

The Political Market for Agricultural Protection

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ABSTRACT

Why do poor countries tax agriculture more than other sectors, whereas rich countries subsidize farmers? Using the neoclassical economic theory of the political market for distortionary policies, an explanation is sought by examining changes to factors affecting the supply and demand curves in that political market. The aggregate effect of these changes is a shift in both the demand curves and the supply curve to the right as industrialization proceeds.

THE POLITICAL MARKET FOR AGRICULTURAL PROTECTION

Most countries seem to have a dual relationship with their agricultural sector. On one hand they often tax it, especially at the early stage of development. On the other hand, they offer a number of direct measures of support. For example, they subsidize agricultural credit and fertilizer use and create public investment programs.

Because agricultural market interventions are the result of legislative policies, administrative measures, and pressure group actions, it is difficult to discern a definite pattern of agricultural measures and countermeasures.

Market intervention policies have played a major role in the differential performance of agricultural sectors in developing and developed countries alike. These policies include price supports, taxes, subsidies, tariffs, and interventions in the exchange rate market.

Agricultural policy in advanced industrial countries has been characterized by strong protection of domestic producers through trade restrictions and direct price supports that originated between World War I and World War II when prices were depressed. In contrast, the developing countries have exploited agriculture by such means as export taxes and overvalued exchange rates (here, the objective was to stimulate industrial growth because this sector is believed to generate savings).

Studies of industrial and newly industrialized countries in East Asia attempted to explain variations in the level of agricultural protection in terms of political and economic factors (Anderson and Hayami 1986; Honma and Hayami 1986). They concluded that the higher nominal protection rates are, the more developed the country is, and that there are no biases specific to particular countries. In general, their results showed that the level of agricultural protection is explained by

factors common to advanced industrial countries. This paper attempts to identify factors underlying agricultural protectionism (really disprotectionism) in an early stage of economic development through comparison of a group of developing countries over time.

The Market for Agricultural Protection

The question we are addressing is why farmers are taxed in poor countries and subsidized in rich countries. Economic theory provides at least two frameworks to explain this outcome. One emphasizes the idea that these policies are essentially income redistributive measures and that, given political forces, the programs are attempts to redistribute efficiently (e.g., Becker 1983; Harberger 1978; Peltzman 1976). The political elements in this framework constitute a demand for redistribution, and the economic constraints constitute the cost or supply side. In this context, the hypothesis of efficient redistribution states that policies are chosen to minimize the deadweight losses involved in the transfer, given political forces. The increase in producers' rents per dollar given up of consumers' surplus and taxpayers' income is the marginal cost of redistribution. The demand for redistribution will be directly related to the political power of a sector or commodity group.

The revealed weighing of consumers and producers in a social welfare function is treated as the result of political and economic characteristics of interest groups. Economic factors promoting the political power of a commodity group or sector are those giving the group common economic interests and reducing the cost of investment in lobbying. This framework has been very fruitful in explaining interindustry patterns of protection within the agricultural sector (e.g., Gardner 1987).

To address the previous question, it is useful to use a framework allowing for consideration of characteristic features of the development process. It is also useful to draw on the neoclassical economic theory of politics (e.g., Breton 1974; Buchanan and Tollison 1984; Buchanan and Tullock 1962; Downs 1975), which assumes that political leaders adopt policies to maximize their chances of remaining in office. Demand for and supply of agricultural protection may be considered the

schedules of marginal revenue and marginal cost to political leaders expected from selecting policies to raise the level of agricultural protection.

It would be reasonable to assume that the marginal revenue curve is downward-sloping because the intensity of a political campaign for protection is likely to diminish at a higher level of protection, whereas the resistance is likely to multiply, resulting in the rising marginal cost curve. The equilibrium of maximum expected profit for politicians will be established at the intersection between the marginal revenue and the marginal cost curves. In Figure 1, the horizontal axis represents the protection rate from border intervention, direct price support, and subsidies. The vertical axis represents the marginal gain and the marginal loss that politicians expect to incur if they increase the protection rate by one unit. Changes in the equilibrium level of protection correspond to shifts in the marginal revenue and the marginal cost curves.

With this political market framework in mind, the task becomes one of examining the factors affecting the marginal cost and revenue curves in countries at different stages of development. In the early stage of economic development, the majority of people engage in agriculture. The demand for farm price supports, however, is typically very weak because of the high cost of collective action by farmers relative to the potential benefits from lobbying. Agricultural populations are uneducated and live sparsely over wide areas with poor communications and transportation, making collective action expensive to organize. The benefits from lobbying for higher producer prices are small because a relatively small production share of subsistence farmers is sold. In addition, there are no other significant groups, such as domestic industries supplying farm inputs and arguing for policies favorable to agriculture, because these groups have not yet emerged.

The demand for industrial assistance policies, by contrast, is relatively strong. Industrialists are typically better educated, based in urban centers, and small in number. Thus, the cost of collective political lobbying activity is comparatively low. Benefits from lobbying for lower

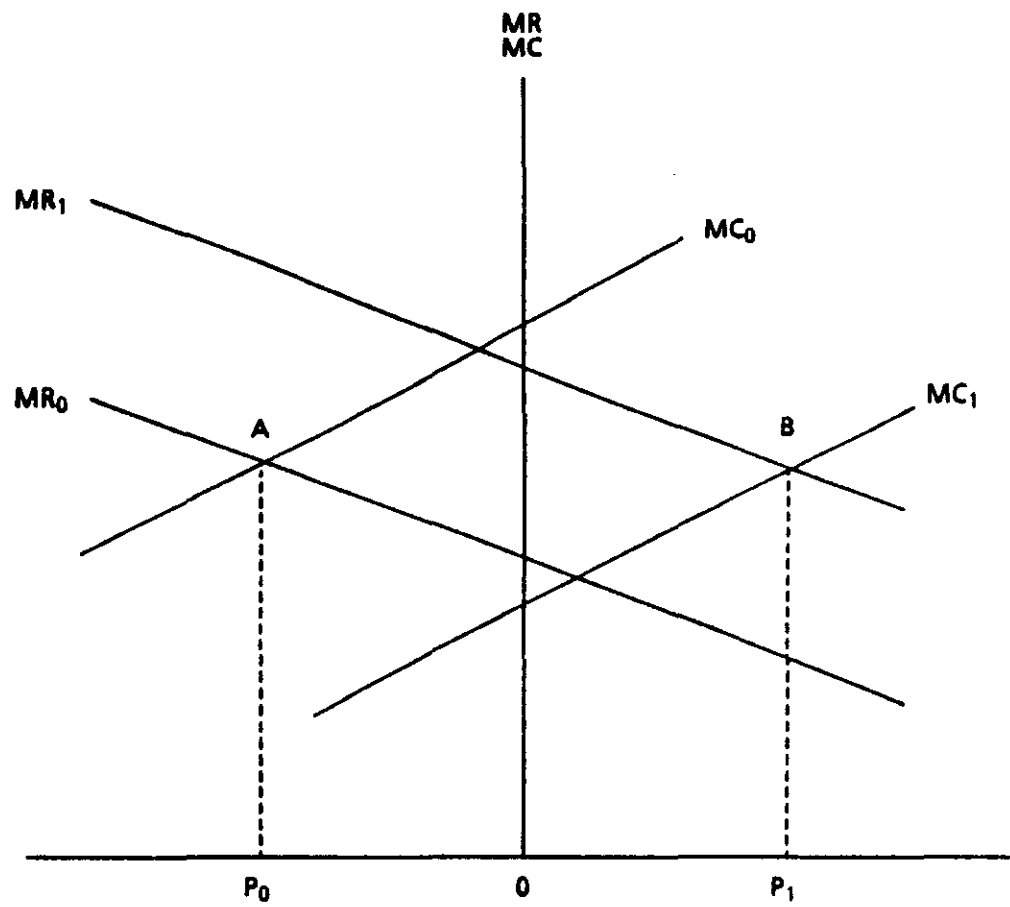


Figure 1. Protection rate

agricultural prices arise in two ways. One is through the effect that reduced agricultural export earnings have on reducing the supply of foreign exchange, thereby raising its price. This depreciation of the currency raises the local currency price of import-competing manufactures. The second important benefit results from the impact of low food prices on wages. Because incomes of urban wage earners are still low and their Engel coefficient is high, high food prices tend to trigger urban disruption. Industrialists will support their workers in resisting food price increases for fear of the increased cost of living and the resulting demands of workers for higher wages.

On the supply side, the government's cost of assisting a sector or group, in terms of reduced political support from the rest of the society, is inversely proportional to the size of that sector or group. This is accentuated by social and fiscal characteristics of agrarian economies. For nationalistic or defense reasons, there is often a desire to promote a less specialized economy, and governments regard export taxes as the least costly means of raising revenue. For these reasons, in their profit calculations, politicians tend to weigh lightly the demands of rural dwellers relative to those of urban dwellers. This tendency can be translated into a low marginal revenue and a high marginal cost of protection. Thus, in an economy in which the food problem dominates, the agricultural protection rate is expected to be negative. In Figure 1, A represents the point at which the expected profits of politicians are maximized and which corresponds to a negative rate of protection.

The equilibrium protection rate will change as the economy develops. As subsistence farmers become more commercialized, the share of marketed production rises and thus increases the potential benefits from seeking higher producer prices. While the farm population declines, their educational level rises and the communication and transportation infrastructure in rural areas improves. Rural people become more sensitive about their relative income and the level of living, while the cost of organizing themselves declines. There is an emergence of farmer organizations that, once established,

have a vested interest in lobbying not only on behalf of farmers but also on their own behalf. The same is true of a new group of manufacturing and service industries producing farm inputs and processing farm outputs. Correspondingly, the marginal revenue curve of protection for politicians will shift upwards in Figure 1.

At the same time, the relative decline of agriculture in gross domestic product (GDP) as an economy develops means that the political cost to the government of supporting farmers gradually falls over time relative to the political cost of supporting expanding manufacturing industries. It also means that nationalistic or security motivations for assisting the import-competing infant industrial sector gradually disappear. As the food problem loses ground due to increases in per capita income associated with lower Engel coefficients, urban dwellers become less resistant to high food prices. The growing problem of free-riding among urban consumers means that the government has less to lose politically from this group. Opposition from industrialists is softened as smaller increases in nominal wages are sought after food price increases. Labor's share of costs declines as industries become more capital intensive. People become more tolerant of agricultural protection as they perceive the "virtues of country life" as their interest in environmental conservation rises. Correspondingly, the marginal cost curve in Figure 1 declines.

Thus, in the course of economic development, the optimum level of agricultural protection in politicians' calculations will change from negative (A) to positive (B). Table 1 shows a strong correlation between the country's wealth and the extent to which policies move from taxation to protection.

Degrees of Intervention

A series of studies financed by the World Bank has provided data on domestic and border prices of agricultural commodities along with a measurement of intervention in the exchange rate market and protection afforded to the nonagricultural sector in 18 developing countries during the

Table 1. Sectorial direct nominal protection coefficients, 1975-84

Country	NPR ^d	GNP _{pc} ^b
Ivory Coast	-29	660
Pakistan	-26	380
Thailand	-24	800
Argentina	-18	2,130
Zambia	-16	390
Egypt	-15	610
Philippines	-10	580
Malaysia	-9	2,000
Brazil	-5	1,640
Colombia	-5	1,320
Sri Lanka	-5	380
Dominican Republic ^c	-4	790
Morocco	-1	560
Portugal	29	1,970
Turkey ^d	34	1,080
Chile ^d	56	1,430
Korea	89	2,150

^aNPR_d: Direct nominal protection rate (domestic producer price/border price evaluated at official exchange rate) - 1.

^bGNP_{pc}: Reported in *World Development Report* (World Bank 1985).

^c1975-85.

^d1975-83.

1960-84 period. Table 2 presents estimates of the degree of direct and indirect intervention in exportable and importable crops (see the country studies cited in Table 2 for concepts and formulas used in calculating the direct and indirect nominal protection rates for each commodity). They are division indexes of protection coefficients for commodities representing between 50 percent and 70 percent of the total value of agricultural output for each of the 18 countries in the series. The impact of "direct" pricing policies given in columns (2), (4), (6), and (8) of Table 2 provides an estimate of the percentage by which domestic producer prices diverged from those that would have prevailed under free trade. The direct nominal protection rate measures the proportional difference between the domestic producer price (relative to nonagricultural prices) and the border price (after adjustment for transport, storage, and other costs and quality differentials) measured at the official exchange rate. A simple average for a subset of commodities considered staples shows a subsidy of 3.1 percent, and

Table 2. Average nominal protection rates, 1960-84

Country	Indirect (1)	All		Staples		Importables		Exportables	
		Direct (2)	Total (3)	Direct (4)	Total (5)	Direct (6)	Total (7)	Direct (8)	Total (9)
(Percent)									
Argentina	-21.2	-18.6	-39.8	-18.4	-39.6	N/A	N/A	-18.0	-39.2
Brazil (66-83)	-17.5	11.0	-6.5	15.5	-2.0	9.9	-7.6	4.5	-13.0
Chile (60-82)	-19.8	-0.8	-20.6	-1.3	-21.1	-1.3	-21.1	12.8	-7.0
Colombia (60-83)	-25.4	-4.8	-30.2	10.1	-15.3	21.6	-3.8	-8.1	-33.5
Dom. Republic (66-85)	-21.8	-19.0	-40.8	-18.6	-40.3	18.0	-3.8	-25.0	-46.8
Egypt (65-84)	-21.4	-27.6	-49.0	-23.0	-44.4	-20.6	-42.0	-31.0	-52.4
Ghana (60-74)	-31.3	14.6	-16.8	36.9	5.5	40.1	8.7	-47.1	-78.4
Ivory Coast (60-82)	-22.2	-24.8	-47.0	25.7	3.5	25.7	3.5	-28.8	-51.0
Malaysia (60-83)	-8.0	-9.6	-17.6	25.4	17.4	25.4	17.4	-12.7	-20.7
Morocco	-16.6	-15.8	-32.4	-14.0	-30.6	-7.5	-24.1	-16.7	-33.3
Pakistan	-47.4	-7.0	-54.4	-2.6	-50.0	-4.9	-52.3	-5.7	-53.1
Philippines	-22.6	-7.8	-30.4	-3.1	-25.7	9.0	-13.6	-11.5	-34.1
Portugal	-1.2	-16.6	-17.8	-7.9	-9.1	18.2	17.0	-19.0	-20.2
South Korea	-27.4	40.0	12.6	37.6	10.2	38.2	10.8	N/A	N/A
Sri Lanka	-32.0	-16.4	-48.4	24.6	-7.4	24.6	-7.4	-22.4	-54.4
Thailand	-14.6	-26.0	-40.6	-28.0	-42.6	N/A	N/A	-25.3	-39.9
Turkey (60-83)	-36.8	4.2	-32.6	13.1	-23.7	7.5	-29.3	2.9	-33.9
Zambia (66-84)	-28.2	-14.3	-42.5	-16.5	-44.8	-16.5	-44.8	-3.0	-31.3
Average	-23.1	-7.7	-30.8	3.1	-20.0	11.7	-12.0	-14.9	-37.8

SOURCES: Calculated from Atsain, M'Bet and Ehouman 1988; Avillez, Finan, and Josling 1988; Bhalla 1988; Carvalho and Brandao 1988; Dethier 1989; Garcia and Llamas 1989; Green and Roe 1989; Hamid, Nabi, and Nasim 1990; Hurtado, Valdes, and Muchnik 1990; Intal and Power 1990; Jansen 1988; Jenkins and Lai 1989; Moon and Kang 1989; Olgun and Kasnakoglu 1988; Siamwalla and Setboonsarng 1989; Stryker 1990; Sturzenegger 1990; Tuluy and Salinger 1989.

importables also have a positive protection of 12 percent. As can be seen in column (8), most countries adopted policies resulting in the equivalent of export taxes for the exportable commodities, the average being -15 percent.

The most surprising finding, shown in column (1), is the impact of indirect intervention. Indirect effects include both the effect of trade and macroeconomic policies on the real exchange rate and the extent of protection afforded to nonagricultural commodities. Discrimination against agricultural commodities inherent in policies external to agriculture had a larger impact on agricultural incentives (a tax equivalent of 23 percent) than did policies aimed directly at agriculture. For exportable crops, indirect negative protection intensified the negative direct protection, resulting in large total negative protection equivalents (column 9). Although staples and import-competing crops show positive direct protection, when indirect policies are considered, the effects of direct policies were in many instances reversed. Column (5) shows an average tax of 20 percent for staples, and column (7) shows a 12 percent discrimination against import-competing commodities.

If all commodities are taken together, column (2) shows that agricultural commodities were protected only in four countries during this period (Brazil, Ghana, South Korea, and Turkey) if indirect price interventions are ignored. The results for total price interventions, however, show that the dominant pattern has been one of systematic and sizable discrimination against the agricultural sector (except for South Korea).

Regression Analysis

To test the hypotheses formulated here, a multiple regression analysis is undertaken. It relates the measured level of agricultural protection to a set of explanatory variables that capture the country's position in the hierarchy of growth, the comparative advantage in agriculture, and the effect of macropolicies.

The dependent variable used in the regression analysis is the nominal protection coefficient (NPC) for the agricultural products included in the analysis. It is the multiple by which the domestic value of agricultural output has been raised by government policies above its value at international prices.

The country's wealth and its stage and pattern of development will be represented by income per capita and by agriculture's share in GDP, labor force, and consumption. The country's wealth is expected to be positively correlated with the dependent variable because rich countries tend to protect agriculture directly. Degree of industrialization will be captured by any of the other three variables, and they are expected to be negatively correlated with the protection coefficients. As the sector becomes smaller, the cost of protecting it decreases. There is less resistance from the rest of the economy, and there is a tendency from the political system to redistribute in favor of the disadvantaged sector.

Two alternative variables are used to represent comparative advantage of agriculture: land area per capita and a labor productivity ratio. The productivity ratio is an index of the ratio of labor productivity in agriculture to labor productivity in industry. Labor productivity in agriculture is measured as agricultural output per worker, and we approximate labor productivity in industry as average GDP per worker for the whole economy. It is expected that the agriculturally well-endowed economies will discriminate against agriculture, thus seemingly extracting some rents.

The share of trade in agricultural commodities in GDP is also included. This variable can be thought of as a proxy for comparative advantage in agriculture, and it is also related to the revenue motive as a basis for developing country governments to tax the sector. The expected correlation is negative.

Two alternative variables are included to represent effects of macropolicies and import substitution policies as opposed to sector-specific commodity interventions captured by NPCs.

Currency overvaluation, represented by deviation of the equilibrium exchange rate to the actual exchange rate, will be assumed to be the link between macropolicy and the sector. The more overvalued the currency is, the more apparent the pressure for direct protection becomes. This relationship shows an offsetting effect of commodity market intervention when macropolicy results in an overvalued currency. The indirect nominal protection coefficient (NPCI) captures the effects of import policies that protect the nonagricultural sector and the effects of interventions in the exchange rate market. The expected correlation with commodity- and sector-specific intervention is negative. Dummies for exportables, importables, nontradables, food, and nonfood are also included.

Regression analysis is employed, using the variables specified, on a pooled cross-section time-series data set involving 18 countries (three to nine commodities per country) for the 1960-84 period. The analysis yielded a total of 1,858 data points.

An interpretation of the coefficients of these variables as causal impacts on protection should be made with caution because the coefficients might not be independent of the level of protection. Thus, in interpreting the results, we will refer to associations rather than causation, and the possibility of simultaneous equation bias must not be overlooked. The regression was run in log linear form, except for the variables representing the relative share of the agricultural sector and of agricultural trade in the economy.

The results of estimating regression equations for different combinations of explanatory variables are summarized in Table 3. Regressions (1) to (4) report the results of the analysis, which include all possible variables that may have influenced the level of agricultural protection. The coefficients of determination indicate that approximately 60 percent of the variations in NPCs among countries and over time are explained by the regressions. The coefficients of the indexes of comparative advantage (labor productivity and land per capita) and of average income all have the expected sign and are significant. That is, the results are consistent with the hypothesis that the level of agricultural

Table 3. Regressions for nominal protection coefficients, 1960-84

Independent Variables	(1)	(2)	(3)	(4)
Income per capita	0.052 (3.92)	0.034 (1.67)	0.047 (1.67)	0.048 (2.34)
Land per capita	-0.250 (-4.32)			
Labor productivity		-0.100 (-3.98)	-0.110 (-2.86)	-0.110 (-4.39)
Share of agriculture in GDP	-0.012 (-1.03)	-0.053 (-1.42)		
in labor force			-0.014 (-0.24)	
in consumption				-0.002 (-1.13)
Share of ag. trade in GDP		-0.007 (-5.64)	-0.007 (-6.22)	-0.009 (-4.65)
Currency overvaluation	2.10 (3.21)	0.220 (3.31)	0.190 (3.00)	
NPR indirect				-0.303 (-3.49)
Exportables	0.260 (2.96)	0.260 (2.88)	0.260 (2.95)	0.240 (2.62)
Importables	0.630 (7.28)	0.630 (7.22)	0.630 (7.27)	0.620 (7.10)
Food	-0.014 (-0.52)	-0.016 (-0.60)	-0.014 (-0.53)	-0.017 (-0.65)
Intercept	-0.900 (-5.80)	-0.620 (-2.47)	-0.810 (-2.18)	-1.130 (-5.22)
R ²	0.620	0.640	0.640	0.660

Note: t-statistics are in parentheses.

protection is associated to both resource endowments and the stage and pattern of development; the agriculturally well-endowed economies tend to discriminate against agriculture and extract some of the land rents. It is also evident that agricultural protection rises as comparative advantage shifts away from agriculture. None of the three proxies for relative importance of the sector is significant, whereas share of agricultural trade on GDP seems important and shows a negative correlation; that is, the higher it is, the less protected the sector is. The two variables representing macropolicies are highly significant. This significance indicates that when the real exchange rate is low, there seems to be pressure to protect the sector. The more the sector is taxed through macropolicy or protection to industry, the less sector-specific intervention there is. The coefficients for the exportable and importable dummies are significant; both are taxed, but exportables more so than importables. The coefficient for the food dummy variable is nonsignificant; that is, food and nonfood are treated alike.

Conclusions

There appears to be a strong correlation between economic development and agricultural protection. At the early stage of development, agricultural producers are disadvantaged in forming coalitions because of high organization costs and relatively small marketed surplus. Urban consumers and industrialists, on the other hand, lobby for a "cheap-food" agricultural policy, and the balance of power tilts in favor of urban consumers and industry.

As manufacturing becomes more capital intensive and as the share of food in consumer expenditures declines, political pressure declines and agricultural producers will eventually dominate. Through capital accumulation during the process of economic growth, comparative advantage shifts from agriculture to industry. The greater the cost of intersectoral adjustments corresponding to the shift in comparative advantage away from agriculture, the greater the demand for agricultural protectionism.

Simultaneously, the relative contraction of the agricultural sector makes it easier for agricultural producers to organize political lobbying, thereby reducing resistance of the nonagricultural population against agricultural protectionism. It is understood that such demand and supply factors combine to promote agricultural protectionism in advanced countries.

Evidence is pointing towards a diffusion of protectionism from the developed to the developing world. Major efforts to achieve international cooperation for agricultural adjustments will be required to prevent agricultural protectionism from being the norm.

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