Institutional Structure and Time Horizon in a Simple Model of the Political Economy: The Lowi Effect

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Institutional structure affects political process and, via that mechanism, political outcomes. All but the most religious structuralists and individualists have come to a new recognition of the fundamental role played by institutions in social processes. There have been two major responses to this recognition. From the structuralist side has come a renewed commitment to the structurally focused case study. This work emphasizes the importance of institutionally situated elites in responding to changes in domestic and international social structures. Given the case study orientation, it is not surprising that the interaction of very specific institutionally located elites becomes a major concern of these studies. From the individualist side has come the attempt to identify the effect of institutional structure on collective behavior, as well as the attempt to identify 'institution-free' properties of collective behavior. This literature tends to operate under very general definitions of both individual preference and institutional structure.

This paper proposes an approach which is, in some loose sense, intermediate between these two approaches: endogenous economic policy modeling. Endogenous policy models attempt an explicit representation of the processes that generate payoffs to political activity in a general political-economic equilibrium. The simple form of this approach assumes that citizen preferences over economic policy are strictly determined by their relationship to the economy. While most research of this type has assumed a very simple institutional structure (direct referendum/lock-in), alternative institutional assumptions are now receiving some attention. This paper develops a formal link between the institutionalist and individualist theory by illustrating the effect of institutional structure on the incentives to political action. Since the results yield a typology similar to that observed in Lowi's now classic work (1964, 1972) linking institutionalized policy types to political action, this will be referred to as the Lowi effect.

The first section of the paper presents a brief discussion of the literature growing out of Lowi's work to establish the categories and the intuition behind the more formal analysis. This is followed by an overview of the endogenous policy approach to modeling political-economic interaction. The bulk of the paper is a step-by-step geometric development of the simplest endogenous policy model (a 2x2 economy with a passive register state). The paper concludes with a discussion of the derived Lowi effect and some suggestions for future research.

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1 This does not imply that it is a new phenomenon. Social analysis have recognized the importance of institutional structure for as long as records of social analysis exist. The current wave of "new institutionalism" in economics and political science, however, is a response to a rather long period from the late 1960s during which rather strong forms of institutionalism prevailed in political science and sociology, at the same time that "economics mainstreamed" the strong forms of institution-free, individualist models from economics into political science and sociology. For a useful discussion of the "new institutionalism," see March and Olsen (1984).

2 Two recent collective efforts are exemplary: the work of Tuma Skocpol and her colleagues on the development of the welfare state in the US, especially during the New Deal (Skocpol 1984); Skocpol and Oleszek 1983; Skocpol 1984; Tuma and Skocpol 1984) and the work of Bardes et al. reported in "The State in American Foreign Economic Policy" (International Organization 1988).

3 The seminal work on institutional structure is that of Shleifer (1979). A convenient survey of this growing literature can be found in Shepsle (1980). With regard to the institution-free aspects of social choice, see the important paper by McKelvey (1986).

4 By general political-economic equilibrium, it is meant that (subject to behavioral and institutional assumptions) the level of political intervention and the state of the economy are endogenously determined. Comparative static analysis involves evaluating the effect of changes in the political and economic parameters of the model on the level of intervention and the state variables of the economy.
The Lowi Literature

Lowi's typology seems to have emerged from an attempt to reconcile the apparently contradictory conclusions of the voluminous case study literature on politics at the local and national levels. Lowi argues that much of the orbote between various schools of thought on politics in liberal democratic systems (pluralist vs. elitist vs. state authoritarianism) arises from the erroneous notion that there is a single, benign model of democratic process. Instead, Lowi argues that there is a small number of 'arenas of power', each of which is characterized by its own distinctive politics. That is, the attributes of a policy send to induce characteristic patterns of politics, or to use Lowi's own simple formula: 'policies determine politics' (Lowi 1972, p. 299).

In the 1964 review of Bauer, Pool and Dexter, the arenas of power analysis is framed as an empirical observation: the recognition that there are several distinctive patterns of political interaction existing in the American political system and that these patterns relate to the major schools of interpretation of that same system. Specifically, Lowi argues that there are three arenas of power, each yielding characteristic politics and research traditions: distributive (elitist), regulatory (pluralist) and redistributive (state authoritarianism).

Distributive policies are characterized by the case which they are regulated un by a single unit, each unit more or less in isolation from the other unit and from any general rule. These are policies that are virtually not policies at all but are highly individualized decisions that only by accumulation can be called a policy. They are policies in which the individual and the deprived, the loser and the recipient, need never come into direct contact with the individual or the single firm (as in distribution), because individual decisions must be made by application of a general rule and therefore be

core interrelated within the broader standards of law.

Regulatory policies are like regulatory policies in the sense that relations among broad categories of private individuals are involved and, further, individual decision must be foreclosed. (But the bills of categories of impact are much broader, approaching social and economic issues.) In common with all empirical typologies, the arena of power typology is a pre-theoretical construct.

Abstract typologies are valuable tools for identifying patterns of politics and for suggesting a framework for assessing the adequacy and effectiveness of these patterns. In the case of distributive policies, the arena typology has been used to examine the distribution of welfare (Spicer 1979; The executive's perspective (Lowi 1972)), and most extensively, the Congress (Feit 1980; Rights and Franklin 1984). In addition to these applications, the arena typology has also been used to regularize foreign investment (Lowi 1967; Neuber 1977; Zuckerman 1977; Walker and McGowan 1982) and comparative politics (Green 1990; Peters et al. 1972).

The public acceptance of the arena typology is extraordinary by the standards of social science. The growth of research on the arena typology is a period in the development of social science that is marked by a renaissance of the empirical study of politics.

In addition to research on the theoretical foundations of the arena typology, there is also a closely related body of research that uses the arena typologies as a methodological base but examines the most traditional questions of the study of political organization on policy types. We refer to our book, 'The arena typology in the study of political organization: An empirical study of the arena typology' for more detailed information. The book itself and the arena typology as a methodological base is written by Robert Sailors, modelled below, from which much of this work is summarized. The book was published in February 1986, (1986). Additional work on the arena typology will be found in: Leeds 1978, 1978 and Kofford (1987).

Research on the arena typology assumes that choice among arena-type behaviors is somewhat independent of other choice among behaviors. There is no empirical evidence that all alternatives are available to all actors.

Lowi's typology emphasizes that attempts to exercise the political arena typology and empirically can be found in Lowi (1950, 1962, 1972, 1973).
sured to be rational in terms of both economic and political calculation. That is, individuals are assumed to prefer policies that yield a net balance of benefits (economic rationality) and to engage in political action only when, to that action are positive political rationality. Policies are given institutional form in a piece of legislation that specifies a distribution of costs and benefits, as well as the terms of access to the costs and benefits. Once a policy is institutionalized, Lowi conjectures that the institutional form lends a characteristic, organic, causal character to the policy (institutional form) to politics (patterns of activity).

Lowi's (1972) own attempt to provide a theoretical motivation for his empirical typology remains the most significant contribution of this work. Generalizing his earlier discussion of the attributes of the arenas, Lowi argues that an issue can be characterized in terms of the applicability and likelihood of coercion expected from adoption of the policy in question. In his later work, Lowi drops the emphasis on coercion in favor of the more general "impact," (e.g. Lowi 1985). Instead of applicability of coercion, this paper follows Lowi in emphasizing form of intended impact, which refers to whether the policy is expected to operate on an individual conduct or on the environment of conduct. That is, whether decisions on individual cases reflect the operation of discretion or rules on the part of the decision-making entity. 15 In a sense, discretion prohibits the relevant decision makers to treat each individual independently of any other, while rules create groups by aggregating individuals on the basis of some shared attribute or behavior. 16

While the rules vs. discretion dimension seems to be a fairly constant part of the literature on the Lowi effect, the other dimension has proven to be somewhat problematic. As with the previous dimension, Lowi's approach has been to focus directly on the salient content of the legislation/regulation that gives a policy its official form. Thus, generalizing his earlier emphasis on applicability of coercion, Lowi's (1985) later work has emphasized the degree to which a policy works through incentives or constraints. That is, he asks whether the policy is implemented primarily by allocating benefits (powers or privileges) or imposing costs (obligations or prohibitions).

A closely related approach stresses the distinction between policies with symmetrical and asymmetrical effects (Zimmerman 1977). Whereas Lowi emphasizes a policy's statutory content in identifying arenas, Zimmerman emphasizes the consequences of a policy by focusing on the relative distribution of costs and benefits across citizens. Thus, a policy with symmetrical effects treats all citizens equally, while a policy with asymmetrical effects distributes costs and/or benefits unequally. As with Lowi's analysis, the causal mechanism linking policy type to behavior is never analyzed in detail. The discussion in the relevant texts suggest two such mechanisms: information costs and collective action costs. 17 With regard to the former, it is implicitly assumed that individuals (or citi"des) distributed may be too small that it would not be rational to notice them (e.g. the cost of learning about them is higher than the costs imposed by the policy). Even if individual costs rise above the level at which they are noticed when symmetrically distributed, there may be collective action problems in organizing for effective political action.

The difficulty with this construction is that it fails to recognize that asymmetries may be of various types, each with distinctive behavioral implications.
Once it is recognized that virtually all policies imply both benefits and costs, the importance of the distribution of benefits and costs becomes equally apparent. Drawing on the work of Wilson (1956), one might ask whether the benefits of a policy are distributed among citizens in a concentrated or a diffused manner, and make similar considerations about the costs. 11 Introducing these considerations along with the rule-distortion distinction yields what might be called a Lowi-Wilson typology.

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**Figure 1:** Lowi-Wilson Typology of Policy Induced Arenas.

Assuming that individuals are rational in the sense that they support policies yielding a net balance of benefits and oppose policies yielding a net balance of costs, and that concentrated benefits or costs are more likely to stimulate political action than diffused benefits or costs, this typology allows for identification of several of the characteristic arenas of power. In arenas I-A, the policy is administered under a general rule which treats individuals as members of a class on the basis of some relevant attribute.

1. Public good: The government provides many goods and services that are widely available (e.g., the benefits are diffused). Whether or not such goods are, in fact, non-excludable is not relevant. The terms of the policy define access to a broad class (e.g., all citizens). The funding of such goods and services (i.e., the costs) are provided out of general revenues, and, thus, are also diffused. Research on the theory of collective action suggests that such policies are unlikely to stimulate strong political action on either side (i.e., for or against). 12 As a result, such issues are expected to be determined either by the executive or by political entrepreneurs. In either case, the policies are expected to be very public.

2. Regulatory (Type I): Like the public good case, a good or service is being provided whose benefits are widely diffused. Unlike that case, however, the costs are clearly seen to fall on some identifiable class. In this case the rule identifies the class of individuals or behaviours that bears the cost. This is the general case of regulation in the public interest. Thus, legislation regulating the introduction of pollution into the environment is scrutinized by a diffuse benefit of cleaner air, with concentrated costs to polluters and potential pollutees. Like the public good case, the executive and/or entrepreneurs would be expected to play a major role in promoting such policy, while opposition is expected to be self-organizing.

3. Regulatory (Type II): Type II regulation is just the reverse of Type I regulation—the benefits of the policy are concentrated, but the costs are diffused. As in the Chicago School accounts of regulation, beneficiaries are easily organized to capture the regulatory policy to the detriment of those who bear the diffuse costs of the policy. In this case, organized interests are expected to dominate the political process. 13 Subgovernment (or "iron triangles") made up of constituent elites, bureaucratic elites, and beneficiary elites are expected to manage Type II regulatory policies in a less visible fashion.

4. Redistributive: In this case, the costs and benefits are concentrated such that the rule under which the policy takes place is clearly seen to redistribute value (e.g., wealth) from one class of people to another. Both givers and takers would be expected to be effectively organized for political action in this case, and, as a result, substantial political conflict would be expected. Instead of the low polity approach, we should expect to find high politics (e.g., President-Floor peak association).

Where the previous policy arenas are defined by the presence of some form of central rule under other than these costs and benefits. Consider "agential incu-
bility." Political action is clearly a public good in the sense that all members of the class "know" someone in it. These are, however, concentrated benefits (e.g., office occupations) and concentrated costs (civilians soldiers).

As a result, in both cases, there may be no moral or principle for a policy of the public good type. This suggests the importance of establishing partnerships with regard to these forms. Such partnerships may be "success" since the same sense that "one is genuine to the importance of the issue, or the sense of being "of the same sort that they are attempting to delineate conflict by hiding the source of the public interest label. Whose of this is the case is fundamental importance for producing policy change (e.g., the October 1974, but not so im-
mportant in the effort of policy on policies (e.g., the Lowi effect) is the finding that the regulatory life cycle to publics (Gibbons, 1988) simply brings a "temporal shift from Type I to Type II regulation. This, in part, implies a substantial shift in the organizational polity: from public, entrepreneurial polities on the floor of the legislature; to private, subgovernmental polities.

11 Alternatively, the concept could be extended to include other degrees of influence about the policy system, who may, or may not, participate in the political system. While both of these factors are distinct from each other and from the relative concentration of benefits and costs, they are all closely related and may be distinguished from each other.

12 Specifically, the benefits are not sufficient to justify the additional expenditure necessary to achieve the desired results.

13 The public good case illustrates the importance of both perception and entrepreneurialism in the Lowi-Wilson framework.

14 As a result, the "politicization of regulation" with regard to these forms.
which policy is administered, in areas 5-8 the policy is perceived to operate through the allocation of costs and/or benefits on an individual basis.

5. Routine constituent/administrative service: In this case, the relationship to the society is defined in such a way that the relationship is highly individualized (reflecting a high degree of discretion). However, while the benefits of this relationship are seen as specific to individuals, they are open to the citizenry as a whole (diffused benefits). Furthermore, the costs of each act of accommodation are seen to be spread across the whole system (diffused costs). Research on Congress suggests that a substantial amount of a Congressperson's time is spent performing a wide range of small services for constituents (Fiorina 1977). These benefits are diffused in the sense that they are available to virtually everyone at low individual costs, while the costs are diffused both because the direct costs of any individual act of constituent service are low and are covered by general revenues. We would expect the policies of such issues to be very non-controversial, rarely involving floor action or high level executive officials.

6. Adjudicative regulations: In this case, concentrated costs are imposed on individuals in such a way that substantial discretion permits the relevant decision makers to distinguish between individuals in the allocation of such costs, but the benefits are diffused across the entire community.

7. Distributive: In this case, concentrated benefits are distributed to individuals, while the costs are diffused across the entire (legitimate) community. The policies in this case are characterized by log-rolling. The executive and the floor of the legislature are expected to be dominated by the operation of committees and organized pressure by the beneficiaries of the policy. Unlike Type II regulatory issues, however, the beneficiaries do not form an institutionally organized group; they are a diffuse and diffuse interest.

8. Adjudicative redistribution: In this case, the relevant authority identifies both the individual to be accommodated and the individual to bear the cost. The political effects of this sort of policy is to drive a wedge into an existing group - between those expecting to be accommodated and those expecting to be disadvantaged.12

Sfits a primary goal of this paper is to present the endogenous policy approach in its simplest possible form, only the cases involving concentrated benefits will be analyzed. In these cases it is not unreasonable (at least as a first approximation) to abstract from almost political entrepreneurs (within the state and/or the policy). As with much work in the pluralist tradition, this simplification makes it possible to treat the state as a passive register of effective demand by systems and to focus on the equilibrium levels of political activity in the policy.13

The Endogenous Policy Approach to Political Economic Analysis

Given some reasonably coherent social entity (e.g., nation-state), political economic analysis seeks to understand the interaction between the civil society, state and economy. Such an understanding, conceivably, be advanced in a variety of ways, among them: philosophical reflection, case studies of particular policy choices and comparative analysis across countries and/or policy choices. Formal modeling is one form of philosophical reflection and the endogenous policy approach to political economic analysis is one formal modeling strategy.

The strategy of endogenous policy modeling is deceptively simple. The actors of the state are taken to be a function of effective citizen demands. These demands are, in turn, functions of citizen preferences and the opportunity cost of political activity; preferences are taken to be determined by the economic attributes of the citizen (taxes, factor ownership and industrial affiliation). The system is closed via the effect of policy on citizen interests as determined by their position in the economy (i.e., their attributes). On this form, the structure may appear to be too simple to yield valid insights. A moment of reflection, however, should lead one to the realization that it is precisely this sort of logic which's lurking just below the surface of the great majority of treatises of political-economic interaction. One of the great virtues of formal modeling is that it forces users to face up to the assumption structure necessary for their conclusions.14

12 Noted that the "good" in question here is the implementation. The temptation of one's representation in an international trade commission hearing is a good example of this logical structure that yields unique with an economic value. That is, it is unreasonable in such a predication is subjectivity of how one's representation will be calculated in the legislation regulating, say, Controlling the procedural.

13 One example of how this would be an industrial policy prompted by the ability of "trickster winners." In this case, some unit agency is expected to identify some strategy of an industry for discriminative treatment, while the remainder of the inquiry to be forced out of business by state foot or by competition.

14 See, in particular, the discussion of alternative assumptions about the state in the center of endogenous economic policy models.

15 Two points of clarification only prove useful here. First, although this paper operates with a minimal extreme representational model, a more elaborate model would be feasible (in principle) by extending the theory of political parties. Given political parties are expected to yield political activity, the more open the democratic process, the more effective political activity, but the more critical the political participation, the more likely is effective political activity, but the more likely is effective political activity. Hence, political society in its capacity as political activity and political success in the combination of economic and political activity available to them. Formally, the paper has the salutary effect of denouncing the "false sovereignty" of willy-nilly relations. Perhaps the most striking of these insights is the general impossibility of social policy decisions in principle implies the choice of instruments (Dornbusch, McFarley 1976; Schlesinger 1983). The point of these findings is (perhaps not that there is no necessity) but because of other preferences and social outcomes, but that the cost is not any straightforward (as simple) as many thought hoped it was.
Since the goal of this paper is illustrative as well as analytical, an extremely simple set of behavioral, technological, and institutional assumptions is adopted. This strategy not only permits a direct focus on political economic interdependence in a clear and intuitively appealing way, but the fact that this simple structure is rich enough to generate the Low effect suggests the value of endogenous policy modeling as an instrument of political-economic discourse.

The basic units of analysis in this work are citizens and firms. As has already been suggested, the former are defined in terms of three basic attributes: status (i.e., preferences over available consumption goods), factor ownership (the services of these factors are employed by firms as inputs into the production of consumption goods), and industry (i.e., which industry employs the services of a factor of production). The sole source of individual income is the wage of the services of factors of production (called the "return" to a factor). Along with the price of each consumer good, factor income defines a set of affordable consumption bundles from which an individual consumer may choose. Out of the primarily behavioral assumptions presented here is that individuals are economically rational utility maximizers. Primarily for geometric tractability, most of the expositions in this paper proceeds under the assumption that there are just two goods (X and Y) and two factors of production (capital and labor).

For reasons discussed later in the description of the basic model of the economy, each individual is classified as either an owner of capital (K) or labor (L), but not both, and an individual's capital can be employed in only one industry at a time. Finally, it will be assumed that labor is instantly movable between sectors, but that once capital has been located in one of the industries, it cannot be instantaneously reclassified to the other industry.

Firms are very simple entities in this model. Like consumers, firms are assumed to be economically rational, where rationality is defined as profit maximization. Each firm is characterized by a production function which specifies how the services of capital and labor can be combined to produce outputs of X or Y. Specifically, it will be assumed that production in each industry is characterized by constant returns to scale, dictating returns to both, factors of production. Unspecified complications relating to specialization will be avoided by assuming that some of each good's always produced. Finally, it will be assumed that firms in each industry produce with the same production function, but that X production is capital-intensive relative to Y production at all relative product prices.

The following are major institutional assumptions. In the economy, it is assumed that there is a complete system of property rights and a complete system of markets for goods and factors of production, and that perfect competition obtains in all markets. With regard to the state, it is assumed that state choices are a function of the balance of effective political demand. That is, the state is a passive registry of effective demand. This will be seen to be a lobbying model, not an electoral model. The analysis is further simplified by assuming that the state possesses only a single policy instrument: the capacity to change relative product prices by some combination of taxes and/or subsidies.

Having defined terms and outlined assumptions, the model itself can now be developed. First a model of the economy is developed in some detail, with particular reference to the effects of state intervention on factors of production, the short run and the long run. This emphasis follows from the fact that, given the assumptions about individuals, the welfare effects of government intervention must pass through their effects on factor returns. Furthermore, the time horizon relative to the given issue will affect the organization of those utilities for adjustment of the policy change in the short and long run. From there the cost of influencing state action is introduced. The opportunity to engage in political activity yielding some direct economic benefits is at a positive cost.

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20 In fact, a very strong form of rationality is used: individuals are assumed to be goods self-regarding. That is, while it is defined utility from one's own preferences. Alternative approaches are possible, but for the purposes of this paper, they add considerable complication without additional benefit.

21 This will be the basis of the distinction between the long run and the short run. That is, the long run is defined as the period in which all factors are mobile between sectors.
plies that economically rational individuals will allocate their resources between economic and political activity (i.e., between the production of goods and lobbying to influence government policy).24 One of the fundamental results illustrated in this paper is that once lobbying costs are introduced into the model, the institutional form through which state output is delivered has an effect on the organization of lobbying activity and, thus, on its level. The intuition behind this result is quite straightforward. Suppose a distinction is made, as in the discussion public/with (private) cost presented above, between delegation under a general rule and delegation with discretion (or, more appropriately, direct accommodation). In the former case, the output (loosely speaking) is like a public good in that it applies in the same form to all members of a given class, while in the latter case the output is again, loosely speaking) like a private good. As a result, not only will there be some tendency to underproduce the public good on standard collective action logic, but the opposition will form in a more coherent fashion than in the privatized output case.

The Basic Model of the Economy

In this section the model of the economy is presented in somewhat more detail. As suggested above, if it is a two sector, two factor general equilibrium model.25 A particular goal of this section is to discuss the use of a graphic technique for depicting both a short-run and a long-run equilibrium in our sample economy. This technique will be used in the following section to discuss the real income effects of a price change in the economy brought about by a political process (i.e., price change is, therefore, assumed to be the 'outcome of the political process'). The discussion will concentrate on the simple two-sector version of this model, since the results may be presented graphically and the important effects of political output (price changes) on the distribution of income in the economy are preserved when generalized to any number of goods.

Given the assumptions, profit maximization will lead to the result that an industry will hire additional units of each factor of production up to the point that the revenue generated by the additional output equals the cost of the factors. That is, each factor will be employed until its value of marginal product (price of the output times the marginal productivity of the factor) equals its cost (factor return). It will be recalled that in the short run, labour (L) is assumed to be fully mobile between industries while capital (K) is assumed to be fully immobile and, therefore, 'specific' to an industry. In the long run, capital is also fully mobile. Since labour is mobile in the short run, it will shift between industries until its return, w, is the same in each industry. Since capital is immobile in the short run, it returns in the two industries, r, and s, may differ in the short run. These short-run equilibrium conditions are summarized below:

\[
V_L = w \quad (1.1)
\]

\[
V_K = w \quad (1.2)
\]

\[
R_L = r \quad (1.3)
\]

\[
R_K = s \quad (1.4)
\]

where \(V_L, V_K, R_L, R_K\) are the value of marginal products for labour and capital (respectively) in each industry. Over a long-run time period capital will be mobile and, therefore, will also shift between industries until factor returns are equalized as follows:

\[
r_L = r_K \quad (1.5)
\]

Labor market equilibrium

Graphically, we may represent short-run equilibrium in the labor market (where labour shifts between industries until returns are equalized) as follows in Figure 3.

![Figure 3](image)

The range of marginal product of labour in industry \(X\) at each level of employment is represented by the height of the \(V\) curve. For any given cost of labour services, \(w\), a profit maximizing industry

24 Bhagwati (1962) refers to "directly productive" and "indirectly productive" profit making activities in making this distinction.
25 This set is standard in international trade theory and is much of public interest. The larger version of the model is generally referred to as the Hahn-Ohlin-Samuelson (H-O-S) model by trade theorists, and the short-run version is the "specific factors" model of Ricardo-Viner (R-V) model. These two models are fully described in the international trade theory literature. For a basic presentation of these models and important implications for international trade theory, see Appendix A of Edith (1968). For a more detailed survey of these models by trade economists, see Carter and Neary (1984). For an introduction to public economics, see McCloskey (1971a, b, 1973).
will employ labour until the height of the \( V \) curve equals the given return. For example, if the cost of labour is \( w \), then employment by industry \( X \) would be \( L_a \) for getting \( L \) be the total amount of labour in industry \( Y \) at the equilibrium, full employment requires that the labour not used in industry \( X \) be employed in industry \( Y \). In Figure 4, we have added the value of marginal product curve for labour in industry \( Y \) using \( L \) as the origin and movement left as increases in employment of labour in industry \( Y \). If the cost of labour is \( w \), then the distance \( L_a \) would equal the profit maximizing level of employment by industry \( X \) while \( (L_a - L_a) \) would equal the profit maximizing level of employment of \( L \) in industry \( X \). The distance \( (L_a - L_a) \) would, therefore, represent unemployment of labour at \( w \) and since it is greater than zero it would result in downward pressure on the wage. Similarly, given a wage of \( w \), a labour shortage equal to \( (L_a - L_a) \) would result, creating upward pressure on the wage. The value of \( w \) at the intersection of \( V \) and \( V \), \( w^* \), therefore represents the only return to labour that will result in full employment of labour under conditions of profit maximization. In this equilibrium, industry \( X \) would employ \( L^* \) units of labour and industry \( Y \) would employ \( (L - L^*) \) units of labour. \(^{30}\)

If industry output is assumed to be zero units of labour hired, then the area under a value of marginal product curve equals the total revenue of that industry. Further, since the assumption of perfect competition in the output market ensures that the total revenue of an industry equals the total payments to the two factors of production, \( X \) and \( Y \), and the area of the rectangle below the equilibrium wage equals the total payments to labour, \( wL \), then the area above the value of marginal product curve and above the wage represents the total payments to specific factors, \( F \). These areas are shown in Figure 5 below for both industry \( X \) and industry \( Y \).

[Figure 4]

[Figure 5]

Short-run factor returns

A graphic representation of the short-run equilibrium in each industry (as opposed to the total payments to labour, \( wL \), will be made, based on the fact that the assumption of perfect competition in all markets implies that the price of the output in an industry will always equal its per unit cost of production. Concentrating on the moment, on industry \( X \), this may be represented algebraically as follows:

\[
P_X = \frac{t_X}{X} + \frac{K_X}{X} \quad \text{(2)}
\]

Because of the further assumption of constant returns to scale (linear homogeneous) production functions in all industries, the factor to output ratios (representing the units of labour needed per unit of output) are independent of the level of output in each industry by the definition of constant returns to scale production) and will, therefore, be functions of \( w \) and \( t \) alone. For any given output price (and, therefore, any given unit cost of production) there will, therefore, \(^{30}\) be a functional relationship be-

\[\text{Note that although there is zero economic profit with perfect competition in output markets, } F \text{ may still experience economic profit (discounting tax economic rents).}\]

\[\text{See equations 1.3 and 1.4 above.}\]

\[\text{Note that to assume an economy with zero economic profit with perfect competition in output markets (as there may still exist economic profit (discounting tax economic rents).}\]

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\[\text{See equations 1.3 and 1.4 above.}\]
between w and t, consistent with zero profit. Further, this relationship will be dependent only upon the technology of the industry and will be unaffected by the mobility of the factors between industries. 11 For a given price of output in industry X, feasible combinations of w and t, may be mapped out consistent with zero profit and, therefore, reflecting the efficient use of factor inputs for a given cost of production. The resulting curve, which will be labeled Cx, is generally referred to as an isoquant curve for industry X. Similarly, the isoquant curve for industry Y, Cy, may be derived. Both curves, for a given pair of output prices, may be seen in Figure 6.

![Figure 6](image)

Note that rearrangement of equation (3) above will show that the absolute value of the slope of either curve at a given point will equal the equilibrium capital to labour ratio in that industry. 12 Once the return to labour, w, is determined in the labour market (as in the value of marginal product diagram is Figure 4), the isoquant curves of Figure 6 will show the short-run equilibrium returns to capital in each industry, 13 and t, completing the description of the short-run economy. The labour market and isoquant curve diagrams are shown together in Figure 7 where w, t, 13, and C represent short-run equilibrium returns to labour and the two specific factors for a given pair of output prices and value of marginal product curves.

**Long-run factor returns**

In the long-run time period, capital is mobile be-

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11 This relationship between factor prices and industry technology at a given level of output quantity amounts to profit maximizing and perfect competition in all markets is a basic result from neoclassical microeconomics. More on this topic may be found in almost any intermediate level microeconomics textbook.

12 Thus the assumption that t is capital intensive relative to X is shown by the fact that Cy is steeper than Cx in Figure 6.

13 See equation 4-5 above for a statement of this equilibrium condition. Nearly 100 years ago a celebrated essay concerning the adjustment referred to in this paragraph.

14 Note again that the conditions of quasi-perfect production function in all industries is important to note in determining that the isoquant curves must only exist. Therefore, there will be a unique set of factor returns x, w and t, that define equi-returns to factors in both industries.
A Simple Model of the Political Economy: The Levi Effect

The short-run equilibrium returns to factors and allocation of labour between industries may all be seen in the diagram and are denoted with the unit superscript. Since the return to capital in industry Y is greater than in industry X, capital will, over the long-run time period, shift from industry X to industry Y. As it does, the value of marginal product of labour curve in industry X shifts down as labour becomes less productive with less capital and the value of marginal product of labour curve in industry Y becomes more productive with more capital. The intersection of W, and Y, in the long run will be determined by the technology of the two industries and will, therefore, eventually intersect at the same W as the recent curves do in the right hand diagram, with a long-run equilibrium return to capital of 1.10

Characterizing the political economic rationality of individuals

Since individuals are assumed to have preferences over government policy outcomes based only on the way the relevant policy affects their economic welfare, the possible economic welfare effects of different policy outcomes must be better described. In this simple model, individuals engage in only two types of behaviour: they consume goods and they sell the services of factors of production. Thus, we identify actors in terms of their preferences over consumption of X and Y, and their ownership of either K or L.11 Since individuals are sought to purchase goods and services at given price levels, P, and P,

and do so with a given amount of income, I, (derived from ownership of factors of production) each ray, therefore, be seen to have preferences over different possible price and income levels that are represented by some real valued function U(P,X,Y). This ‘indirect’ welfare (or utility) function will reflect an inverse relationship between the price level in either industry and the welfare of the individual and a direct relationship between an individual’s income level and welfare.12

Further, it is clear that if the income of an individual is increased by a greater percentage than the price level in either industry, then real income and, therefore, the welfare of an individual, as measured by the ‘indirect’ welfare function, is increased.13 Using a ‘hat’ (‘) to denote a proportional change, this implies that an individual will support any government policy that proportionally increases income by a greater amount than the price level in either industry: 1 > P, and 1 > P,. If a government

Note 10: Since capital will be assumed immobile in the short run it is sufficient to be important in none while industry employs a unit of capital.

Note 11: This is called the ‘indirect’ utility function in microeconomic theory when individual preferences are assumed to be based merely upon prices and income, but upon the consumptions of goods and services. The utility for welfare in an individual will, therefore, depend directly upon his/her income and the price levels of all goods in the economy.

Note 12: This follows from the fact that if real income is increased, then the buying power of the individual has increased in just the old purchases are still affordable while previously unattainable bundles of goods are now attainable.
policy increases income by a greater percentage than the price level in one industry but not the other, then the preferences of the individual with regard to that policy are ambiguous. Speculatively, support for such a policy will depend upon the consumption patterns of the individual. For example, if little good Y is consumed by the individual, then the fact that P_Y > 1 imposes little loss of welfare compared to the increased utility of the fact that I > P_Y. In order to simplify the determination of the income level of an individual (which is solely from ownership of factors of production) and, therefore, dependent upon returns to factors owned, it is assumed that individual income flows from the returns to ownership of only one unit of either K or L. Furthermore, with regard to ownership of capital, an individual will be involved with only one industry at a time. In the short run, therefore, a distinction may be made between an owner of capital in industry X, an owner of capital in industry Y, and an owner of labor services. The indirect utility function of an individual will, therefore, have not of the following three forms: U(P_K, P_L, X), U(P_K, P_L, Y) or U(P_K, P_L, X, Y). Further, income will change for each of these individuals only through their factor returns: I = I_k, I = I_l, or I = I_k + I_l, respectively.

To sum up the micro-classical microeconomic view of an economic and political individual decision maker, if a government policy increases the returns to a factor by a proportionally greater amount than the price level in both industries (or decreases returns proportionately less), then owners of that factor will unambiguously benefit. Conversely, if the returns to a factor increase proportionately less than both price levels (or decrease by a proportionally greater amount than both price levels), then owners of that factor will unambiguously be worse off. Also, if a factor return/increase proportionately more than one price level but less than the other, they owners of that factor may or may not be better off; time since may be consumers of the last good.

Short-run Versus Long-run Effects of Price Changes

In order to examine the economic effects of polici-}


cal outcomes on individuals, it will be assumed that policy outcomes affect only prices in an economy and do not affect the welfare of individuals directly. Of interest in the present work, therefore, is the effect of an exogenous change in the price level in an industry on the distribution of real income in the economy. It will be shown here that there are two distinct effects on real income in this model and, therefore, two distinct effects on individual welfare from a price change: a short-run and a long-run effect. Specifically, a price change will influence factor returns (and, therefore, individual welfare) at the industry level in the short run, but will cut across industries to the factor ownership level in a long-run time period.

Given the characterization of the foundations of political economic rationality in the previous section, the distinction between short-run and long-run results has an interesting implication for the formation of interest groups. Assuming that there are many more industries than factors of production, when the time horizon over which political calculation is made is short, the gains from participation in the political process will fall to owners of an impossibly large number of industries at the expense of owners of only unstable factors in other industries. Thus, as Lewis describes in redistributive arenas, political action on behalf of a large number of relatively small, industry-specific interest groups would be expected. However, when the time horizon over which political calculation occurs is long, even when a political outcome increases the price level in a single industry, the benefits from participation will fall to a single factor, cutting across all industries. This is, in the case of two factors, either owners of labor will benefit at the expense of owners of capital, or owners of labor will benefit at the expense of owners of capital. Thus, as Lewis’ redistributive arenas, factor based interest groups that cut across industries will form.

Short-run effects

Suppose the state acts to increase the price of industry X’s output. Since the value of marginal product of a good equals the output price times marginal product (unaffected by price change) the V_X curve will shift upward proportionately to the height of the curve of the V_L curve will, of course, re-
main unchanged, since the lowest curve represents zero profit is the face of constant returns to scale, the C, curve will shift outward proportionally to its distance along a ray from the origin (C, is also unchanged). An example of these shifts is shown in Figure 9.

If V, increases to V, and C, increases to C, the equilibrium wage will increase from w, to w, as seen in the labour market diagram on the left, and the returns to the two immobile factors may be read to be 1, and 5 in the isoquant curve diagram on the right. Note that return to all labour and capital in industry X alone will increase while the returns to capital in industry Y will decline.

Figure 9

So far the analysis has been carried out in dollar terms, but as mentioned in the previous section, in order to discuss the welfare implications of a price change on the individual factor owner, it is necessary to examine the changes in proportional terms. Beginning with the left-hand side of Figure 9, it can be seen that the proportional increase in the price of industry X shifts the V, curve up proportionally to its height. Therefore, at current employment, L, and P, will equal the distance between V, and V, divided by the height of V, The wage will increase from w, to w, so that w, will equal the difference between w, and w, divided by w,. It can be seen that since w, equals the height of V, at L, the wage has risen proportionally less than the price of X. Adding the trivial observation that p, increases by more than p, since C, shifts outward proportionally to the price change in industry X along a ray from the origin, the proportional change in p, will equal the ratio of the distances AB/BD. Thus, a perpendicular dropped from A to the r axis would show a new return to capital in industry X whose proportional increase is identical to that of the price level in industry X. It can, however, be seen that the new return (r) is greater than this. Thus, the complete result is:

l, > P, > A > P, > E.

That is, when the government causes an increase in the relative price of one of the goods (X), the factor specific to that industry benefits unambiguously (i.e. experiences an unambiguous increase in welfare), the factor specific to the other sector (Y) loses unambiguously; and the effect on the mobile fac-

...
ton's welfare is dependent on the use of the two goods in consumption. Extensions of this result to policies that lower the relative price of Y or raise the relative price of X are invalid and can be left as exercises for the interested reader. The primary point is that this result yields clear predictions about the preferences of individuals over policies that affect the relative prices of products.

When policies are such as to induce short-run changes in the political calculation, thegame from participation in the political process will fail to own or disable an immovable factor in one industry at the expense of owners of immobile factors in other industries. It would, therefore, be expected, as Jovi describes as distributive politics, that relatively small interest groups will form on these political issues that affect a single industry and will be formed by owners of the specific capital employed in that industry. As for the mobile factor, those owners of the mobile factor with particular tastes toward or away from goods or services from an affected industry would tend to support government actions that increase or decrease the price level in that industry.

**Long-run effects**

The long-run effects of a price change may also be seen using these two diagrams. Suppose again that the government induces an increase in the relative price of Y, as in Figure 10.1.

![Figure 10.1](image1)

While the returns to capital in industry Y increase and the returns to capital in industry X decrease in the short-run, over time (in the long-run), capital will shift between industries, in response to the differentials in factor returns, and will also do until these returns are equilibrated again. As capital moves from industry X to industry Y, labor will also move from industry X to industry Y (as it becomes more productive with the increased capital) and returns to labor and capital will eventually adjust until factor returns in all industries are equilibrated. This will be in the new intersection, \( w^* \) and \( r^* \), of the (isoquont) curves, \( C_1 \) and \( C_2 \). Note in the example depicted in Figure 10-1, that although returns to capital in industry X initially decrease to \( r_1 \), they will increase to \( w^* \) in the long run. Also, note that wages will unambiguously decline in the long run to \( w^* \). In the notation used in the analysis of short-run effects:

\[ r > r_1 > r^* \]

This result depends fundamentally on our assumption that Y production is always capital intensive compared to \( X \) production, as reflected in the steeper slope of the Y isoquant curve. Thus, if the government chose instead to increase the relative cost of X (the labor-intensive good), as in Figure 10-2, the long-run effects would be an increase in wages and a decrease in the returns to capital. That is, the long-run effects of a relative price increase on the returns to factors as described above would

![Figure 10.2](image2)

result in cross-national analysis of the Salient's effect. The hypothesis would be that political costs in countries with historically egalitarian (i.e., relatively equal) distributions of income would more likely be characterized by face (i.e., class-based conflicts, while

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\( w > w^* > w^* \)
be reversed. The new long-run equilibrium returns would be $ww$ and $zz$, and this reflects the result that although returns to capital in industry $X$ initially increased to $cc$, they will decrease to $ww$ in the long run. Further, returns to labour will unambiguously rise at the long run to $ww$ in terms of effect. This is one of the ways that putational results of general equilibrium theory and is generally called the Stolper-Samuelson theorem. It may be explicated as follows:

As an increase in the price of one good relative to the other will result in an increase in the price of the factor used intensively in the production of that good relative to the price of both goods and a decrease in the return to the other factor relative to the good produced, regardless of the industry in which the factors are employed. 63

This result has an interesting implication with regard to the incentives for political action. Although the gains from participation in the political process will fall to owners of an immobile factor in one industry and the gains of owners of mobile factors in other industries in the short-run, when individuals are concerned about the long-run effects of a political decision, their material political allies are other individuals with the same factors-endowment (regardless of the industry in which their factor is employed). Specifically, a factor would benefit (be harmed) in the long run from an increase (decrease) in the price of a labour-intensive good and would be harmed (benefit) in the long run by an increase (decrease) in the price of a capital-intensive good. It would, therefore, be expected, in Leib's redistributive arena, that when considering long-run effects, large interest groups will form around ownership of factors of production regardless of their employment in the economy.

**Towards a Model of General Political Economic Equilibrium: Endogenizing Political Choice**

It is clear from the above discussion that in this simple short-run model, as increase in an industry's price level brings benefits to owners of industry-specific factors of production at the expense of owners of factors specific to other industries. If a political institution existed whose outcome affected the price level in an industry, then one would expect to find economically rational individuals (utility maximizing through the consumption of goods and services) only engaging in two kinds of activities: directly producing factors that are mobile with unstable scale (e.g., with institutionalized instability) would have more likely to be characterized by small-scale, specialized industries. 64

In the more general case of many industries and factors, the generalization to the result that an increase in the price level in an industry brings a proportionately greater increase in its returns to at least one factor (the sector's output) of population while reducing the returns to at least one other (also, many more)

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63 Note that gains to specific factors in an industry form an increased price level at the expense of specific factors in all other industries. Specific factors in industry whose price level increases only slightly, by an increase in the case, while a number of other industries' price levels increase, specific factors export in the industry may prefer a quota to the rule.

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its economic effects, the price level in an industry will either go up or down as a result of political decision. Taking the existence of political mechanisms as given and letting $p$ be the relative price of good X in terms of good Y (that is, $p = P_x/P_y$), the passive register entry can be represented as a political output function, using as input the lobbying resources employed by the relevant special interest groups:

$$p = p(L_i, L_j).$$

To examine the effect of lobbying for government output graphically, the effect of using lobbying resources to influence the relative price level in the two industries will be considered. For simplicity, the analysis will concentrate on the benefits of lobbying to specific factors in industry X. Hold the returns to the mobile factor constant, and keep factor returns in units of good Y. In Figure 1 below, it may be seen that when the relative price level goes up, the value of marginal product curve in industry X shifts up proportionally to its height.

As discussed above in Figure 5, since there is perfect competition in all markets, the area below the $V_x$ curve out to current employment of labour in the industry represents total industry revenue, which is divided between the total return to owners of specific factors (the area below $V_x$ but above the current return to labour) and mobile factors (the rectangle below the current return to labour). Therefore, ignoring the labour market effects (i.e. holding w constant), when the relative price level increases, returns to owners of specific factors in industry X increase as shown by area $ab$. Suppose, however, that wages are no longer assumed fixed and the effects of the relative price level increase on the market for the mobile factor are taken into account. When the value of marginal product curve for industry X shifts up, the return to the mobile factor will increase as it is bid away from industry Y. Adding the value of marginal product curve for industry Y in Figure 12, it can be seen that this increase in $w$, from $w^f$ to $w^0$, reduces the demand by industry X for additional units of the mobile factor (employment increase to $L^1$ instead of $L^0$).

The total return to owners of specific factors in industry X before the price change was area $(b + c)$ (above wage $w^0$ and below $V_x$ out to employment level $L^0$) and after the price change will be area $(a + b)$ (above the new equilibrium wage, $w^1$, and below the new value of marginal product curve, $V_x$, out to employment level $L^1$). The increase in returns to specific factors in industry X from the relative price increase is, therefore, equal to area $(a + b)$ minus area $(b + c)$ — or, simply, area $(a - c)$. Note that, as previously discussed, the return to specific factors in industry X must increase with this.
price increase. Area (a - c) must, therefore, be greater than zero. This is easily demonstrated graphically by noting that the height of area (a + b) is greater at every given level of employment of labour than area (b + c) (since the value of marginal product curve shifts upward proportionally to its height) while at the same time being wider (since L' must be larger than L with a downward sloping V, curve). This is shown in Figure 13 by moving shaded area (b + c) on top of the outer area (a + b).

When costly labour must be hired by specific factors in industry X to lobby for a relative price level increase, the supply of productive labour in the economy is reduced, as seen in Figure 14, shifting the origin for industry X inward, as well as the value of marginal product curve (as it is the same distance from the origin will not change). Note that this decrease in the amount of productive labour in the economy increases the return to the mobile factor in the economy. This reduces the employment of labour by industry X, reducing the marginal productivity of the specific factor and thereby reducing the return to the specific factors in that industry. This may be seen to be the shaded area in Figure 14.

Since the total return to specific factors in industry X is rX KX and owners of specific factors in each industry employ the lobbying resources to influence the industry price level, the net return to this political activity, noted by N*, is

\[ N* = rX KX = wLX. \]

The problem, solved by the owners of specific factors in industry X, is to choose an amount of resources, LL*, that maximizes N* for a given level of lobbying by factor owners in industry Y, LL. When lobbying labour is hired, several effects may be seen graphically. The combination of a simultaneous increase in the relative price level Y to Y and a decrease in productive labour due to the use of lobbying resources (the rightward shift in the left vertical axis) is shown in Figure 16.

Note that this is simply adding the movements in Figure 12 and 14, and their resulting effects together into one diagram. The increase in the mobile factor returns from W to W and change in the allocation of the mobile factor from L to L are the same as in Figure 12 and due to the higher relative price level in industry X. Also, the increase in the return to the mobile factor from W to W and change in use of the mobile factor from L to L are the same as in Figure 14. Due to the reduction of productive labour in the economy, industry X gets more lobbying labour. The return to specific factors in industry X will increase by an amount equal to

1) the increase due to the higher relative price level — equal to area (b + a + a) + c).

2) the decrease due to the increase in mobile factor returns: from the reduction in productive labour — equal to area (b + a + a) + c).

Note that areas (a + a + a) and (c + c) in Figure 15 are the same as areas (a) and (c) in Figure 12, respectively.

Note that area (b + a + a) in Figure 15 equals the shaded area in Figure 14.
The cost or the specific factors of influencing the price level will be:
3) the cost of hiring lobbying labour at the current wage level — equal to area (f)
4) the increased cost of hiring lobbying labour due to the relative price increase — equal to area (g)
5) the increased cost of hiring lobbying labour due to the reduction of productive labour — equal to area (h).

In total, the increase in the net return to specific factors in industry Y from lobbying for a higher relative industry price level equals area (a + b + c + d + e + f + g + h).

This may also be shown mathematically. The change is $N_Y$ from the use of additional units of lobbying resources, for a given level of lobbying by specific factors in industry Y, will be:

$$
\frac{\partial N_Y}{\partial L_Y} = \frac{\partial N_Y}{\partial L_Y} \frac{\partial L_Y}{\partial P} \frac{\partial P}{\partial Q} = \frac{\partial N_Y}{\partial L_Y} \frac{\partial L_Y}{\partial Q} \frac{\partial Q}{\partial P}
$$

The first term, $\frac{\partial N_Y}{\partial L_Y}$, represents the direct effect on the revenue to specific factors from a relative price increase due to increased lobbying by industry X. If an increase in $L_Y$ would increase area $(x + y + z + c + d + e + f + h + g + a)$ from Figure 16 through the term (i).

The second term, $\frac{\partial N_Y}{\partial L_Y}$, shows the reduction in $L_Y$.

In the total returns to specific factors from the increase in revenue to specific factors when productive labour is reduced by an increase in lobbying by industry X. An increase in $L_Y$ increases the area $(x + y + z + c + d + e + f + h + g + a)$ from Figure 16 through this term. The cost of hiring lobbying services is the sum of the next three terms, $w, L_Y, \frac{\partial P}{\partial Q}$, and $\frac{\partial Q}{\partial P}$. An increase in $L_Y$ increases the area $(d + e + f)$ from Figure 16.15

15 Note that this type is always positive since $y + z - c - d - e - f - g - a$ may always increase with an increase in the relative price level.

16 If the industry problem is defined as hiring lobbying labor simply to maximize the net return to lobbying, then the necessary and sufficient conditions will be achieved in the way used (i.e., whether net return is measured as units of good X, good Y, or in dollar terms), although the way results, just point out the trade-off in benefits and costs of employing lobbying resources and adequate to the units, the industry problem could equally be formulated using a utility function representing the trade-offs between changes in the relative price level and the net return to lobbying as follows:

$$\text{w} = \text{u}_{\partial p}, \text{N}_Y = 1.4$$

The contrary conclusion for industry X would be:

Rule versus discretion in determination of intervention levels

As argued in the discussion of the Lori effect as the beginning of this paper, one of the attributes of a policy that has taken to affect the organization of political activity directed toward that policy is whether access to the policy output (in this case a change in relative prices) is a direct result of the lobbying process or as indirect result. In the first case, discretionary accommodation, the state makes case-by-case determinations on the basis of lobbying effort.

This is in contrast to rule-based decision making in which the lobbying effort determines a general rule under which all effort to change relative prices are determined.15 An excellent example of this distinction is found in the original development of the Lori effect (Lori 1964). In measuring between the findings of Schattschneider (1942) and those of Bauer, Poul and Dexter (1963), Lori argued that the Reciprocal Trade Agreement Act of 1924 and the emergence of multilateral tariff bargaining in the GATT changed the institutional definition of tariff politics from a distributive issue toward a regulatory issue. The authors have argued elsewhere that the cause of this change was a shift from direct accommodation of tariff-seeking by Congress to rules-based accommodation by the executive under a delegation from the Congress.16

In light of the foregoing, the last two results may now be presented: Discretionary accommodation will tend to reduce economic analysis of the state's interest, but rule-based accommodation and discretionary accommodation will more often result in increases in price levels than will rule-based accommodation. Once the cost of political activity is explicitly recognized, the logic behind the first result is quite straightforward:

$$\frac{\partial N_Y}{\partial L_Y} = \frac{\partial N_Y}{\partial L_Y} \frac{\partial L_Y}{\partial P} \frac{\partial P}{\partial Q} = \frac{\partial N_Y}{\partial L_Y} \frac{\partial L_Y}{\partial Q} \frac{\partial Q}{\partial P}$$

Since any industry is also maximizing utility through consumption of the two goods, Roy's theory may be used (Varian 1970), and rearranged to:

$$\frac{\partial N_Y}{\partial L_Y} - \frac{\partial N_Y}{\partial L_Y} = \frac{\partial N_Y}{\partial L_Y} \frac{\partial L_Y}{\partial P} \frac{\partial P}{\partial Q} = \frac{\partial N_Y}{\partial L_Y} \frac{\partial L_Y}{\partial Q} \frac{\partial Q}{\partial P}$$

where $\text{N}_Y$ is industry X's Marshallian demand function for good X (as a function of relative prices, $p_X$, and income, $Q$). Note that since $N_Y$ is a function of $p$ and $L_Y$, alone, $D_Y$ is $\text{u}_{\partial P}$. For the rule-based case, it was assumed that the general rule-operates efficiently and with certainty. As a result, the rule makes policies which are virtuous and are often being used by the same.

Thus, complete discretion is compared with a completely specified rule.

The historical argument is made quite clearly in Peltzman (1975). In Pierson, Fielder and Neuman (1983) with respect to the role of policy within an institution. A formal development of this approach for the case of tariff policy can be found in Hall and Nelson (1980).
the benefits of discretionary accommodation are appropriately individual policy-seeking groups (industries, in our model) while the benefits of rule-based accommodation are not. As a result, by comparison to discretionary accommodation, rule-based accommodation results in lower levels of lobbying activity for the directly affected industry. The second result is also fairly straightforward: while there is a lower overall level of political activity under rule-based accommodation, there is also a bias in favor of individuals who are not owners of specific factors employed in industries whose price levels are directly affected by the government output. As has been assumed up to this point, government output that influences price levels is completely determined by the lobbying resources used at the industry level. Momentarily dropping the assumption of just two industries, if a set of government outputs, $g_1, g_2, ..., g_n$, is considered, potentially affecting a number $n$ of industries, it can be seen that their values are simple functions of the lobbying resources expended by the industries:

$$g_j (L_{i1}, L_{i2}, ..., L_{im})$$

Each of these government outputs, if assumed to influence only one industry price level (for simplicity), will affect only one set of industry-specific factors (in the short-run). The price level in an industry $X$, for example, that is affected by a particular government output will, therefore, be determined by the lobbying resources used to influence that government output:

$$p_i (L_{i1}, L_{i2}, ..., L_{im})$$

For this reason, any lobbying resources used by this industry or small group of industries (in particular those that are fully or almost fully captive) as a result, output under discretion may loosely be referred to as a "private good". Further, gain of that industry or small group of industries at the expense, to varying degrees, of all other industries indirectly through factors markets. Suppose now that there is a different form of government output. It no longer results directly from industry level lobbying but from the application of a general rule which is itself simply determined by lobbying. The rule, therefore, may be represented as was each separate government output previously, as a simple function of the industry specific factors employment of lobbying resources

$$R (L_{i1}, L_{i2}, ..., L_{im})$$

This rule is applied to government output (which allows lobbying to indirectly influence government outputs) and, even if it is again assumed that each of these government outputs influences only one industry price level (for simplicity), it affects price levels in several industries at once:

$$P(R), P(R), ..., P(R)$$

Since the benefits of lobbying for rule-based accommodation will not be fully appropriate by a single group of industry-specific factors, the output in this case may loosely be referred to as a "public good". Instead, resources used by the specific factors is an industry must benefit several industries simultaneously. The effect that this public type of government output will have on the incentive for lobbying resources may be seen graphically using the same basic diagram as in Figure 16. Taking an arbitrary industry $X$, whose price level will be increased by the government output, if its resource use is compared to that of another industry not affected by the government output, then there will not be a difference in their industry problem solution as in Figure 16. If its resource use is compared to that of another industry whose price level is also increased by the government output, then any resources used by this industry to increase its price level also must increase the price level in the other industry. This is shown in Figure 17. Note that the same rewards to lobbying persist as in Figure 16, but now $p_i$, increases $P_i$ as before, $p_i$ must now also increase. The result is that the value of marginal product curve in industry $Y$ will now also shift upward proportionally to its height. The loss to specific factors in industry $X$ from this adjustment shift is seen by the shaded area in Figure 17. Now, instead of simply gaining specific

![Figure 17](image-url)

Note that the return to factors and value of marginal product curve have been switched into units of another good besides the output of industry $Y$, or they could have been kept in units of dollars. This is for convenience only that this permits an upward shift in the $Y$ curve, reflecting an increase in the price level in industry $Y$. This change has been kept in units of good $Y$ as before, the $Y$ curve would simply (though not obviously in the same manner) have been shifted downward. The graph would have further complicated changes in the rates returns would have changed, since they were in units of good $Y$. 

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factor returns equal to area (a) minus area (c, r = b + e + f + d), there will be the additional
area (a) minus area (c, r = b + e + f + d), there will be the additional
area (a) minus area (c, r = b + e + f + d), there will be the additional
area (a) minus area (c, r = b + e + f + d), there will be the additional

Conclusions
The relationship between the results presented above and what has been called the Levi effect should be
clear. In the context of the model developed here, a policy will have two attributes: the time horizon
shift and the use of terms to access output (discretionary or rule-based). Once these attributes have
been specified, the organization of political action is determined along the lines shown in Figure 18.

<table>
<thead>
<tr>
<th>Short Horizon</th>
<th>Long Horizon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rules</td>
<td>Regulator</td>
</tr>
<tr>
<td>Discretion</td>
<td>Distributive</td>
</tr>
</tbody>
</table>

Figure 18: The Levi Effect.

A policy that induces a short time horizon in po-
litical calculation and discretion in accommodation of demands results in industry-based lobbying. In
this model, industries are the smallest possible unit of collective identification, so this defines the kind

of limit conceived by Levi in his definition of a dis-
tributive policy. Maintaining the short time horizon
but shifting to a rule-based system for accommodat-
ing demands induces the creation of larger groups
along the lines defined by the rule, which is the clas-
sic pattern of regulatory policy as analyzed by Levi.
Finally, if the rules orientation is retained but the
definition of the policy induces long time calculation,
factor-based groups will form. If the assumption is
that there are far fewer ‘basic factors’ than indus-
tries, this yields Levi’s redistributive role with its broad-based (approaching class struggle)
gruppend. 8

The purpose of this paper has been to illustrate the use of a class of formal models in polici
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