Food Pricing Policy in Developing Countries: Bias against Agriculture or for Urban Consumers?

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Price policy discrimination against agricultural producers, in order to provide cheap food for urban consumers, has been widely cited in development forums as a cause of agricultural stagnation. Evidence is presented that suggests no consistent pattern of discrimination against producers for a major food commodity, wheat. However, consumer subsidies and trade policies have reduced bread prices to urban consumers in many countries. Price data from the early 1980s are assembled for thirty-one developing countries. Nominal protection coefficients for producers and consumers at official and corrected exchange rates and wheat-fertilizer price ratios are estimated for each country.

Key words: consumer prices, food policy, producer prices, wheat.

Price discrimination against agriculture arising from government policy interventions has been widely cited as a major factor in the poor agricultural performance of many developing countries. Several important studies published in the last five years have presented evidence of government policies that decrease prices received by farmers for their produce. Peterson (1979, 1983) analyzed official producer prices during the 1960s from a sample of twenty-eight developing countries to show that producer price incentives in developing countries were consistently well below those in industrialized countries.[1] During the 1970s, the World Bank sponsored a series of case studies of agricultural policy incentives in Thailand, Pakistan, Egypt, and Argentina, using data up to the mid-1970s which showed that governments of these countries were consistently taxing the agricultural sector through price policy (see Lutz and Scandizzo, Bale and Lutz, World Bank 1982). Finally, Schultz has been particularly influential in arguing that price disincentives to farmers are the underlying cause of inadequate investment in agriculture, slow adoption of improved technologies, and increased food imports in developing countries.

Government policies which tax the agricultural sector may be implemented for various reasons. For example, in low income countries, where agriculture is the main source of income and savings, agriculture provides the major potential source of government resources. However, in recent years low farm prices have been widely associated with the disproportionate political power of urban consumers who demand low food prices. To quote Schultz on the main reason for low farm prices: ". . . the 'political market place' strongly favors the urban population at the direct expense of the rural people. Politically, urban consumers and industry demand cheap food" (Schultz, p. 10).

Numerous recent studies, particularly on Africa (e.g., Christensen et al., Bates, World Bank 1981) and the popular press have reiterated these arguments but without presenting the underlying evidence.[2] In addition, no stud-

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[1] It should be noted that this does not necessarily imply price discrimination against agriculture in developing countries since many industrialized countries subsidize agriculture.

[2] The World Bank Report and several other reports do provide convincing evidence on low producer prices for export crops but not for food crops.

ies have examined consumer pricing policies across countries. Hence, a conventional wisdom has become widely established in recent years that (a) farm prices for food commodities are low and are a major factor explaining slow growth in the agricultural sector, and (b) low farm prices are implemented largely in order to keep consumer prices low.

The issue of producer price incentives is clearly important in formulating agricultural development strategies. Krishna has convincingly argued that a balanced strategy of producer price incentives and improved technology and associated input distribution is essential for transforming agriculture. The World Bank report on Africa (World Bank 1982) generated considerable debate on the extent to which African governments should focus on agricultural research and extension to promote technical change or concentrate efforts on "getting prices right."

This paper provides new evidence that suggests that price discrimination against agriculture in food production and conflicts between producer and consumer interests in setting price policy are less widespread than previously reported. We employ recent data for the 1980s to analyze actual prices received by farmers for wheat, a major food staple, for a sample of thirty-one countries that includes almost all the wheat producers of the developing world.[3] We also explicitly analyze consumer prices for bread for the same group of countries to show that, although government policy interventions have widely favored consumer interests, this usually has not been at the direct expense of the farmer.

Producer Prices

In 1980 and 1982, we collected producer prices for wheat from thirty-one countries. A questionnaire was sent to an agricultural researcher or extension worker with frequent farmer contact in an important wheat-producing region of each country. The questionnaire requested information on the post-harvest

wheat price, the price of nitrogenous fertilizer and the daily wage rate for unskilled labor for the most recent wheat season. The price data therefore represent actual market prices (if different from support prices) at a low point in the seasonal price cycle and in most cases provide a representative picture of farm-level prices for wheat in that country.[4] The sample of countries covers 97% of wheat produced in the developing world and is also representative of the distribution of all developing countries between (a) low income, (b) lower middle income and (c) upper middle income, according to the World Bank classification (World Bank 1984). However, 42% of the sample countries depended on agriculture for less than 20% of gross domestic product (GDP), compared to only 30% for all developing countries.[5]

Producer prices were compared to world prices using the following simplifying assumptions. The consumption point was assumed to be the largest city (usually the capital city). The CIF price for imported wheat was computed by adjusting the CIF price from Rotterdam (hard red winter wheat no. 2) for a premium reflecting differential freight rates to that part of the world.[6] CIF prices and freight rates were taken from the International Wheat Council. For an inland consumption or production point, these prices were further adjusted for internal transportation at an estimated "world price" for land transport of U.S.$0.02/ton-km, according to the formula shown in table 1.[7]

Rather than use actual world prices for wheat and freight rates prevailing in 1980–82, long-run trend prices were computed for the

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[3] The countries are Afghanistan, Algeria, Argentina, Bangladesh, Bolivia, Brazil, Burma, Cameroon, Chile, China, Colombia, Ecuador, Egypt, Ethiopia, India, Jordan, Kenya, Lesotho, Mexico, Morocco, Nepal, Nigeria, Pakistan, Paraguay, Peru, Sudan, Syria, Tanzania, Tunisia, Turkey, and Uruguay. Data were also available for Saudi Arabia but were excluded because of its high income, which gives it the special position of having the highest farm support price for wheat in the world—over US$1000/t—and among the lowest bread prices to consumers.

[4] Almost all countries in the sample had a support price for wheat, and in most cases the price received by farmers correlated well with this support price. In one or two cases, such as in Ethiopia, considerable variation across regions and over seasons in wheat and fertilizer prices is observed, depending on whether the official price or black market price prevails.

[5] A number of lower middle income countries in the sample, such as Ecuador, Bolivia, Tunisia, and Morocco had other primary industries, particularly oil and minerals, which reduced their share of GDP from agriculture.

[6] The CIF price for Rotterdam rather than the FOB price for U.S. Gulf ports plus freight was used as the basis of the calculations since the CIF price includes additional costs such as capital costs and insurance as well as freight charges. Turkey and Argentina were net wheat exporters in the years for which price data were obtained. In these cases, the world equivalent price was assumed to be the average of U.S. and Australian farm gate prices.

[7] This price was based on estimated road transport costs, free of price distortions on transport equipment or fuel. We have found that this is a fairly robust estimate for countries as diverse as the Sudan and Ecuador (see, for example, Byerlee 1984).

Table 1. Adjustments to CIF Prices to Allow for Internal Transport Costs

Country Situation	Adjustment for Internal Transport
1. Coastal consumption point/wheat produced in the interior.	Domestic price = producer price + internal transport. World price equivalent = CIF price.
2. Interior consumption point/wheat produced in the interior.	Cost of transporting imported wheat to consumption point is assumed equal to cost of transporting domestic wheat to consumption point. No adjustment made to CIF and producer price.
3. Land-locked country.	World price equivalent = CIF price at nearest port + transport cost to consumption point. Domestic price = producer price.

Table 2. Distribution of Countries According to NPC and Adjusted NPC for Producers

		NPC Calculated at Official Exchange Rate	Adjusted *NPC* Calculated at Shadow Exchange Rate
		(Percent of Countries)	
Producers taxed	*NPC* < 0.85	36	37
No significant tax or subsidy	.85 < *NPC* < 1.15	29	40
Producers subsidized	*NPC* > 1.15	36	23
All countries		100	100
Average NPC		1.14	1.03

period, 1980–82, by a linear time-trend regression of world prices over the period, 1960–82.[8] This avoided the problem of attempting to compare domestic prices with a fluctuating world price.

These assumptions provided an approximate measure of the nominal protection coefficient (NPC_i) at the consumption point, where $NPC_i = p_i^d/p_i^w$, p_i^d is the price of domestic wheat at the consumption point, and p_i^w is the price of imported wheat. Despite the simplifying assumptions used, these procedures correctly classified the price policy regime prevailing in those countries where more detailed studies allowed a check.

Finally, the above calculations were made using the official exchange rate. Because it is widely known that many countries maintained an overvalued exchange rate during this period, an effort was also made to estimate the adjusted *NPC*, which is calculated using the shadow or equilibrium exchange rate (see Bingswanger and Scandizzo). The extent of overvaluation of the exchange rate was estimated using the differential inflation rate between domestic prices (approximated by the consumer price index) and import prices (based on the composite index of import price

for all developing countries) (International Monetary Fund). The base year was chosen as 1971 or a year in the 1970s when a significant devaluation took place. (It is expected that after a devaluation the exchange rate will be close to its equilibrium rate.) In most countries this adjustment indicated an overvalued exchange rate, although for a few countries this procedure indicated an undervalued exchange rate.[9]

The calculated *NPC*s from thirty-one countries, summarized in table 2 and listed in the appendix, show no consistent evidence of price disincentives to wheat producers. The average *NPC* was 1.14, and the average weighted by wheat production was 0.92. Given the approximations used in the calculations, we have classified countries with an *NPC* between 0.85 and 1.15 as having no significant taxes or subsidies on producers (table 2). This shows that the sample divides

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[8] The estimated long-run trend price for CIF Rotterdam in 1980–82 was US$195/ton.

[9] This method of correcting exchange rates has been used by several authors (e.g., Binswanger and Scandizzo, Agarwala). However, it provides only a crude estimate of the extent of overvaluation since it ignores factors other than inflation differential that lead to exchange rate distortions. In fact, in countries such as India, where this method indicates an undervalued exchange rate, high tariff protection and import controls relative to export subsidies almost certainly result in significant overvaluation (see Harberger and Schydlowsky). However, the large set of countries used in this study precludes a detailed country-by-country calculation of exchange rate distortions.

Table 3. Distribution of Countries According to the Ratio of Price of Nitrogen to the Price of Wheat

	Ratio of Nitrogen to Wheat Price[a]	Percent of Countries
Producer subsidy	Less than 2.5	50
No significant tax or subsidy	2.5 to 3.2	27
Producer tax	Over 3.2	23
		100

[a] The average for all countries is 2.7.

almost equally between countries that tax wheat producers and those who protect domestic producers.

When account is taken of exchange rate distortions, the distribution of countries distinctly shifts toward countries which neither subsidize nor tax producers. In particular, a number of countries (e.g., Sudan, Jordan, Ethiopia, and Bolivia) which were apparently protecting producers were in fact paying close to world prices when account is taken of exchange rate distortions.

Another way of measuring price incentives is through the ratio of the product price to the prices of tradable inputs, such as fertilizer, which are widely used in the production of that commodity. This method eliminates the problems in exchange rate conversion (Peterson 1979). From the same source of data, we calculated the producer price of nitrogenous fertilizer (nutrient equivalent) in kilograms of wheat. Given world prices of wheat and urea and international and internal transport costs, the cost of nitrogen in wheat equivalents was expected to range from 2.5 to 3.2 in 1980–82.[10] Table 3 shows the distribution of price ratios in the sample of countries classified into three groups according to the incentives offered to the producer. (Individual country data are included in the appendix.) Using this method, half of the twenty-six countries for which fertilizer price data were available were classified as providing positive price incentives to producers, and only six provided negative incentives. In general, the classification corresponds reasonably well with that based on the *NPC*, with a correlation of −0.5 between the fertilizer/wheat price ratio and the *NPC* (significant at the one percent level). More-

over, four countries (Mexico, Egypt, Tunisia and Pakistan) which had low producer prices, subsidized nitrogen fertilizer to the extent that they were classified as providing positive price incentives for the use of this input.

Incentives for fertilizer use, of course, are not necessarily a good guide to incentives for all tradable inputs used in agriculture. Many governments have implemented price incentives which are specific to fertilizer. Nonetheless, fertilizer is one of the major inputs in wheat production, particularly in irrigated areas, which characterize over half of the wheat produced in the developing world.

While these results do not suggest any consistent policy of taxing or subsidizing producers, they do indicate the wide variation in producer price policies across countries. It is beyond the scope of this paper to provide a more in-depth analysis of reasons for this variation, but some interesting hypotheses are suggested by the data. First, it is expected that agriculture would be taxed according to its contribution to national income. That is, countries where agriculture is a high proportion of GDP (i.e., low income countries) would tend to tax agriculture more heavily in order to provide resources for industrialization. The data provide only very weak support for this hypothesis (table 4). A slightly higher proportion of countries with a high share of agriculture in GDP tax producers than countries in which agriculture is less important.

A second hypothesis arises from the objective of governments to keep urban consumer prices low. In this case, we expect lower producer prices where (*a*) wheat is a staple food of urban consumers and (*b*) most wheat consumed in urban areas is supplied from domestic production. If wheat for urban areas is

Table 4. Distribution of Countries According to Producer Price Incentives and the Share of Agriculture in Gross Domestic Product

	Share of Agriculture in GDP		
	>20%	<20%	All
	(Percent of Countries)		
Producers taxed	39	31	36
No significant tax or subsidy	28	31	29
Producers subsidized	33	38	36
	100	100	100
Average NPC	1.10	1.16	1.14
Average Adj. NPC	.99	1.06	1.03

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[10] These calculations were done in the same way for world equivalent prices for wheat, by adding internal transport costs to an estimated CIF price for urea.

Table 5. Average Producer Price of Wheat in Countries Classified by Degree of Import Dependence on Wheat and the Importance of Wheat as a Staple Food, 1980–82

Import Dependence	Importance of Wheat as a Food Staple		
	Per capita Consumption <30 kg/yr.	Per capita Consumption >30 kg/yr.	All Countries
	Price (US$/ton)		
1. Less than half of wheat is imported	257	163	194
2. Half or more of wheat is imported	365	229	271
All countries	311	197	234

Note: Two-way analysis of variance shows both factors are significant at the 5% level.

Table 6. Comparison of Estimates of NPCs for Wheat Production from This Study with Those of Earlier Studies

Country	Previous Study			This Study NPC in 1980–82
	Source[a]	Year	NPC	
Argentina	LS	1976	.54	1.00
	BS	Late 1970s	1.04	
Bangladesh	BS	Late 1970s	1.00	1.00
	A	1981	.76	
Egypt	BL	1976	.48	.41
	BS	Late 1970s	.54	
	A	1975–76	.95	
Kenya	BS	Late 1970s	1.43	.89
India	BS	Late 1970s	.77	.66
	A	1980	1.00	
Mexico	BS	Late 1970s	.76	.76
Pakistan	BL	1976	.78	.71
Tunisia	BS	Late 1970s	1.18	.84
	A	1975–80	1.13	
Turkey	BS	Late 1970s	.84	.65
Average			.91[b]	.77

[a] LS, Lutz and Scandizzo; BS, Binswanger and Scandizzo; BL, Bale and Lutz; A, Agarwala.
[b] Where more than one year's data is available for a country, the average NPC over years was taken.

largely imported, then a country can protect producers without incurring high prices for urban consumers, or low consumer prices can be maintained with less of a fiscal burden of subsidies. Table 5 shows that these relationships in fact generally hold. The lowest producer prices occur in countries where wheat is a staple food and where most wheat is domestically supplied and vice versa. It should also be noted that over half of the countries who tax producers were at least 90% self-sufficient in wheat (e.g., India, Pakistan, Nepal, Turkey, and Uruguay). For these countries, the world equivalent price should be intermediate between the CIF price and the FOB price (McIntire); and, in fact, domestic producer prices reflected this strategy. This leaves only a small group of five out of thirty-one countries that explicitly taxed wheat producers.

Comparing our results with the earlier studies (table 6), it seems that the major difference in results arises from the selection of countries. None of the countries that we have classified as protecting domestic wheat producers were included in the earlier studies. For those countries common to this and the earlier studies, we have generally estimated the same or a lower *NPC* in 1980–82 than in the earlier studies.

Consumer Prices

Consumer prices for bread were assembled from a number of sources for the same group of countries and years for which producer prices were available (see Byerlee 1983 for details).[11] Countries were classified into three groups—those that subsidized consumers, those that charged consumers approximately world prices, and those that taxed consumers. It was estimated that bread prices in countries importing wheat with no significant market distortions should be around US$0.75/kg in 1980–82 (Byerlee 1983).[12] This is confirmed by consumer prices in countries such as Singapore and Panama, which traded freely in wheat.

The results, summarized in table 7 and listed in the appendix, strongly indicate a widespread policy of subsidizing consumers. In this sample of countries, the average bread price was 22% below the "world price" and 27% lower if exchange rate overvaluation is taken into account. Nearly two-thirds of the countries were classified as subsidizing consumers.

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[11] Consumer prices were unavailable for five of the thirty-one countries.

[12] Costs of non-wheat ingredients and of nontradable inputs, such as labor, used in bread making vary widely across countries, and some differences in the price of bread are expected (Longmire and Heid). Nonetheless, the procedure correctly classified the countries according to the extent of tax or subsidy on consumers for those countries for which more detailed case studies were available (e.g., Mexico, Ecuador, Brazil, Pakistan, Egypt, and Sudan). See Byerlee (1983) for details.

Table 7.   Distribution of Countries According to NPC for Consumer Prices of Bread, 1980–82

		NPC Calculated at Official Exchange Rate	Adjusted NPC Calculated at Shadow Exchange Rate
		(Percent of Countries)	
Bread subsidized	$NPC < .85$	62	80
No significant tax or subsidy	$.85 < NPC < 1.15$	23	4
Bread taxed	$NPC > 1.15$	15	16
All countries		100	100
Average NPC		.78	.73

Consumer price incentives were more closely related than producer prices to the level of development. The correlations between the share of agriculture in GDP and the NPC and adjusted NPC for consumers were .32 and .43, respectively (the latter significant at the 5% level). As expected, subsidies to urban consumers are highest for countries which are less dependent on agriculture for income and taxation. Consumer prices were also closely related to the level of wheat consumption as expected by standard demand theory. Variation in per capita income and bread prices explained over 60% of the variation in per capita wheat consumption across the sampled countries [equation (1)]. Because all the countries in this sample are net wheat importers facing similar world prices, there is strong evidence that in countries where wheat is a staple food, governments intervene in wheat markets to maintain low consumer prices.

(1)   Cross-country regression equation for wheat consumption:

$$\log C = 5.72 + .49 \log Y - .66 \log P$$
$$(2.55)^{***} \quad (4.84)^{***}$$
$$n = 26, R^2 = 0.61,$$

where C is average per capita wheat consumption, 1979–81 (kg/yr), Y is per capita income, 1981 (US\$/yr), P is consumer price of bread 1979–81 (US\$/kg), t values are given in parentheses (***significant at 1% level).

The Relationship between Producer and Consumer Price Policies

The evidence presented to date shows no consistent policy of providing policy disincentives to producers, but at the same time it is clear that consumers have been paying low prices

for wheat products. It remains to reconcile these two sets of findings.

To some extent consumer prices relate to producer prices. The correlation between producer and consumer price in the sample is $+0.43$ (significant at the 5% level). However, if we classify countries according to both producer and consumer price policies only eight out of twenty-six had both low producer and consumer prices (table 8). But even in this group, explicit consumer subsidies for wheat products through government fiscal expenditures also operated in all eight countries. In at least four of these countries (Egypt, Mexico, Tunisia, and Peru), we estimate that explicit fiscal subsidies were considerably more important than low producer prices in the total subsidy provided to consumers. Only in the two large wheat producers, India and Pakistan, which are low income countries and where imports are a small proportion of total wheat consumed, does the producer appear to have paid the largest share of the subsidy to consumers (see Brown for evidence on Pakistan).

Turning to other categories in table 8, explicit consumer subsidies operated in the eight countries (33%) where producer prices were medium to high but where consumer prices were low. Most of these countries were also importing a large proportion of the wheat con-

Table 8.   Classification of Countries by NPCs for Producers and Consumers

NPC for Producers	NPC for Consumers			
	<.85	.85–1.15	>1.15	Total
	(Number of Countries)			
<.85	8	3	0	11
.85–1.15	3	3	0	6
>1.15	5	0	4	9
Total	16	6	4	26

sumed, especially in urban areas, so that the subsidy applied more to imported wheat than to domestically produced wheat. Overall, fourteen of the sixteen countries with low consumer prices for which we have information had explicit consumer subsidies on wheat products.[13] Only three countries were classified as having no subsidies on consumer prices but with low producer prices. In two of these countries, correcting for the overvaluation of the exchange rate changed these countries into the low consumer price category.

During the 1970s the wedge between producer and consumer prices brought about by explicit government subsidies tended to widen in a number of countries, such as Brazil, Ecuador, Mexico, Egypt, and the Sudan, where subsidies were highest (Byerlee 1983). As a result there was no effective relationship over time between changes in producer and consumer prices. More recently, the foreign exchange and debt crisis faced by a number of these countries has led to increasing pressure to reduce consumer subsidies. Those on bread still remain in most countries, although in some cases at reduced levels. Furthermore, the exchange rate overvaluation noted here has been reduced in a number of countries by recent sharp devaluations, especially in Latin America.

Conclusions

On average, producer prices for wheat in developing countries approximated long-run trend prices in world wheat markets in the period 1980–82. However, there was a great deal of variation between countries in price policies, although an approximately equal number of countries taxed and subsidized producers. Those countries which paid producers high prices tended to import a large share of their wheat consumption or were countries where wheat is not an important staple food. In addition, exchange rate overvaluation reduced real producer prices in a number of countries. However, this same policy of overvaluing the exchange rate also reduced prices of tradable inputs used in wheat production; and, in fact, there were negative incentives for fertilizer use in wheat in only a few countries.

On the other hand, there was conclusive

evidence of a widespread and consistent bias in government policy toward providing low price bread to urban consumers. The significant finding of this study is that in only a few countries has this policy been implemented at the direct expense of the producer. In most cases, explicit government fiscal subsidies to consumers have played a much larger role than low producer prices in urban cheap food policies. Of course, the size of consumer subsidies in government expenditures in many countries is large in relation to government resources allocated to the agricultural sector, and hence we can reasonably expect that food subsidies have reduced investment in the agricultural sector.

It remains to speculate on why our results are in conflict with earlier analyses and to what extent we can generalize our conclusions for other commodities. We have presented evidence that the earlier studies selected a biased sample of countries, at least in the case of wheat. There may also have been a trend toward increasing producer prices in developing countries from the 1960s, which was the basis of the Peterson study, to the 1980s, which was the period used in this study. However, limited time-series data on wheat prices for the 1970s provide no evidence of any consistent upward trend in support prices for wheat in relation to the trend in the world price.[14]

Preliminary analysis suggests that studies of other food commodities will reinforce these findings. In fact, for maize, which is grown in a somewhat different sample of countries including many African countries, it seems that most countries in this period protected producers at the expense of consumers (Sain and Martinez). The degree of government intervention in food markets has also been higher for wheat than for any other food commodity with the possible exception of rice. In the case of maize, consumer subsidies applied in only a few countries.

The results of this paper suggest that in

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[13] For more detailed information on consumer subsidies for a larger sample of countries, see Byerlee (1983).

[14] Government support prices for wheat for the period, 1970–81 were available from FAO for seventeen of the countries in the sample. These support prices were deflated by the consumer price index for each country and a linear time trend regression was fitted omitting the two years of extreme prices in the mid-1970s (usually 1974 and 1975, but 1975 and 1976 in some countries). Upward trends were observed for three countries and downward trends in five countries. In nine countries no significant trend was observed (at the 90% confidence level) using the same procedure. By comparison, the U.S. export price of wheat deflated by the unit export price of non-oil exporting developing countries showed no significant trend.

most wheat-producing countries, producer price incentives are not the major issue constraining increased productivity. In countries which have experienced slow growth in wheat productivity (notably the Middle East and North Africa), development of technologies appropriate to farmers and supporting input delivery and extension systems are more important constraints (Byerlee and Winkelmann). Our analysis also suggests that consumer prices have not been adequately considered in analysis of price policies of developing countries. Low consumer prices rather than low producer prices appear to have been the major impetus to the rapid rise in food grain imports (largely wheat) by developing countries in the 1970s.[15]

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[15] Wheat imports in developing countries are closely related to the consumer price of flour and bread (Byerlee 1986).

Appendix

Country-Specific Data

Table A-1. Estimated Nominal and Adjusted Nominal Protection Coefficients for Producers and Consumers in 31 Countries Ranked by NPC for Producers

	Producers		Ratio of Price Nitrogen to Wheat	Consumers	
	NPC	Adjusted *NPC*		*NPC*	Adjusted *NPC*
1. Nigeria	2.60	1.43	.3	1.46	.80
2. Sudan	2.37	.90	.5	.60	.22
3. Burma	2.05	3.49	.2	1.41	2.40
4. Colombia	1.67	1.40	na[a]	2.01	1.68
5. Jordan	1.66	.98	1.3	.38	.22
6. Algeria	1.50	1.52	.7	na	na
7. Brazil	1.35	1.67	3.1	.52	.62
8. Morocco	1.35	1.55	na	.33	.37
9. Ethiopia	1.32	1.05	3.4	na	na
10. Ecuador	1.24	.99	1.9	.86	.69
11. Bolivia	1.21	.88	na	.62	.45
12. Cameroon	1.19	1.05	3.1	1.38	1.21
13. Paraguay	1.08	.85	2.2	.78	.61
14. Chile	1.07	.85	3.2	1.04	.82
15. China	1.06	1.25	2.7	na	na
16. Lesotho	1.02	.81	6.0	.77	.61
17. Syria	1.00	.91	2.0	na	na
18. Bangladesh	1.00	.96	1.7	.77	.74
19. Argentina	1.00	.60	7.0	na	na
20. Kenya	.89	.86	4.5	1.06	1.02
21. Tunisia	.84	1.06	2.4	.30	.38
22. Uruguay	.80	.59	na	.87	.63
23. Nepal	.79	.98	2.7	.97	1.20
24. Mexico	.76	.66	1.7	.41	.34
25. Tanzania	.73	.50	5.8	.95	.66
26. Pakistan	.71	.62	2.2	.61	.53
27. Afghanistan	.68	na	na	.31	na
28. India	.66	.92	3.2	.54	.76
29. Turkey	.65	.79	2.7	.39	.48
30. Peru	.51	.58	na	.70	.78
31. Egypt	.41	.19	2.0	.12	.05

[a] na—not available.