

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.¹ There have been two major responses to this recognition. From the structuralist side has come a renewed commitment to the structurally focused case study.² 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 behaviour, as well as the attempt to identify 'institution-free' properties of collective behaviour.³ 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.⁴ The simplest 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/lobbying), 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 po-

litical 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 modelling political-economic interaction. The bulk of the paper is a step-by-step geometric development of the simplest endogenous policy model (a 2×2 economy with a passive register state). The paper concludes with a discussion of the derived Lowi-effect and some suggestions for future research.

¹ This does not imply that it is a new phenomenon. Social analysts have recognized the importance of institutional structure for as long as records of social analysis exist. The current wave of 'neo-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 structuralism prevailed in political science and sociology, at the same time that 'economics imperialism' brought 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 Theda Skocpol and her colleagues on the development of the welfare state in the US, especially during the New Deal (Skocpol 1980; Skocpol and Finegold 1982; Skocpol and Ikenberry 1983; Orloff and Skocpol 1984; Amenta and Skocpol 1988) and the work of Ikenberry *et al.* reported in 'The State in American Foreign Economic Policy' (*International Organization* 1988).

³ The seminal work on institutional structure is that of Shepsle (1979). A convenient survey of this growing literature can be found in Shepsle (1986). 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 behavioural 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.

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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.⁵ Lowi argues that much of the debate between various schools of thought on politics in liberal democratic systems (pluralists vs. elitists vs. state autonomists) arises from the erroneous notion that there is a single, best model of the political 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 tend 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 takes the form of an empirical observation: the recognition that there are several distinctive patterns of political interaction coexisting in the American political system and that these patterns relate to the major schools of interpretation of that 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 autonomist).

Distributive policies 'are characterized by the ease with which they can be disaggregated unit by small 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 indulged and the deprived, the loser and the recipient, need never come into direct confrontation'.

Regulatory policies 'are distinguishable from distributive in that in the short run the regulatory decision involves a direct choice as to who will be indulged and who deprived... So, while implementation is firm-by-firm and case-by-case, policies cannot be disaggregated to the level of the individual or the single firm (as in distribution), because individual decisions must be made by application of a general rule and therefore be-

come interrelated within the broader standards of law'.

Redistributive policies 'are like regulatory policies in the sense that relations among broad categories of private individuals are involved and, hence, individual decisions must be interrelated... [But the] categories of impact are much broader, approaching social classes'.

In common with all empirical typologies, the arenas of power typology is a pre-theoretic construction. Abstracting from nihilistic assertions that reality is simply too complex to support any useful generalizations (e.g. Greenberg *et al.* 1977), research based on empirical typologies takes two general forms: attempts to apply the typology in additional empirical work⁶ and attempts to develop the theoretical foundations in more detail. With regard to theoretical development, two major bodies of research can be identified; attempts to provide firmer theoretical foundations for the typology⁷ and attempts to derive the properties of political activity within a given category.⁸ The former issue will be dealt with in this paper.

The choice theoretic foundations of the Lowi effect are quite straightforward. Individuals are as-

⁶ Although this paper is concerned with theoretical development of the Lowi effect, it should be noted that the arenas of power typology has given rise to an extensive empirical literature. With regard to American domestic politics, the arenas typology has been used to organize research on: the presidency (Spitzer 1979); the executive bureaucracy (Lowi 1985); and most extensively, the Congress (Vogler 1890; Ripley and Franklin 1984). In addition to these applications, the arenas typology has also been used to organize research on foreign policy (Lowi 1967; Brewer 1973; Zimmerman 1973; Walker and McGowan 1982) and comparative politics (Smith 1969; Peters *et al.* 1977).

The wide acceptance and use of the arenas typology in empirical research has two important implications for attempts to extend the theoretical foundations of the typology. First, even though there are considerable difficulties in applying the typology, scholars and practitioners seem to think that it taps an important aspect of political life. Second, the broad application (across time, institutions and countries) suggests that some general process is at work. It is this general element that theoretical treatments like the one reported here hope to begin to capture.

⁷ In addition to research on the theoretical foundations of the Lowi effect, there is also a closely related body of research that uses the arenas of power categories but returns to the more traditional question of the effect of political organization on policy type. We refer to the linkages between interest structure and political patterns detailed in this research as the *Salisbury effect* in recognition of the original contributions by Robert Salisbury, modelled below, from which much of this work arises (Salisbury 1968, 1970). Additional work on the Salisbury effect can be found in Hayes (1978, 1981) and Kofford (1987).

Research on the Lowi effect assumes that choice among arenas is somehow independent of (and certainly prior to) the organization of social interests; research on the Salisbury effect assumes that organization is logically prior to issue identification. These two are clearly intimately related, but they imply very different modelling programs. The first seeks to find optimal organization subject to given policy attributes; the latter seeks to find optimal policy attributes subject to given political organization.

⁸ This research is effectively a search for more complete micro-foundations for the Lowi effect. This research has tended to focus on distributive issues (Weingast 1979; Fiorina 1981; Shepsle and Weingast 1981; Niou and Ordeshook 1985); and regulatory issues (Fiorina 1982, 1986; McCubbins 1985; McCubbins and Schwartz 1984; Moe 1985, 1987).

⁵ The first significant presentation of Lowi's approach is in a review of Bauer, Pool and Dexter's (1963) massive study of the politics leading up to passage of the 1962 Trade Expansion Act. In that book, Bauer *et al.* seem to argue against both pluralist and elitist schools of research by demonstrating the independence of congressmen. In particular, they reject the findings of Schattschneider's (1935) earlier study of the politics of the tariff. In his review, Lowi suggests that there is no fundamental conflict between these two classic studies, because trade policy was in the process of shifting arenas (from the distributive to the regulatory). In that review Lowi refers to a larger project that examines a wider range of policies. For the original presentation, see Lowi (1964). Later presentations that attempt to extend the analysis both theoretically and empirically can be found in Lowi (1970, 1972, 1985).

sumed 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 the returns 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 tends to induce a characteristic pattern of politics. The causality runs strictly from policy (institutional form) to politics (patterns of activity).⁹

Lowi's (1972) own attempt to provide theoretical motivation for his empirical typology remains the most significant contribution of this sort. 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 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.¹⁰ In a sense, discretion permits 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 behaviour.¹¹

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 statutory 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 positions').

A closely related approach stresses the distinction between policies with symmetrical and asymmetrical effects (Zimmerman 1973). 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 actual causal mechanism linking policy-type to behaviour is never analyzed in detail. The discussions in the relevant texts suggest two such mechanisms: information costs and collective action costs.¹² With regard to the former, it is implicitly assumed that symmetrically distributed costs may be so small that it would not be rational to notice them (i.e. the costs of learning about them are 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 behavioural implications.

⁹ It might be useful to note the relationship of this logic to that of the Salisbury effect. If it is assumed that there exists an *a priori* issue-cleavage pattern, and if politicians are simply passive registers of citizen demand (i.e. there is no political entrepreneurship), then there is no real difference between the Lowi and Salisbury effects. The first assumption asserts that one attribute of a political issue (prior to its institutional definition) is a fixed distribution of preferences over that issue. The second assumption asserts that politicians are unable to deviate from the outcomes established by that distribution of preferences. Under these assumptions, identification of an issue implies knowledge of the underlying pattern of political conflict and, thus, of the political arena. Another way of saying this is that issue is not *per se* important to the identification of arena, what is important is pattern of conflict. This logic is probably most useful in comparative political studies where it might be assumed that there is some pattern of conflict characteristic to a given country, which defines a central tendency in the politics of that country (Smith 1969; Peters *et al.* 1977; Nelson 1983; Rogowski 1988).

The Lowi effect, by its strict emphasis on the causal link from policy to politics, permits an independent analysis of the politics of issue institutionalization and transformation. This makes it possible to incorporate notions of the relatively autonomous state into a model with explicit micro-foundations.

¹⁰ The rules-discretion dimension will, at first, seem quite different from Lowi's 'form of intended impact' dimension. This problem, however, can be easily clarified. Virtually all of the literature on the Lowi effect seeks to explain the effect by reference to the behaviour of rational individuals. Thus, all policies ultimately work through individual conduct. Similarly, all policies (no matter how individually oriented) involve some reference to more-or-less general principles (i.e. attempts to define an environment of conduct). The real issue is whether the legislation/regulation that embodies the policy is seen to permit an individual relationship to the political/regulatory process that generates costs and benefits, or whether that legislation/regulation permits only

a collective relationship. The former case requires discretion on the part of the relevant decision maker, the latter requires the absence of discretion.

¹¹ Note that in this analysis the term 'individual' is used to refer to the smallest effective unit of analysis. For example, if households and firms are the basic units of analysis, the rule must treat classes that include many households (e.g. a community) or firms (e.g. an industry). However, in the general equilibrium model developed later in the paper, although firms and households are the atomic elements of the analysis, the assumption that consumers possess identical tastes and that all firms in an industry possess a common production function implies that the industry is the smallest effective unit of analysis.

With regard to its impact on the incentives to individual action, the authors have recently shown that this distinction is formally quite similar to that between a private good and a public good (Hall and Nelson 1987).

¹² These are both subcases of the more general phenomenon of *transaction costs* (Arrow 1974; Williamson 1975, 1985).

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 (1974), one might ask whether the benefits of a policy are distributed among citizens in a concentrated or a diffused manner, and made similar considerations about the costs.¹³ Introducing these considerations along with the rules-discretion distinction yields what might be called a Lowi-Wilson typology.

Benefits Are:	Political Mechanism Operates Under			
	Rules		Discretion	
	Costs are:		Costs are:	
	Diffused	Concentr.	Diffused	Concentr.
Diffused	I	II	V	VI
Concentrated	III	IV	VII	VIII

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 1-4, 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 (i.e. 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).¹⁴ As a result, such issues are expected to be dominated either by the executive or by political entrepreneurs. In either case, the politics 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 pollutants into the environment is seen to produce the diffused benefit of cleaner air, with concentrated costs to polluters and potential polluters. 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 (diffused) costs of the policy. In this case, organized interests are expected to dominate the political process.¹⁵ Subgovernments (or 'iron triangles') made up of committee elites, bureaucratic elites, and beneficiary elites are expected to manage Type II regulatory politics in a low visibility 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 gainers and losers 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 politics of a subgovernment, one would expect to find high politics (i.e. President-floor-peak association).

Where the previous policy arenas are defined by the presence of some form of general rule under

other than those costs and benefits. Consider 'national security'. National security is clearly a public good in the sense that all members of the class 'citizen' consume it. There are, however, concentrated benefits (e.g. defense contractors) and concentrated costs (citizen soldiers).

As a result of its attributes, there may be no natural constituency for a policy of the public good type. This suggests the importance of political entrepreneurs with regard to these issues. Such entrepreneurs may be 'sincere' in the sense that they genuinely believe in the importance of the issue, or they may be 'strategic' in the sense that they are attempting to defuse conflict by hiding the interest of some constituent under the public interest label. Which of these is the case is of fundamental importance for predicting policy arenas (i.e. the Salisbury effect), but it is immaterial to the effect of policy on politics (i.e. the Lowi effect).

¹⁵ It is interesting to note that the regulatory life cycle hypothesis (Bernstein 1955) simply implies a temporal shift from Type I to Type II regulation. This, in turn, implies a substantial shift in the organization of politics: from public, entrepreneurial politics on the floor of the legislature; to private, subgovernmental politics.

¹³ Alternatively attention could be focussed on relative degrees of information about the policy between gainers and losers, or relative degrees of access to the political system. While both of these are distinct from each other and from the relative concentration of benefits and costs, they are all closely enough related that the additional analytical leverage from their explicit inclusion in the analysis would not be sufficient to justify the substantial increase in complexity.

¹⁴ The public good case illustrates well the importance of both perception and entrepreneurship in the Lowi literature. With regard to perception, it is important to note that the theory does not imply that a public good cannot have concentrated costs or benefits, but that the policy is accepted as being about something

which policy is administered, in arenas 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 government's relationship to civil 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 Congress-person'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.¹⁶

We would expect the politics of such issues to be very non-conflictual, 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 (tax paying) community. The politics 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 'coalition of uncommon 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 effect 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.¹⁷

¹⁶ Note that the 'good' in question here is the intervention. The testimony of one's Representative in an International Trade Commission hearing is a good independent of the legal structure that yields outcomes with an economic value. That is, intervention in such a proceeding is independent of how one's Representative voted on the legislation regulating, say, Countervailing Duty proceedings.

¹⁷ One clear example would be an industrial policy premised on the notion of 'picking winners'. In this case, some state agency is expected to identify some subset of an industry for discriminatory treatment, while the remainder of the industry expects to be forced out of business either by state fiat or by competition.

Since 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 activist political entrepreneurs (within the state and/or the polity). 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 citizens and to focus on the equilibrium levels of political activity in the polity.¹⁸

The Endogenous Policy Approach to Political Economic Analysis

Given some reasonably coherent social entity (e.g. a nation-state), political economic analysis seeks to understand the interaction between its civil society, state and economy. Such an understanding can, 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 modelling is one form of philosophical reflection and the endogenous policy approach to political economic analysis is one formal modelling strategy.

The strategy of endogenous policy modelling is deceptively simple. The actions of the state are taken to be a function of effective citizen demands.¹⁹ 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 (tastes, 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 first reading, this structure may appear to be too simple to yield valuable insights. A moment of reflection, however, should lead one to the realization that it is precisely this sort of logic which is lurking just below the surface of the great majority of treatments of political-economic interaction. One of the great virtues of formal modelling is that it forces users to face up to the assumption structure necessary for their conclusions.²⁰

¹⁸ See Nelson (1988) for a discussion of alternative assumptions about the state in the context of endogenous economic policy models.

¹⁹ Two points of clarification may prove useful here. First, although this paper operates with a minimal (passive register) state, a wide variety of assumptions about the function that transforms effective citizen demand into state action are possible. Second, it should be noted that the relevant political force here is *effective* political demand, not the more general notion of political preference. Since political action is costly and individual resources are finite, individuals are constrained in the combinations of economic and political activity available to them.

²⁰ Formal analysis often has the salutary effect of demonstrating the 'non-simplicity' of widely held notions. Perhaps the most striking of these relates to the general impossibility of social choice functions in minimally complex choice environments (Arrow 1951; McKelvey 1976; Schofield 1985). The point of these findings is (perhaps) not that there is no necessary link between collective preferences and social outcomes, but that the link is not as straightforward (i.e. simple) as many thought/hoped it was.

A Simple Model of the Political Economy: The Lowi Effect

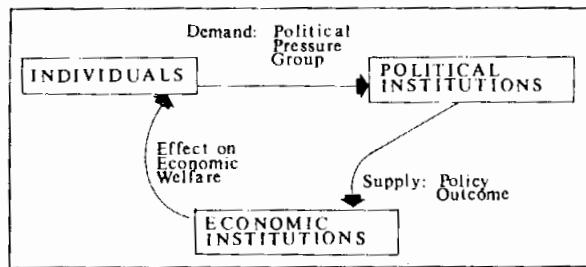


Figure 2

Since the goal of this paper is illustrative as well as analytical, an extremely simple set of behavioural, 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 Lowi effect suggests the value of endogenous policy modelling 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: tastes (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 sale 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. One of the primarily behavioural assumptions presented here is that individuals are economically rational utility maximizers.²¹ Primarily for geometric tractability, most of the exposition in this paper proceeds under the assumption that there are just two goods (X and Y) and two factors of production (capital and labour). 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 labour (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 labour is instantaneously mobile between sectors, but that once capital has been located in one of the industries, it cannot be instantaneously relocated to the other industry.²²

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 labour 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 and positive but diminishing returns to both factors of production.²³ Unessential complications relating to specialization will be avoided by assuming that some of each good is always produced. Finally, it will be assumed that firms in each industry produce with the same production function, but that Y production is capital-intensive relative to X production at all relative product prices.²⁴

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 register 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.²⁵

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 factor returns in the short run and in the long run. This emphasis follows from the fact that, given the assumptions about individuals, the welfare effects of government intervention operate through their effects on factor returns. Furthermore, the time horizon relative to the given issue will affect the organization of interests via the opportunities for adjustment to the policy change in the short and long run. From there the cost of influencing state action is introduced into the analysis. The opportunity to engage in political activity (yielding some direct economic benefit) at a positive cost in-

²³ More formally, it is assumed that production functions are linear homogeneous, twice differentiable and strictly quasi-concave, with positive first derivatives.

²⁴ This assumption means that the K/L ratio in Y production is always greater than the K/L ratio in X production.

²⁵ The standard practice is adopted here of assuming that the tax-cum-subsidy policy is constructed in such a way that it has no effect on political or economic incentives except the direct effect on relative product prices.

Given the technological and institutional assumptions made, the limitation of intervention to price instruments is not as limiting as it seems. It turns out that under constant returns and perfect competition there is a direct equivalence between price and quantity instruments. If the analysis permitted a more active role for the state, or some other political entrepreneurs, the limitation to a single instrument (of any kind) would be a considerably more significant simplification.

²¹ In fact, a very strong form of rationality is used: individuals are assumed to be strictly self-regarding. That is, utility is derived solely from personal consumption. Alternative assumptions are possible, but for the purposes of this paper they add considerable complexity without additional benefit.

²² 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).²⁶

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 of the Lowi effect 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, it is a two sector, two factor general equilibrium model.²⁷ 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 simple 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 (the 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 outputs (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, its returns in the two industries, *r_x* and *r_y*, may differ in the short run. These short-run equilibrium conditions are summarized below:

$$V_x = w \tag{1.1}$$

$$V_y = w \tag{1.2}$$

$$R_x = r_x \tag{1.3}$$

$$R_y = r_y \tag{1.4}$$

where *V_x*, *V_y*, *R_x* and *R_y* 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:

$$r_x = r_y. \tag{1.5}$$

Labour market equilibrium

Graphically, we may represent short-run equilibrium in the labour market (where labour shifts between industries until returns are equalized as in equations 1.1 and 1.2 above) as follows in Figure 3.

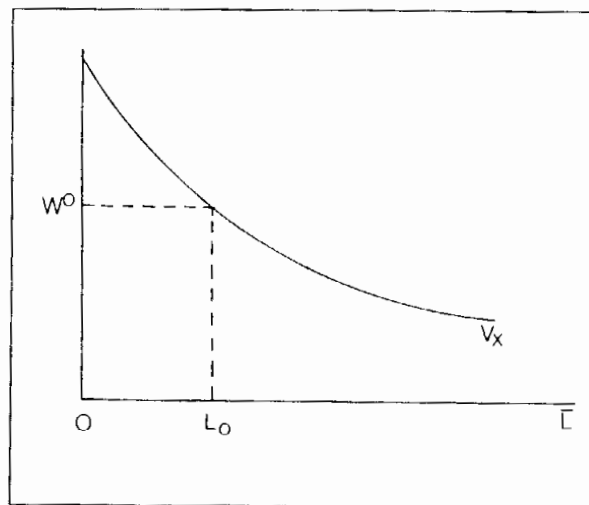


Figure 3

The value of marginal product of labour in industry X at each level of employment is represented by the height of the *V_x* curve. For any given cost of labour services, *w*, a profit maximizing industry

²⁶ Bhagwati (1982) refers to 'directly productive' and 'directly unproductive' profit-seeking activities in making this distinction.

²⁷ This set up is standard in international trade theory and in much of public finance. The long-run version of the model is generally referred to as the Heckscher-Ohlin-Samuelson (H-O-S) model by trade theorists, and the short-run version as the specific-factors or Ricardo-Viner (R-V) model. These two models are fully described in the international trade theory literature. For a basic presentation of these models (both mathematically and graphically) and their implications for international trade theory, see appendix A of Ethier (1988). For a more detailed survey of these models in international trade, see Jones and Neary (1984). For applications to public finance, see McClure (1971a, b, 1975).

will employ labour until the height of the V_x curve equals the given return. For example, if the cost of labour is w^0 , then employment by industry X would be L^0 . Letting \bar{L} be the total amount of labour in the economy, full employment requires that the labour not used in industry X be employed in industry Y. The distance $(\bar{L} - L^0)$ would, therefore, equal the employment of labour in industry Y. In Figure 4, we have added the value of margi-

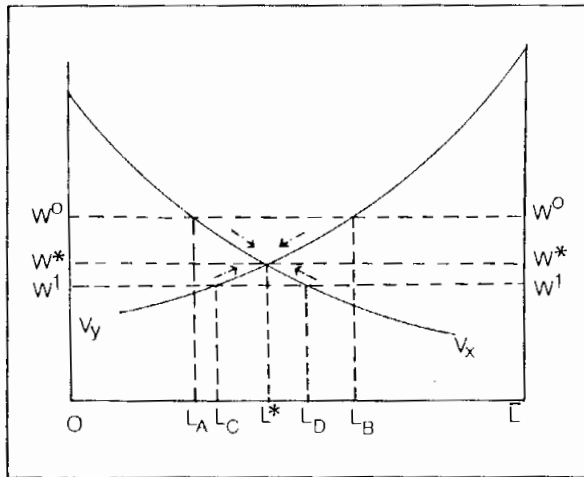


Figure 4

nal product curve for labour in industry Y using \bar{L} as the origin and movement left as increases in employment of labour in industry Y.

If the cost of labour is w^0 , then the distance L_A would equal the profit maximizing level of employment by industry X while $(\bar{L} - L_B)$ would equal the profit maximizing level of employment of L in industry Y. The distance $(L_B - L_A)$ would, therefore, represent unemployment of labour at w^0 and since it is greater than zero it would result in downward pressure on the wage. Similarly, given a wage of w^1 , a labour shortage equal to $(L_D - L_C)$ would result, creating upward pressure on the wage. The value of w at the intersection of V_x and V_y , 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 $(\bar{L} - L^*)$ units of labour.²⁸

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 in 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,²⁹ $wL + rK$, and the area of the rectangle below the equilibrium wage equals the total payments to labour, wL , then the area below the value of marginal product curve and above the wage represents the total payments to specific factors, rK . These areas are shown in Figure 5 below for both industry X and industry Y.

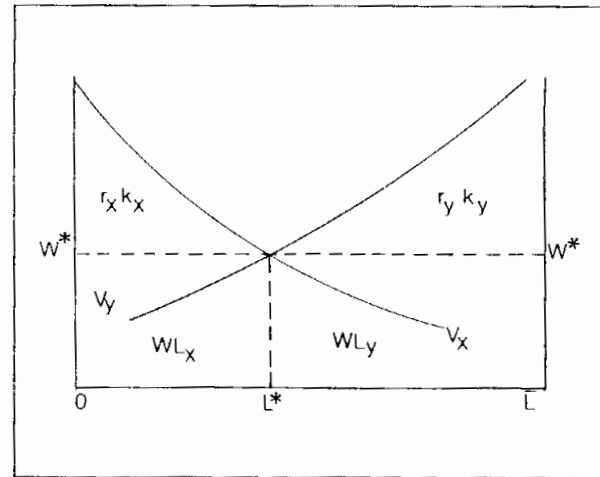


Figure 5

Short-run factor returns

A graphic representation of the short-run equilibrium returns to the immobile factor in each industry (as opposed to the total payments to each)³⁰ 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 for the moment on industry X, this may be represented algebraically as follows:

$$P_x = \left\{ \frac{L_x}{X} \right\} w + \left\{ \frac{K_x}{X} \right\} r_x \quad (2)$$

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 r_x alone. For any given output price (and, therefore, any given per unit cost of production) there will, therefore, be a functional relationship be-

²⁸ Note that the assumption of quasi-concave production functions leads to the result that both values of marginal product curves are downward sloping which ensures a unique equilibrium allocation of labour between the two industries.

²⁹ Note that although there is zero economic profit with perfect competition in output markets, rK may still represent entrepreneurial profit (accounting not economic profit).

³⁰ See equations 1.3 and 1.4 above.

tween w and r , 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.³¹ For a given price of output in industry X, feasible combinations of w and r_x 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 labelled C_x , is generally referred to as an isocost curve for industry X. Similarly, the isocost curve for industry Y, C_y , may be derived. Both curves, for a given pair of output prices, may be seen in Figure 6.

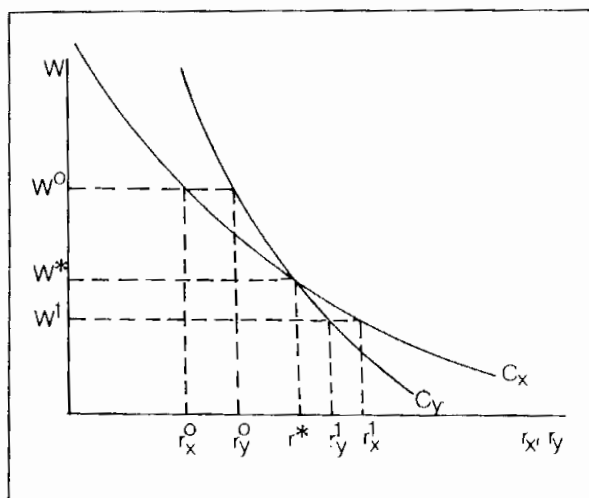


Figure 6

Note that rearrangement of equation (2) 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.³² Once the return to labour, w , is determined in the labour market (as in the value of marginal product diagram in Figure 4), the isocost curves of Figure 6 will show the short-run equilibrium returns to capital in each industry, r_x and r_y , completing the description of the short-run economy. The labour market and isocost curve diagrams are shown together in Figure 7 where w^0 , r_x^0 , and r_y^0 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-

³¹ This relationship between factor prices and industry technology at a given level of output under assumptions of profit maximization and perfect competition in all markets is a basic result from producer theory in microeconomics. More on this topic may be found in almost any intermediate level microeconomic textbook.

³² Thus the assumption that Y is capital intensive relative to X is shown by the fact that C_y is steeper than C_x in Figure 6.

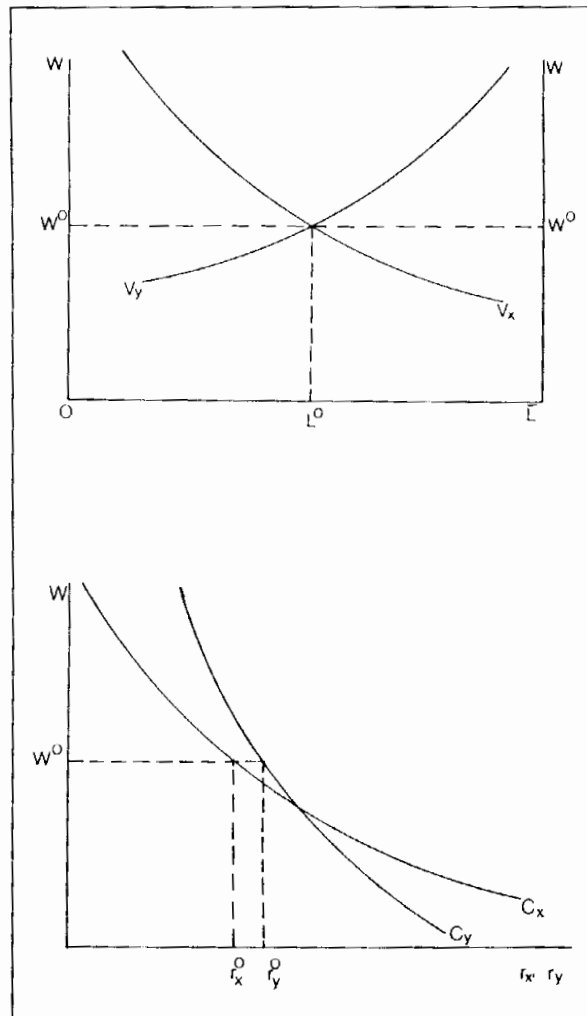


Figure 7

tween industries and will be attracted to the industry with the higher return (industry X if $r_x > r_y$, or industry Y if $r_y > r_x$). As capital flows into (out of) an industry, its marginal productivity will decline (increase), driving down (up) the returns in that industry. This will continue until the returns to capital in each industry are equalized, eliminating the incentive for the movement.³³ Further, as capital flows into (out of) an industry, the marginal productivity of labour in that industry and, therefore, its value of marginal product will increase (decline). This will then cause a shift in the employment of labour until the returns to the labour are equalized between industries.³⁴ This results in a unique combination of returns to labour and capital in both in-

³³ See equation 1.5 above for a statement of this equilibrium condition. Neary (1978) presents an admirably clear discussion of the adjustments referred to in this paragraph.

³⁴ Note again that the assumption of quasi-concave production function in all industries is important in that it guarantees that the isocost curves cross only once. Therefore, there will be a unique pair of factor returns, w^* and r^* , that denote equal returns to factors in both industries.

A Simple Model of the Political Economy: The Lowi Effect

dustries that represents a long-run equilibrium in the economy. To illustrate this adjustment process, suppose that the economy begins in a short-run equilibrium situation at the intersection of V_x^0 and V_y^0 as in Figure 8.

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.³⁶ Since individuals are seen to purchase goods and services at given price levels, P_x and P_y ,

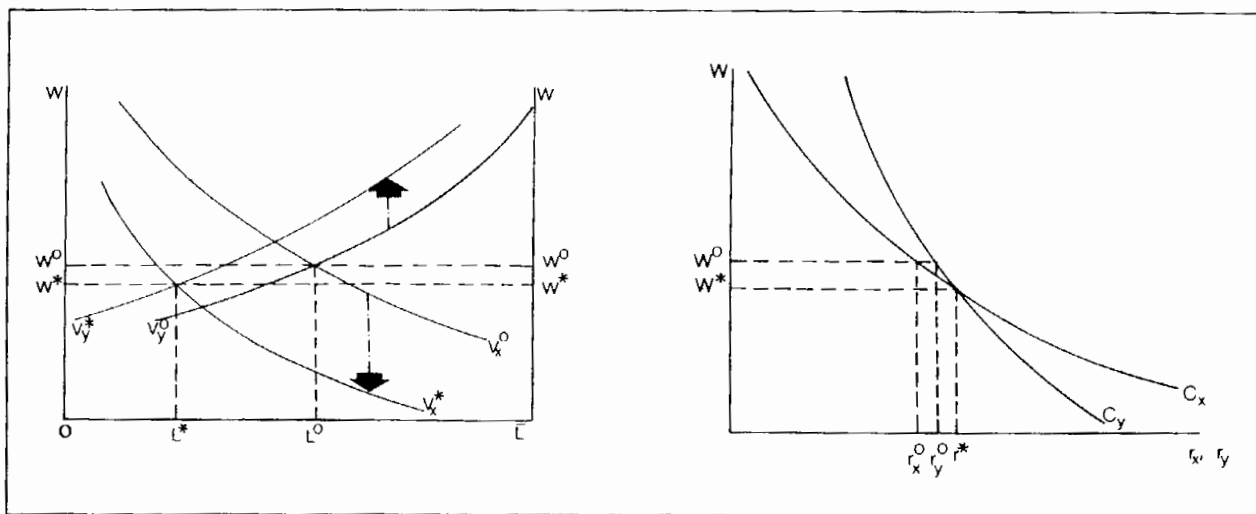


Figure 8

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 null 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 shifts up as labour in industry Y becomes more productive with more capital. The intersection of V_x and V_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 isocost curves do in the right hand diagram, with a long-run equilibrium return to capital of r^* .³⁵

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

and do so with a given amount of income, I , (derived from ownership of factors of production) each may, therefore, be seen to have preferences over different possible price and income levels that are representable by some real valued function $U(P_x, P_y, I)$. 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.³⁷

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 this 'indirect' welfare function, is increased.³⁸ Using a 'hat' ($\hat{\cdot}$) 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: $\hat{I} > \hat{P}_x$ and $\hat{I} > \hat{P}_y$. If a government

³⁵ Note the importance of the fact that the isocost curves for each industry are dependent solely upon the technology of the industry and are, therefore, unaffected by the shifting factors of production.

³⁶ Since capital will be assumed immobile in the short run it turns out to be important to note which industry employs a unit of capital.

³⁷ This is called the 'indirect' utility function in microeconomic theory since individual preferences are not assumed to be based directly upon prices and income, but upon the consumption of goods and services alone. For a given set of preferences over goods and services, the utility (or welfare) of an individual will, therefore, depend *indirectly* upon his/her income and the price levels of all goods in the economy.

³⁸ This follows from the fact that if real income is increased, then the buying power of the individual has increased in that the old purchases are still affordable while previously unaffordable 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. Specifically, 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 $\hat{P}_y > \hat{I}$ imposes little loss of welfare compared to the increased utility of the fact that $\hat{I} > \hat{P}_x$.³⁹

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.⁴⁰ 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 labour services. The indirect utility function of an individual will, therefore, have one of the following three forms: $U(P_x, P_y, r, K)$, $U(P_x, P_y, r, L)$, or $U(P_x, P_y, w, L)$.⁴¹ Further, income will change for each of these individuals only through their factor returns: $\hat{I} = \hat{r}_x$, $\hat{I} = \hat{r}_y$, or $\hat{I} = \hat{w}$, respectively.

To sum up the neo-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 levels in both industries (or decreases returns proportionally less), then owners of that factor will unambiguously be better off. Conversely, if the returns to a factor increase proportionally 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 increases proportionally more than one price level but less than the other, then owners of that factor may or may not be better off since they may be consumers of the latter good.

Short-run Versus Long-run Effects of Price Changes

In order to examine the economic effects of politi-

³⁹ This problem is encountered with the effects of relative price changes on the returns to labour in the model of the economy used (the specific factors model). For a discussion and partial solution to this problem, termed the 'neo-classical ambiguity', see Ruffin and Jones (1977).

⁴⁰ Though this assumption is mainly for convenience, its importance lies in that it eliminates the complication of individuals who may, due to a political outcome, simultaneously gain income from the ownership of units of one factor while losing income from the ownership of units of another. For this same reason, the capital of an individual will be assumed to be employed in one industry only. For a presentation of a model where similarly defined individuals are permitted to own both types of factors of production, see Mayer (1984).

⁴¹ Note that K and L here refer to only one unit of capital and labour, respectively, and not industry totals.

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,⁴² 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 immobile factor in one industry at the expense of owners of immobile factors in other industries. Thus, as Lowi describes in distributive 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 industry prices. That is, in the case of two factors, either owners of labour will benefit at the expense of owners of capital, or owners of capital will benefit at the expense of owners of labour. Thus, as with Lowi's 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.⁴³ Since the value of marginal product of a good equals the output price times marginal productivity (unaffected by price change) the V_x curve will shift upward proportionally to the height of the curve (the V_y curve will, of course, re-

⁴² As this condition suggests, these results take on greater importance in a more 'realistic' model, i.e. one characterized by higher dimensionality than 2×2 . While it is not a universally held opinion, the authors tend to believe that in the long run industries outnumber factors of production (probably by several orders of magnitude). That is, it is not too radical a simplification to suppose that basic factors can be limited to land, labour, capital and possibly human capital, while the number of industries can only be considered enormous.

⁴³ Note that any of the following analysis could be expressed in units of one of the two goods. In this case, an increase in the relative price of one good would represent either an increase in the dollar price of the good, or a decrease in the dollar price of the other good, or any combination of the two as long as the ratio of the prices increases.

main unchanged). Since the isocost curve represents zero profit in the face of constant returns to scale, the C_x curve will shift outward proportionally to its distance along a ray from the origin (C_y is also unchanged). An example of these shifts is shown in Figure 9.

tion that r_y declines, as seen on the righthand side of Figure 9, the following is seen to hold:

$$\hat{P}_x > \hat{w} > \hat{P}_y (= 0) > \hat{r}_y.$$

Finally, again from the right side of Figure 9, it can

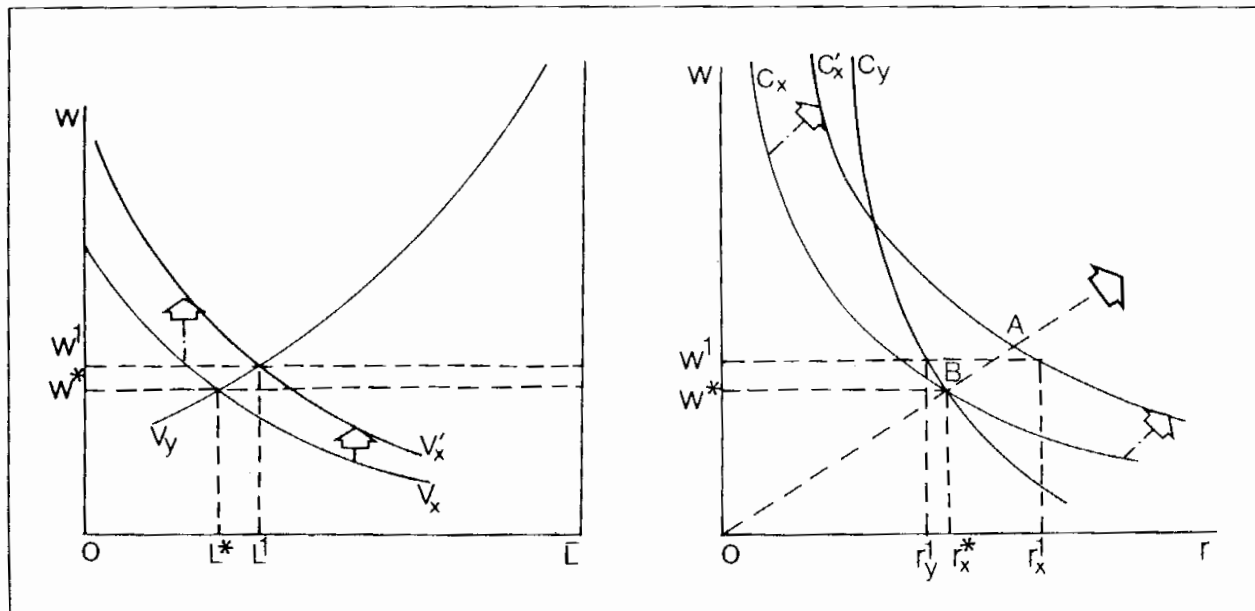


Figure 9

If V_x increases to V'_x and C_x increases to C'_x , the equilibrium wage will increase from w^* to w^1 , as seen in the labour market diagram on the left, and the returns to the two immobile factors may be read to be r_x^1 and r_y^1 in the isocost curves diagram on the right. Note that returns to all labour and to capital in industry X alone will increase while the returns to capital in industry Y will decline.

be seen that r_x increases by more than P_x . Since C_x shifts outward proportionally to the price change in industry X along a ray from the origin, the proportional change in P_x will equal the ratio of the distance AB/OB . 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_x^1) is greater than this. Thus, the complete result is:⁴⁵

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 (percentage) terms. Beginning with the lefthand side of Figure 9, it can be seen that the proportional increase in the price level in industry X shifts the V_x curve up *proportionally* to its height. Therefore, at current employment, L^* , \hat{P}_x will equal the distance between V_x and V'_x divided by the height of V_x . The wage will increase from w^* to w^1 , so that \hat{w} will equal the difference between w^1 and w^* divided by w^* . It can be seen that since w^* equals the height of V_x at L^* , the wage has risen proportionally less than the price of X.⁴⁴ Adding the trivial observa-

$$\hat{r}_x > \hat{P}_x > \hat{w} > \hat{P}_y > \hat{r}_y.$$

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-

to move from Y to X until the labour market is back in equilibrium — at a wage whose proportional change is intermediate between the changes in P_x and P_y .

⁴⁵ The economic intuition behind this result is also quite straightforward. With zero profit, the benefits of an industry price increase must be distributed in the form of increased returns to the two factors of production. Since the proportional increase in the return to labour is below that of the industry price level, the returns to capital must be greater. Furthermore, since the return to labour in both industries goes up and there is no change in the price level in industry Y, the return to capital in that industry must decline.

⁴⁴ The economic intuition behind this relationship is quite straightforward. If both L and K are fixed in the short run, an increase in the price of X raises the returns to both factors in the same proportion (by linear homogeneity of the production function and perfect competition). L, however, is mobile in the short run, so the incipient increase in wages in X causes labour

tor's welfare is dependent on the mix 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 trivial 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 time horizons in political calculation, the gains from participation in the political process will fall to owners of an immobile factor in one industry at the expense of owners of immobile factors in other industries.⁴⁶ It would, therefore, be expected, as Lowi describes in distributive arenas, that relatively small interest groups will form on those 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 taste biases 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 effect of a price change may also be seen using these two diagrams. Suppose again that policy induces an increase in the relative price of Y, as in Figure 10-1.

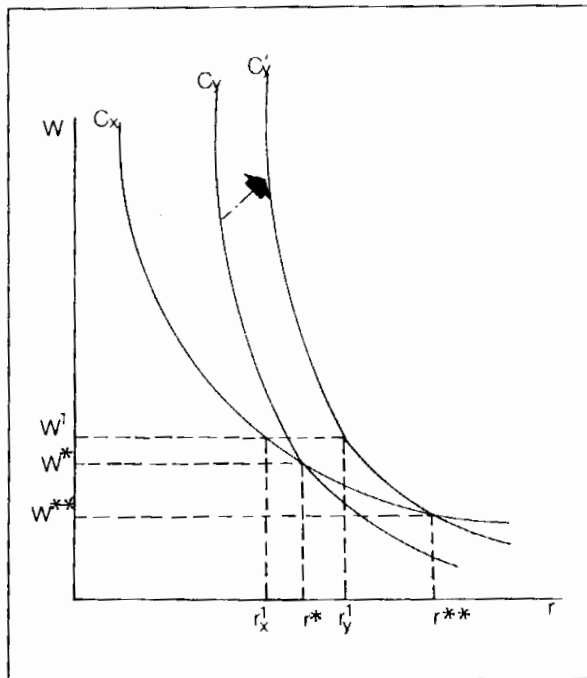


Figure 10-1

⁴⁶ It is arguable that the time horizon of political calculation should be treated as a parameter that varies across political communities. If community time horizon were a function of, for example, the average duration of government, we could use this

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 differential in factor returns, and will do so until these returns are equalized again. As capital moves from industry X to industry Y, labour will also move from industry X to industry Y (as it becomes more productive with the increased capital) and returns to labour and capital will eventually adjust until factor returns in all industries are equalized. This will be at the new intersection, w^{**} and r^{**} , of the isocost curves, C_x and C_y' . Note in the example depicted in Figure 10-1, that although returns to capital in industry X initially decline to r'_x , they will increase to r^{**} 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:

$$\hat{r} > \hat{P}_y > \hat{P}_x > \hat{w}.$$

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

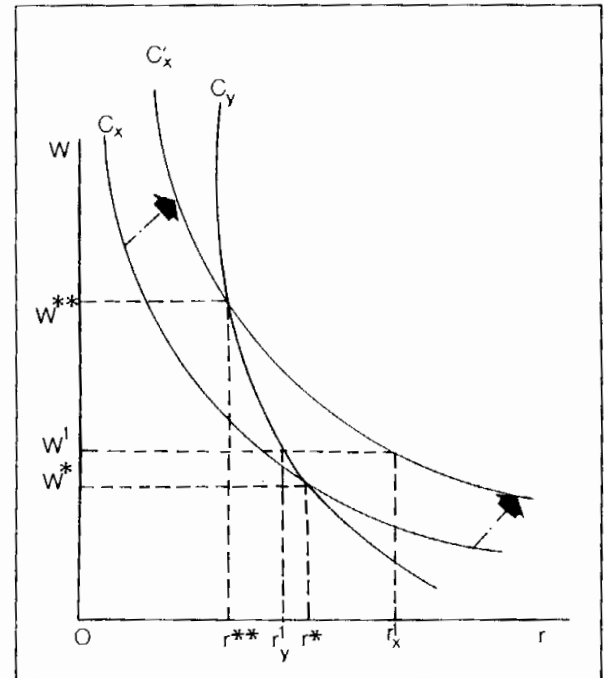


Figure 10-2

result in cross-national analysis of the Salisbury effect. The hypothesis would be that political conflict in countries with historically stable states (e.g. stable hereditary monarchs) would more likely be characterized by factor (i.e. class) based conflict, while

be reversed. The new long-run equilibrium returns would be w^{**} and r^{**} and would reflect the result that although returns to capital in industry X initially increased to r_1^* , they will decrease to r^{**} in the long-run. Further, returns to labour will unambiguously rise in the long run to w^{**} in terms of either good. This is one of the most fundamental results of general equilibrium theory and is generally called the Stolper-Samuelson theorem. It may be expressed as follows:

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 prices of both goods and a decrease in the return to the other factor relative to both goods (regardless of the industry in which the factors are employed).⁴⁷

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 at the expense of owners of immobile factors in other industries in the short-run, when individuals are concerned about the long-run effects of a political decision, their natural political allies are other individuals with the same factor-endowment (regardless of the industry in which that factor is employed). Specifically, labour 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, as in Lowi's redistributive arenas, that when considering long-run effects, large interest groups will form around ownership of factors of production regardless of their employment in the economy.

Toward a Model of General Political Economic Equilibrium: Endogenizing Political Choice

It is clear from the above discussion that in this simple short-run model, an increase in an industry's price level benefits owners of industry specific factors of production at the expense of owners of factors specific to other industries. If a political institution existed whose outcomes 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 produc-

tive (i.e. earning income through the rental of factors of production to firms) and political (i.e. lobbying government to influence prices, which then affect the returns to ownership of factors of production). Given that such political activity is costly, an implication of this is that economically rational individuals will recognize this trade-off between the gains from a higher (or lower) industry price level and the cost of attempting to influence government output and devote resources to political activities until the marginal benefit equals the marginal cost of doing so. Further, to the extent that the institutional form through which state output is provided affects the cost of political activity relative to its value, institutional form would be expected to have an effect on the incentives to engage in political action. In this section, the simple model will be expanded to include the trade-off between the gains from changes in the price level in an industry(s) and the cost of influencing the government output that causes this price change. Then, this expanded model will be used to discuss the effect of two alternate institutional forms of supply of government output.⁴⁸

Costly lobbying

It will be assumed that individuals who participate in the political process are rational economic actors who influence the political process through lobbying (as opposed to voting). A measure of the resources used by a group in affecting government policy output will be denoted by LL. This variable will be referred to as 'lobbying labour' since it will be further assumed that this input is perfectly substitutable for the labour in the production of goods and services. The cost, then, of influencing government output is simply the return to the mobile factor, labour, times the amount of the mobile factor used in lobbying government, wLL . Since the benefits from a higher price level in a given industry fall unambiguously to the owners of specific factors in that industry, it will be assumed that they hire the labour resources to influence government output. Full employment in the economy, therefore, implies that:

$$\bar{L} = L_D + LL_x + LL_y$$

where LL_x and LL_y are the labour used in lobbying by specific factors in industry X and Y, respectively, and L_D is defined as 'productively' employed labour ($L_D = L_x + L_y$). Since government output will be seen to affect individuals only through

that in countries with unstable states (or states with institutionalized instability) would more likely be characterized by small-group based conflict.

⁴⁷ In the more general case of many industries and factors, this generalizes to the result that an increase in the price level in an industry results in a proportionally greater increase in the return to at least one factor (maybe more) of production while reducing the return to at least one other (also, maybe more).

⁴⁸ Note that gain to specific factors in an industry from an increased price level is at the expense of specific factors in all other industries. Specific factors in industries whose price levels are not increased by a government output will, therefore, oppose increases in this government output. Further, if an industry's price level increases only slightly by an increase in the rule, while a number of other industries' price levels increase, specific factor owners in the industry may prefer a decrease in the rule.

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 state can be represented as a political output function, using as inputs the lobbying resources employed by the relevant special interest groups:

$$p = p(LL_x, LL_y).$$

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 11 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.

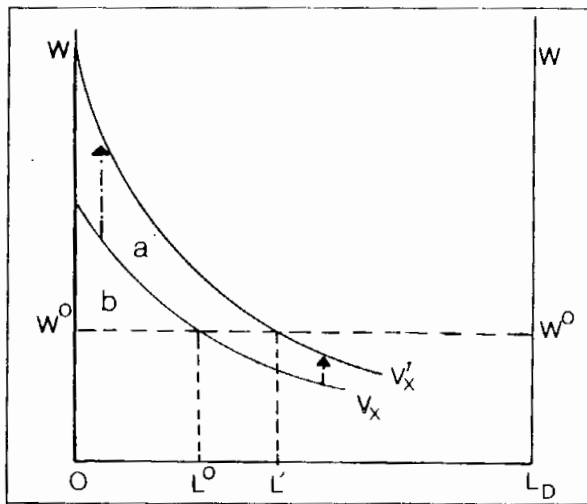


Figure 11

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 (a).

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^0 to w^1 , reduces the demand by industry X for additional units of the mobile factor (employment increase to L^1 instead of L^0).

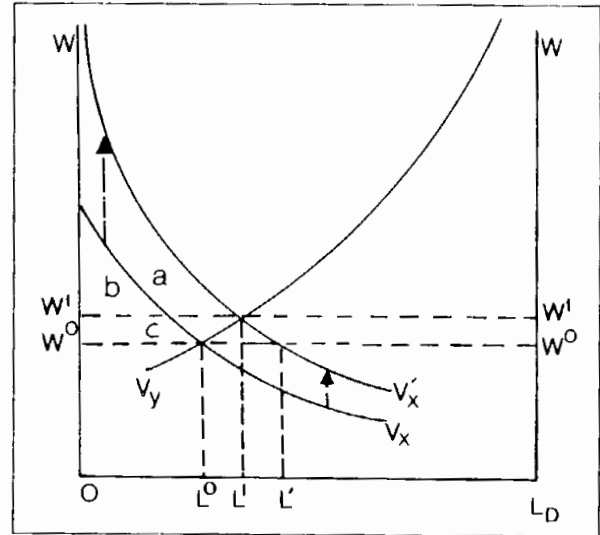


Figure 12

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 returns to specific factors in industry X must increase with this

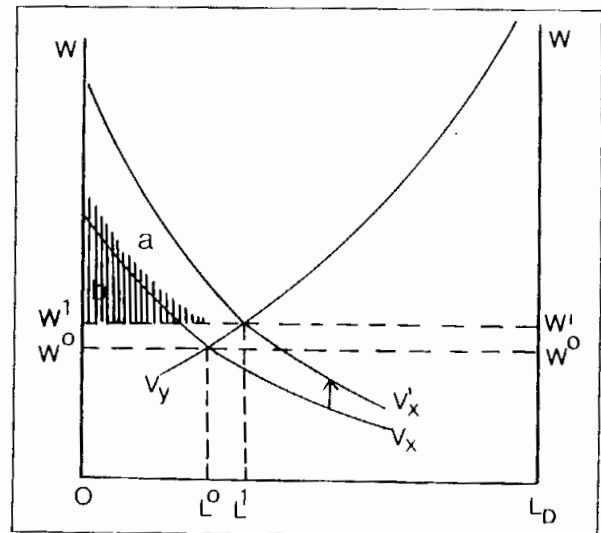


Figure 13

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^1 must be larger than L^0 with a downward sloping V_y curve). This is shown in Figure 13 by moving shaded area (b + c) on top of the larger 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 rightward (since its 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 the industry. This may be seen to be the shaded area in Figure 14.

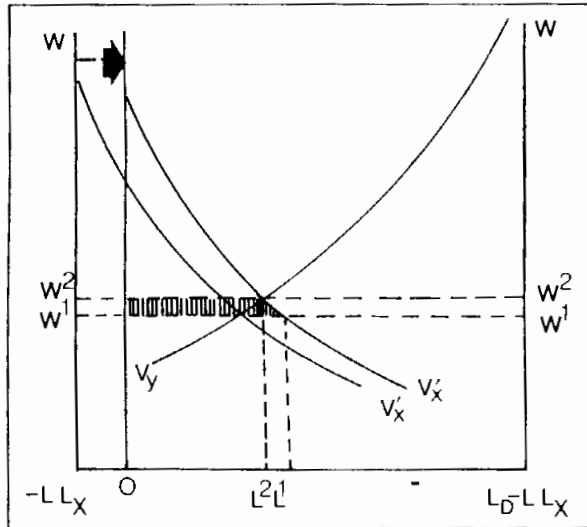


Figure 14

The industry problem

The model of the political economy is now complete. The basic framework may be see in Figure 15.

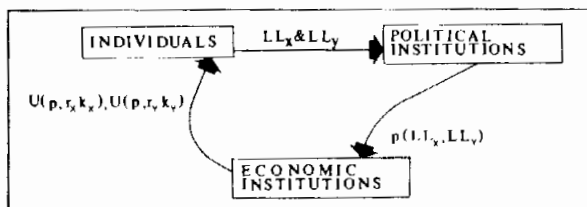


Figure 15

Since the total return to specific factors in industry X is $r_x K_x$ 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_x , is

$$N_x = r_x K_x - w L L_x.$$

The problem, solved by the owners of specific factors in industry X, is to choose an amount of resources, $L L_x$, to employ that maximizes N_x for a given level of lobbying by factor owners in industry Y, $L L_y$. When lobbying labour is hired, several effects may be seen graphically. The combination of a simultaneous increase in the relative price level V_x to V'_x , 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.

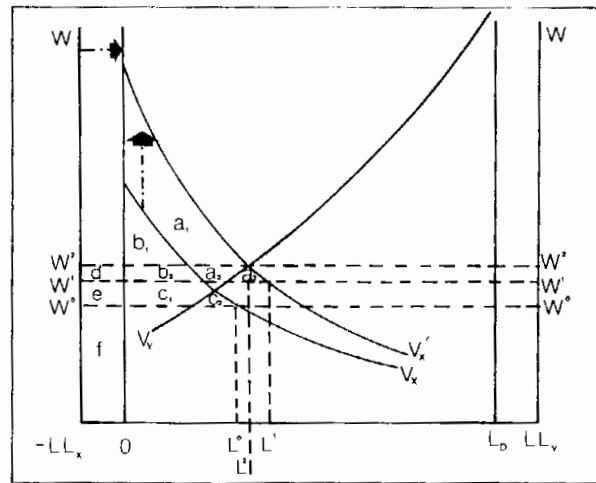


Figure 16

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^0 to w^1 and change in the allocation of the mobile factor from L^0 to L^1 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^1 to w^2 and change in use of the mobile factor from L^1 to L^2 are the same as in Figure 14. Due to the reduction of productive labour in the economy, industry X hires more lobbying labour. The returns 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 $(a_1 + a_2 + a_3 - c_1 - c_2)$ ⁴⁹
- 2) the decrease due to the increase in mobile factor returns from the reduction in productive labour — equal to area $(b_2 + a_2 + a_3)$ ⁵⁰.

⁴⁹ Note that areas $(a_1 + a_2 + a_3)$ and $(c_1 + c_2)$ in Figure 15 are the same as areas (a) and (c) in Figure 12, respectively.

⁵⁰ Note that area $(b_2 + a_2 + a_3)$ in Figure 15 equals the shaded area in Figure 14.

The cost to 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 the lobbying labour due to the relative price increase — equal to area (e)

5) the increased cost of hiring lobbying labour due to the reduction of productive labour — equal to area (d).

In total, the increase in the net return to specific factors in industry X from lobbying for a higher relative industry price level equals area $(a_1 - c_1 - c_2 - b_2 - e - f - d)$.

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

$$\frac{\delta N_x}{\delta LL_x} = K_x \frac{\delta r_x}{\delta p} \frac{\delta p}{\delta LL_x} - K_x \frac{\delta r_x}{\delta L_D} - w - LL_x \frac{\delta w}{\delta p} \frac{\delta p}{\delta LL_x} - LL_x \frac{\delta w}{\delta L_D}$$

The first term, $K_x \frac{\delta r_x}{\delta p} \frac{\delta p}{\delta LL_x}$, represents the direct effect on the revenue to specific factor from a relative price increase due to increased lobbying by industry X. An increase in LL_x would increase area $(a_1 + a_2 + a_3 - c_1 - c_2)$ from Figure 16 through this term.⁵¹

The second term, $K_x \frac{\delta r_x}{\delta L_D}$, shows the reduction in the total returns to specific factors from the increase in returns to mobile factors when productive labour is reduced by an increase in lobbying by industry X. An increase in LL_x increases the area $(b_2 + a_2 + a_3)$ in Figure 16 through this term. The cost of hiring lobbying labour services is the sum of the next three terms, w , $LL_x \frac{\delta w}{\delta p} \frac{\delta p}{\delta LL_x}$, and $LL_x \frac{\delta w}{\delta L_D}$. An increase in LL_x increases the area $(d + e + f)$ from Figure 16.⁵²

⁵¹ Note that this term is always positive since area $(a - c)$ must always increase with an increase in the relative price level.

⁵² If the industry problem is defined as hiring lobbying labour simply to maximize the net return to lobbying, then the necessary and sufficient conditions will be sensitive to the units used (i.e. whether net return is measured in units of good X, good Y, or in dollar terms). Although the main results that point out the trade-off in benefits and costs of employing lobbying resources are not sensitive to the units, the industry problem could simply be formulated using a utility function representing the trade-off between changes in the relative price level and the net return to lobbying as follows:

$$\max_{LL_x} U_x(p, N_x)$$

The necessary condition for industry X would be

Rules versus discretion in determination of intervention levels

As argued in the discussion of the Lowi effect at the beginning of this paper, one of the attributes of a policy that is 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 an 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 efforts to change relative prices are determined.⁵³ An excellent example of this distinction is found in the original development of the Lowi effect (Lowi 1964). In mediating between the findings of Schattschneider (1935) and those of Bauer, Pool and Dexter (1963), Lowi argued that the Reciprocal Trade Agreements Act of 1934 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 core of this change was a shift from direct accommodation of tariff-seeking by Congress to rule-based accommodation by the executive under a delegation from Congress.⁵⁴

In light of the foregoing, the last two results may now be presented: discretionary accommodation will tend to result in more political activity than 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:

$$\frac{\delta U_x}{\delta LL_x} = \frac{\delta U_x}{\delta p} \frac{\delta p}{\delta LL_x} + \frac{\delta U_x}{\delta N_x} \frac{\delta N_x}{\delta LL_x} = 0.$$

Since an industry is also maximizing utility through consumption of the two goods, Roy's identity may be used (Varian 1978), and rearranged to get

$$\left(K_x \frac{\delta r_x}{\delta p} - LL_x \frac{\delta w}{\delta p} - D_x \right) \frac{\delta p}{\delta LL_x} = w + \left(K_x \frac{\delta r_x}{\delta L_A} - LL_x \frac{\delta w}{\delta L_A} \right)$$

where D_x is industry X's Marshallian demand function for good X (as a function of relative prices, p , and income, N_x). Note that since N_x is a function of p and L_A alone, D_x is also.

⁵³ To make the difference as stark as possible, it is assumed that the general rule operates costlessly and with certainty. As a result, the only political costs are those associated with setting the rule. Thus complete discretion is compared with a completely specified rule.

⁵⁴ The historical argument is made most clearly in Nelson (1987). In Finger, Hall and Nelson (1982) econometric evidence is presented supporting the hypothesis that the delegation from Congress (at least up to 1980) is precise enough for anti-dumping and countervailing duty cases to be decided 'on their merits'. A formal development of this argument for the case of tariff policy can be found in Hall and Nelson (1988).

A Simple Model of the Political Economy: The Lowi Effect

the benefits of discretionary accommodation are appropriable by the 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, \dots, g_m , 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:

$$g_j (LL_1, LL_2, \dots, LL_n) \text{ for } j = 1, 2, \dots, m.$$

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:

$$P_x (LL_1, LL_2, \dots, LL_n).$$

For this reason, any lobbying resources used by this industry or small group of industries impart benefits that are fully or almost fully capturable. As a result, output under discretion may loosely be referred to as a 'private good'. Further, gain of that industry or small groups of industries is 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

$$R (LL_1, LL_2, \dots, LL_n).$$

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:

$$P_x(R), P_y(R), \dots, P_z(R).$$

Since the benefits of lobbying for rule-based accommodation will not be fully appropriable 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 in 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 17.⁵⁵

Note that the same rewards to lobbying pertain as in Figure 16, but now as LL_x increases P_x as before, P_y 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 addition shift is seen by the shaded area in Figure 17. Now, instead of simply gaining specific

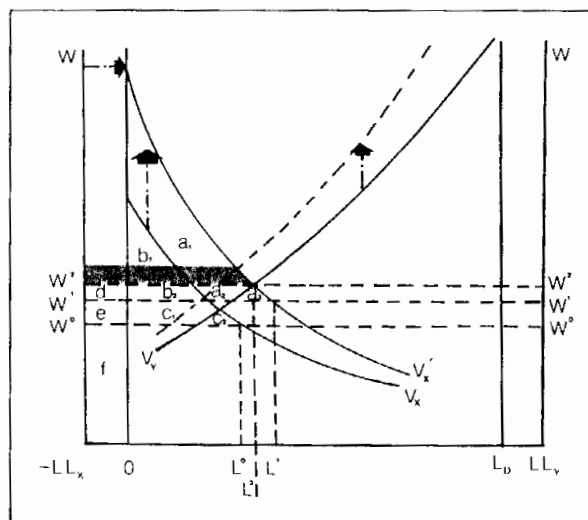


Figure 17

⁵⁵ Note that the returns to factors and value of marginal product curves 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 in that this permits an upward shift in the V_y curve, reflecting an increase in the price level in industry Y. Had things been kept in units of good Y as before, the V_x curve would simply (though not so clearly in the diagram) have been shifted downward. This would have further complicated things in that the returns would all have changed, since they were in units of good Y.

factor returns equal to area (a_1) minus area ($c_1 + c_2 + b_2 + e + f + d$), there will be the additional loss of the shaded portion of the diagram. The result will be less of an incentive for lobbying by industry X, since the net gains from doing so will be reduced. In fact, the industry may even now prefer that its own price level be *decreased* by the government output. The potential benefits to specific factors from lowering its own price level would simply be the reverse of those from raising it: area ($c_1 + c_2 + b_2 + e + f + d$) minus area (a_1) plus the shaded portion of Figure 17.

There will also be a bias in this public good government output. That is, this reduced incentive to lobby affects only industries whose price levels are affected. Those industries that are lobbying against the government output will have the same incentive as before.

Conclusions

The relationship between the results presented above and what has been called the Lowi effect should be clear. In the context of the model developed here, a policy will have two attributes: the time horizon (short or long) and the terms of access to 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.

	Short Horizon	Long Horizon
Rules	Regulatory	Redistributive
Discretion	Distributive	

Figure 18: The Lowi Effect.

A policy that induces a short time horizon in political 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 Lowi in his definition of a distributive policy. Maintaining the short time horizon but shifting to a rule-based system for accommodating demands induces the creation of larger groups along the lines defined by the rule, which is the classic pattern of regulatory policy as analyzed by Lowi. Finally, if the rules orientation is retained but the definition of the policy induces long-run calculation, factor-based groups will form. If the presumption that there are far fewer 'basic factors' than industries is correct, this yields Lowi's redistributive case with its broad-based (approaching class struggle) groupings.⁵⁶

The purpose of this paper has been to illustrate the use of a class of formal models in political economic analysis. The development was intentionally simple (both in terms of technique and assumption structure). Many interesting extensions present themselves immediately. With regard to the economy, it is possible to introduce various alternative assumptions about technology of production and market structure. With regard to behavioural assumptions, it is possible to include non strictly self-interested behaviour. Perhaps most importantly, it is possible to introduce more active political entrepreneurship and coalition behaviour. For example, if the state is able to play an active role, policy type can become a strategic variable.⁵⁷ The fact that such complications will undermine (to a greater or lesser degree) the conclusions of the simple model presented in this paper, however, should not be taken to detract from the value of simple models in the development of intuition and as a step on the way to a more well-grounded theory of political economy.

⁵⁶ The fourth (empty) cell is what is called adjudicative redistribution and is fully consistent with the above discussion. It involves factor-based interest identification, but the discretion allowed can have the effect of disorganizing the interest groups. This is not pursued here because it requires an additional structure that would undermine the simple presentation that was one of the goals of this paper.

⁵⁷ See Nelson (1983) for a discussion of such strategies in the case of industrial policy.

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