanded their controls ever more deeply into the economy they have necessarily come to rely more on trade associations for expert advice. There are now an estimated 1600 trade associations represented in Washington, D.C., by active lobbyists. Their object is to influence the direction of new regulation in a way favorable to the objects of the regulation. Ann Colamosca, "The Trade Association Hustle," New Republic, 3 November, 1979. But of course political moods change and Congressional pressure on regulatory agencies can produce activism as well, for example the revival of antitrust proceedings by the Justice Department in the second administration of FDR after the New Deal efforts to cartelize industry had ended. A similar scheme was afloat in 1936 to rein in the Supreme Court. It was proposed that the Federal Constitution be amended to allow the Supreme Court to be overridden by a 2/3 vote of Congress. William Leuchtenburg, "Franklin D. Roosevelt's Supreme Court 'packing' plan," Harold M. Hollingsworth and William F. Holmes, eds., Essays on the New Deal, Austin, Texas, University of Texas Press, 1969. So long as the private sector is regulated by government perfect congruence of regulatory ambitions and private interests are extremely unlikely to occur. Where veto power on such actions lies, in the agencies or in Congress, probably matters little. Regulation creates rent and redistributes income and wealth; some gain and some lose. Regulation cannot be understood without taking into account the interactions among gainers and losers. A model of the regulated economy that omits this element would appear to be inadequate.

If we assume further that for any coalition structure \mathcal{C} there is a vector $(\hat{\pi}_1(\mathcal{C}), \dots, \hat{\pi}_q(\mathcal{C})) = (\hat{\pi}_1(c_1, \dots, c_q), \dots, \hat{\pi}_q(c_1, \dots, c_q))$ of good strategies, we may write the payoffs as

$$V_{r_t}^i(e; p(\mathcal{C})) \quad e \in E, i \in I \cup J,$$

where

$$V_{r_t}^i(e, \hat{p}(\mathcal{C})) = v^i(e; p(\hat{\pi}_1, \dots, \hat{\pi}_q(\mathcal{C}))).$$

Thus, the remaining strategic question is, which coalitions will form?

Notice that regulator j can influence the payoff structure of the political game Π by choice of regulations r_t^j , via the influence of that choice on the game Γ . Thus, choice of regulations in a given game $\Gamma(r, b)$ will be made in light of the impact of that choice on the political game Π . This becomes more explicit in the dynamic version which follows.

III

Dynamics

At time $t = 0, 1, \dots$, the regulatory framework (r_t, b_t) is in force, defining the game-form $\Gamma(r_t, b_t)$. For any "optimal" strategies $\hat{r}_t^j \in R^1(r_t^j, b_t^j)$, $j \in J$ and $\hat{\alpha}_t^i$, $i \in I$, that are chosen,

$$\hat{\alpha}_t^i(\hat{r}_t) = \mu_t^i \quad \text{is determined and hence so is}$$

$$V_{r_t}^i(\cdot, r_t, b_t), \quad i \in I \cup J$$

which, given e_t determines

$$V_{r_t}^i(e_t, r_t, b_t) \quad i \in I \cup J.$$

Then the political game Π is played. If the coalitions

$(c_{1_t}, \dots, c_{q_t}) = c_t$ form and choose $\hat{\pi}_1(c_t), \dots, \hat{\pi}_q(c_t)$, the political outcome is

$$\hat{P}(c_t) = r_{t+1}, b_{t+1}$$

leading to the game $\Gamma(r_{t+1}, b_{t+1})$.

Thus, the strategic situation is reduced to the following. At each stage (time) the political game is played to decide the rules of the economic game to be played in the next period. In this game the regulators have two strategic variables. First they can engage in political action (e.g., with Congress, with allied groups of economic agents, etc.) and second, they can influence the political behavior of economic agents by manipulating the payoffs obtainable by agents in the economic game. This is done by choice of regulations r , which of course influences not only the outcome of payoffs in the economic game but also the structure of the political game. ^{1/}

^{1/}

It should be mentioned that full strategic rationality on the part of players in this game would involve each agent in an attempt to take account of the effects of his actions at any level on the choices of others at any level. Thus, a private agent might decide to do something other than his "optimal" choice in the game $\Gamma(r, b)$ with a view to influencing the behavior of others at the political level in hopes of bringing about a more favorable game $\Gamma(r^*, b^*)$. Our formulation does not give full expression to these possibilities. Considerations of bounded rationality suggest that, except perhaps for a private agent who is large relative to the economy, agents might well do as well as they can for themselves in the existing situation while pursuing cooperative political action to change it if they can.

Dynamic Evolution of the Environment at t.

The economic actions taken in one period affect the given conditions of the next and perhaps subsequent periods. E.g., investment in period t changes the stock of resources available in t+1; similarly with production. Therefore in a dynamic model the environment in period t+1 is affected by actions taken in earlier periods. We model this as follows. Let

$$F: E \times A \times R_+ \rightarrow E$$

by a function which associates to an environment at t an action at t and time t, the environment at t + 1. Thus,

$$(*) \quad F(e_t, a_t, t) = e_{t+1} \quad t = 0, 1, \dots, \quad .$$

We make t an argument of F to permit the environment to be partly exogenously determined. A special case of this model is one in which the future history of environments is completely determined by the initial one, e_0 , and the actions. This is, however, probably too deterministic to be useful in an historical model.

The relation (*) when substituted for e_t in the payoff expression

$$V_{r_t}^i(F(e_{t-1}, h_{t-1} \cdot \hat{\alpha}(\hat{r}_{t-1})(e_{t-1}), t), R_t, b_t)$$

shows how both the game form $\Gamma(R_{t+1}, b_{t+1})$ evolves over time and how the economy itself evolves over time.

Some Interpretive Remarks

We next make some comments about this model in the light of the sort of "irrationalities", incoherencies mentioned in the introduction to this note, and in relation to some other observations about regulation. Since we do not specify the model to the point where analytic results are derived, these comments remain fragmentary and heuristic.

In general, solutions of games are not necessarily Pareto optimal. For example, Nash equilibria of n -person-non-cooperative games need not lead to Pareto optimal outcomes. The existence of a multiplicity of regulators, each with its own sphere of authority, regulatory mission and resources is a necessary consequence of limitations on information processing and coordination. Without such constraints, one regulator would suffice. However, this multiplicity of regulators each with its own objectives, in light of the nature of solutions or equilibrium points of games, suggests that the resulting regulation may well appear irrational and incoherent.

One conceivable way for the cooperative (political) game to be played is for the agents to form the coalition of all players, agree on a Pareto optimal economic outcome, and then divide the payoff among themselves. This resembles the view of the competitive economic theory in that it separates the achievement of an efficient allocation from the system of transfer payments superimposed on the solution to bring about a "desired" distribution of income. The solution which involves forming the coalition of all players corresponds in a sense to global economic planning. The informational difficulties alone suggest that this solution is not feasible. The attempt to find a Pareto optimal solution by competitive decentralization runs into the incentival difficulties which are part of the motivation for economic

regulation in the first place.

When viewed in the cooperative games, the question arises as to the extent to which the regulators are essential strategic players as against mere mechanisms reflecting the balance of power among coalitions of private agents. There are, no doubt, specifications of the model in which it could be shown that the regulators "disappear" as real players, and the outcomes are the same as those that would result from a properly specified cooperative game involving only the private agents. However, we suspect that the existence of costs and other difficulties of coalition forming, give to those whose hands are on the instruments of state power a degree of freedom of action which makes them true strategic players in the game. If this is the case then it is plausible that the actions of regulators cannot be explained by their economic missions or objectives, and information alone. If the "best" current regulations in terms of official mission would lead to political consequences resulting in lower budget or in other respects an inferior situation for a regulator, then he may well not issue such regulations for fear of the political consequences. Some Federal regulatory agencies have been criticized for being captives of those whom it is their mission to regulate. The recent experience of the Federal Trade Commission discussed above is an example of what an agency might face if it is insufficiently attentive to the political consequences of its actions.

Another set of questions has to do with the behavior of regulators over time. As we have seen in this model, by playing the cooperative game in period t the agents together determine which game of incomplete information they will play in period $t+1$. In the latter game, the economic agents "draw" an environment, --- the regulators in ignorance (partial perhaps) of the environment drawn, select regulations, direct and incentival, and the economic agents choose their strategies non-cooperatively, knowing the regulations.

The economic agents are aware that the regulators do not know the environmental components and are aware that their behavior in response to regulations may reveal something about their environment to the regulators. The regulators are aware that the economic agents have information which the regulators do not have. The choice of regulations must be influenced by their desire to move outcomes in a preferred direction allowing for the asymmetry of information.

Both regulators' and agents' strategy choices should reflect the fact that they are playing a sequence of games, and that their choices in any one game may effect the future choices of others. This would lead to an extremely complex strategic situation. Full dynamic rationality is doubtless infeasible because of information processing constraints. However, elements of interaction between present and future must be involved.

In such a situation a sequence of relatively myopic moves may well result in the system showing a tendency to drift in a certain direction. For example, suppose the regulators do not observe the environment e_t , but do observe the economic outcomes, α_t . The regulators seeking to push the system in desired directions choose r_t within the relatively fixed framework

(ρ_t, b_t) . Since the environment changes, in part as a result of these actions, the regulators are likely to be frustrated in their attempts to "determine" α_t as they would, possibly inconsistently, prefer; they might well seek to enforce the outcome they prefer by imposing stricter constraints in behavior, i.e., by choosing ρ_{t+1} to be more constraining than ρ_t and perforce allowing less room for dependence on the unknown (to the regulators) environment. Because the environment evolves partly as a consequence of actions taken under those constraints, the system may well drift further away from optimality at the same time as the web of regulations grows tighter.

IV

American economic history can be illuminated in an interesting way by our model. For example, from the postbellum "farmers' revolt" to the end of the New Deal the history can be re-aligned to reveal the emergence of contending coalitions of rent-seekers who used the regulatory power. ^{1/}

In that period (roughly 1880-1940) the relations between business organizations, labor, government and the public were altered fundamentally through the enlargement of government regulatory (and thus redistributive) powers. The change came not so much from the creation of entirely new types of governmental authority, but rather, from the relocation of them within the total web of government at all levels, as well as the lodgment and concentration of governmental powers at the Federal level. These changes in the patterns and processes of governmental activity represented shifting coalitions of interests to which the competitive political system (including the courts) responded over time by grants of special privilege and favor, alternately restricting some for the benefit of others. Since the political influence of special interest groups (and coalitions of them) changed over time the resulting structure of laws and regulations did not form consistently in favor of any single group. Thus apart from the broadest sorts of generalizations, it is no simple matter to chart the course of growth of government over time within the framework of simple political models. Different interests and groups of them were served by the growth of government at different times. The patterns were complex, but not really chaotic.

Four Categories

We identify four types of economic agents in the private sector; these groups of agents will also form basic elements of the coalitions we consider. These groups and their main economic policy objectives are as follows.

1. Big Business. B. These were the large firms growing in connection with a powerful wave of industrialization that ended

^{1/} See Terry Anderson and P.J. Hill, The Development of the Transfer Society, Palo Alto, The Hoover Institution, 1980.

in the first great merger movement of 1887-1904. ^{1/} The policy objectives congenial to this group were:

- a. High tariffs.
 - b. A strict specie monetary standard.
 - c. High (relatively) interest rates.
 - d. Easy access to natural resources on public lands.
 - e. Unlimited immigration.
2. Farmers. F. In different organizations, Greenbackers, Grangers, Populists, the farmers after 1865 began to pressure the Federal government systematically. Basically they wanted:
- a. Free or easy access to public lands.
 - b. Low tariffs.
 - c. A "soft money" monetary standard (paper money, free silver, etc.) and cheap credit.
 - d. Restrictions on immigration.
 - e. Control by government of big-business monopoly powers.
 - f. Restrictions on land ownership by aliens and corporations.
 - g. A progressive income tax.
3. Organized Labor. L. Following earlier abortive efforts to create permanent organization, the AF of L after 1886 followed the policy in politics of "reward our friends, punish our enemies." The AF of L attempted to gain advantages for the rising class of urban artisans, and there was continuous effort to form unions among shop workers and factory employees. Organized labor wanted help from government. It favored:
- a. The eight hour day, and legal restrictions on child labor.
 - b. Government support for the rights to organize and strike.

^{1/}F.M. Scherer, Industrial Market Structure and Economic Performance, Chicago, Rand McNally, pp. 103-106.

- c. Restrictions on immigration.
 - d. Cheap money.
 - e. A progressive income tax and redistribution of income and wealth.
 - f. High tariffs.
4. Urban consumers, small businesses and professions. S. The most rapidly increasing interest group. These small businesses, shopkeepers, white collar workers, professionals, formed the basis of the urban population, the most rapidly growing part of the total, which by 1920 would surpass the farm population in numbers. These urban populations would ultimately form the basis of the long-time labor-consumer Democratic coalitions. Their interests were best served by:
- a. Low tariffs.
 - b. Suppression of monopoly power of big business.
 - c. A Federal income tax to redistribute in favor of urban overhead investment.
 - d. Cheap mass transportation.
 - e. Consumer protection.
 - f. Cheap money policies and a soft money standard.

Our model calls for the identification of specific regulatory instruments, and their formal representation in terms of the variables $r = (\rho, \theta)$. Full specification of the game $\Gamma(RB)$ would then permit us to evaluate the payoff to each coalition structure, and player in given environments. We could then study the characteristic function game in which coalitions strive to influence the regulatory structure to their

advantage. The dynamic effects of connecting current actions and outcomes to future environments and structures would then permit us to study the resulting sequence of games. To specify these parameters and functions in detail on the basis of historical observations is a formidable task, well beyond the resources presently available to us. We shall instead use the model as a paradigm, or schema, to organize and integrate the events and developments of the period under examination.

It should be obvious that these interests and policies are substantially in conflict and could not be served simultaneously. The balance of forces prevailing at any one time determined a political outcome which set the rules of the economic game for the following period. As the dynamics of the economic process unfolded, the relative strength and the degree of organization of the various economic groups changed. The result was a new power structure for the characteristic function game played to determine the new rules of the economic game in the succeeding period. In the early part of our period this process was played out mainly through the various legislatures.

One should bear in mind that American legislatures, including the Congress, were by design institutions meant to redistribute wealth and income in favor of special interests or coalitions of them; "log-rolling" had always been the way of life there. As Blaisdell and Greverus wrote nearly half a century ago of the Federal government in TNEC Monograph 26

"In the struggle for dominance ... [economic power] ... is exerted largely through pressure groups -- groups organized for the purpose of applying political and economic pressure to secure their own ends." ^{1/}

^{1/} Economic Power and Political Pressures, Temporary National Economic Committee, Monograph No. 26, USGPO, Washington, D.C., 1941, Donald C. Blaisdell, assisted by Jane Greverus, p. 3.

A Short History

Blaisdell and Greverus concentrated on business lobbies, which seemed ominous in the 1930's. Actually the record shows effective pressuring by many different interests from the very beginning and long before even the notorious Republican "billion dollar" Congresses of the late 19th century. Protective tariffs, the procedures for disposal of the public domain by land grant, auction, preemption, graduation, varieties of homesteading, the early abandonment of Federal government rights to minerals and salt springs, mechanic lien laws, homestead exemptions -- all these and more were actions designed to favor specific groups at the expense of "everyone else." Many interests had been served. Tariffs redistributed wealth in favor of specific manufacturers, their employees and suppliers. Huge early land grants and high minimum acreages of early land auctions favored large-scale speculators. Later reductions in minimum sizes of sales, the preemption act of 1841, the graduation act of 1854 and the Homestead Act of 1863 were designed to meet the demands of small-scale purchasers and settlers. By then the public domain had already been used to subsidize railroad companies, state colleges and building of public works. ^{1/}

Abandonment of Federal reservations of a share in mineral rights (traditionally, "the king's fifth") had been revolutionary; ancient practice was set aside and the entire natural resources of the continent were made available for private exploitation. Developing policies at state levels loosening ancient sovereign controls over the rights of corporate bodies catered to entrepreneurial interests. Mechanic lien laws were meant to favor artisans and suppliers of materials. Homestead exemptions favored

^{1/} Hughes, The Governmental Habit, Chs. 3-4.

private owners of real property in the incidence of the tax burden, and against creditors of all kinds. ^{1/}

Even the southern slave owners in the Kansas-Nebraska Act (1854), and the Fugitive Slave Law had been able (1850), before 1861, to find a sympathetic congressional ear. In the Dred Scott case (1857) the US Supreme Court lent slavery a helping hand. Each special interest had somehow found the necessary bloc of willing legislators. Only the force of organized labor seemed to come up empty by the last two decades of the 19th century. Hired workers were still threatened by unlimited immigration, and although unions were no longer per se criminal conspiracies in law, they were unprotected from hostile acts against them; for example, black lists and yellow dog contracts.

An important point about all these regulatory measures before the 1880's is that they required very little permanent apparatus, little in the way of a regulatory bureaucracy. Congress and the legislatures met regularly and the courts ruled on the resulting laws. But late in the century a great change began. In a crude way it can be seen in the numbers of permanent Federal civil employees per 1000 persons. In 1841 there was just over one person so employed for every 1,000 of population. In 1871, three decades later, after the Civil War and Reconstruction the figure was still just 1.2. In another thirty years it was 3.1. By 1921 the figure stood at 5.2; it was 10.8 in 1941 and 16.1 by 1951. (It has settled to a level of around 14 since).^{2/} The manyfold increase mirrors an

^{1/} Lawrence M. Friedman, A History of American Law, New York, Simon and Schuster, 1973, pp. 203-204, 214.

^{2/} Historical Statistics of the United States, USGPO, Washington, D.C., 1960 derived from series Y241-250. Data banks and computer storage and retrieval methods contain enormous scale economies. Accordingly one trained clerk in a government office now can do the work of many a few years ago. The measure used here, the number of federal employees per 1000 population therefore loses its significance as a measure of government control in the modern era.

important reality: with changes in the size of business enterprises, the urbanization of our population and increasing economic complexity came a more persistent reliance upon government's managerial function. That management would come to play a significant role in the game of redistribution; governments were no longer legislatures meeting periodically to divide up the spoils and disperse, leaving an interim bureaucratic caretaker of skeletal proportions and the courts of law to mediate between rent-seeking disputants until the next legislative sessions.

It is an open question whether a bureaucratic agency is a full strategic player in the game, or whether its strategic role consists of facilitating the organization and coordination of coalitions of private agents. Even this latter function could be expected to have a significant effect on the outcome of the game when "costs" of communication and coalition formation are taken into account. In any event, the role of bureaucrats as organizers and even initiators of coalitions or private agents appears more clearly in the latter portion of the period under consideration.

The watershed period fell somewhere between the 1870's and the 1890's, roughly between the decision in the Granger Cases (1877) and establishment of the ICC and passage of the Sherman Antitrust Act (in 1887 and 1890). In the main Granger decision, Munn vs. Illinois, the Supreme Court made its last gesture to the ancien regime of local and state regulation. In a decade the first permanent Federal regulatory agency, the ICC, had come into existence. Once begun, Federal regulatory activism spread. In little more than a decade a new conception of permanent Federal intervention in economic life had been set into legal and institutional form. By 1914 regulation had spread from railroads and "big business" to consumer protection (the Pure Food Act of 1906), a more powerful form of Federal banking control (The Federal Reserve Act of 1913). A beginning of Federal regulatory

stewardship was made in the wage bargain, feebly, in the Clayton Antitrust Act (1914), wherein labor was declared to be not an article of commerce. The Federal income tax amendment was passed in 1913. A child labor law would be passed in 1916 and the eight-hour day achieved by railroad workers in the Adamson Act of the same year. Also in 1916 the Federal land banks were established, meeting one of the most pressing demands of the Populists, that there be Federal mortgage money for farmers. In the wartime regime of Woodrow Wilson experiments in many forms of direct regulation were carried out in nearly all sectors of economic life. The stage was set by that wartime experience for the big expansions of the Federal power in the 1930's.^{1/}

This growth of the regulatory power, so briefly stated, reflected underlying changes in the positions of our four main groups of "interests." Available numbers tell us something of the situation in 1880, just as the big changes were about to begin.

In 1880 there were 2,984,000 farms wholly or partially owned by farmers, and 51 percent of the labor force was engaged in agriculture. Fully 72 percent of the population was still living outside places with 2,500 or more. But already agriculture's share of national income was falling: in 1880 that rural majority received a mere 16.1 percent of national income. Only 18.9 percent of the labor force was directly employed in manufacturing, yet that sector received 16.6 percent of the national income.^{2/}

Big businesses, the characteristic form of American manufacturing enterprises, were already in evidence. Even though there were some 1900 firms manufacturing farm implements in 1880, the top four producers probably controlled 65 percent of the industry's total output. In 1890 the top four producers of copper had 75 percent of the market. A single firm, Standard

^{1/} Hughes, The Governmental Habit, pp. 133-145

^{2/} Historical Statistics of the United States, Series K-9, A195-209, F34-43.

Oil, by 1879 refined 90 percent of domestic crude oil and controlled 80 percent of the pipeline capacity (and was headed for a Sherman Act prosecution when the time came). In two more decades many more giant firms appeared. By 1901 the top four steel producers controlled 44 percent of blast furnace capacity and 61 percent of rolling mill capacity. By 1909, even though only 26 percent of the country's manufacturing enterprises were organized in corporate form, they employed fully three-fourths of all the workers in manufacturing. ^{1/} Big business, mainly organized in corporate form, was a potent force in the struggle for regulatory gains.

As urbanization proceeded, productivity in agriculture, mining and manufacturing continued to rise. As a result an ever-increasing proportion of the labor force was freed from direct work on the production of food and goods, and could turn to the widening spectrum of opportunity in professions and services of all kinds. These employments which engaged only about 9 percent of the labor force in 1880, accounted for some 40 percent of employment by 1940. While the number of owner-operated farms stood at 3,960,000 (up a third from 1880) the number of independent businesses had grown from the 746,000 of 1880 by three-fold to 2,156,000 by 1940. By that date agricultural employment was down to a mere 17 percent of the labor force and was declining rapidly. By the late 1930's agriculture's share of national income was a mere 8.5 percent and manufacturing's share was 19.4 percent. A major new sector, employment by government (all levels), had come into existence and was 13 percent of the total labor force. Nearly 60 percent of the population in 1940 was now urban. ^{2/} Two-thirds of this mass of town and city-dwelling people were engaged in professions, retail trade, transportation, finance and other services, governments and "customers" for goods and services provided by its programs.

^{1/} The Structure of Industry, Temporary National Economic Committee, Monograph No. 23, USGPO, Washington D.C., 1941, Part IV, "The History of Concentration in Seven Industries," by Willard L. Thorp and Grace W. Knott.

^{2/} See p. 8 above, for 2.

Let us now consider, in brief outline, the major regulatory changes as they affected our four groups of interests up to 1940. Until 1887 Federal regulation of private business had been slight. Nonmarket controls: monopoly grants to special franchise, licensing, regulation of quality, wages, prices, times of provender, working conditions -- these were the prerogatives of the state and local governments under ancient commonlaw practice. The Federal influences that had been experienced, in money, establishment of the national banking system, charters to transcontinental railroads supported by land grants, withdrawals of lands from homestead entry (beginning with Yosemite in 1864 , Yellowstone in 1872), enforcement of customs regulations -- all such matters, while productive of significant redistributive consequences, had little effect in terms of permanent institutional change. But, as we have already noted, by 1914 the Interstate Commerce Commission, the Pure Food and Drug Administration, the Sherman and Clayton antitrust acts, the Federal Reserve System, and more, had come into existence. They were to be the cornerstone and foundation of permanent Federal regulation. None had existed in 1880. Until then the game of control and redistribution had been mainly played at the lower levels, through court cases, through legislation, and through customary "police power" regulation of the states and their subdivisions.

The main exceptions were tariffs, a national banking system (1863), access to timber and minerals on public lands (or military support for access if they were on Indian lands, as was the gold of the Black Hills), the abandonment of the Federal share in mineral wealth, massive land grants to the railroads, a free rein to corporate development and merger, unlimited immigration and a "hard currency".

Then in the 1880's and 1890's the farm interest, F, still in the voting majority, made many and far-reaching demands upon the Federal government.

Farmers wanted fundamental changes in the rules of the game and use of Federal power for distribution of wealth and income in their favor. The farmers' demands, together with the rise of a mass urban voting bloc produced great opportunities for innovative politicians. To a large extent these changes involved gestures to constrain "big business", a financially powerful body that could be abused by all others, and whose sacrifices in favor of other sectors would elicit little public sympathy. The reforms that followed thus were primarily at the expense of the entrepreneurial sector which had produced the characteristic giant firms of late 19th century American capitalism, and something new, a whole class of millionaires, one social bi-product of the new uses of the corporation. Unequal wealth was nothing new in American experience, but the scale of wealth of the Goulds, Vanderbilts, Carnegies, Fricks, Rockefellers, had never been seen before. They made excellent targets for ideologues. So even the mainstream part of American property owners, the GOP, would come to adopt a populist stance and push for a graduated income tax under the leadership of Teddy Roosevelt and William Howard Taft.^{1/}

These changes represent new conditions of vying for redistributive gains. Historians have managed by broad strokes to identify them. Business, large and small, tended to be of the Republican persuasion, favored high tariffs, sound money, free immigration. Such policies diverted more real income into profits and rents than would otherwise have been the case. By the late 1880's this interest was beginning to divide between big and small business as the first great wave of mergers approached. Corporate firms, some growing to gigantic size, began to make issues of monopoly power more than merely of local interest. The new policies favoring agriculture, small business, urban

^{1/}Karl Brent Swisher, American Constitutional Development, Boston, Houghton Mifflin, 1954 (2nd ed.) PA531-535.

workers and consumers were meant to divert income and wealth from the "big business interest". Essentially, the phrase referred to the manufacturing sector, which long had enjoyed redistribution in its favor supplied by the tariff. Farmers had never been so protected. Cheap land, redistribution in their favor at the expense of Indians, Mexicans, trappers and squatters had been their major gain from federal action before the Populist era. F, S, and L were to be served at the expense of B.

At first, general demands of the new urban constituencies for political and social reforms were conflated with the redistributive ambition of the farmers. The farmers, in their final avatar, the People's Party, or "Populists", produced important changes in this country. The great wave of such pressures came after 1865. The nation's imperfections by then were seen to be many and great. In their various conventions ^{1/} the Populists "demanded" a graduated income tax (16th amendment, 1913); a postal savings system (Postal Savings Act, 1910); a merit system and civil service for all Federal employees (gradually gained by administrative action); a secret ballot, useful to shield workers from economic reprisal by employers (achieved state by state); restricted immigration (the national origin quota act of 1921); an eight hour day (Fair Labor Standards Act, 1938); initiative and referendum (by amendment to state constitutions - never achieved nationally); direct election of senators (17th amendment, 1913). These and other non-economic demands achieved wholly, or in part, profoundly changed the country. Many Populist demands were never achieved, like the demand for direct election of the President and Vice President, the nationalization of railroads, telephones and telegraphs. The Populists wanted land owned by corporations taken and sold to farmers. They wanted strict controls over corporations, and by 1890, after decades of prior agitation, the ICC had been created and the Sherman

^{1/} John D. Hicks, The Populist Revolt, Lincoln Nebraska, University of Nebraska Press, 1961 (Bison ed.) pp. 427-444. Appendixes of Populist Party Platforms.

Antitrust Act passed into law. So in spirit at least the political system was starting to respond even by 1890 to farmer agitation. Some demands from farm groups were really hare-brained, although it would be premature to pass final judgment considering modern political history.

The various farmers' movements produced long lists of purely redistributive demands too. There were three consistencies in these, variously expressed:

(i) Easy money, created by governmental action, (ii) Government funds supplied for farm mortgages, and (iii) Government guarantees of farm commodity prices. Falling farm prices after the Civil War, the memory of greenback inflation together with propaganda from western silver producers resulted in the long history of "funny money" schemes associated with the Populists. Yet in 1913 the Federal Reserve Act provided, as the Populists had demanded, a national paper money issued by a government agency that was full legal tender, and even had the magical words "elastic currency" written into the Federal Reserve Charter.^{1/} The result was a permanent regulatory agency with no real initial warrant except to exist. Its policy ambitions developed only with experience.

The reticence of state banks to make mortgage loans on farm land, and the prohibition of such loans by the national banks had led to Populist demands that the national banks be abolished. What the farmers wanted was access to the U.S. Treasury for farm mortgages. The Federal Reserve Act allowed the national member banks to lend money against farm mortgages, but more important, in 1916 the Federal Land Banks were created to make low-interest mortgage loans to farmers. In 1923 the Federal Intermediate Credit Banks were added to underwrite the commercial value of real property in the agricultural sector. These banks remained as permanent parts of the regulatory sector.

^{1/} Robert Craig West, Banking Reform and the Federal Reserve 1863-1923, Ithaca, N.Y., The Cornell University Press, 1977, Ch. 2. For a history of the entire episode of farmers and banking, Irwin Unger, The Greenback Era, Princeton, Princeton University Press, 1964.

but vote-laden, consumer-labor group. A bureau of labor statistics had been established in 1884 within the Interior Department. In 1888 it was made a separate labor department with its own commissioner. Then in 1903 the Department of Commerce and Labor was organized, which had within it a Bureau of Corporations headed by a Commissioner of Corporations. Their reports on business behavior produced demands for tighter Federal regulation, and in 1914 the FTC was created and the Bureau of Corporations placed inside it. This entire development of bureaucratic expertise took three decades before its final form, the FTC emerged.^{1/} In modern times the process is more rapid.

The Pure Food and Drug Administration's origins contained a mixture of bureaucratic expertise and political activism. The urban consumer and worker, groups S and L, were the main beneficiaries. The Pure Food Act came when an evident "market failure" (monopoly power and morally-repugnant production techniques) together with desire for a needed social improvement caused development of a permanent regulatory node. Antitrust proceedings against the "beef trust" (Swift & Co. vs. U.S., 1905) had stirred up agitation against monopoly abuses. In 1906 Upton Sinclair's sensational exposure of the Chicago meat-packing industry, The Jungle, appeared. Theodore Roosevelt had read the book in manuscript, was appalled, and had persuaded Senator Albert Beveridge to get a Federal meat inspection bill through Congress. This was followed by the Pure Food Act in 1906, and a new permanent regulatory commission was born.^{2/} The pattern is very important. The list of major regulatory agencies, stretching back nine decades now, reveals this process as perhaps the most common origin of the permanent regulatory apparatus. A market failure is identified, there is no way to "solve it" -- make it go away -- so a regulatory body is created to

^{1/} Swisher, op. cit. pp. 502-505.

^{2/} The Pure Food and Drug Administration is an agency born to protect health and safety, and therefore is one of the main beneficiaries of the "veil of regulation," the persistent belief that regulation is first and foremost in the public interest. See Owen and Braeutigam, op. cit. pp. 22-25.

In many ways the most controversial of the Populist redistribution schemes was that which would cause government paper money to be created with stored crops as "backing". This was the essence of the famed sub-treasury scheme. Considered to be scandalously hare-brained at the time, it was achieved fulsomely in 1933 by creation of the Commodity Credit Corporation, a permanent agency which has done yeoman service in the cause of income redistribution ever since. Earlier efforts, the Warehouse Act of 1916, and the Farm Credit Board of 1929-32 had been abandoned. The Populist nostrum that farm surpluses should be purchased and exported by the government, achieved in part during World War I and its aftermath, faced two Coolidge vetoes (the Haugen-McNary bills) in the 1920's, but finally became part of the modern permanent income redistribution system when the Export-Import Bank was organized in 1934. ^{1/}

The strictly redistributive agencies created by farmer agitation did not "solve" the problem of farm incomes falling below those desired by farmers, but instead became part of the on-going game of pressure, response and redistribution continuously played between the agents, the central government and the regulatory system.

The growing body of permanent government officials added its weight and planning to these changes. Early experiences with governmental activism provided models for the regulatory sector's behavior when, later on, a mature and confident governmental bureaucracy would become the main source of information necessary to innovate new regulations and social programs of all sorts. ^{2/} The bureaucracy's continuity, experience, and expertise became an absolutely essential ingredient in the subsequent growth of government. At first its growth was mainly the service of the S group, again ostensibly at the expense of B. Consider the FTC, an early regulatory body conceived to be in the interest of the amorphous,

^{1/} Hughes, The Governmental Habit, pp. 183-188.

^{2/} Gary Walton, ed., op. cit. Ch. 3.

manage the problem in perpetuity. This opens a game in which the private players, in coalitions, attempt to use the regulatory authority to further their private interests.

Many of these reforms had more the appearance of being at the expense of the B group than they were in fact. Business interests had never been lax in their uses of government for their own benefit. The tariff had always been a shining example, and the ability to maintain this method of redistribution from consumers to manufacturers was never lost, reaching an outstanding peak in the Smoot-Hawley tariff of 1930. So even when the tide seemed to be running mainly against manufacturers, individual triumphs could still be achieved. The Federal Reserve System of 1914, answering in part the demands of the Populists, also served banking and business interests. Indeed, the original, and ultimately dominating plan for the system, the Aldrich report of 1911, had its origins in the banking sector.^{1/} The regulatees largely wrote their own legislation, although other interested parties were able to influence the system's initial form through the Report of the National Monetary Commission of 1912 and in Congressional work drafting the bill. Once set going, the system's internal mechanisms and logic shaped its development. The one great revision, the banking act of 1935, came from the hands of Marriner Eccles, a millionaire Utah banker turned public servant. The act strengthened the Federal Reserve Board's control over member banks and the economy, that is, its independent power to redistribute income and wealth by discretionary action.^{2/}

Sustained service to the L sector, organized labor, came in the 20th century, beginning notably with World War I. The Adamson Act, as we already have noted, had produced the eight-hour day for railroad workers in 1916. In 1917 the Federal government provided legal assistance to unions prosecuted for organizing activities. The Federal government sided with labor to ensure industrial peace.

^{1/} West, op. cit., Ch. 4.

^{2/} H.H. Liebavsky, op. cit., pp. 543-550.

Production was more important in wartime than prolonged labor disputes to protect the business interest. When a strike threatened Western Union the government took over its operations. Government seizure of the railroads in 1918 was a solution to continued labor problems in that industry. Wages were raised, and work rules adjusted to meet labor demands. Disputes were referred to arbitration by the new War Labor Board.^{1/} That technique was destined to remain, first in the Railway Labor Board in legislation of 1926, temporarily under the National Industrial Recovery Administration in 1933-35, and then on a permanent basis in the National Labor Relations Board after the National Labor Relations Act was passed in 1935. One of the long-time labor-Populist demands, immigration restriction, was finally achieved in 1921, and this restriction was maintained rigidly for decades to come.

The courts had managed a holding action in favor of the business interest in Hitchman Coal and Coke v Mitchell (1917) which sustained the yellow-dog contract, in Hammer v Daggenhart (1918) which overturned the Child Labor Act, and in Adkins v Children's Hospital (1923) which overruled a minimum wage law in the District of Columbia.^{2/} But in 1931 Congress countered with the Norris La Guardia Act, restricting use of injunctions in labor disputes, and in rapid succession the New Deal congresses passed not only the NLRA but the Social Security Act in 1935, with provisions for Federal assistance in unemployment and workmen's compensation, as well as old age and survivors insurance. New agencies were formed to manage these laws. Then in 1938 the Fair Labor Standards Act made minimum wages and maximum hours a matter of permanent Federal regulation.

^{1/} Hughes, The Governmental Habit, pp. 142-143.

^{2/} Stephen J. Mueller, Labor Law and Legislation, Cincinnati, Ohio, South-Western Publishing Co., 1947, pp. 23, 806,814.

By then the coalition of labor and the urban-consumer voting interests had achieved an ascendancy with Congress that has never weakened, and the beginning of a new era of special-interest regulation was at hand. In three more decades the proliferation of such legislation catering to organized interests and coalitions would make the Federal regulatory agencies themselves into an independent motive force in the creation of an increasingly regulated economy. In the long process of regulatory development the traditional game of redistribution through government power had finally developed into a permanent establishment of Federal agencies, boards, powers, commissions and offices, lodged in the Executive Office as well as in independent establishments modelled after the original ICC. Management of economic problems had evolved into a permanent process using the apparatus of government to redistribute economic reward: the modern regulated economy. This continuing activity may be viewed as a positive-sum game.