Seminar Paper No. 428

RENT-SEEKING AND PRICE-DISTORTING POLICIES IN RICH AND POOR COUNTRIES

by

Kym Anderson

INSTITUTE FOR INTERNATIONAL ECONOMIC STUDIES

University of Stockholm
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RENT-SEEKING AND PRICE-DISTORTING POLICIES
IN RICH AND POOR COUNTRIES

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ABSTRACT

Why do rich countries tend to subsidize agricultural production more than industrial production and to effectively tax food consumption, while poor countries tend to protect industrial producers and food consumers at the expense of farmers? This paper uses a computable general equilibrium model and representative parameters to demonstrate that the income distributional effects of those two different patterns of price distortions are such that on a per capita basis the losers lose little relative to the benefits to gainers. When coupled with determinants of the relative efficiency of different groups in pressuring policy-makers and influencing social preferences, such as the costs of information and collective action, it becomes less puzzling as to why we so often observe these policy regimes.
INTRODUCTION

Price and trade policies in low-income economies typically protect the infant industrial sector from import competition, reduce food prices for consumers and often tax agricultural exports. The policy regime in advanced industrial economies, on the other hand, typically favours agriculture relative to manufacturing. Historical evidence also suggests there is a tendency for economic development to be accompanied by a gradual change in policy from effectively taxing to increasingly assisting farmers and by a gradual decline in effective assistance to industrialists.¹ This evidence seems paradoxical, given that during the course of economic development the proportions of national votes and wealth in the countryside decline relative to the proportions employed in other tradables sectors. Attempting to resolve this apparent paradox is the purpose of the present paper.

Understanding the reasons for this phenomenon is an important part of policy analysis. Until economists know why the pattern of distortionary policies evolves in this way, they will be poorly equipped to suggest more efficient ways to achieve society's development objectives. Such an understanding also is required if we are to include policy endogenously in models used for forecasting and for estimating the effects of policy developments on production, consumption and trade trends in growing economies.

Traditional attempts to rationalize these policies are typically unconvincing or at best insufficient. For example, the claim that agricultural protection and higher food prices are needed in industrial countries to transfer income to poor farmers looks hollow when the majority of such transfers from consumers goes to
the wealthiest 20 per cent or so of farmers. Similarly, food security concerns may be a part of the explanation for agricultural protection in food-importing industrial countries, but they cannot justify the high level of food prices in those countries which subsidize agricultural exports year after year. The need to raise government revenue in poor countries may help explain why their exports of primary products are taxed, assuming costs of collecting taxes by less-distortionary means are much higher, but why then are those countries' imports not also taxed instead of — as is so often the case — being subjected to quantitative restrictions or prohibitions which do not raise tax revenue? And almost no country has sufficient monopoly power in international markets to justify, on the grounds of maximizing national income, the trade taxes imposed.

The present paper seeks to explain these differing patterns of price distortions by building on the economic theory of regulation developed by Stigler (1975), Peltzman (1976) and others. More specifically, it adopts a political market perspective in which various interest groups affect the demand for and supply of agricultural and industrial price and trade policies. That perspective suggests that one of the major factors determining the policy outcome is the extent to which different groups gain or lose from a policy-induced change in prices. Another is the relative political power of these various groups, which is a function of their shares of votes and of wealth as well as their relative costs of collective action which in turn determine their efficiency in pressuring policy-makers and influencing social preferences. And thirdly, autonomous social preferences also affect the policy outcome.

The paper begins by describing a simple model of the political market for price-distorting policies. It then examines differences between rich and poor countries both in the distributional effects of distortions to agricultural and manufactured product prices and in the political power of key vested interest groups. Together these two sets of factors go a long way toward explaining the typical policy regimes of poor agrarian economies and rich industrial economies.
Differences in social preferences, which themselves can be influenced by interest-group activity, are then briefly mentioned as possible additional contributors to the policy biases observed. The paper concludes with some implications from the analysis of the prospects for reforming policies and of possible ways to improve those prospects.

Previous studies have tended to examine the interests and political power either of just producers and consumers of the product whose price is to be distorted (e.g. Balisacan and Roumasset (1987) and Honma and Hayami (1986) in the case of food price distortions) or of just two competing groups of producers of tradables (e.g. farmers and industrialists, as in Findlay and Wellisz (1982,1983)). However, most consumers are also factor-owning producers and taxpayers, so the effects of policy on their net after-tax real income position is what needs to be determined. And, in addition to industrial capitalists and farmers (either as owner-occupiers or as landlords and landless labourers), there are capital owners in the nontradable sector and non-farm workers to consider. Moreover, the price of nontradables will adjust to a change in the price of a tradable product. Hence the need for a general equilibrium model with three sectors (two producing tradables and one producing nontradables) and three specific factors plus labour for determining the income distributional effects of price distortions. Such a model is summarized in the Appendix, along with representative parameters for a poor agrarian economy and a rich industrial economy.

The focus throughout is on explaining the inter-sectoral pattern of distortions among tradable sectors, especially between agriculture and industry but also (in an aside) between these tradable sectors and the nontradable sector. This distinguishes it from the now-considerable literature aimed at explaining the intra-sectoral pattern of distortions, as well as from the literature which has focused simply on explaining why we have protectionist policies in general rather than free trade.²
A SIMPLE MODEL OF THE POLITICAL MARKET FOR PRICE-DISTORTING POLICIES

Following Downs (1957), assume the political leadership behaves so as to maximize its chances of remaining in office. The government need not be democratically elected, but it is assumed that the leadership is contestable. One way for the government to obtain political support is to supply policies which assist particular groups. Such policies typically harm others, however, so the amount of assistance provided (which conceptually could be positive or negative) is limited to the point where the marginal gain in political support from the group being assisted is just equal to the marginal political cost in terms of the reduced support from other groups. Of course price-distorting policies would not be implemented in a political environment where everyone voted on each policy issue, where no considerations other than the distributional effects of the policy determined the outcome, and where information on the costs and distributional consequences of the policy was costlessly available. This is because the deadweight welfare costs associated with distortionary policies would ensure it was always possible for the potential losers from a policy to bribe the potential gainers not to seek that policy. But in practice these ideal conditions do not hold, hence the need to examine the extent to which different groups gain or lose and their costs of getting together to become informed and to influence policy-makers.

The marginal preparedness of a group to pay for increased assistance is assumed to decline as the amount of assistance increases. This is because more assistance encourages new firms to enter the industry and that spreads the benefits to new entrants and worsens the free-rider problem of collective lobbying action by the group (Olson 1965). Similarly, the marginal political cost of assisting that group increases with the amount of assistance because at higher levels of intervention the government loses support from more and more groups
for whom the adverse effects of the policy exceed the costs of getting members
together to voice their opposition. Thus it is possible to conceptualise a political
market with a downward-sloping demand curve for a policy which assists a
particular group, and an upward-sloping supply curve representing the leadership's
marginal political cost of providing that assistance policy. The currency of
payment is political support for the government, which includes but is not limited
to cash contributions to electoral campaigns.\textsuperscript{3}

Suppose the economy has just three sectors: two (agriculture and industry)
producing final tradable goods and one producing nontradable goods and services.
Final-product export proceeds are used to import intermediate inputs and perhaps
some additional quantities of one of the two final products that are tradable. One
way to quantify the amount of assistance to a sector provided by price and trade
policies is to use the partial-equilibrium effective protection coefficient (EPC)
concept. The EPC is defined as one plus (minus) the proportion by which
government policies directly raise (lower) value added in that sector. This index is
thus a positive number which exceeds (is less than) unity for a particular sector
when policies directly discriminate in favour of (against) that sector.

This simple political market for assistance to a sector is illustrated in Figure
1. The vertical axis measures the 'price', in terms of political support, of a unit of
effective protection to a tradable sector, while the horizontal axis measures the
'quantity' in terms of the effective protection coefficient for this tradable sector
relative to a given EPC for the other tradable sector. Of particular interest in
this paper is why the demand and supply curves for assistance to agriculture tend
to intersect to the left of unity on the horizontal axis for poor agrarian economies
and to the right of unity in rich industrial countries, as illustrated in Figure 1, and
why those for industry tend to intersect more to the right of unity for developing
as compared with advanced industrial countries (not illustrated).
FIGURE 1: The political market for government assistance to agriculture

D and S refer to the demand and supply curves; PAE and RIE refer to a poor agrarian economy and a rich industrial economy.

The relative protection index is defined as the effective protection coefficient (EPC) for agriculture relative to a given EPC for the industrial sector. Thus an index in excess of (less than) unity indicates that government policy is effectively assisting (taxing) agriculture relative to the industrial sector.
Such a political market framework is able to accommodate both the (positive or negative) benefits from assistance policies and the costs of collective information-gathering and lobbying by groups favouring or opposing assistance to a sector, as well as (via the supply side) any special social preferences, fiscal characteristics and the like which affect this market. Examining the factors affecting these demand and supply curves should also illuminate why some price-distorting policy instruments are used more than others, why effective protection for agriculture relative to industry increases in the course of a country's economic development, and why protection coefficients differ between countries with similar income levels. The most obvious factors to focus on first are those which determine who gains and who loses from price-distorting policies.

INCOME DISTRIBUTIONAL EFFECTS OF PRICE-DISTORTING POLICIES

There are many ways to analyse the distributional and other effects of policy-induced changes to producer incentives and consumer prices, depending on the assumptions one is prepared to tolerate. Trade theorists, following Stolper and Samuelson (1941), typically have concentrated on the long-run general equilibrium effects of trade taxes on factor incomes. These effects suggest results which are incompatible with the actual behaviour of interest groups: the Stolper-Samuelson relationship predicts that in an economy with two mobile factors, one factor will gain but the other will lose from assisting an industry, yet there are numerous cases where both labour and capital owners in an industry lobby for its protection (Magee 1980). Such behaviour is predicted, however, by a model formalised by Jones (1971, 1975) and Mussa (1974) in which capital is assumed to be sector-specific and only labour is mobile intersectorally. While in practice both factors are less than perfectly mobile in the short run, and in the long run even capital is somewhat mobile through depreciation and redirection of new investments, the assumption that capital is sector-specific and labour is
mobile intersectorally is sufficiently realistic for the medium term to be adopted here. The appendix extends the Jones (1975) version of that model to include a nontradables sector which produces both intermediate inputs and final products. While the inclusion of nontradables adds realism to the Jones-Mussa model, it makes the equations of change rather complex. To draw clear conclusions about the income distributional effects of distortionary policies, it is helpful to adopt representative parameter sets for a poor agrarian economy and a rich industrial economy.

In the process of economic growth, there are at least five sets of parameters whose changes have important influences on the effects of price and trade policies. One is the distribution of labour across sectors: 60 per cent of workers are assumed to be employed in agriculture and 10 per cent in manufacturing in the poor country while for the rich country the shares are 3 and 30 per cent, respectively.

Another critical parameter is the distribution of expenditure of different groups between the three sets of final products. In the poor country food accounts for around half of household expenditure (in opportunity-cost terms for semi-subsistence farmers), while in the rich country its share is smaller than that for manufactures and nontradables are the dominant expenditure items.

The third important set of parameters relates to the much more rapid growth (from a low base) in the use of purchased inputs, including capital items, in agriculture compared with other sectors as economic growth proceeds. Subsistence farmers purchase very few intermediate inputs and employ little capital at early stages of development. Even the land used in traditional agriculture often has only modest capital value before the advent of systematic irrigation, nutrient building via chemical fertilizer applications, and the like. On the other hand, agriculture in advanced industrial countries tends to be more
intensive than other sectors the use of purchased intermediate inputs and physical capital. Thus labour’s share of value added and the value-added share of output are assumed for agriculture to be only half as large in the rich country as in the poor country, while the differences for other sectors are more modest.

The fourth set of parameters which differs significantly between a poor agrarian country and a rich industrial one has to do with the pattern of trade specialization. Poor countries’ exports tend to be dominated by primary products and perhaps a few light manufactured final products while imports are dominated by intermediate goods, whereas rich industrial countries tend to have a comparative advantage in manufactured goods and would import agricultural products in the absence of distortions.

And fifthly, in poor agrarian countries farmers typically pay no income tax because the cost of collecting it would exceed the revenues raised. Hence, real incomes of the relatively small urban sector of such countries are more sensitive to changes in the demand for tax revenue than is the case in rich countries, despite the fact that the latter have an overall rate of taxation double that of the former.

Given these and related assumptions about values for the relevant parameters, summarized in Table A.1 in the Appendix, it is possible to generate representative effects of price and trade policies on factor rewards, output, employment, tax revenue and the real incomes of different groups in the two archetype countries. These effects obviously depend on the parameter values chosen, but the following inferences are robust for a wide range of feasible values for those parameters. For the moment, assume that the policy choice set is confined to trade taxes–cum–subsidies on final products, results for which are summarized in Table 1.
### TABLE 1: Elasticities of factor rewards, the price of nontradables, real incomes and sectoral output and employment with respect to a trade policy-induced change in the price of agricultural or industrial products

<table>
<thead>
<tr>
<th>I. Elasticity of factor rewards and nontradables prices with respect to a change in:</th>
<th>Poor agrarian economy</th>
<th>Rich industrial economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Agricultural product prices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Agricultural capital</td>
<td>1.45</td>
<td>3.69</td>
</tr>
<tr>
<td>2. Industrial capital</td>
<td>-3.13</td>
<td>-0.20</td>
</tr>
<tr>
<td>3. Other capital</td>
<td>0.93</td>
<td>0.09</td>
</tr>
<tr>
<td>4. Wages</td>
<td>1.06</td>
<td>0.11</td>
</tr>
<tr>
<td>5. Price of nontradables</td>
<td>0.80</td>
<td>0.08</td>
</tr>
<tr>
<td>(b) Industrial product prices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Agricultural capital</td>
<td>-0.40</td>
<td>-1.81</td>
</tr>
<tr>
<td>7. Industrial capital</td>
<td>4.82</td>
<td>1.73</td>
</tr>
<tr>
<td>8. Other capital</td>
<td>0.32</td>
<td>1.21</td>
</tr>
<tr>
<td>9. Wages</td>
<td>0.14</td>
<td>1.28</td>
</tr>
<tr>
<td>10. Price of nontradables</td>
<td>0.21</td>
<td>0.95</td>
</tr>
</tbody>
</table>

### II. Elasticity of real incomes of different groups with respect to a change in:

| (a) Agricultural product prices | | |
| 11. Farmers | 0.37 | 2.29 |
| 12. Industrial capitalists | -4.30 | -0.32 |
| 13. Other capitalists | -0.24 | -0.03 |
| 14. Non-farm workers | -0.25 | -0.06 |

| (b) Industrial product prices | | |
| 15. Farmers | -0.21 | -1.99 |
| 16. Industrial capitalists | 4.43 | 0.43 |
| 17. Other capitalists | -0.06 | -0.08 |
| 18. Non-farm workers | -0.03 | 0.04 |

(continued)
### Table 1 (continued)

<table>
<thead>
<tr>
<th></th>
<th>Poor agrarian</th>
<th>Poor economy</th>
<th>Rich industrial</th>
<th>Rich economy</th>
</tr>
</thead>
</table>

#### III. Elasticity of sectoral output and employment, and of tax revenue with respect to change in

(a) Agricultural product prices

<table>
<thead>
<tr>
<th>Item</th>
<th>Poor (a)</th>
<th>Rich (a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. Agricultural output, employment</td>
<td>0.28, 0.40</td>
<td>1.25, 3.58</td>
</tr>
<tr>
<td>20. Industrial output, employment</td>
<td>-2.93, -4.19</td>
<td>-0.16, -0.31</td>
</tr>
<tr>
<td>21. Nontradables output, employment</td>
<td>-0.01, -0.02</td>
<td>-0.00, -0.00</td>
</tr>
<tr>
<td>22. Tax revenue</td>
<td>0.00 (-1.60)b</td>
<td>0.00 (-0.16)b</td>
</tr>
</tbody>
</table>

(b) Industrial product prices

<table>
<thead>
<tr>
<th>Item</th>
<th>Poor (b)</th>
<th>Rich (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>23. Agricultural output, employment</td>
<td>-0.38, -0.55</td>
<td>-1.08, -3.09</td>
</tr>
<tr>
<td>24. Industrial output, employment</td>
<td>3.28, 4.68</td>
<td>0.22, 0.44</td>
</tr>
<tr>
<td>25. Nontradables output, employment</td>
<td>0.12, 0.18</td>
<td>-0.04, -0.07</td>
</tr>
<tr>
<td>26. Tax revenue</td>
<td>0.00 (-0.14)b</td>
<td>0.00 (-1.76)b</td>
</tr>
</tbody>
</table>

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a Derived from equations (23) to (29) and (32) of the Appendix together with the parameter values in Table A.1, assuming that a trade tax-cum-subsidy is used which changes the producer and consumer price of one of the final tradable products by the same proportion.

b The elasticities in parentheses show the tax revenue effect if income tax rates were not changed.
When the relative price of one of the sector's output rises because of the imposition of a trade tax-cum-subsidy, wages must rise to attract labour to the now-more-profitable sector. The wage rise will tend to be larger, the larger the share of employment in the expanding sector. The product-price and wage rises also will result in a higher price for nontradables since the former shifts out the demand curve in the market for nontradables and the latter shifts up its supply curve. The nontradables price rise will be larger the larger the share of expenditure on the tradable product whose price has risen and hence the larger the income-compensated cross-elasticity of demand for nontradables. Hence if agricultural product prices rise, wages and the price of nontradables rise substantially in the poor agrarian economy while they rise only a little in the rich industrial economy, and conversely for a rise in industrial product prices (rows 4, 5, 9 and 10 in Table 1). The more the wage rises, the less the boost to specific factor rewards in the expanding tradable sector and the greater the reduction in specific factor rewards in the contracting sector(s). Hence a rise in agricultural product prices boosts returns to agricultural capital less and harms returns to industrial capital much more in the poor agrarian economy than in the rich industrial economy, and conversely for a rise in the industrial product prices (rows 1, 2, 6 and 7 of Table 1).

The net effects on real incomes of farmers, industrial capitalists, owners of nontradables capital and non-farm workers are summarized in the second part of Table 1. These real income effects take into account the assumption that farmers supply their own labour as well as capital, and that capitalists have a different expenditure pattern from workers and farmers because they are assumed to be richer.

These real income effects shed considerable light on the political economy of trade policy in poor as compared with rich countries. A 10 per cent reduction in agricultural relative to industrial product prices in the poor agrarian economy,
due to a tax on agricultural exports, would reduce farmers' real incomes by less than 4 per cent but would boost industrialists' real incomes by 43 per cent (see the elasticities in rows 11 and 12 of Table 1).\textsuperscript{5} At the same time such a trade policy would boost real after-tax incomes of other capitalists and workers by about 25 per cent, assuming income tax rates were to be adjusted to ensure no net change in overall tax revenues. Moreover, unemployed people would benefit much more than workers if they continued to remain unemployed, because of the lower price not only of food but also of nontradables: a 10 percent drop in agricultural prices would lower their cost of living by about 8 percent. Similarly, a rise in the price of industrial products in the poor country has a very large positive effect on real incomes of industrial capitalists, only a minor negative effect on farm incomes, and almost no effect on incomes of other capitalists and workers (rows 15 to 18). It would even have little negative effect on unemployed people, since the flow-on effect of industrial protection to the price of nontradables is relatively minor and the cost of living for such people is in any case primarily determined by food prices. Indeed unemployed people may favour an industrial protection policy in the belief that it would boost the number of available jobs.\textsuperscript{6}

For the rich industrial economy, on the other hand, a 10 per cent increase in agricultural product prices would boost real farm incomes by 23 percent while lowering incomes of industrial capitalists' by only 3 percent and of other capitalists and non-farm workers by less than 1 per cent. A rise in industrial product prices would again do the opposite: it would hurt farmers seven times more than it helps industrial capitalists, while real incomes of other capitalists and workers would hardly be affected if full tax adjustment were to occur (see second column in Section II of Table 1).

These factor owners are not the only groups with vested interests in price and trade policies, however. A not insignificant source of lobbying on sectoral policy issues comes from within the government's bureaucracy. Insofar as the
career prospects of officials in the agricultural and industrial development ministries are positively related to output and employment in the sector they serve, so the intensity of their support for or against a policy might be expected to be positively related to the sectoral output and employment effects of that policy. As shown in Section III of Table 1, the proportional changes in output and employment in the poor country from distorting agricultural relative to industrial product prices are much smaller for agriculture than for industry, whereas the opposite is true in the rich country. (Nontradables output and employment changes are close to zero in both cases.) As well, because the dominant export sector in the absence of distortions is agriculture in the poor country and industry in the rich country, trade tax revenue is enhanced greatly if agricultural exports are taxed in the poor country (an elasticity of 1.6 – see line 22 of Table 1), whereas in the rich country they are enhanced by protecting farmers from import competition. Conversely, it is much easier to finance on industrial export subsidy in the poor country than in the rich country, given the size difference in their industrial sectors. For these reasons, finance ministry officials concerned to maintain tax revenues, in an environment where raising income tax rates is difficult, would tend to support a trade policy regime which is biased against the agricultural export sector of the poor country and in favour of import-competing farmers in the rich country.

In short, these simulations suggest the potential gross benefits to farmers and agricultural bureaucrats who successfully seek agricultural price supports or oppose industrial protection in poor countries are less than one sixth the benefits to individuals in corresponding groups in rich countries, while industrial capitalists and closely associated bureaucrats each have ten times more incentive to seek policies which assist manufacturing and reduce agricultural prices in poor countries than do individuals in corresponding groups in rich countries, ceteris paribus. Moreover, in the poor country the per capita benefits to industrial
capitalists from a trade policy regime which favours manufacturing at the expense of agriculture are more than ten times the loss that policy regime imposes on farmers. The difference in distributional effects is not quite so extreme in the rich industrial country, but even there farmers would gain five or more times as much as industrial capitalists would lose per capita from a trade policy regime which favoured agriculture at the expense of manufacturing.

These per capita distributional effects are only part of the story, however. To determine their impact on the policy outcome one needs to also consider the political power of vested interest groups to translate into action those incentives to influence policy.

**POLITICAL POWER OF VESTED INTEREST GROUPS**

A group's political power presumably is a function of its vote contribution, its economic strength as indicated, for example, by its share of national income, and its efficiency in getting members together to become informed and to lobby. Consider each of these in turn.

**Voting contribution of different interest groups**

Perfectly-informed voters might be expected to support or oppose a distortionary policy more vigorously the larger the percentage by which their real income is raised or lowered by that policy. If, in addition to being perfectly informed, voters had the opportunity (but no compulsion) to vote on each policy issue, then a crude indication of the strength of each group's aggregate voting behaviour could be obtained by multiplying the elasticities in Section II of Table 1 by the proportion of votes each group represents. The sign of the sum of such weighted elasticities also provides rough indication of the likely net voting outcome. These indicators are presented in Section 1 of Table 2.
TABLE 2: Indicators of aggregate gross incentives for groups to influence trade policy decisions

<table>
<thead>
<tr>
<th></th>
<th>Poor agrarian economy</th>
<th>Rich industrial economy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Elasticity of real incomes of different groups, times group's share of votes, with respect to a change in:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Agricultural product prices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Farmers</td>
<td>.214</td>
<td>.066</td>
</tr>
<tr>
<td>2. Industrial capitalists</td>
<td>-.043</td>
<td>-.005</td>
</tr>
<tr>
<td>3. Other capitalists</td>
<td>-.007</td>
<td>-.001</td>
</tr>
<tr>
<td>4. Non-farm workers</td>
<td>-.096</td>
<td>-.056</td>
</tr>
<tr>
<td>TOTAL</td>
<td>.068</td>
<td>.004</td>
</tr>
<tr>
<td>(b) Industrial product prices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Farmers</td>
<td>-.122</td>
<td>-.058</td>
</tr>
<tr>
<td>6. Industrial capitalists</td>
<td>.044</td>
<td>.006</td>
</tr>
<tr>
<td>7. Other capitalists</td>
<td>-.002</td>
<td>-.003</td>
</tr>
<tr>
<td>8. Non-farm workers</td>
<td>-.011</td>
<td>.041</td>
</tr>
<tr>
<td>TOTAL</td>
<td>-.091</td>
<td>-.014</td>
</tr>
<tr>
<td><strong>II. Elasticity of real incomes of different groups, times group's share of GDP, with respect to a change in:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Agricultural product prices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Farmers</td>
<td>.222</td>
<td>.092</td>
</tr>
<tr>
<td>10. Industrial capitalists</td>
<td>-.129</td>
<td>-.054</td>
</tr>
<tr>
<td>11. Other capitalists</td>
<td>-.021</td>
<td>-.007</td>
</tr>
<tr>
<td>12. Non-farm workers</td>
<td>-.070</td>
<td>-.033</td>
</tr>
<tr>
<td>(b) Industrial product prices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Farmers</td>
<td>-.125</td>
<td>-.080</td>
</tr>
<tr>
<td>14. Industrial capitalists</td>
<td>.135</td>
<td>.074</td>
</tr>
<tr>
<td>15. Other capitalists</td>
<td>-.005</td>
<td>-.020</td>
</tr>
<tr>
<td>16. Non-farm workers</td>
<td>-.007</td>
<td>.024</td>
</tr>
</tbody>
</table>

a Elasticities of real income are taken from Section II of Table 1.

b The distributions of votes are based on sectoral employment shares from Table A.1 and the assumptions that all, and only, farmers, urban capitalists and non-farm workers are eligible to vote and that there is one capitalist per ten (twenty) workers in each of the non-farm sectors in the poor (rich) country. The four groups' proportions of votes are .577, .010, .029 and .384 for the poor country and .029, .014, .032 and .925 for the rich country.

c Shares of national income are derived from the first and the final rows of Table A.1. For the four groups listed they are .60, .30, .09 and .28 for the poor country and .04, .17, .248 and .542 for the rich country.
In this simplified polity of perfect voter information, single-issue elections and no compulsion to vote, this indicator suggests that in the poor country, the weight of the farmers' vote relative to that of the industrial capitalists' should be sufficient to more than offset the relative smallness of the income effects per farmer of a trade policy regime which favours the industrial sector at the expense of agriculture. What is surprising, however, is not that the vote-weighted elasticities sum to more than zero (0.068) for agricultural price support and less than zero (-0.091) for industrial price support, but that these sums are quite small, suggesting that the skewed income distributional effects of those trade policies are almost sufficient to offset the opposite asymmetry in the distribution of votes. Indeed for the rich industrial country the asymmetry in effects on income is just sufficient to offset the opposite voting asymmetry: the vote-weighted elasticities sum to 0.004 for an agricultural protection policy and -0.014 for industrial price support. That is, if votes were all that influenced the policy determination process and voters were fully informed and more inclined to vote for or against a policy the more it affected their income, there would be a close match in both the poor country and the rich country in votes for and against a trade policy regime which favoured one of the tradables sectors at the expense of the other, despite the skewed distribution of votes in the two different types of countries.

In practice, of course, it is costly for voters to become informed about (especially the indirect) effects of policies on their real incomes. Moreover, voters do not have the opportunity to vote for or against each policy, but instead have to vote for a package of policies among which price and trade policies are but a small part. These facts of political life ensure that the economic size of different vested interest groups also has an influence on the policy outcome.
Economic size of different interest groups

In order for the government and opposition parties to go to the electorate to persuade voters of the virtues of their party's policy package, the party needs resources. As Brock and Magee (1980) and others point out, these can be obtained by including in the package some policies which benefit a minority even through they reduce national income and the welfare of the majority. Such a strategy is possible wherever the political support gained from that favoured minority exceeds that lost from the disadvantaged majority. The latter is likely to be smaller relative to the former the stronger the group's relative economic strength (the larger its share of national resources and hence income), because this affects the aggregate gross economic benefit of the policy to that group, ceteris paribus.

Not only will the demand curve in the political market diagram in Figure 1 be further to the right the larger that aggregate benefit, but also the supply curve will be lower since some of the potential benefits of the policy to the group could be spent on disseminating selective information on the virtues to society of the policy, thereby reducing opposition to it.

An indication of the aggregate benefit to different groups of raising agricultural or industrial product prices via trade taxes-cum-subsidies is summarised in Section II of Table 2. It shows the product of the elasticities reported in Section II of Table I and the group's share of national income. This index suggests capitalists in the nontradables sector are affected relatively little in aggregate terms. As between farmers and industrial capitalists, in the rich country this indicator suggests farmers have slightly more incentive to influence trade policies in their favour than do industrialists, although non-farm labour has a reasonably strong incentive to support the industrial capitalists' lobbying efforts. In the poor country, farmers have slightly less aggregate incentive to oppose an industrial protection policy than industrial capitalists have to demand it, but farmers would lose considerably more than industrialists would gain in aggregate
from a lowering of agricultural prices. This latter asymmetry is consistent with
the finding that farmers in poor countries tend to have been much more successful
in preventing the imposition of direct disincentives for agriculture than they have
been in preventing policies which indirectly disadvantage them (see Krueger,
Schiff and Valdes (1988)).

Clearly, the indicators in Section II of Table 2 bring us even closer to
understanding why industrialists tend to be assisted more and farmers assisted less
or even taxed indirectly in poor economies as compared with rich ones. This is
especially so in view of the likelihood that the group benefitting directly from a
policy is likely to be more informed about that effect than those who are affected
indirectly. But there is a further important set of factors affecting the incentive
to lobby for favourable policies, namely those that determine the relative
efficiency of different groups in acting collectively.

**Costs of collective action by vested interest groups**

In a poor agrarian economy, the costs of getting farmers to act collectively
to become informed and lobby for a more favourable policy regime tend to be
prohibitively high. Collective action by them is expensive to organize because of
the difficulty of preventing free-riding due to the large number of small, poorly
educated producers who find it costly to get together because of low-quality rural
transport and communications infrastructure. By contrast, urban capitalists in
poor countries are relatively well-educated, politically articulate, small in
number, have larger sales per firm than farmers, and are often located in the
large cities in easy reach of people in government. Hence their costs of becoming
informed and lobbying are comparatively low (Olson 1986).

In the course of a country's economic development, however, the costs of
collective action fall more for farmers than for urban capitalists. Partly this is
because the differences between urban and rural education, transport and communications infrastructure tend to narrow with economic growth. Also, the positive effect of the increase in numbers of industrial and service-sector firms on the lobbying strength of urban capitalists tends to be more or less offset by an increase in their free-rider problem of acting collectively. As well, numerous industries graduate from import-relacement to export status and perhaps also become direct investors abroad. Manufacturers' associations therefore become less inclined to seek manufacturing protection policies since that is against the interests of its more-competitive, more successful members.

Even more importantly, a way for farmers to reduce substantially their free-rider problem emerges with development. As farmers gradually commercialise their activities, they perceive income-earnings opportunities in the supplying of off-farm inputs and the marketing of farm output. They also often fear exploitation by the middlemen who emerge to supply these services. Thus farmer associations or cooperatives form and act as input-buying and output-selling groups for the purpose of increasing farmers' bargaining power with middlemen. In some cases farmer cooperatives even become a substitute for middlemen. Discounts for members on purchased inputs and marketing fees are offered to encourage producers to join. Once established, these organizations are able to lobby on behalf of farmers at relatively low cost, despite the large number of relatively small farm firms still involved in agriculture. Furthermore, established farm cooperatives have a vested interest in lobbying not only on behalf of farmers but also on their own behalf, as do the new groups of manufacturing and service industries producing farm inputs and processing farm outputs insofar as these activities are not undertaken by farm cooperatives (Bolin et al. 1986; George and Saxon 1986). This adds considerably to the effective demand for policies favourable to agriculture in advanced industrial economies, especially as input and output volumes tend to keep expanding even as the number of farmers diminishes.
What about non-farm workers? Their costs of collective action in some poor economies, along with those of the unemployed, are demonstrably low enough to allow collective action in the form of urban riots and the like. They tend to support policies which favour industry and keep down food prices. This is what might be expected from the signs of the elasticities in Tables 1 and 2 in the case of agricultural policy, but not in the case of industrial protection. An explanation for the latter anomaly may be that urban workers give more weight to the direct effects of industrial policies in boosting jobs in urban areas. It is of course in the interests of industrial capitalists to emphasise these direct effects of policies and to quietly ignore the indirect effect such policies have in reducing the demand for labour and hence wages.

In rich industrial countries, urban workers are well organised into unions and therefore enjoy relatively low costs of collective action there as well. The indicators in Table 2 would suggest workers should be against – but only mildly so – the typical trade policy regime in which agriculture is assisted relative to manufacturing. The absence of strong opposition from them may partly be because they find it more profitable to invest their resources in wage bargaining with employers and wage arbitration tribunals. But it may also be due to their view on non-economic effects of trade policy, to which we now turn.

SOCIAL PREFERENCES AND PRICE-DISTORTING POLICIES

Social preferences of society can also have an important influence on policy outcomes. In poor agrarian economies the desire to industrialize is typically strong because industrialization is perceived to be related to modernization and affluence and to result in a more 'balanced' economy (Johnson 1965). As well, in states which have recently gained their independence from a capitalist power, the ruling elite often has socialist tendencies which include inclinations to reduce their economy’s dependence on trade with rich industrial countries, provide urban
consumers with cheap food and housing, and develop state-financed, import-substituting industrial projects (Bates 1981). Funds for the latter can be raised most cheaply by trade taxes which, for countries with a comparative advantage in agriculture, will also contribute to the government's goals of being less agrarian and less trade-dependent. The larger these social benefits of taxing manufactured imports and agricultural exports are perceived to be relative to the perceived costs of trade taxes, the lower will be the political costs of such a trade policy regime as reflected in the supply curve in Figure 1.

As an economy industrializes, however, the balanced-economy, nationalistic and self-reliance motivations for not opposing assistance to the import-replacing infant industrial sector gradually disappear. So too does the need to depend heavily on trade taxes to raise government revenue and to redistribute welfare, because of a relative decline in the costs of collecting and dispersing government funds by more direct means. And if in the course of industrial development the economy loses its comparative advantage in agricultural products, the earlier concern by society to promote manufacturing may be displaced by a concern to boost agricultural output for food security reasons.

During this century productivity growth and demand changes have been such that the international price of farm products relative to industrial products has been trending downwards, a trend that has been exacerbated by the growth of agricultural protection.¹⁰ Since many urban people in industrial countries have a fondness toward farmers, perhaps because of the perceived virtues of country life and the fact that their recent ancestors were farmers, their sense of fairness is aroused when farm output prices are not keeping up with inflation and farmers are having to leave the land in part because of their sector's labour productivity growth and the protectionist policies of other rich countries. So when farm lobbyists direct media attention to the plight of small farmers in left-behind regions, few groups in advanced industrial societies actively oppose agricultural
protection policies which merely slow the declines in real food prices and farm employment. Indeed, urban groups may judge that if the agricultural sector were to shed labour too rapidly, political instability would result which, in addition to being undesirable for its own sake, may be perceived to be more detrimental to economic growth in the non-farm sectors than the comparative-static deadweight costs of the price distortions. In any case, urban groups may see agricultural protection as a social insurance policy of a sort they themselves may feel the need to draw on at some future date (Corden 1974, pp. 320-21; Eaton and Grossman 1981).

Finally on social preferences, both producers and consumers typically prefer prices of (especially necessary) products to be more rather than less stable over time. The fact that international prices for farm products gyrate much more than prices for manufactured products is often used to justify policy intervention at a country's border. Once a price stabilization scheme is legitimized in principle, the administrative task of deciding on the trend level of prices around which to stabilize is subjected to the same pressures from interest groups as discussed above, since there is always uncertainty ex ante about that medium-term trend level. Thus the social preference for stable food prices in an environment of fluctuating international prices simply makes it less costly politically for a government to intervene to distort farm product prices below or above the international trend level.

WHY DO POOR COUNTRIES ALSO LOWER TRADABLES PRICES BY OVERVALUING THEIR CURRENCIES?

Overvaluing the real exchange rate is equivalent to lowering the price of both tradables by the same proportion (relative to the endogenously determined price of nontradables). The distributional effects of real exchange rate policy can therefore be obtained from summing (minus) the elasticities in Table 1 for the two
trade policies. As shown in column (3) of Table 3, overvaluing the real exchange rate in the poor agrarian economy raises the real incomes of non-farm workers and capitalists in the nontradable sector much more than it lowers the real incomes of farmers, while incomes of industrial capitalists are hardly affected in real, after-tax terms. The inefficiency of farmers as lobbyists and the considerable capacity of industrialists to obtain offsetting protection ensure that in the poor country there are no strong opponents of a policy of overvaluing the currency. In the rich industrial country, on the other hand, the effects of overvaluation on urban groups would be minor and offsetting while the effects on farmers – who are relatively efficient lobbyists – would be somewhat larger and adverse. Hence it is not surprising that overvaluation of the currency is another common way in which governments of poor countries choose to discriminate against agriculture, whereas this instrument is generally not used in industrial countries as a long-term sectoral policy instrument.11

WHY ARE FIRST-BEST POLICY INSTRUMENTS NOT USED?

In view of the asymmetries in the costs of getting together and becoming informed about the effects of sectoral policies, it is not difficult to understand why first-best policy instruments to achieve particular objectives are not used. Of special significance is the higher cost of information to potential opponents of a sectoral assistance policy when a covert second- or nth-best instrument is used instead of a direct payment. But it is illuminating to also examine the distributional effects of more direct instruments compared with trade and exchange rate policies. The most obvious instruments to consider are producer price subsidies for both tradable products in the rich country and food consumer and industrial producer subsidies in the poor country.
TABLE 3: Elasticities of real incomes with respect to various policy-induced changes in the price of agricultural and/or industrial products

<table>
<thead>
<tr>
<th>Poor agrarian economy</th>
<th>Rich industrial economy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elasticity of real after-tax incomes of:</strong></td>
<td><strong>Elasticity of real after-tax incomes of:</strong></td>
</tr>
<tr>
<td>Farmers</td>
<td>Farmers</td>
</tr>
<tr>
<td>0.37</td>
<td>2.29</td>
</tr>
<tr>
<td>Industrial capitalists</td>
<td>-0.30</td>
</tr>
<tr>
<td>Other capitalists</td>
<td>-0.24</td>
</tr>
<tr>
<td>Non-farm workers</td>
<td>-0.25</td>
</tr>
<tr>
<td>Price-raising agricultural trade policy(^a)</td>
<td>Price-raising industrial trade policy(^b)</td>
</tr>
<tr>
<td>(1)</td>
<td>(2)</td>
</tr>
</tbody>
</table>

\(^a\)From part (a) of Section II of Table 1.

\(^b\)From part (b) of Section II of Table 1.

\(^c\)Minus the sum of columns (1) and (2), since a real exchange rate overvaluation in this model means lowering the price of both tradables by the same proportion (relative to the endogenously determined price of nontradables).

\(^d\)Based on the modifications to equations (24) to (28) mentioned after equation (29) in the Appendix. In the case of column (6) it is the agricultural purchases of only urban people are subsidized, that is, farmers continue to pay (typically in opportunity cost terms) the world price for their food.
Producer price subsidies for agriculture are shown in column (4) of Table 3 to have almost the same distributional effects on real after-tax incomes in the rich industrial country as agricultural protection at the border. They presumably are not used to support farmers, despite their smaller deadweight cost than import taxes, simply because the extent of the transfer to farmers would be more obvious. Column (5) of Table 3 shows the effects of industrial producer price support policies. Again this more-direct policy instrument would hurt farmers less and help industrialists more than would a trade policy instrument, but again it has a more negative effect on the real incomes of other urban groups as well as being overt.

To estimate the elasticities for an agricultural consumer price subsidy, it is assumed that farmers are ineligible for the subsidy. Thus the effect on the real income is mainly that due to the small change in the price of nontradables and in wages, which is negligible (see column (6) of Table 3). Urban workers would gain but at the expense of urban capitalists, who lose because they are cross-subsidizing through their taxes the greater proportional implicit income transfer to that lower-income group (which spends a larger share of its income on food). Thus the extent to which such subsidies are used rather than, or in addition to, agricultural export taxes would depend on the relative political power of the three urban groups. Evidently in some poor countries where urban workers (and unemployed) have sufficient power it has paid governments to raise tax revenue to subsidize urban food consumption.\textsuperscript{12} In such circumstances perhaps other additional policy instruments have been used to compensate urban capitalists for the negative effect on them of food subsidies.

\section*{Possible Extensions}

The above analysis could be extended in a number of ways. One is to modify the extreme factorial assumptions of the model outlined in the appendix, for example to allow capital to be partially mobile between sectors (Diamond 1982; Grossman 1983), to allow for minimum wage laws and the urban unemployment it
can induce (Harris and Todaro 1970; Corden and Findlay 1975), and to allow for some sector specificity to the human capital associated with labour (Baldwin 1984). Insofar as labour is imperfectly mobile and some capital can move between sectors, the elasticities of factor rewards reported in Table 1 overstate the extent of change that would take place. If workers have above-average union strength and can thereby extract above-equilibrium wages in a particular sector, or if they have sector-specific skills (as do farmers), the incentive for them to lobby for assistance to that particular sector would be greater than otherwise, ceteris paribus (Becker 1983, p. 383). The latter is especially important when employment in that sector is declining absolutely, as happens to agriculture once a country graduates from middle-income status,13 because then all the benefits from assistance which slows that decline accrue to existing producers (Hillman 1982). Different assumptions concerning the taxing of factor incomes could also be introduced, including the deadweight costs of income taxation which Browning (1987) and others have identified as being significant.

Another extension could be to include more explicitly the reactions of other groups to any one group's lobbying demands.14 What determines the proportion of farmers' lobbying funds that are devoted to demanding assistance policies for agriculture rather than opposing policies favourable to industrialists or other groups? What is needed is a general equilibrium model of the political market for which a Cornout-Nash equilibrium outcome could be determined. This would also shed light on why trade policy instruments rather than more-direct redistributive instruments such as income transfers or producer price subsidies are used15, and why we simultaneously observe policies which subsidize an industry's output but tax some of its inputs or vice versa.16

Thirdly, there is scope to include the administrative and legislative arms of government more explicitly in the analysis than is done above. In addition to bureaucrats wanting to enhance their welfare, for example through expanding the size of their agency, politicians could be considered as an interest group over and above their role as an arbitrator of conflicting private interest groups.17
Fourthly, lobbying itself involves resources, represented in Figure 1 by the price times quantity area. Integrating this fact into the analysis is unlikely to change the conclusions, but it would shed light on the extent of lobbying activity to expect in different circumstances (see Findlay and Wellisz 1982, 1983; Young and Magee 1986).

IMPLICATIONS OF THE ANALYSIS

Distortion patterns across countries and over time

Even though the above involves a highly simplified model of the political process, it nonetheless helps explain why distortionary price and trade policies in poor agrarian economies are biased in favour of manufacturing and against agriculture whereas in rich industrial countries the opposite intersectoral bias tends to prevail. Moreover, over time and within any group of countries there will be a tendency for the policy regime (a) to gradually change in favour of agriculture as an economy grows (particularly if growth is accompanied by a decline in agricultural comparative advantage), (b) to favour farmers relative to industrialists at a lower per capita income level the lower the agricultural comparative advantage of this as compared with similar-income countries, and (c) to change faster the faster the growth of the economy and the faster the decline in its agricultural comparative advantage. And this is indeed what has happened among the advanced and newly industrialized countries in recent decades. As can be seen from the first three columns of Table 4, nominal protection for agriculture is low in the relatively lightly populated, food-exporting countries of North America and Australasia, reasonably high in Western Europe and very high in the densely populated, food-importing industrial economies of East Asia. The proportional increases in the nominal protection coefficients for agriculture are similarly ranked, with protection growing fastest in rapidly growing East Asia where agricultural comparative advantage has declined substantially, and least in
### TABLE 4: Indicators of agricultural protection, comparative advantage and economic growth in industrial countries, 1960-85

<table>
<thead>
<tr>
<th>Agricultural protection indicators</th>
<th>Comparative advantage indicators</th>
<th>Real growth per capita (% p.a.) in:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal protection coefficient for agriculture&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Hectares of agricultural land per capita, 1985&lt;sup&gt;c&lt;/sup&gt;</td>
<td>Gross domestic product, 1960-85</td>
</tr>
<tr>
<td>Relative price of agricultural products domestically as a % of relative agricultural price internationally, 1981-85 (1961-65 = 100)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Food production as a percentage of food consumption, valued at economy prices, 1985&lt;sup&gt;d&lt;/sup&gt;</td>
<td>Value added in industry, 1960-85</td>
</tr>
<tr>
<td>1965-75</td>
<td>1975-83</td>
<td>1988</td>
</tr>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>North America and Australasia</td>
<td>1.10</td>
<td>1.15</td>
</tr>
<tr>
<td>Western Europe&lt;sup&gt;f&lt;/sup&gt;</td>
<td>1.40</td>
<td>1.55</td>
</tr>
<tr>
<td>Japan, Korea and Taiwan</td>
<td>1.90</td>
<td>2.50</td>
</tr>
</tbody>
</table>

<sup>a</sup> Proportion by which domestic prices exceed border prices for grains, meats, dairy products and sugar. The values for 1988 are estimates based on projections from a model of world food trade.

<sup>b</sup> Domestic prices are based on the ratio of indexes of prices received by farmers (FAO) and wholesale prices of industrial products (IMF). International price indexes for agricultural and industrial products also are from the FAO and IMF.

<sup>c</sup> Land used for crops (annual and perennial) and pastures.

<sup>d</sup> Production and consumption of grains, meats, dairy products and sugar are aggregated using the border prices at which each country trades (or would do under free trade).

<sup>e</sup> Real growth in value added per employee in agriculture as a ratio of real growth in value added per employee in the total economy. Final number refers to Japan only.

<sup>f</sup> The twelve member countries of the European Economic Community plus the five member countries of the European Free Trade Arrangement.

slow-growing North America and Australasia which have maintained a strong comparative advantage in agriculture.

Further evidence of the positive correlation between agricultural protection on the one hand and per capita income and agricultural comparative disadvantage on the other is reported in Anderson and Tyers (1986). Using cross-sectional data for the early 1980s for 30 countries or country groups spanning the world, they estimated the following statistically significant relationship:

\[
NPC = 0.22 + 0.11Y - 0.51CAR^2 = 0.83
\]

(8.7) (5.6) (-10.7)

where NPC is the log of the weighted average nominal protection coefficient for grains, livestock products and sugar, Y is the log for the ratio of an economy's per capita income to the global average per capita income and CA is the log of the ratio of production to consumption of grains, livestock products and sugar valued at free-market prices (t-values in parentheses). This result is consistent with that obtained by Honma and Hayami (1986) using a combined cross-country, cross-commodity, and across-time data series for 15 individual industrial countries.

Prospects for reform

Is it inevitable that protection for the declining agricultural sector will continue to grow in currently protected economies and to spread to less-developed economies as they industrialize? Consider first the factors affecting the distribution of gains and losses from a policy bias towards agriculture. In the course of economic growth at home and abroad, the per capita benefits to farmers will continue to grow relative to the per capita losses to other groups. This is because economic growth is likely to continue to be characterised by declines in agriculture’s shares of GDP and employment and in the share of farm products in household expenditure, and by the more rapid decline in the value added share of
output in agriculture than in other sectors. The costs of collective action by farmers relative to those costs for other groups also is likely to keep falling as the numbers of farmers decline and as farmer associations become firmly established. Moreover, the real price of agricultural products in international markets is likely to continue to gyrate around a declining long-run trend. In this environment, politicians are understandably reluctant to deregulate and thereby reduce producer returns and increase the variability of food prices: that can always be done after the next election when the inefficiency of present policies will be even more obvious. Should the cost of protection become more evident, as with the emergence of surplus farm products in the EC during the past decade, the inclination of politicians and bureaucrats is to 'do something' rather than 'undo something' (Winters 1987). So rather than reduce domestic-to-border price ratios, the tendency is to introduce a quantitative limit on production which maintains existing farmers' incomes and ensures more bureaucrats are needed but reduces the visibility of the policy and prevents potential newcomers from enjoying the benefits of protection.

There is, however, the possibility that with the decline in the proportion of employment (hence votes) and GDP from farming and agro-industrial firms, the rightward shift in the aggregate demand in the political marketplace for farm support policies will slow down (Hillman 1982; Cassing and Hillman 1986). As well, the downward movement of the supply curve in Figure 1, which represents the declining marginal political costs of providing such policies, may eventually reverse. There are at least three reasons for expecting this. One is that where the continuation of high domestic food prices eventually generates an exportable surplus of agricultural products which can be disposed of in international markets only with the help of explicit subsidies, as in the European Community, there tends to be much more opposition to continued farm support than where the support is in the more covert form of import restrictions alone. The second and
related reason is that once export subsidies are used, the food security justification for further assistance to agriculture looks hollow and prompts traditional agricultural-exporting countries to intensify their commercial diplomatic pressure for reform by such countries, using the threat of retaliatory trade restrictions. And thirdly, the high food prices themselves encourage farmers in protected countries to use greater volumes of chemical fertilizers and pesticides and more irrigation than would otherwise be the case. The consequent adverse effect on the environment, especially in densely populated countries, is reducing the preparedness of urban people to continue to tolerate agricultural price supports.

The prospects for reform of agricultural protection policies have been further enhanced by two recent and related developments. They are the publication of numerous empirical studies of the hidden costs and adverse distributional consequences, both domestically and internationally, of those policies, and the Uruguay Round of multilateral trade negotiations (MTN) which, unlike previous rounds, has agriculture high on the agenda. The empirical studies, especially that by the OECD (1987) which has a degree of official status in industrial countries, are reducing the cost of information for domestic groups and MTN negotiators opposing agricultural protectionism. Those studies are especially useful for the MTN because they demonstrate the considerable extent to which the adverse political consequences of withdrawing farm support policies would be reduced if multilateral rather than unilateral liberalization were to take place. The persistent dissemination of such research results can play an important role in the changing political market for distortionary price and trade policies.
APPENDIX:

INCOME DISTRIBUTIONAL EFFECTS OF PRICE-DISTORTING POLICIES

Consider a small, open, three-sector economy producing two sets of tradable final products and one set of nontradable products \((X_j, j = 1,2,3)\) by combining labour \((L)\), capital \((K)\), imported intermediate inputs \((I_i, i = 1,\ldots,m)\) and some nontradables \((X_3)\) as intermediate inputs. The economy has a fixed endowment of homogeneous primary factors; capital is immobile between sectors while labour is perfectly mobile; the production function for each sector is of a linear, homogeneous form which exhibits positive and declining marginal products for each factor, and is separable between primary factors, imported intermediate inputs and nontradable intermediate inputs; tradable product and input prices are given by world markets adjusted according to the country's (initially zero) trade taxes-cum-subsidies (the small country assumption); aggregate product equals aggregate expenditure; there is continual external balance; flexible prices ensure the full employment of all resources; and domestic markets are perfectly competitive so that profits are zero and marginal productivity factor pricing prevails.

If \(\alpha_{Lj}, \alpha_{Kj}, \alpha_{ij} \) and \(\alpha_{nj}\) represent respectively the quantity of factors \(L\) and \(K\), of imported intermediate input \(I_i\) \((i = 1,\ldots,m)\) and of nontradable input \(X_3\) required to produce one unit of \(X_j\) \((j = 1,2,3)\), the competitive-equilibrium zero-profit statements are

\[
\alpha_{Lj} w + \alpha_{Kj} r + \sum_{i=1}^{m} \alpha_{ij} q_i + \alpha_{nj} p_3 = p_j, j = 1,2,3
\]

and the full-employment conditions are given by
(2) \[ \sum_{j=1}^{3} \alpha_{Lj} X_j = L \]

(3) \[ \alpha_{Kj} X_j = K_j \quad , j=1,2,3 \]

where \( w, r, q_i \) and \( p_j \) are respectively the labour wage rate, the rental return to capital specific to sector \( j \), and the domestic prices of imported intermediate input \( I_i \) and of the product of sector \( j \).

The domestic prices of the two tradable products and the intermediate inputs, \( p_1, p_2, \) and \( q_i \) (\( i = 1, \ldots, m \)) are determined by their international prices, \( p_1^*, p_2^* \) and \( q_i^* \) (which are assumed to be unaffected by this small country's activities and are held constant throughout the analysis) and by any trade taxes-cum-subsidies. The domestic price of the nontradable product, \( p_3 \), is determined endogenously by the equilibrium condition that the domestic demand and supply for that nontradable are equated. That is,

(4) \[ C_3 (p_1, p_2, p_3, Y) = X_3 \]

where \( C_3 \) and \( X_3 \) are the quantities of the nontradable product demanded and supplied and \( Y \) is national income.

Equations (1) to (4) can be used as the basis for analysing the effects of a small change in trade taxes-cum-subsidies. Such a change will cause a change in \( p_3 \) and in all factor rewards as well as induce a change in techniques (the \( a \)'s). Differentiating equations (1) and expressing proportional changes by \( \hat{\cdot} \) yields

(5) \[ \gamma_{Lj} \hat{w} + \gamma_{Kj} \hat{r}_j + \sum_{i=1}^{m} \gamma_{ij} \hat{q}_i + \gamma_{nj} \hat{p}_3 = \hat{p}_j \quad , j = 1,2,3 \]

where the \( \gamma \)'s represent distributive shares of the factors and intermediate inputs in the value of sector \( j \)'s output so that, for example, \( \gamma_{Kj} = r_j K_j / p_j X_j \) and their
sum is unity for each sector.\textsuperscript{18} Dividing all terms in equations (5) by the share of value of output going to primary factors, $V_j$, where $V_j = 1 - \sum_{i=1}^{n} \gamma_{ij}$, and defining $\theta_{Lj}$ and $\theta_{Kj}$ as the shares of value-added going to labour and specific capital in sector $j$, yields

$$
(6) \quad \theta_{Lj} \hat{w} + \theta_{Kj} \hat{r}_j = \left( \hat{p}_j - \sum_{i=1}^{m} \gamma_{ij} \hat{q}_i - \gamma_n \hat{p}_3 \right) / V_j \quad , j=1,2,3.
$$

For present purposes attention will focus on the effects of distorting just one of the tradable final product prices, and will assume that the other tradable final product price and the prices of imported intermediate inputs remain at their free-trade level. In this case equations (6), the requirements for the retention of zero profits, reduce to

$$
(7) \quad \theta_{Lj} \hat{w} + \theta_{Kj} \hat{r}_j = \left( \hat{p}_j - \gamma_n \hat{p}_3 \right) / V_j \quad , j=1,2,3.
$$

The requirements for retaining full employment in the factor markets are obtained by differentiating equations (2) and (3) which, since the aggregate supplies of labour and specific capital are assumed fixed, gives

$$
(8) \quad \sum_{j=1}^{3} \lambda_{Lj} \hat{x}_j + \sum_{j=1}^{3} \lambda_{Lj} \hat{a}_{Lj} = 0
$$

and

$$
(9) \quad \hat{x}_j = -\hat{a}_{Kj} \quad , j=1,2,3
$$

where $\lambda_{Lj}$ is the fraction of the labour force employed in sector $j$. Given the assumption of separability, so that the ratio of primary factors used in each sector is independent of prices of both imported and nontradable intermediate inputs, use can be made of the following definition of $\sigma_j$, the elasticity of factor substitution:
\begin{align}
\hat{\alpha}_{K_j} - \hat{\alpha}_{L_j} = \sigma_j (\hat{w} - \hat{r}_j) , & \quad j=1,2,3. 
\end{align}

Substituting equations (9) and (10) into equation (8) then gives the following requirement for the retention of full employment of labour and capital:

\begin{align}
\sum_{h=1}^{3} \lambda_{Lh} \sigma_h (\hat{w} - \hat{r}_h) = 0
\end{align}

To ensure internal and external balance as summarized in equation (4), expressions for changes in production and consumption of $X_3$ are required. The equations for production changes can be obtained by recalling the Wong-Viner envelope theorem (mentioned in footnote 18) which reduces to the following, given the separability assumption and the assumption that intermediate input prices do not change:

\begin{align}
\gamma_{Lj} \hat{\alpha}_{Lj} + \gamma_{Kj} \hat{\alpha}_{Kj} = 0 , & \quad j=1,2,3.
\end{align}

Substituting equations (10) and (12) into equation (9) yields

\begin{align}
\hat{X}_j = \theta_{Lj} \sigma_j (\hat{r}_j - \hat{w}) , & \quad j=1,2,3.
\end{align}

Turning to the consumption changes, the demand for good $j$ is given by $C_j = C_j(p_1, p_2, p_3, Y)$ and hence

\begin{align}
dC_j = \sum_{h=1}^{3} \frac{\partial C_j}{\partial p_h} dp_h + \frac{\partial C_j}{\partial Y} dY , & \quad j=1,2
\end{align}

and

\begin{align}
dC_3 = \sum_{h=1}^{3} \frac{\partial C_3}{\partial p_h} dp_h + \frac{\partial C_3}{\partial Y} dY + \sum_{h=1}^{3} \frac{\partial C_3}{\partial p_h} dp_h
\end{align}
where \( C^f_3 \) and \( C^i_3 \) refer to final and intermediate use of nontradables, respectively. When the income and price effects are separated in the first term via the Slutsky decomposition, equations (14) and (15) become

\[
dC_j = \sum_{h=1}^{3} \frac{\partial C^i_3}{\partial p_h} U dp_h + \frac{\partial C^f_3}{\partial Y} (dY - \sum_{h=1}^{3} C^f_h dp_h), \quad j=1,2
\]

and

\[
dC_3 = \sum_{h=1}^{3} \frac{\partial C^f_3}{\partial p_h} U dp_h + \frac{\partial C^i_3}{\partial Y} (dY - \sum_{h=1}^{3} C^f_h dp_h) + \sum_{h=1}^{3} \frac{\partial C^i_3}{\partial p_h} C^i_h dp_h
\]

National income, \( Y \), is given by

\[
Y = \sum_{j=1}^{3} p_j X_j - \sum_{i=1}^{m} q_i I_i - p^i_3 C^i_3 + \sum_{j=1}^{2} T_j p_j t_j
\]

and because the \( dq_i \) are assumed to be zero, since profit maximization and separability imply

\[
\sum_{j=1}^{3} p_j dX_j = 0, \quad \sum_{i=1}^{m} q_i dI_i = 0 \quad \text{and} \quad p^i_3 dC^i_3 = 0,
\]

and since trade taxes-cum-subsidies are initially zero, it follows from differentiation of equation (18) that

\[
dY = \sum_{j=1}^{3} X_j dp_j - \frac{C^i_3}{p^i_3} dp_3 + \sum_{j=1}^{2} T_j p_j t_j
\]

where \( T_j \) is the initial quantity traded and \( t_j \) is the proportional trade tax. Since \( p_j dt_j \) is the same as \( dp_j \) for the import-competing sector and minus \( dp_j \) for the export sector, and since \( X_j + T_j = C_j \) for the import-competing sector and \( X_j - T_j = C_j \) for the export sector, and \( X_3 = C^f_3 + C^i_3 \), the substitution of equation (19) into equations (16) and (17) reduces \( dC_j \) to
\[ dc_j = \sum_{h=1}^{3} \frac{\partial C_j}{\partial p_h^j} \frac{dp_h}{U}, \quad j=1,2 \]

and

\[ dc_3 = \sum_{h=1}^{3} \left( \frac{\partial C_3^f}{\partial p_h^f} + \frac{\partial C_3^i}{\partial p_h^i} \right) dp_h \]

or, when expressed in proportional form, to

\[(20) \quad \hat{C}_j = \sum_{h=1}^{3} E_{jh} \hat{p}_h, \quad j=1,2 \]

and

\[(21) \quad \hat{C}_3 = \sum_{h=1}^{3} E_{3h} \hat{p}_h \]

where \( E_h = E_{3h} (1-\delta) + E_{3h}^i \delta \) and is the weighted average elasticity of total demand for good 3 with respect to the price of good h, \( E_{jh} \) is the income-compensated elasticity of final demand for good j with respect to the price of good h (\( h,j = 1,2,3 \)), \( E_{3h}^i \) is the elasticity of intermediate demand for good 3 with respect to the price of good h, and \( \delta \) is the proportion of nontradables' output used as an intermediate input.

The condition for obtaining a new equilibrium in the market for the nontradable product can now be obtained by differentiating equation (4) to get \( \hat{C}_3 = \hat{X}_3 \). Then by equating \( \hat{C}_3 \) from equation (21) with \( \hat{X}_3 \) from equations (13) one obtains:

\[(22) \quad \theta_{13} \sigma_3 (r_3 - \hat{w}) = \sum_{h=1}^{3} E_{3h} \hat{p}_h \]

The effects of a small change in \( p_1 \) or \( p_2 \) in response to the imposition of final-product trade taxes-cum-subsidies can now be summarized in the following equations, all of which are derived from the differential forms of equations (1) to (4):
(i) For competitive-equilibrium zero profits by firms:

\[ \hat{\vartheta}_{L_j} w + \vartheta_{K_j} r_j = (\hat{p}_j - \gamma_{n_j} \hat{p}_3)/V_j \quad j=1,2,3 \]

(ii) For full employment:

\[ \sum_{h=1}^{3} \lambda_h \sigma_h (\hat{w} - \hat{r}_h) = 0 \]

(iii) For equilibrium in the market for nontradable products:

\[ \vartheta_{L_3} \sigma_3 (\hat{r}_3 - \hat{w}) = \sum_{h=1}^{3} E_h \hat{p}_h \]

These five equations can be solved simultaneously to obtain the following expressions for changes in the five relevant parameters, \( \hat{w} \), \( \hat{r}_1 \), \( \hat{r}_2 \), \( \hat{r}_3 \) and \( \hat{p}_3 \) relative to the change in \( \hat{p}_j \) (\( j = 1,2 \)):

\[ \Delta \hat{w}_j = \hat{w}/\hat{p}_j = [A_j \vartheta_{L_3} \sigma_3 (1 - \gamma_{n_3})/V_3 - A_j \vartheta_{K_3} E_3 - \vartheta_{n_3} E_j] / \vartheta_{L_3} \sigma_3 \]

\[ \Delta \hat{r}_{jj} = \hat{r}_j/\hat{p}_j = [\vartheta_{L_3} \sigma_3 /V_j + \vartheta_{L_j} \vartheta_{K_3} E_j + A_j \vartheta_{L_j} \vartheta_{K_3} E_3 - A_j \vartheta_{L_j} \vartheta_{L_3} \sigma_3 / V_j] / \vartheta_{L_3} \sigma_3 \]

\[ \Delta \hat{r}_{hj} = \hat{r}_h/\hat{p}_j = - \Delta \hat{w}_j \vartheta_{L_h} \vartheta_{K_h} - \gamma_{n_j} \vartheta_{n_h} / V_h \vartheta_{K_h} \quad , h=1,2,3 \]

\[ \Delta \hat{r}_{3j} = \hat{r}_3/\hat{p}_j = [E_j + A_j \vartheta_{L_3} \sigma_3 (1-\gamma_{n_3})/V_3 + A_j \vartheta_{L_3} \sigma_3 ] / \sigma_3 \]

\[ \Delta \hat{p}_{3j} = \hat{p}_3/\hat{p}_j = A_j \]

where
(28) \[ A_j = \frac{B_1 \theta_1 \sigma_3 / V_1 + (B_1 + B_2 + B_3) \theta_{K3} \sigma_3 / V_1}{(B_1 + B_2) \theta_2 \sigma_3 (1 - \gamma_{n3}) / V_3 - (B_1 + B_2 + B_3) \theta_{K3} \sigma_3 / V_3 + (B_1 \gamma_{n1} / V_1 + B_2 \gamma_{n2} / V_2) \theta_{K3} \sigma_3} \]

and

(29) \[ B_j = \lambda_{Lj} \sigma_j / \theta_{Kj} \sum_{h=1}^{3} \lambda_{Lh} \sigma_{h}, \quad j=1,2,3. \]

These equations summarise the effects of a trade tax-cum-subsidy which changes both the producer price and the consumer price of product \( j \) by the same amount. If instead a producer price tax-cum-subsidy alone were to be imposed, the equations of change would be the same except the terms with \( E_j \) would not appear. Alternatively, if only a consumer tax-cum-subsidy on product \( j \) were to be imposed, the equations of change would be as above except the first term in equations (24) and (28) would not appear.

Once these equations are solved, it is possible also to generate the effects on production and consumption of each of the three products, using equations (13) (20) and (21). The effect on a sector's net exports, \( T_j \), where \( T_j = X_j - C_j \) \((j = 1,2)\) is then given by

(30) \[ \hat{T}_j = (\hat{C}_j - s_j \hat{X}_j) / (1 - s_j), \quad j=1,2 \]

where \( s_j \) is the self-sufficiency ratio for sector \( j \) \((s_j = X_j / C_j)\). Finally, the effect on the number of workers in each sector can be derived by noting from equation (2) that \( L_j = \alpha_{Lj} X_j \), from which it follows after some manipulation that

(31) \[ \hat{L}_j = \hat{X}_j / \theta_{Lj}, \quad j=1,2,3. \]
As noted by Cassing (1981) and others, the effect of trade policies on the real income of a person or group \( n \) depends not just on the changes in product prices and factor rewards but also on the initial proportions of their income obtained from different factors \( (a_{Ln}, a_{Kln}, a_{K2n} \text{ and } a_{K3n}, \text{ the sum of which is unity}) \) and the initial proportions of their expenditure on the three products \( (b_{1n}, b_{2n}, \text{ and } b_{3n}, \text{ the sum of which is also unity}) \). The elasticity of \( n \)'s real income with respect to \( p_j \) is given by

\[
\frac{\Delta Y_n}{Y_n} / \frac{\Delta p_j}{p_j} = a_{Ln} \frac{\Delta w_j}{w_j} + \sum_{h=1}^{3} a_{Khn} \frac{\Delta r_h}{r_h} - b_{jn} - A_j b_{3n} - Z_{nj}
\]

where \( Z_{nj} \) is the elasticity of \( n \)'s personal income tax with respect to \( p_j \). Assuming income tax rates are adjusted to keep overall tax revenue constant and all groups face the same average tax rate, then \( Z_{nj} \) has the value \( \rho_j \) in the case of a price-raising trade tax-cum-subsidy, \( \eta_j / W_j \) in the case of a production subsidy and \( b_j \) in the case of a consumption subsidy where \( \rho_j \) is the ratio of sector \( j \)'s net exports to GDP, \( \eta_j \) is sector \( j \)'s share of GDP and \( b_j \) is the share of national expenditure on the output of sector \( j \). However, for the poor agrarian economy, where tax collection costs would outweigh the revenue collected in rural areas, it is necessary to assume farmers are not taxed, so \( Z_{nj} \) is omitted from equation (32) for farmers but is divided by \( (1 - \eta_j) \) for other groups in the case of the poor country. 20

There are seven obvious groups of people to consider with this model. Four of them are factor owners, namely farmers, who are assumed to supply all their own labour, land and other forms of capital (although it is a simple matter to alter this assumption to allow, for example, for hired farm labour or land rental); industrial capitalists; other capitalists, whose capital is employed to produce nontradables; and non-farm workers. The other three groups are bureaucrats in the agricultural and industrial development ministries, whose career prospects are
assumed to be related to output and employment levels in the sectors they serve (changes in which are given by equations (13) and (31)), and bureaucrats in the finance ministry whose prospects are related to the volume of tax revenue (Downs 1967; Niskanen 1971). The latter, though, would be affected only if tax rates were unable to be adjusted.

Unfortunately, equations (23) to (29) are too complex to be able to readily examine the effects of different parameters on the welfare of these groups. It is helpful therefore to select representative parameters for a poor agrarian economy and a rich industrial economy. One such set is provided in Table A.1. Values for the factor intensities of production and value-added shares of output are selected from data in the United Nations' National Account Statistics: Main Aggregates and Detailed Tables. (See also Anderson 1987, Table 2.) For simplicity the factor substitution elasticities are assumed to be unity. Tax rates and the intersectoral distribution of labour data (the \( \lambda \)'s) are from the World Bank's World Development Report. The income-compensated own- and cross-price elasticities of final demand for nontradables (the \( E_{3j} \)'s) are derived from estimates of expenditure shares and income elasticities of demand reported in Lluch, Powell and Williams (1977, Ch. 3) and Theil and Clements (1987, Ch. 2) together with the following formula from Theil and Clements (based on the assumption that the utility function is additive in the three goods):

\[
E_{3j} = \phi \eta_3 (\delta_{3j} - b_j \eta_j) \quad , j=1,2,3
\]

where \( \eta_j \) is the aggregate income elasticity of final demand, \( b_j \) is the aggregate average share of final expenditure on good \( j \), \( \delta_{3j} \) is the Kronecker delta (=1 if \( j=3 \) and =0 otherwise) and \( \phi \) is the income flexibility (the reciprocal of the income elasticity of the marginal utility of income, which Theil and Clements suggest is around -0.6 for both rich and poor countries).21 The variations in the average
expenditure shares (the b's) of different groups around the national aggregates selected from the above-mentioned demand analyses reflect the differences in per capita incomes of those different groups.

Using these assumed parameter values, the effects of a change in $p_1$ or $p_2$ on factor rewards, the price of nontradables, output, employment and the real incomes of the four different groups of factor owners have been calculated and are reported in elasticity form in Table 1 of the paper.
TABLE A.1: Assumed parameter values for two representative economies\(^a\)

<table>
<thead>
<tr>
<th>Parameter/Sector</th>
<th>Poor agrarian economy</th>
<th>Rich industrial economy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(\theta_{1j})</td>
<td>0.70</td>
<td>0.70</td>
</tr>
<tr>
<td>(v_j)</td>
<td>0.80</td>
<td>0.60</td>
</tr>
<tr>
<td>(\lambda_{1j})</td>
<td>0.60</td>
<td>0.10</td>
</tr>
<tr>
<td>(c_j)</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>(v_{nj})</td>
<td>0.076</td>
<td>0.150</td>
</tr>
<tr>
<td>(E_{1j})</td>
<td>-0.250</td>
<td>0.087</td>
</tr>
<tr>
<td>(E_{2j})</td>
<td>0.318</td>
<td>-0.691</td>
</tr>
<tr>
<td>(E_{3j})</td>
<td>0.300</td>
<td>0.187</td>
</tr>
<tr>
<td>(E_{7j})</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>(E_{8j})</td>
<td>0.210</td>
<td>0.131</td>
</tr>
<tr>
<td>(b_j) for farmers</td>
<td>0.58</td>
<td>0.14</td>
</tr>
<tr>
<td>(b_j) for non-farm capitalists</td>
<td>0.28</td>
<td>0.24</td>
</tr>
<tr>
<td>(b_j) for non-farm workers</td>
<td>0.58</td>
<td>0.14</td>
</tr>
<tr>
<td>(b_j) in aggregate</td>
<td>0.55</td>
<td>0.15</td>
</tr>
<tr>
<td>(\rho_j)</td>
<td>0.20</td>
<td>0.017</td>
</tr>
<tr>
<td>(\pi_j)</td>
<td>0.60</td>
<td>0.10</td>
</tr>
</tbody>
</table>

\(^a\) Parameter values are derived in an internally consistent way with the additional assumption that the income elasticities of demand for the output of sectors 1, 2 and 3 are 0.65, 1.48 and 1.40 for the poor agrarian economy and 0.20, 1.21 and 1.20 for the rich industrial economy. It is also assumed that national taxation amounts to 12.5 per cent of income in the poor country and 25 per cent in the rich country. It follows from the above parameters that \(\delta\), the share of nontradables production used as intermediate inputs, is 0.3 in the poor country and 0.4 in the rich country.
1. Evidence of policy discrimination against agriculture and in favour of industry in less-developed countries is available in Little, Scitovsky and Scott (1970), Balassa and Associates (1971), Peterson (1979), Bates (1981) and Krueger, Schiff and Valdes (1988), while evidence that policies tend to favour agriculture relative to industry in advanced industrial countries can be found in Johnson (1973), Gulbrandsen and Lindbeck (1973), Tracy (1982) and Anderson, Hayami and Others (1986). The extent of the change from effectively taxing to positively assisting agriculture relative to industry in East Asia is documented in Anderson (1983) and Anderson, Hayami and Others (1986). Two exceptions to this rule among industrial countries are land-abundant Australia and New Zealand (Anderson and Garnaut 1987).

2. See Baldwin (1985), Anderson and Baldwin (1987) and the references therein on attempts to explain inter-industry differences in manufacturing protection in various industrial countries. Fewer attempts have been made to explain inter-industry differences in agricultural price distortions, but two such studies are Anderson (1978) and Gardner (1987). Among the recent papers that have focussed on explaining the existence of tariffs rather than free trade are those by Baldwin (1982), Brock and Magee (1978, 1980), Magee (1980), Mayer (1984), Wellisz and Findlay (1984), and Young and Magee (1986). See also the earlier paper on nineteenth century agricultural trade policy in Europe by Kindleberger (1950).
3. This partial equilibrium conceptualization of the political market thus incorporates, via the supply curve, the political opposition from all other groups to the lobbying actions of any particular group seeking assistance. In practice, the reaction of opposing groups may also include seeking more assistance for their own group. Thus the demand and supply curves need to be specified for particular levels of assistance in other sectors.

4. If both tradable products were to change by the same proportion, the net changes in the price of nontradables and in factor rewards are not the same (that is, the elasticities for each variable do not sum to unity). This differs from what Lerner's (1936) symmetry theorem leads us to expect for a model without intermediate inputs. The reason is that when intermediate inputs are included and are used more in some sectors than others, a given product price change generates different changes in effective assistance for the various sectors.

5. The elasticity of real farm income assumes farms are owner-occupied. If farmers also sold part of their labour services they would be affected less than suggested in row 11 of Table 1 (their elasticity would be closer to that of non-farm workers). On the other hand, if as landlords they hired in farm labour they would be affected more than suggested. The real income elasticity for a pure landlord with a spending pattern equivalent to urban capitalists and not subject to income tax would be -0.79 in response to an agricultural product price fall and -0.64 in response to an industrial product price rise, compared with the -0.37 and -0.21 shown in Table 1 for the owner-occupying farmer in the poor agrarian economy. This difference helps explain Krueger's (1989) finding that government policies tend to discriminate less against agriculture in countries with a more skewed distribution of farm land ownership.
6. The belief that jobs are created by industrial protection policy is very common but is not well founded, especially when the reasons people drift to the city are taken into account (see Corden (1974, Ch. 6) and Corden and Findlay (1975)). An obvious extension to the present analysis would be to include wage distortions and Harris-Todaro type unemployment in the model in the Appendix.

7. Notice that the sector producing final industrial products in the poor country is a slight net exporter. This is because the agricultural sector’s exports alone are insufficient to pay for the imported intermediate inputs in this simulated economy. It would only take a small change in assumed parameter values to make it an import-competing sector, however.

8. Notice that the values in Section II of Table 2 sum to zero (apart from rounding errors). This is necessarily the case for the model presented in the Appendix because technically it refers to infinitesimally small changes from equilibrium.

9. The ingenuity of farmer cooperatives in finding ways to entice membership is quite remarkable. See, for example, Olson (1965), George and Saxon (1986) and Bolin et al. (1986) for examples in the United States, Japan and Sweden, respectively.

10. A recent study found that between 1900 and 1986, international prices for foods other than beverages declined on average by 0.5 per cent per year and non-food agricultural prices declined by 0.8 per cent per year, relative to industrial product prices (Grilli and Yang 1988). See also Spraos (1980) and Sapsford (1985).
11. Exchange rate policy is occasionally used as a form of short-term sectoral assistance in industrial countries, however. See the analysis in Corden (1981).

12. See, for example, Byerlee and Sain (1986) and Peterson (1979).

13. During the period from 1960 to 1981, the number of people employed in agriculture in industrial countries declined at an average rate of 2.8 per cent per year (OECD 1983).


15. Becker (1983, 1985) has argued that, other things equal, we should observe redistributive policy instruments which impose the lowest deadweight costs on the economy. Presumably part of the reason for trade policies being used as a redistributive devise is that they provide more covert forms of assistance than direct payments since the latter have to appear in the finance ministry's annual budget papers. This makes it more costly for potential opponents to determine the adverse effects on them of those policies. In poor agrarian economies there is also the problem that raising and dispersing revenue other than via trade taxes involves relatively high administrative costs. This is part of the reason for the bias in assistance toward import-competiting and against export industries in these countries especially.

16. For an analysis of some reasons for the plethora of sometimes contradictory policies affecting farmers in industrial countries, see Raussner (1982) and Raussner and de Gorter (1989). The issue has also been raised in the
developing-country context by Krueger (1989). The model in the appendix to this paper could be extended to include domestically-produced tradable intermediate inputs for computing the distributional effects of input price or trade policies to compare with the effects of a similar rate of effective assistance to a sector via output price or trade policies.

17. Apart from wanting to be elected or re-elected, the objectives of politicians might include securing jobs for family members or friends in government-assisted firms or organizations, promoting party ideology and the like. On the role of ideology, personality and party, see Peltzman (1984) and Kalt and Zupar (1984).

18. Since the competitive producer takes factor and input prices as given and varies the \( \alpha \)'s so as to set the derivative of costs equal to zero, it follows that:

\[
\gamma_{Lj} \alpha^L_{Lj} + \gamma_{Kj} \alpha^K_{Kj} + \sum_{i=1}^{n} \gamma_{ij} \alpha^i_{ij} = 0, \ j = 1, 2, 3.
\]

This is the Wong-Viner envelope theorem (Jones 1975).

19. There is an implicit assumption here that the collection of taxes and dispersement of subsidies is undertaken in a costless and nondistortionary way.

20. Obviously this is only one of numerous assumptions about the change in tax policy that might accompany a change in price-distorting policies. It assumes there is an enclave to the economy producing free public goods, the social demand for which is unaffected by such policy changes.
21. The author is extremely grateful for guidance from Ken Clements in obtaining representative values for these price elasticities of demand.
REFERENCES


Balassa, B. and Associates (1971), The Structure of Protection in Developing Countries, Baltimore: Johns Hopkins University Press.


Byerlee, D. and G. Sain (1986), "Food Pricing Policy in Developing Countries: Bias Against Agriculture or for Urban Consumers?", American Journal of Agricultural Economics 68 (4): 961-69, November.


Gulbrandsen, O. and A. Lindbeck, (1973), The Economics of the Agricultural Sector, Stockholm: Almqvist and Wiksell.


