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Electoral Systems and Consumer Power: Theoretical Considerations

We begin with some fundamental and still highly influential work on regulation and its effects by two leading economists of the mid-twentieth century, George Stigler and Sam Peltzman. We then move to develop a specific Stigler-Peltzman political support function and analyze the role of electoral responsiveness in it. We next consider possible welfare and distributional effects of regulated, high-price economic systems. We then consider how the analysis might differ in a small, open, export-dependent economy. Then, having analyzed the effect of various kinds of democratic constitutions, we consider some of the implications for nondemocracies, weakly institutionalized democracies, and less developed economies. Finally, we consider whether electoral systems can be regarded as exogenous and whether this affects our overall analysis.

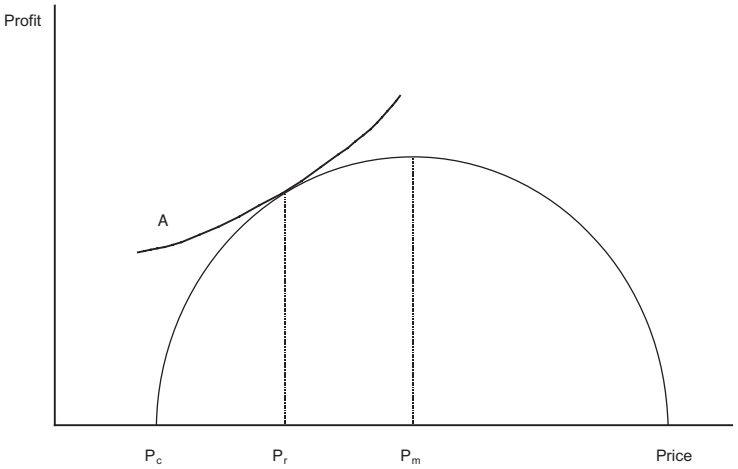

Figure 2.1. Stigler-Peltzman regulation

The Stigler-Peltzman Framework

The essential insight of the Stigler-Peltzman (S-P) analysis of regulation can be conveyed by a single and widely familiar diagram shown in Figure 2.1 (cf. Peltzman 1976, p. 224). Suppose that the price of a given industry's product is represented on the horizontal axis and its profits on the vertical one. At the perfectly competitive price (p_c), profits will be zero.[1] To the extent that regulation in any of its familiar forms – licensure schemes that artificially restrict supply, regulatory boards that set minimum prices, impediments to efficient retailing,

[1] Recall that, in a competitive market, price must equal cost of production (including the rent of capital). If a firm is charging more than that cost, hence making profits, some competitor can and will underbid it.

tariffs, quotas, and so on – raises the product's price above this competitive level, total industry profits begin to rise[2] until price reaches the level that a monopoly would impose; this is denoted as p_m.[3] If regulation becomes so restrictive of supply as to push price even beyond this monopolistic level, industry profits again decline, returning to zero (or even becoming negative) as the price becomes prohibitive.

Producers in this sector, of course, desire monopolistic price setting (p_m) while consumers prefer competitive pricing (p_c). Politicians, in the S-P framework, simply want to maximize support. They therefore consider the marginal rate of substitution between producer and consumer support, represented by a set of iso-support curves I_s, analogous to classic indifference curves. As politicians impose policies that increase profits, producers support those politicians more (higher contributions, a greater likelihood of voting for them). Yet the price increases that raise profits make consumers less likely to support those politicians. Similarly, regulations that decrease prices increase consumer support but decrease producer support. The iso-support curves describe the degree to which politicians can trade off or exchange consumer

[2] Absent barriers to entry, these profits will be competed away, but the same political power that imposes higher prices is usually adept enough to restrict entry.

[3] In classical analysis, this will be the point at which marginal cost just equals marginal revenue and industry profit is maximized.

support for producer support while maintaining a constant total level of combined support. In terms of the respective interests of producers and consumers, the iso-support curves express the extent to which increases or decreases in consumer prices must be counterbalanced, respectively, by decreases or increases in producer profits to maintain a constant level of political support. Moving along any given iso-support curve is equivalent to translating shifts in producer support (as determined by profits) into necessary counterbalancing shifts in consumer support (as determined by prices).

Concretely, suppose that a politician faces the situation depicted as point A in Figure 2.1: profits are high, prices low. The almost flat iso-support curve depicted at that point tells us that the politician can increase prices considerably without losing much consumer support, and will need to increase profits only slightly to gain offsetting producer support. As prices rise further, however – again, as shown in Figure 2.1 – consumers become more resistant: further rises lose more consumer support, and profits must rise more (the curve becomes steeper) to garner offsetting producer support.

Just as with indifference curves, we should imagine an infinity of iso-support curves, describing a kind of contour map of political support, increasing as we move to the northwest of the graph: that is, if the politician can both decrease prices and increase profits, support will unambiguously grow. Any particular iso-support curve is assumed to be convex

from below for the same reason that obtains with indifference curves: the more one need (here, for example, consumer support) is already satisfied, the readier one is to sacrifice some of that good to gain a little of the other (here, producer support).

In this manner, any specific set of iso-support curves captures the electoral influence of consumers' interests vis-à-vis producers' interests on politicians. Iso-support curves are unique to a country's economic and political institutions – that is, we initially take them as given. Considering the balance of consumer and producer power, strategic politicians make regulatory decisions that maximize support from both camps. In equilibrium, politicians indirectly set prices at the highest point of tangency between the iso-support curves and the price-profit hump through the regulatory policies they implement. One hypothetical iso-support curve in its equilibrium position is depicted in Figure 2.1A.

The S-P theory predicts that government will bring price (and hence profits) to precisely the level indicated by the point of tangency, denoted here as p_r, the regulated price. To solidify this point, let us consider the iso-support curves (and the prices they yield) more closely. Imagine a world in which (for whatever reason) producers are quite powerful relative to consumers in a given sector. In this world, it takes a large *increase* in consumer support to compensate for a small *decrease* in producer support. Were profits to decrease even slightly – thus lowering producer support – prices would have

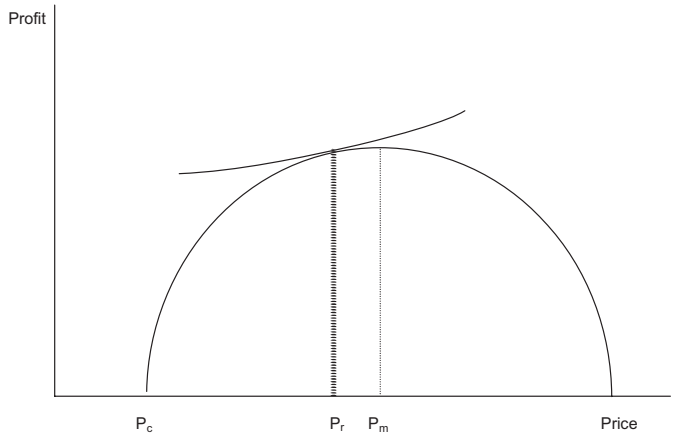

Figure 2.1A. Producers politically strong

to decrease by some quite large amount to compensate for this loss by an equivalent gain in consumer support. In terms of iso-support curves, this relationship would be described by a curve that is nearly flat (Fig. 2.1A). Logically enough, regulators impose (or enact restrictions that yield) almost the monopoly price $p_{m.}$ Failing to do so would result in a nearly irreplaceable loss of producer support.

Conversely, if consumers greatly outweigh producers in a given sector, the iso-support curves will be almost vertical. The power of consumers in this alternate world is expressed in terms of the massive increases in profit politicians must award to producers (thus increasing producer support) to compensate for even slight price increases (which depress consumer support). Put another way, to compensate for the

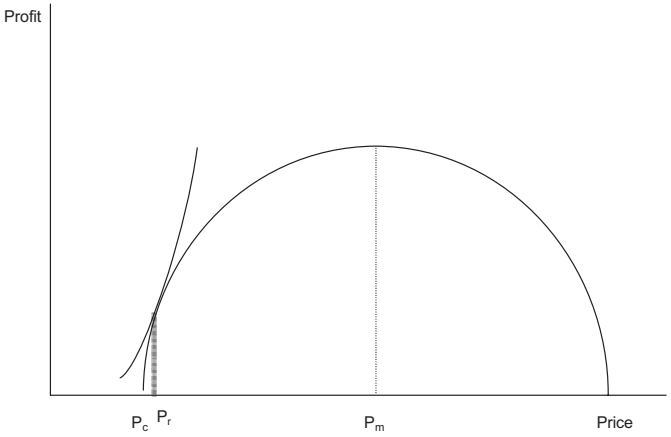

Figure 2.1B. Consumers politically strong

ire that even a slight price increase would arouse among consumers, profits would have to rise hugely. Naturally, politicians will depart very little from the competitive price p_c when presented with such a scenario. This situation is depicted in Figure 2.1B.

In this precise sense, price – or, more exactly, departure from competitive price once we have controlled for other relevant factors[4] – indicates the balance of consumer-producer political power in a given industry.[5]

[4] As Chapters 3 and 4 make clear, we build on existing literatures that relate countries' real prices to (*inter alia*) their per capita wealth, their exposure to world markets, and the size of their home markets.

[5] Two exceptions, neither of them (we believe) significant in the long run, occur to us. First, government may be pressured by a powerful industry simply to apply a subsidy and let price seek its own level (e.g., the "Brannan Plan" of unsavory memory in U.S. agriculture). Second, government

Modeling the Stigler-Peltzman Support Function

The S-P iso-support curves appear to be little more than descriptions: a steeper curve simply says that politicians attend more to consumers whereas a flatter one says that producers' views matter more. To move beyond this description, we develop a simple model of political support, formalizing the S-P analysis. We then examine its comparative statics.

Assume that the regime is democratic, and that the incumbent government, and the opposition, care about two things: (a) *legislative* (L), or parliamentary, support and (b) campaign funds, or, more generally, *money* (M).[6] Then, consistent with S-P analysis, we stylize political support S as a Cobb-Douglas function[7] of the form

$$S = M^{\alpha} L^{1-\alpha} \,|\alpha \in (0, 1) \tag{1}$$

may impose so-called sin taxes (e.g., on tobacco and alcohol) whose professed intent is to suppress consumption, thus moving (possibly) even above p_m.

[6] Alternatively, one could think of support purely in legislative terms, taking legislative support as a function of votes and money (i.e., $S = L(V, M)$). So long as one acknowledged that the seats-votes elasticity was systematically higher in majoritarian electoral systems, the result reported here would continue to obtain – and, indeed, could be demonstrated almost trivially. The form adopted here accepts that money can play an important role between, as well as during, elections, and therefore seems to us to conform better to experience.

[7] Only CES (constant elasticity of substitution) functions readily generate the nicely tractable convex iso-support curves that the S-P approach assumes. Of CES functions, the Cobb-Douglas, where the constant elasticity is taken to be one, is the standard and simple workhorse; hence, we employ it here. It is also merely for notational convenience that we

Legislative support – the share of seats in parliament, or, more broadly, the share of power that the government can command – is taken as an increasing function of vote share V, that is, $L = L(V)$, $dL/dV > 0$.[8] For simplicity we regard producers and consumers as mutually exclusive groups and assume – realistically, we believe – that consumers can contribute only votes whereas producers can offer both votes and money.[9] We assume, at least initially,[10] that consumers' support (in votes) will decrease in p (the price level), while producers' support (in both money and votes) will increase in π, the level of profits, as described earlier.

Formally, we have

$$\mathrm{M} = \mathrm{M}(\pi),\ \mathrm{dM/d}\pi > 0 \tag{2}$$

and

$$\mathrm{V} = \mathrm{V_p}(\pi) + \mathrm{V_c}(\mathrm{p}), \quad \mathrm{dV_p/d}\pi > 0, \quad \mathrm{dV_c/dp} < 0, \tag{3}$$

take the exponents as summing to unity. As is well known from any standard textbook, the marginal rate of substitution – the quantity of theoretical interest here – is invariant to scale effects: see, e.g., Varian 1992, 98.

[8] In reality, electoral systems frequently violate even weak monotonicity, i.e., winning more votes may actually yield fewer parliamentary seats; the assumption of strong monotonicity is invoked here only to simplify modeling.

[9] Note that this assumption "stacks the deck" against our claim that electoral system matters for the shape of iso-support curves. If, by analogy to Denzau and Munger (1986, especially 93), we assumed that consumers could contribute only votes, producers only money, the greater steepness of majoritarian iso-support curves would follow almost self-evidently.

[10] We consider possible exceptions later, particularly in countries that depend heavily on exports in a few sectors.

where V_p denotes vote share from producers and V_c vote share from consumers.

With appropriate substitution from (2), (3), and the formula for L, we can rewrite (1) wholly in terms of π and p as

$$S = (M(\pi))^{\alpha} \left[L(V_p(\pi) + V_c(p)) \right]^{1-\alpha}; \tag{4}$$

and from here we can determine the marginal rate of substitution (*MRS*)[11] between profits and prices, $d\pi/dp$, according to the conventional formula (or via the Implicit Function theorem)

$$\frac{d\pi}{dp} = -\frac{\partial S/\partial p}{\partial S/\partial \pi}. \tag{5}$$

Note first that

$$\partial S/\partial p = (M(\pi))^{\alpha}(1-\alpha)L^{-\alpha}(dL/dV)(dV_c/dp) \tag{6}$$

while

$$\begin{aligned} \partial S/\partial \pi &= \alpha(M(\pi))^{\alpha-1}(dM/d\pi)\, L^{1-\alpha} \\ &\quad + (1-\alpha)(M(\pi))^{\alpha} L^{-\alpha}(dL/dV)\left(dV_p/d\pi\right). \end{aligned} \tag{7}$$

The MRS between profits and prices can then be stated as:

$$d\pi/dp = -\frac{dV_c/dp}{\dfrac{\alpha}{1-\alpha}\dfrac{\dfrac{dM/d\pi}{M(\pi)}}{\dfrac{dL/dV}{L(V)}} + \dfrac{dV_p}{d\pi}}. \tag{8}$$

[11] In terms of our graphical exposition, this is just the slope of the iso-support curve.

Because we can assume $dV_c/dp < 0$ while all other terms in (8) are positive, the MRS is *positive*, thus producing the upward-sloping S-P iso-support curves seen in Figure 2.1.

The comparative statics revealed by (8) accord with intuition for the most part. The iso-support curves become *steeper* (signifying greater consumer power and, all else being equal, lower prices) as:[12]

- Consumer votes become more responsive (or sensitive) to prices (dV_c/dp grows more negative);
- Politicians weight votes (as opposed to money) more heavily (decreasing α, hence increasing $1 - \alpha$); or
- Politicians already have more monetary support (higher M).[13]

Conversely, the curves become *flatter* – implying greater producer power and higher prices – when:

- Producers' votes or monetary contributions become more responsive to profits (rising $dM/d\pi$ or $dV_p/d\pi$)
- Politicians weight money more heavily (larger α), or

[12] Whatever decreases the denominator in (8) increases the *MRS*, i.e., implies steeper curves; whatever increases the denominator decreases the *MRS*, implying flatter iso-support curves.

[13] The two latter results suggest to us that either public funding of political parties and campaigns, or independently wealthy politicians, will tend to empower consumers and lower prices.

- The government already enjoys strong parliamentary support (L).[14]

Our most important result, however, was not at all intuitively obvious prior to this modeling exercise, but it is clear from (8): the iso-support curves become *steeper*, therefore, more consumer-friendly, as

- The seats-votes slope (dL/dV) – what we are calling here electoral responsiveness – increases.[15]

In other words, the greater the percentage increase in seats produced by a 1 percent increase in votes, the more policy will favor consumers and – assuming that the original S-P analysis is correct – the more closely prices will approximate the competitive price level p_c.

We focus the next stage of our analysis of democratic systems on the seats-votes ratio as a property of the electoral system, which determines variation in real prices between

[14] Thus, all else equal, countries with strongly dominant parties, whether of a nominally Leftist or Rightist persuasion, will disadvantage consumers. We argue that this is particularly the case in plurality SMD systems. And that indeed under extreme single-party dominance (what some used to call "one-and-one-half party systems"), PR actually advantages consumers more.

[15] Again: as dL/dV increases, holding all other terms constant, the overall denominator in (8) *decreases*; hence the *MRS increases*, implying a steeper iso-support curve.

democratic countries. Under normally competitive circumstances, majoritarian systems exhibit seats-votes slopes considerably higher – to be precise, one-and-one-half to eight times higher – than those of proportional systems. It follows directly that, if our model has accurately captured this aspect of reality, plurality systems – or those plurality systems in which leading parties divide the vote not too unequally – will be systematically more pro-consumer in their policies and will have significantly lower prices. Proportional representation (PR) systems, on the other hand, which by design do not greatly distort vote shares when converting them into seat shares, will be systematically more pro-producer in their policies and will have significantly higher prices.

To the best of our knowledge, this hypothesized link between seats-votes elasticity and pro-consumer policies went unobserved until the research of Rogowski and Kayser (2002). Yet it emerges clearly from our model, from the S-P approach more generally, and (we shall assert) from a careful examination of the empirical evidence. The intuition behind it may seem paradoxical to most students of politics: if one group can influence policy by both money and votes, another only by votes, then whatever increases the effect of the vote shifts policy toward the group that has *only* votes.[16] At a purely

[16] To forestall one possible misinterpretation of these results: it is *not* the case that producers would be better off if they gave no money, or if monetary contributions were outlawed: indeed, it is always the case that the

mechanical level, this is clear enough as one considers equations (5), (6), and (7) in tandem: any increase in dL/dV multiplies (6), the numerator of (5), by its full amount; yet, the same increase is diluted in (7), the denominator of (5), by the unchanged term in the first part of that sum, which represents the marginal effect of money.

Yet at a deeper level, this effect – that advantaging a given factor benefits disproportionately those who command *only* that factor – generalizes and seems less paradoxical. If, for example, one group in a society can offer only unskilled labor while another some mix of human capital and labor, we find nothing remarkable in the conclusion that an exogenous increase in the marginal productivity of unskilled labor will leave the unskilled better off.

Seats-Votes Slope: Quantifying Differences Between Electoral Systems

Every electoral system may conveniently be regarded as a method for translating parties' or candidates' shares of the popular vote into shares of offices, typically of seats in parliament. Notationally, where V_i represents the ith party's

more sharply monetary contributions respond to increased profits, i.e., the higher the $dM/d\pi$ is, the more pro-producer policy will be (i.e., the flatter the iso-support curves).

($i \in [1,N]$) share of the popular vote and L_i its share of parliamentary seats (of course subject to the constraint $\sum V_i = \sum L_i = 1$), we characterize an electoral rule simply as a function r

$$L_i = \mathrm{r}(\mathrm{V_i}). \tag{9}$$

An important landmark of work on electoral systems was the observation by Taagepera and Shugart (1989) that virtually every extant electoral rule can be approximated[17] by a power function of the form

$$L_i = \frac{V_i^\tau}{\sum_{j=1}^{N} V_j^\tau}, \tag{10}$$

where V_i is the *i*th party's vote share, L_i is the same party's share of parliamentary seats, and N is the total number of parties.[18]

[17] The fit of actual data to the predicted curve is never perfect, but the essential insight – that more majoritarian systems are characterized by significantly higher seats-votes slopes in the competitive range – is extremely robust. That said, there are significant variations, owing to such factors as gerrymandering and geographical concentration of party support, in seats-votes slopes among majoritarian systems (and even among parties within majoritarian systems).

[18] King (1990) suggests the introduction of a bias parameter λ_i, such that Eq. 10 would be modified to

$$L_i = \frac{e^{\lambda_i} V_i^\tau}{\sum_{j=1}^{N} V_j^\tau};$$

and demonstrated how both parameters, "bias" and "responsiveness," could be estimated empirically.

In systems of proportional representation, the exponent τ approximates one by design. In contrast, in plurality single-member district (SMD) systems – as used, for example, for elections to the British House of Commons or the U.S. House of Representatives – according to an observation current even in the early twentieth century (cf. Kendall and Stuart 1950), something like a cube rule prevails (i.e., $\tau \approx 3$). If, for example, four parties competed and won 10, 20, 30, and 40 percent of the vote, respectively, a typical plurality SMD system might award them (in the same order) 1, 8, 27, and 64 percent of the seats. In fact, as Taagepera and Shugart found, the typical plurality SMD system exhibits a value of τ closer to 2.5; while the U.S. Electoral College, because of its "winner-take-all" (bloc vote) provision in almost all states, has a historic value of approximately $\tau = 8$.[19] Subsequently, Richard Katz (1997, chap. 9, esp. table 9.11) estimated both parameters empirically, using King's (1990) procedure, for ninety-three countries and found that the twenty-six plurality SMD systems in his set had an average τ (in our terms) of 2.03 (with variance of about 1.6), while τ in forty-eight PR systems

[19] In reality, the magnitude of τ under plurality SMD in any particular country is mostly a measure of the country's political homogeneity. If each electoral district were a random draw from the entire voting population, every district would be marginal and τ would approach infinity; the more heterogeneous the districts, the greater the number of them that will be safe for one or another party – and, of course, the lower the value of τ. We discuss this point more fully later.

averaged 1.19 (with variance .13).[20] Bloc-vote systems (multimember plurality), like the U.S. Electoral College, reached an average τ of 3.61 (with variance 5.4); but Katz's set included only seven such countries. Estimating the actual values of τ empirically proves exceedingly difficult, particularly in multiparty systems, but for the British Conservatives τ sometimes approaches 4.0.[21]

Economists and political scientists have long been interested, in other contexts, in the class of power functions represented by (10). Hirshleifer (1991), for example, following earlier work by Tullock, posited a "contest success function" of exactly this form, which related "fighting effort" to the probability of winning. He aptly designated the counterpart of τ as a "decisiveness" parameter (Hirshleifer 1991, 181). Even earlier, Theil (1969), from a purely normative standpoint and seemingly in ignorance of any empirical referent, suggested that seats *should* be allocated to parties by such a formula, and that the median voter's preference over the desirable value of τ should be decisive.

[20] In Katz's nine cases of *majority* SMD (with a run-off provision), τ averaged only 1.07 (variance: .21), i.e., less than under PR.

[21] An improved method of estimating responsiveness using district-level results from a single election (rather than pooling election results across elections) was introduced by Gelman and King (1994B); but it only applies to the case of two-party competition. More precise methods that generalize to the multiparty setting are introduced by Linzer (2009) and applied to the problem of estimating electoral "competitiveness" by Kayser and Linzer (2008).

A particularly revealing property of (10) is that, for the much simpler two-party case when each party captures half the vote ($V_i = .5$), τ expresses exactly the seats-votes elasticity, that is, the percentage increase in seats to be anticipated from a 1 percent increase in votes. Consider that in the two-party case,

$$L_i = \frac{V_i^\tau}{V_i^\tau + (1 - V_i)^\tau} = \frac{1}{1 + \left(\frac{1}{V_i} - 1\right)^\tau}$$

hence we have also

$$\frac{dL_i}{dV_i} = \frac{\tau \left(\frac{1}{V_i} - 1\right)^{\tau - 1}}{\left(1 + \left(\frac{1}{V_i} - 1\right)^\tau\right)^2 V_i^2}$$

which self-evidently, for $V_i = \frac{1}{2}$, reduces to τ.

To put the matter concisely: in the two-party case under PR, moving from 50 to 51 percent of the popular vote raises a party's seat share by precisely the same margin; under plurality SMD, the same increase moves the seat share (give or take) to 52.5 percent; and in the U.S. Electoral College, such a division of the popular vote yields a candidate around 58 percent of the Electors (ignoring bias). The relationship between vote share (horizontal axis) and seat share (vertical axis) is plotted in Figure 2.2 for the three representative cases: PR ($\tau = 1$), plurality SMD ($\tau = 2.5$), and the Electoral College ($\tau = 8$).

The two-party scenario, with each capturing about half the vote, is highly relevant to non-PR systems because (a)

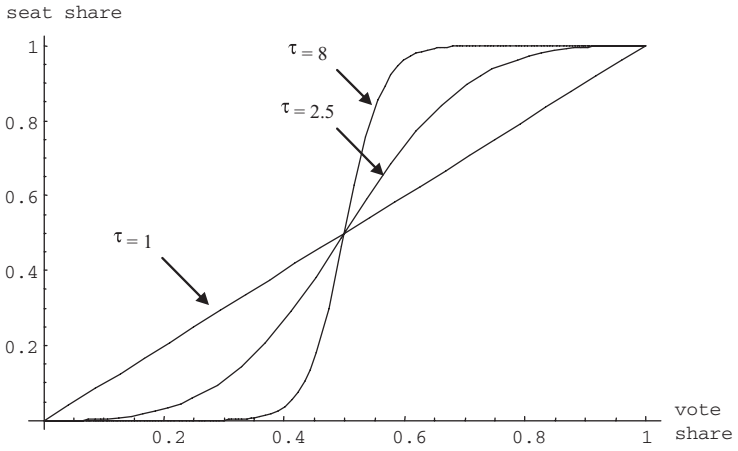

Figure 2.2. Two-party seat-vote functions

the higher the τ, the greater the disincentives to third-party formation (an effect commonly labeled Duverger's Law); and (b), under two-party competition on a single issue-dimension (Downs 1957), the dominant strategy for both parties is to converge on the position of the median voter and thus to win exactly half the electorate (cf. Persson and Tabellini 2000, ch. 3). Because in PR systems the seats-votes elasticity is normally $\tau = 1$, and because in plurality SMD systems under normally competitive circumstances (with each of two major parties capturing roughly half the vote) it will closely approximate τ, we can in most cases take τ in either system to be the seats-votes slope that we actually observe, or dL/dV.

Thus, for most purposes in this volume we will focus on the gross difference between SMD (or predominantly

SMD) and PR (or predominantly PR) systems, for two simple reasons: first, the real-world electoral systems we observe cluster around these two poles; and second, with very few exceptions, majoritarian systems have considerably higher seats-votes slopes than do proportional methods of election.[22]

The Effect of Competitiveness

An implicit assumption used earlier to contrast seats-votes slopes under various electoral systems is that the leading two parties divide the vote almost equally. This assumption is unnecessary for proportional systems – τ will equal one regardless of vote share – but is critical to plurality SMD. Precisely how great an effect a given vote swing has on seat share

[22] The United States, and even more some American states (e.g., California), have long been considered significant exceptions, because bipartisan gerrymanders, "vanishing marginals," or some combination of the two have made so many seats safe for incumbents, with effects we consider briefly in Chapter 5. Yet the 2006 congressional elections suggest the limits of this conventional analysis, and our seats-votes curves suggest why. In essence, "safe" seats simply flatten the curve around the midpoint – a uniform loss of 3 percent across all districts means only that the incumbent who normally wins by 60 percent now wins by only 57 percent – but make the curve all the steeper when the swing is big enough. A uniform loss of 10 percentage points across all districts means that suddenly *all* of the seats that the losing party had held by 60 percent are at risk.

under SMD systems depends on the closeness of political competition.

Our earlier example showed that where two parties evenly divide the vote in a two-party political system, a 1 percent increase in either party's vote share should translate into a 1, 2.5, and 8 percent increase in its respective seat share under proportionality, plurality SMD, and bloc vote electoral systems. However, what happens as the gap between the parties expands? For the simple two-party case, the shifting slopes along the SMD curve in the elementary seats-votes diagram suggest the answer.

The more imbalanced the two parties' vote shares become, the more the SMD slope decreases. In fact, when its slope drops below one, majoritarian electoral arrangements become less friendly to consumers than their proportional counterparts. Figure 2.3 reproduces the two-party seats-votes curve and adds vertical lines to indicate the points at which the SMD curve's slope equals one to delineate the area, A to B, in which majoritarian systems are more responsive to votes than PR. Figure 2.4 re-expresses vote shares as vote *margins*, the difference between the two parties' vote shares. Perhaps the most striking feature of both figures is the magnitude of the range over which SMD is more responsive than PR. As long as neither party gains more than roughly 40 percent more of the vote than its rival – a rare occurrence under two-party

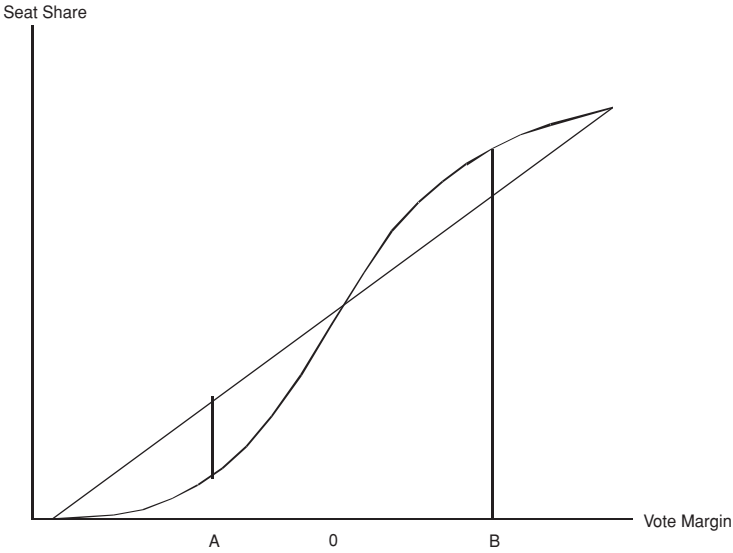

Figure 2.3. Where votes-seats slope becomes less under SMD than under PR

competition – SMD should be more consumer friendly than proportionality.

Precisely how does political competitiveness, measured as vote margin, affect the seats-votes relationship? Figure 2.4, as already noted, plots the marginal effect of vote share on seat share over a range of increasingly lopsided divisions of the vote. As we observed previously, SMD initially rewards more seats for a given shift in vote than proportionality. SMD begins with a seats-votes slope of 2.5 that diminishes remarkably slowly as long as politics remains reasonably competitive, remaining above two for vote margins above 15 percent and

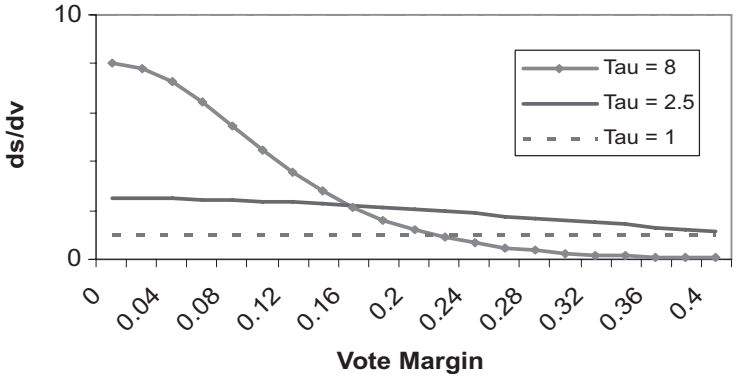

Figure 2.4. Competition and responsiveness

only dropping below that of PR ($\tau = 1$) after one party gains a vote share of forty percentage points greater than its opponent (i.e., in a two-party contest a margin of about 70–30).

The bloc vote system – again, the leading example is the U.S. Electoral College – drops off considerably faster than SMD, eventually offering a smaller marginal seat bonus than majoritarianism (at vote margins more than 16 percent) and PR (at vote margins more than 22 percent). Political competitiveness clearly matters for the effect of votes on seats.

Of course, it is not just party competitiveness that affects electoral systems' marginal seats-votes responsiveness but the converse as well: electoral systems influence the level of political party competition. The Downsian character of the two-party competition commonly found in SMD systems provides a strong incentive to competitive politics. The further a

party deviates from the median voter under two-party competition along a single issue-dimension, the more disproportionate the share of the vote accruing to its more mainstream opponent. This nudges both parties to choose policies near the median and thereby keeps vote margins relatively small. The rare cases of protracted one-party dominance such as that enjoyed by the Revolutionary Institutional Party (PRI) in Mexico, the Congress Party in India, or the U.S. Democratic Party during the New Deal may provide the exception that tests the rule: policy should tilt sharply toward producers during such periods, and real prices should rise.

Of course, τ can vary among countries, and even among parties within a country, independent of any efforts by gerrymandering politicians to manipulate it; it is best regarded as an index of homogeneity of districts. To see this, imagine a country in which every electoral district is simply a random sample of the national electorate: for example, in the U.S. case, each House "district" would consist of a random draw of about 500,000 voters. Then, with the minor exceptions that the normal distribution would allow, each district would identically mirror the nation's overall political preferences – 51 percent of the vote nationally would mean 51 percent, give or take a few thousandths of a percentage point, in every district – and even an infinitesimal shift in national support would give the victorious party all of the parliamentary seats.

The fact that this does not happen in any known SMD parliament reflects the actual cultural and political heterogeneity of geographic districts: Oakland, CA, remains Democratic even when the nation votes 60 percent Republican, just as Nebraska votes Republican even in national Democratic landslides. Presumably the more heterogeneous the country, the lower its actual τ is under SMD; the more homogeneous – the more each district, in fact, approaches being a microcosm of the nation – the higher is its τ.

The notion of district as microcosm is not mere fantasy. As we discuss more fully later, a strong, directly elected national presidency, like that of France or most Latin American countries, in effect makes the whole country a single "district" and produces a τ approaching infinity.

Proportional electoral arrangements also have distinct effects on seats-votes responsiveness. Rather than converging toward the median, parties in multiparty PR systems can and often do stake out successful positions considerably removed from the median voter or along a different policy dimension. It is common to find small parties that represent narrow but stable segments of the population such as agriculture, specific ethnic groups, or small business. The volatility of given parties' vote shares between elections is likely to be considerably lower when voters choose parties based on ethnic, class, or religious loyalties rather than policy preferences. Moreover, large vote margins that would augur the demise of the

second party in a two-party system (by permitting the entry of a rival) can comfortably persist in the absence of centripetal Downsian incentives.

Electoral arrangements also demand attention in our formal consideration of how vote competition affects responsiveness. To find the envelope of preferable electoral rules for consumer interests, we must consider not just how vote margins affect the seats-votes slope, dL/dV, but how this relationship changes under specific seat shares designated by those votes. The marginal response of seat share to vote share differs under various divisions of the legislature, which, in turn, are themselves a product of vote share and the electoral system. Thus, what we consider is $(dL/dV)/L(V)$, from the denominator of (8). If one plots $(dL/dV)/L(V)$ under our earlier specification as a function of V under PR ($\tau = 1$), plurality SMD ($\tau = 2.5$), and the Electoral College ($\tau = 8$), one gets the result shown in Figure 2.5.

Note that the "envelope" of highest lines is the most consumer-friendly position. For $V \leq .566$, this is the supermajoritarian Electoral College; for $V \in (.566, .684)$, it is plurality SMD; for $V \geq .684$, it is PR. PR is more pro-consumer than an Electoral College whenever $V > .59$.

The competitiveness of plurality systems depends, however, not only on the margin that separates the two leading parties but also on the volatility of voters' preferences. A party that wins 60 percent in one election, but knows from recent

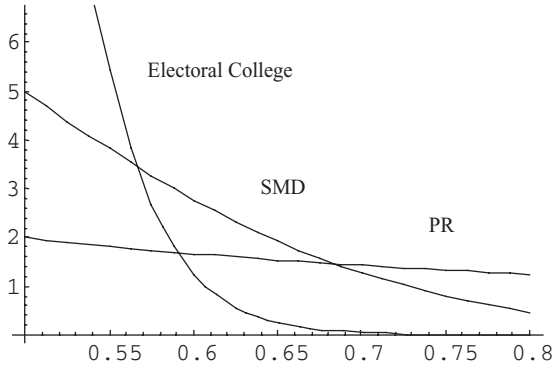

Figure 2.5. "Envelope" of most consumer-friendly systems at different levels of competitiveness in two-party systems

experience that it can easily sink to 40 percent when voters next go to the polls, is very different from one that confidently expects – perhaps because of deep religious, regional, or ethnic divisions – to win 60 percent at most elections. (Think of the nineteenth-century U.S. Republican hegemony, when Democrats could be dismissed as the party of "Rum, Romanism, and Rebellion"; or – as mentioned earlier – Northern Ireland under Unionist, i.e., Protestant, hegemony.)

For the general case, however, and returning to the model outlined earlier, we can substitute τ for dL/dV and rewrite (8) as

$$-\frac{dV_c/dp}{\dfrac{\alpha}{1-\alpha}\dfrac{\dfrac{dM/d\pi}{M(\pi)}}{\dfrac{\tau}{L(V)}}+\dfrac{dV_p}{d\pi}} \tag{8a}$$

and thus see the crucial theoretical prediction: normally, **the more majoritarian the system**, that is, the higher its τ,

- the steeper its S-P iso-support curves, and therefore
- the more pro-consumer its policies and
- **the lower its prices**, that is, the more closely they approximate p_c, the level that perfect competition would produce.

The most readily observable implication of the model is that about price levels; and we propose to test precisely that hypothesis, namely that **price levels will be systematically lower in majoritarian democracies**; and, indeed, that they will be lower **the more majoritarian the electoral system is**, that is, the **higher its** τ.

To return to an earlier point, a directly elected and powerful presidency, as is found in France or many Latin American democracies, has necessarily a τ that approaches infinity: winning the contest by even a single vote nationally confers all the power of the office (cf. King 1990, 162). As can be seen by inspection, such a high value of dL/dV would drive (10) also to infinity, implying an almost-vertical iso-support curve – and, of course, very low prices. Therefore, we shall also have to consider the separate effect of presidential systems in our empirical estimations.

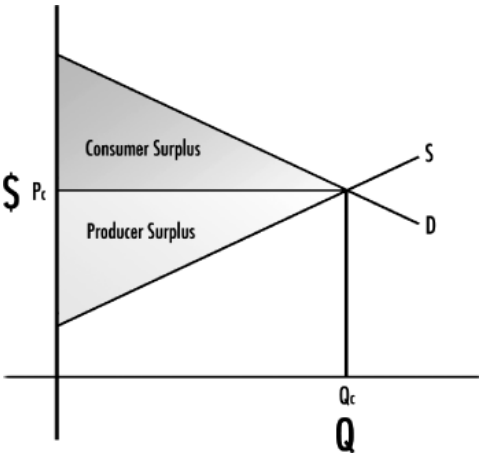

Figure 2.6. Welfare and distributional effects at competition prices

Effects on Equality, Distribution, and Social Welfare

Let us stipulate that regulation can impede competition, restrict supply, and impose higher prices. What further effects does such regulation have, particularly on social welfare and equality?

Begin with the most basic tool of Economics 1: the supply and demand curves depicted in Figure 2.6. In a competitive market, equilibrium price (P_c) and quantity supplied (Q_c) are determined by the intersection of the supply and demand curves; and the area below the price line but above the supply curve describes producer surplus; the area above

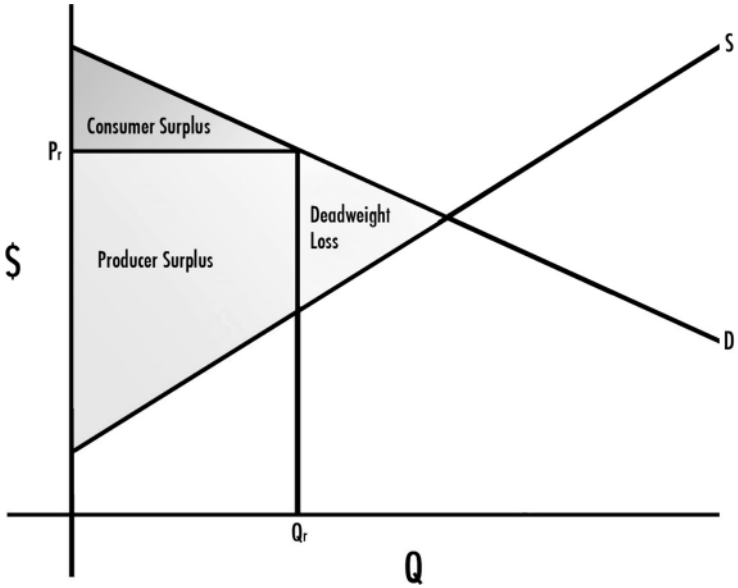

Figure 2.7. Welfare and distributional effects of pro-producer policies

the price line but below the demand curve represents consumer surplus.

If regulation restricts supply to Q_r (the "regulated" quantity), price will rise to P_r (Figure 2.7). Consumer surplus of course will shrink drastically, producer surplus may actually increase (particularly where consumer demand is most inelastic); and the infamous "deadweight loss" triangle, representing the quantity that willing purchasers now cannot buy and willing suppliers are prevented from offering, sums up the welfare that is forgone by the economy as a whole. Two

points are clear even from this simple analysis: (a) restrictive policies unambiguously *diminish social welfare*; and (b) they also have powerful *distributional effects*, advantaging producers and disadvantaging consumers. Note that the more inelastic consumer demand is (i.e., the more steeply sloped is the demand curve), the stronger the distributional effects and the less the welfare effects.

Suppose we expand our picture of the economy to include two sectors, one labor- and one capital-intensive. Almost by definition, the labor-intensive sector is where the votes are, so in a democracy regulation will often favor producers in the labor-intensive sector. Under these conditions, the price of the labor-intensive product will rise relative to the capital-intensive one; and, if factors are mobile between the sectors, the familiar Stolper-Samuelson effect, illustrated in Figure 2.8, will obtain: the product's increased price will mean that less capital and labor are required to produce a dollar's worth of it, the iso-value curves in the labor-intensive sector shift to the southwest, and the line of relative factor prices grows steeper: wages rise relative to the rent of capital.[23] Because the wage-rent ratio is conventionally taken as an index of equality (see, e.g., O'Rourke and Williamson 1999), we can also say that supply-restricting policies in democratic regimes make

[23] As is also evident from the diagram, or from simple reflection, in both sectors capital will be substituted for some of the labor that has now become more expensive.

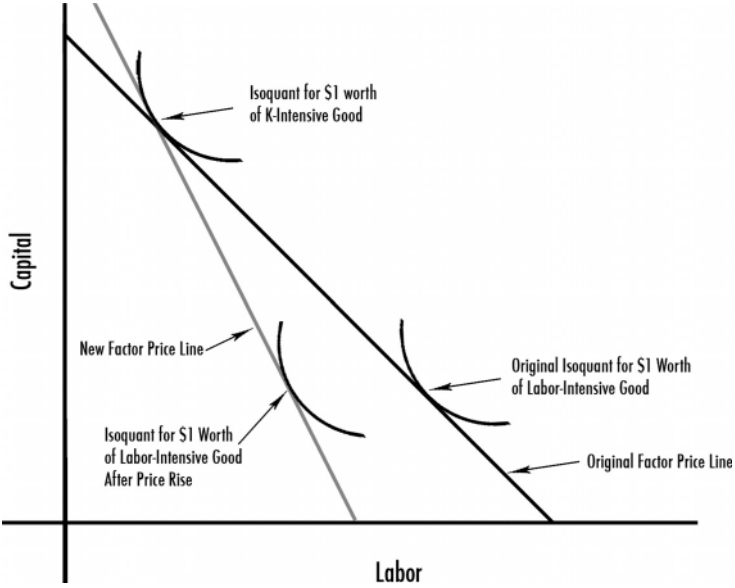

Figure 2.8. How pro-producer policies in the labor-intensive sector raise relative wages and diminish inequality

society more equal, albeit – as already seen – at the cost of an overall diminution of social welfare. However, as will be seen momentarily, this equalizing effect is conditional on labor remaining a mobile factor – and there are strong incentives to restrict that mobility.

In the conventional trade-related Stolper-Samuelson analysis, the gains to the abundant factor outweigh the losses to the scarce one because trade overall is welfare-improving. However, pro-producer policies inflict losses to the disadvantaged sector that outweigh the gains to the advantaged one.

Even so, we see analytically how the conventional observation can be correct: anticompetitive regulation in democratic settings normally leads to higher wages and greater equality.

To demonstrate empirical support for this seemingly counterintuitive notion that more regulation can lead to greater equality, we build on a recent contribution by Reuveny and Li (2003) that probes the effects of economic openness and democracy on income inequality. As a first cut, we construct a simple cross-national data set with the primary focus on the advanced democracies. Following their operationalization, the dependent variable is measured by a transformed Gini coefficient,[24] and we calculate the average over the 1970–2000 period. The independent variables, as specified in Reuveny and Li, are the level of democracy (i.e., polity score) and trade openness (i.e., exports plus imports over Gross Domestic Product [GDP]). Importantly, we expand Reuveny and Li's model by adding our key variable, the price level[25]; and, as we can see from Table 2.1, countries with higher price levels and – as we argue in this book, presumably greater regulation – are associated with less inequality of incomes.

Barriers to labor mobility, however, can reverse the equalizing effect. In Figure 2.9, the economy's entire labor supply is represented on the horizontal axis; workers to the left are

[24] That is, $\log(\frac{Gini}{1-Gini})$, with higher value indicating greater inequality.
[25] See subsequent chapters for a detailed discussion on this variable.

Table 2.1. The effects of regulation on income inequality

	Model 1
Price	−.004**
	[.001]
Democracy	.014
	[.032]
Trade openness	−.002***
	[.000]
Constant	−.220
	[.211]
Adjusted R^2	.447
N	20

Note: Robust standard errors are in brackets.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. All tests are two-tailed.

employed in Sector A, workers to the right in Sector B. The line sloping downward from the left represents marginal productivity of labor (*MPL*, always of course decreasing in *L*) in Sector A, while the line sloping downward from the right describes (also declining) *MPL* in sector B. So long as labor is free to move between the two sectors, wages of course equalize at w_c; and at this point, Sector A employs workers to the left of vertical line L_c, Sector B, workers to the right of that line. Moreover, because summing the marginal products gives us the total product, we can take the area under the MPL_A curve to the left of L_c as the total product of Sector A; the area under the MPL_B curve to the right of L_c as the total product of Sector B. Distributional consequences are also clear from the graph:

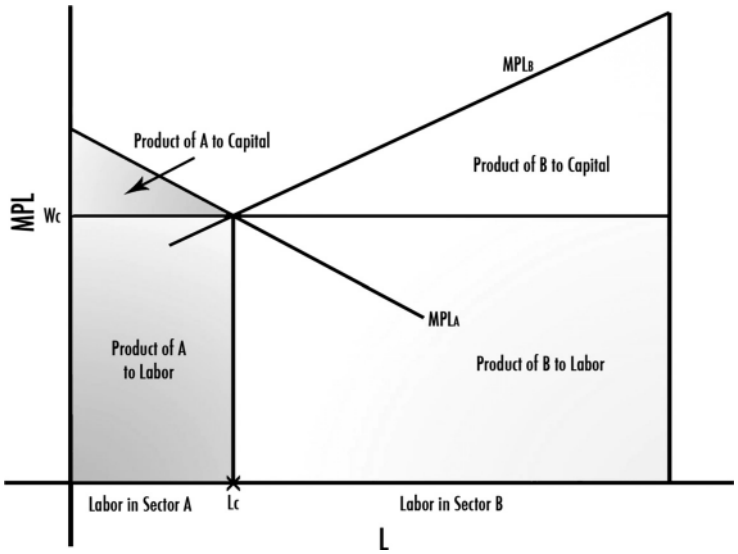

Figure 2.9. Welfare and distributional effects with a two-sector model with mobile labor

in each sector, the area of the lower rectangle, which is just the wage multiplied by the number of workers employed, is the share of total product in the given sector that goes to labor; the upper triangle, or the remainder of the total product of that sector, goes to capital.[26]

However, suppose that regulatory barriers prevent workers in B from moving into sector A. We can envision the barriers as analogous to the border of a state, and from standard migration models we know the result: if, as in Figure 2.10, only

[26] The figure assumes tacitly, as we do explicitly, that in the short run capital is sector-specific, i.e., does not move with labor.

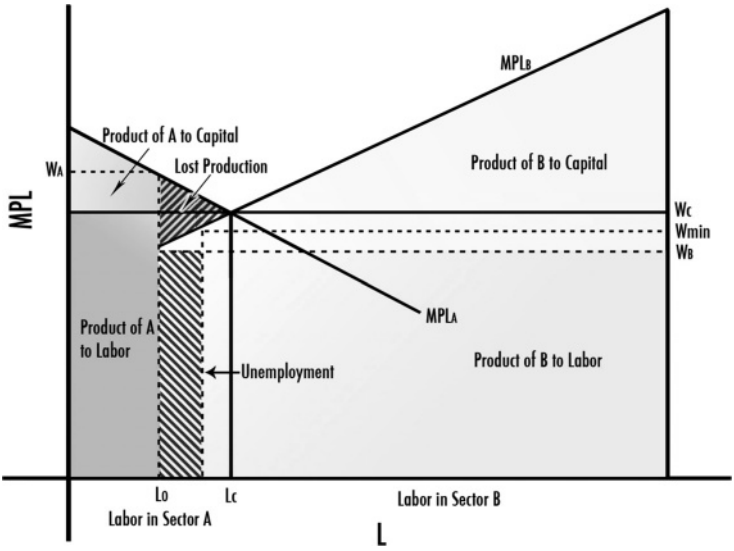

Figure 2.10. Welfare and distributional effects of barriers to labor mobility in a two-sector, two-factor economy

workers to the left of L_o, the "organized" allocation of labor, can be employed in A, then the wage in that sector is driven up to w_A, the wage in B falls to w_B, and the economy as a whole finds its welfare diminished by the area of the resultant "missing triangle." If a legal minimum wage, or a reservation wage enforced by norms or unions, prevents the wage in B from falling to w_B, we get unemployment (noted also in Figure 2.10) and a yet greater loss of social product.

Barriers to labor mobility also have distributional consequences: the wage-rental ratio rises (and thus inequality falls) in Sector A but declines (thus implying increased inequality)

in Sector B.[27] Moreover, product per worker rises in the organized sector but falls in the unorganized one.

Thus, to use David Rueda's (2005, 2006) terms, when this kind of split between "insiders" and "outsiders" develops in highly regulated economies, the equalizing effect is confined to the privileged "insiders." Inequality grows between organized producers and the unorganized "outsiders" – with, of course, increasing welfare losses for the society as a whole. To the extent that international markets or technology-based innovation pushes down market wages, the gap between insiders and outsiders tends to grow, and we judge that this is already becoming the most serious challenge to the kind of highly regulated PR regimes that were established in many democracies in the period just before and just after World War II.

Exposure to International Markets

Our empirical work demonstrates what we would expect theoretically, namely that – controlling for all other effects,

[27] These results do not depend on the simplified straight-line graphics of the figures. In a Cobb-Douglas production function, for example, product per worker is $y = Y/L = A(K/L)^{\alpha}$, clearly decreasing in L (and hence increasing whenever L falls). Even more simply, the wage-rental ratio in this case is linear in the K/L ratio:

$$\mathrm{w/r} = [(1-\alpha)/\alpha](\mathrm{K/L}), \text{ again clearly decreasing in } L.$$

including those of wealth, size, and electoral system – real prices decline as a country's exposure to international markets grows. Indeed, by definition in "small" countries, the price of traded goods and services is set in international markets. Only nontraded sectors, or traded ones protected by quotas or tariffs, could have domestic prices that exceeded "world" levels; and, where the home market is small, the deadweight costs of protection rapidly become prohibitive. So how do high-wage countries and sectors often do so well as exporters to world markets? Iversen and Soskice (2009) argue, and we agree, that such countries succeed chiefly by (a) large inputs of human capital that (b) are heavily subsidized (or, indeed, whose costs are totally borne) by these countries' governments. Assuming that this view is correct, as world prices of traded goods and services fall: (a) the domestic subsidies to human capital must increase and (b) the "wedge" between traded and nontraded sectors must widen.

What about Nondemocracies?

Given our emphasis on the marginal impact of votes on politicians' fates, one might expect dictatorships – in which, almost by definition, votes have no impact at all – to have the highest prices of all.[28] We disagree, regarding dictatorships as too

[28] We owe this argument to Federico Sturzenegger.

much of a mixed bag for us to have any coherent priors about their price levels. Some dictatorships indeed appear to be one-man (or one-couple) tyrannies on the Stalinist model: Ceauşescu's Romania and Saddam Hussein's Iraq come to mind. Others exhibit almost as much political contestation, albeit under different rules and with different "selectorates," as democracies. Some, vulnerable to city-dwellers' riots, create the kind of "urban bias" discussed by Lipton (1977) and Bates (1981), keeping foodstuffs and imports cheap. And still others, dominated by rural and export-oriented elites – for example, Brazil in the early twentieth century (Bates 1997, ch. 2) – keep both foodstuffs and imports dear. Without knowing whether and by whom a dictatorship is influenced, we cannot say *ex ante* whether it will strive to keep prices high or low – overall, or in particular sectors.

Are Electoral Systems Exogenous, and Does It Matter?

Suppose it is true that PR leads to more pro-producer policies, and that these policies lead to higher prices, more equality (at least in the "organized" sectors), and a greater loss of social welfare. Surely something in turn affects countries' choices of electoral systems (one friendly critic has suggested, only half in jest, that majoritarian systems are "only a proxy for speaking English"), and this of course raises the possibility of endogeneity and spurious correlation (both electoral system and

policy are caused by something else, which we have failed to consider). In a provocative model with some supporting evidence, Ticchi and Vindigni (2010) propose that the median voter's choice of an electoral system will be constrained by the prevailing degree of economic inequality: more unequal countries choose majoritarian institutions, more equal ones PR.[29] Other scholars – Boix (1999), more recently Cusack, Iversen, and Soskice (2007) – have advanced more contingent historical arguments about the origins of PR in continental Europe.

The crucial test, we think, is this: does the electoral system have an independent and consistent effect on economic policy? We show in later chapters that it does. In other words, changing a country's electoral system affects prices in both the short and the longer run. Thus, while it is undoubtedly true – and later we tease out the argument – that other factors, including economic (in)equality, affect countries' choice of electoral systems, that choice itself has strong and predictable effects on economic policy.

In some ways, our argument on this point is analogous to the one many scholars now make about the link between Parliamentary Reform (expansion of the franchise) and repeal of the Corn Laws in the nineteenth-century United Kingdom.

[29] We advance a similar argument later in the chapter but show how this likely leads to self-sustaining equilibria of high or low inequality.

While many factors – industrialization, urbanization, expanding world markets – pushed Britain toward more participatory rule (and, very likely, also toward freer trade), Parliamentary Reform gave a huge and likely crucial push toward the acceptance of free trade.

We turn now to the evidence: how do electoral systems affect policy and prices in democracies; is that effect uniform across rich and poor democracies; and in light of these facts, why do countries choose the electoral systems that they do?