In: The Political Economy of Development and Under-Development, fifth edition, C.K. Wilber and K.P. Jameson (eds.). New York, U.S.A.: McGraw-Hill, Inc. 1992.

17

The Political Economy of Third World Food Imports: The Case of Wheat

Derek Byerlee
CIMMYT, *Islamabad, Pakistan*

INTRODUCTION

Much attention has been focused on the increase in food imports by Third World countries during the last decade. This increase is usually equated with a growing gap between food production and consumption in developing countries. Yet projections, whether based on simple projection methods or more formal econometric models, have consistently underestimated imports by developing countries. For example, FAO and USDA forecasts of wheat imports by developing countries for 1985 (made in 1977–78) had already been exceeded by 20%–25% in 1981.[1]

This paper takes a new look at trends in food imports by developing countries. It focuses on wheat imports in the context of the wider food policy, institutional, and external trade environment in which these imports occur. It departs substantially from the traditional econometric approaches, which emphasize regional aggregates, to analyze evidence at the country level, where national food policies are made. An analysis across countries interpreted in the light of national and international policies provides fresh insights into the political economy of rapidly increasing wheat imports.

Wheat has special significance in the analysis of food policy and food imports in the Third World. First, cereals constitute the bulk of Third World

I am grateful to Robert Tripp and Jim Longmire for comments on an earlier draft of this paper. Views expressed in this paper are not necessarily those of CIMMYT. *Economic Development and Cultural Change* 35, 2 (January 1987), pp. 307–328.

food imports, and, among cereals, wheat is by far the dominant food grain import. In 1980, wheat accounted for an estimated 86% of food grain imports by Third World countries.[2] Since the postwar years, when Europe was the major wheat buyer in international markets, wheat imports have been increasingly destined for the Third World (including China), which now accounts for two-thirds of total world wheat imports. In particular, in the last decade, wheat imports by developing countries have expanded extremely rapidly, doubling from 1970 to 1981. Second, unlike rice, world wheat *exports* are dominated by developed countries, which produced about two-thirds of the world's wheat and accounted for about 95% of total exports in 1979–81. Third, a significant group of 84 developing countries lying in the tropical belt between 23 degrees south latitude and 23 degrees north latitude currently do not produce wheat. Hence, there is a basic inconsistency between the traditional food staple (i.e., rice, coarse grains, or roots and tubers) and the importation of wheat, a nontraditional staple with little immediate prospects for local production. Finally, wheat—more than any other cereal staple—usually undergoes a greater degree of commercial processing before being consumed. This means that transportation, processing, and marketing costs make up a larger proportion of final consumer prices (over 80% for bread), and consumer prices are more sensitive to the influence of policy interventions and market distortions at each stage of the process.

This paper begins by summarizing recent patterns in wheat consumption and imports in the Third World. A framework is then developed to explain these trends in light of both national food policies and policies of the exporting countries. The framework is applied in a cross-country analysis of wheat imports and policy interventions. The evidence on biases in national and international food policies in favor of wheat products is developed in some detail, and policy measures to arrest growing dependence on food imports are discussed.

RECENT TRENDS IN CONSUMPTION AND IMPORTS

During the last 2 decades, wheat has shown a remarkably rapid and widespread increase in its contribution to diets in the Third World. Data from FAO indicate that, in all major regions, wheat consumption has increased more than any other food staple in both a relative and absolute sense (see Table 1). Consumption of rice has also increased but to a much smaller extent than that for wheat. To a large extent increased wheat consumption reflects a widespread substitution for so called inferior food staples—coarse grains and roots and tubers—whose per capita consumption has declined (Table 1). These trends in consumption patterns have accelerated during the 1970s, when wheat consumption in the Third World grew at an annual rate of 5.4%. An estimated 80% of the

TABLE 1 **Aggregate Changes in Consumption of Food Staples, by Region (%)**

	Staple Food Calories Provided by Wheat, 1975–77	Annual Growth Rate in Per Capita Availability of Staple Foods for Human Consumption, 1961–77			
		Wheat	Rice	Coarse Grains	Roots and Tubers
1. Countries where wheat is the traditional food staple[a]	72	1.3	2.0	−1.2	−.1
2. Large mixed-cereal economies (India, China, Mexico)	28	2.8	.4	−.7	−2.1
3. Tropical belt of countries where wheat is not a traditional staple[b]	15	2.7	.8	−.6	−.5

[a]Includes countries from Morocco to Pakistan and the Southern Cone of Latin America.
[b]Includes countries lying between 23 degrees north latitude and 23 degrees south latitude.
SOURCE: Calculated from FAO, *Food Balance Sheets* (Rome: FAO, 1981).

increase in world wheat consumption in this period occurred in the developing world.[3]

Although these changing consumption patterns were general across countries, there is a sharp division between countries in the extent to which increased wheat consumption was supplied by domestic production or by imports. For the largest wheat producers (China, India, Pakistan, and Turkey), rapid increases in domestic production have supported increased consumption and in some cases allowed for import substitution. For all other regions, increased consumption has largely been met by imports (Table 2). This includes those regions where wheat is a traditional food but import dependence is high (e.g., over 100 kilograms per capita of wheat is imported by countries of North Africa) and the tropical zone, where wheat consumption is much lower but almost all wheat is imported (e.g., Southeast Asia and sub-Saharan Africa).[4] Many countries in the tropical belt now have per capita wheat imports (and consumption) of 30–50 kilograms per year.

In summary, in 1978–80 there was a total of 65 developing countries consuming over 100,000 tons of wheat annually. Forty-six of these countries were less than 50% self-sufficient in wheat and 26 (i.e., those in the tropical belt) did not produce wheat (i.e., less than 20,000 hectares). Wheat import dependence has increased in almost all Third World countries (except the four largest producers) to reach high levels by the 1980s.

ucts because of rapid technological change in some major wheat-producing countries (e.g., the United States, India, and China).

A central thesis of this paper is that governments, in both importing and exporting countries, have been key actors, whose interventions in wheat markets have consistently reinforced market phenomena and rapidly accelerated the substitution of wheat products for traditional staples. Government interventions on the domestic side are shown toward the right-hand side of Figure 1. These include *(a)* interventions in production of wheat and competing food staples; *(b)* investments, taxes and subsidies, and controls on the marketing and processing of wheat, both domestic and imported; *(c)* explicit consumer subsidies on wheat products; and *(d)* influences on consumers' preferences through market promotion and development. Interventions by governments of both the importing and exporting countries also influence the price of *imported* wheat, including *(a)* trade and exchange rate policies of both importers and exporters, *(b)* subsidies and credit facilities for wheat exports, *(c)* the provision of food aid (largely wheat), and *(d)* marketing and promotion policies by private and public agencies of exporting countries.

Finally, it is hypothesized that a number of influential interest groups have been important in biasing policy interventions toward wheat consumption and imports. These include the influence of middle-income urban consumers in food policy decisions, the vested interests and market power of the wheat-processing sector, and the linkages of this sector with exporting interests in developed countries, such as grain exporters or milling and shipping industries. Interest groups in exporting countries have also succeeded in distorting the policies of these countries toward wheat exports to the Third World. To a large extent, all of these interest groups reinforce each other in promoting wheat consumption.

Clearly, a comprehensive analysis of all of these factors and their linkages is beyond the scope of this paper. My focus is largely on the domestic policy environment with somewhat less attention to the international environment.

THE DOMESTIC POLICY ENVIRONMENT AND WHEAT CONSUMPTION

The Urban Bias of Wheat Consumption

Increased wheat consumption in the developing world has to a large extent occurred in urban areas. This is less so in the traditional wheat-consuming countries of the Middle East/North Africa, but even in that region there is a tendency to switch from coarse grains (such as barley) to wheat with migration to urban areas. Table 3 shows wheat consumption by rural and urban areas in three groups of countries. In countries where wheat consumption is relatively low, consumption is more strongly biased to urban areas. Furthermore, for this group of countries, wheat consumption is biased toward middle- and upper-income groups. Typically, the richest 25% of

households have a per capita consumption of wheat twice that of the poorest 25%.[5] Income elasticities of demand in these countries generally range from 0.5 to 1.0 and are higher than for any other cereal staple. This underlines the important effect of incomes on wheat consumption and its substitution for other cereals.

TABLE 3 **Consumption of Wheat Products in Rural and Urban Areas in Selected Countries**

Country or Region	Year	Annual per Capita Consumption of Wheat Products (kg/year)	
		Rural Areas	Urban Areas
High wheat consumption (>100 kg/capita/year):			
India, Punjab State	1974–75	130	117
Egypt	1974–75	109	178
Pakistan	1982	150	100
Intermediate wheat consumption (30–100 kg/capita/year):			
Peru	1972–73	28	43
Sri Lanka	1981	26	57
India, Bihar State	1974–75	39	57
Sudan	1982	25	84
Low wheat consumption (<30 kg/capita/year):			
Brazil	1975	9	29
Indonesia, Java	1980	3	32
Philippines	1975–79	5	18
Kenya	1974–75	10	30
India, Andhra Pradesh State	1974–75	2	9

SOURCE: Government of India, *National Sample Survey: 28th Round, Oct. 73–June 74* (New Delhi: Department of Statistics, 1977); H. Alderman, J. von Braun, and S. A. Sakr, *Egypt's Food Subsidy and Rationing System: A Description*, Research Report no. 34 (Washington, D.C.: IFPRI, 1982); P. A. Cornelisse and S. N. H. Naqvi, *The Anatomy of the Wheat Market in Pakistan* (Islamabad and Rotterdam: Pakistan Institute for Development Economics and Erasumus University, 1984); Fundação Instituto Brasileiro de Geografia e Estatistica, *Estudo Nacional da Despesa Familiar* (Rio de Janeiro, 1978); P. Lizardo de las Casas Maya, "A Theoretical and Applied Approach to the Formulation of Alternative Agricultural Sector Policies" (Ph.D. diss., Iowa State University, 1977); D. I. Steinberg et al., *Sri Lanka: The Impact of PL480 Title I Food Assistance*, AID Impact Evaluation no. 39 (Washington, D.C.: USAID, 1982); D. Franklin, M. P. Demousin, and M. W. Harrell, *Consumption Effects of Agricultural Policies: Bread Prices in the Sudan* (Raleigh, N.C.: Sigma One Corp., 1982); S. L. Magiera, *The Role of Wheat in the Indonesian Food Sector*, Foreign Agricultural Economics Report no. 170 (Washington, D.C.: USDA, 1981); M. E. C. Bennagen, "Staple Food Consumption in the Philippines," Working Paper no. 5 (Washington, D.C.: IFPRI, 1982); N. Shah and K. Frohberg, "Food Consumption Patterns—Rural and Urban Kenya," Working Paper (Vienna: IIASA, 1980); FAO, *Review of Food Consumption Surveys*, vol. 2, *Africa, Latin America, Near East, Far East* (Rome, 1977).

There is considerable evidence that wheat is preferred as a convenience food. In urban areas, there is a strong tendency to switch to processed products, which require less preparation and reduce costs of cooking fuel. The data for Egypt (Table 4) vividly show these trends. There is also some evidence that women's participation in the labor force increases bread consumption.[6]

Biases in Consumer Pricing Policy toward Wheat Imports

A major factor in increased wheat consumption in urban areas has been the widespread intervention by governments in food marketing, resulting in reduced prices of wheat products to urban consumers. The most common and direct intervention has been to subsidize wheat flour or bread to consumers. In the traditional wheat-consuming countries of the Middle East/North Africa, these subsidies often represent 50% or more of the total cost of providing flour (based on imported wheat) to consumers or bakers (Table 5). Subsidies also occur in most of the mixed cereal economies of South and East Asia (e.g., China and India), although they are often lower (20%–30%) and in India are targeted to low-income consumers through ration shops. Wheat-producing countries of Latin America, such as Mexico and Brazil, also had high subsidy levels (see Table 5). Even a number of non-wheat-producing countries—such as Sri Lanka, Cuba, and the Ivory Coast—have had substantial consumer subsidies on wheat products. Overall, over half of the 56 countries for which data were available had consumer subsidies on wheat products. In most cases, these subsidies are specific to wheat. Rice is also subsidized in a number of countries, whereas subsidies on maize and other coarse grains exist in only a handful of countries (e.g., Mexico).

In a few countries (e.g., Pakistan, Egypt, and Mexico in some years), low consumer prices for wheat products result from policies that reduce

TABLE 4 **Composition of Retail Purchases of Wheat and Wheat Products by Rural and Urban Areas, Egypt (%)**

	1954–55		1974–75	
Wheat Product	Rural	Urban	Rural	Urban
Grain[a]	75	9	49	4
Flour	17	23	33	14
Bread	7	68	18	81
Total	100	100	100	100

[a]Includes consumption of home-grown grain.

SOURCE: H. Alderman, J. von Braun, and S. A. Sakr, *Egypt's Food Subsidy and Rationing System: A Description*, Research Report no. 34 (Washington, D.C.: International Food Policy Research Institute, 1982).

TABLE 5 **Classification of Countries according to Level of Consumer Subsidy on Wheat Products, 1980–81**

	High Subsidy (>40%)	Moderate Subsidy (10%–40%)	No Significant Subsidy	Significant Tax on Wheat Products (>20%)
Sub-Saharan Africa	2	6	3	1
Middle East/North Africa	9	4	-	---
Far East, wheat-producing	1	3	—	—
Far East, non-wheat-producing	—	2	6	3
Latin America	4	4	6	2
All countries for which data available	16	19	15	6

NOTE: Column entries are number of countries and are based on subsidies on imported wheat. In most cases, subsidies on domestically produced wheat are somewhat higher.

SOURCE: D. Byerlee, *The Increasing Role of Wheat Consumption and Imports in the Developing World*, CIMMYT Economics Paper no. 5/83 (El Batan, Mexico: CIMMYT, 1983).

producer prices for wheat below world prices, although in almost all these cases direct government subsidies have played a more important role than low farm prices (see Table 6). Aside from these countries, there is little evidence in favor of the conventional wisdom that governments have maintained low producer prices in order to favor urban consumer-interest groups.[7]

TABLE 6 **Classification of Countries by Nominal Protection Coefficients for Producers and Consumers, Early 1980s (% of Countries)**

	NPC FOR CONSUMERS			
	<.85	.85–1.15	>1.15	Total
NPC for producers:				
<.85	31	11	0	42
.85–1.15	12	11	0	23
>1.15	19	0	15	34
Total	62	23	15	100

NOTE : The NPC (Nominal Protection Coefficient) is the ratio of domestic prices (converted at the official exchange rate) to world prices adjusted by marketing and transport costs. Adjusted NPCs, calculated at shadow exchange rates by correcting for differential domestic and international inflation, indicated a lower percentage of countries subsidizing producers (i.e., 23% of countries with NPC > 1.15).

SOURCE: D. Byerlee and G. Sain, "Food Pricing Policy in Developing Countries: Bias against Agriculture or for Urban Consumers?" *American Journal of Agricultural Economics*, 68 (1986), pp. 961–969.

Trade and exchange-rate policies also often favor low wheat prices to consumers, relative to competing staples. Because wheat is regarded as an industrial input (i.e., to the milling industry), explicit or implicit tariffs for wheat are typically kept low. Meanwhile, other staple foods are protected either by tariffs (in the case of cereals) or by high international transport costs (for roots and tubers). At the same time, many countries, especially in sub-Saharan Africa, have maintained overvalued exchange rates, which have reduced the cost of wheat imports relative to domestically produced staples. A number of countries have also recently established two-tiered exchange rates under which wheat is invariably classified as an "essential" item and imported at the cheaper rate (e.g., Ecuador).

The effect of these various policy interventions on prices of wheat products have been threefold. First, the absolute price of wheat products to consumers is often low. Table 7 shows the distribution of bread prices in wheat-importing countries in relation to a "world" price based on imported wheat in economies such as Panama and Hong Kong with relatively free markets. For most countries, especially the major wheat importers of the Middle East/North Africa and Mexico and Brazil, consumer bread prices are low; for many, bread prices are less than one-half of world prices. Second, the price of wheat products is often low in relation to competing food staples. I have estimated that, for consumer prices based on imported grains, the ratio of the price of wheat flour to rice should be slightly less than 1.0 in a free-trading country. For wheat flour to maize, the price ratio should be close to 2.0.[8] In many countries of sub-Saharan Africa and Latin America where coarse grains are an important staple (e.g., Ivory Coast, Ghana, Nigeria, Egypt, Sudan, Ecuador, and Brazil), wheat flour based on

TABLE 7 **Distribution of Bread Prices by Developing Country Region, 1980–81 (No. of Countries)**

	Low Prices (<US$.60/kg)	"Normal" Prices[a] (US$.60–1.00/kg)	High Prices (>US$1.00/kg)
Sub-Saharan Africa	7	10	5
Middle East/North Africa	11	—	—
South Asia	4	1	—
Southeast and East Asia	—	3	5
Latin America	6	6	5
Total	28	20	15

NOTE: Based on conversion at the official exchange rate. Overvalued exchange rates reduced real prices further in a number of countries, especially in sub-Saharan Africa.
[a]"Normal" bread prices are based on prices in importing countries with relatively free trade policies. In Hong Kong, Panama, and Singapore, bread prices were approximately US$.80/kg. A 25% variation in this price has been selected to allow for differences in local processing costs.

SOURCE: Calculated from data reported in ILO, *Bulletin of Labour Statistics* (various issues), supplemented and edited by the author.

imported wheat was cheaper than the locally produced coarse grain staple in 1980–81. Likewise in East Asia (e.g., Korea and Japan), wheat flour was much cheaper than rice (the local staple) because of high protection to domestic rice production. However, in some rice-producing countries, the price of wheat products relative to rice was high due to high tariffs on imported wheat (e.g., Colombia) and/or subsidies or export taxes on rice (e.g., Thailand). No country for which data are available had high wheat flour prices relative to maize (i.e., a ratio of 2:1 or above). Third, policy interventions in favor of wheat have resulted in declining *real* consumer prices for wheat products, both absolutely and relatively, over a wide array of countries (Tables 8 and 9). The major exception once again has been in the rice economies of Southeast Asia, where real bread prices have increased significantly. In relatively "free market" economies, such as Hong Kong, real bread prices changed little in the 1970s.

There is ample evidence that wheat consumption is sensitive to prices, especially in countries where wheat is not a traditional staple. Estimated price elasticities in these countries usually exceed −0.5 (absolutely) with relatively high cross-price elasticities with respect to rice.[9] Declining real prices of wheat products may explain half or more of the rapid increase in per capita wheat consumption in many countries during the 1970s.[10]

Although the evidence on biases in consumer pricing policy across countries is overwhelming, the consequences of this bias and the reasons for its existence have not been sufficiently analyzed. Several factors appear to converge in favor of wheat. In a number of wheat-producing countries, such as Mexico, India, and China, distinct surplus wheat-producing regions exist where government grain-procurement agencies find it convenient to purchase urban food requirements. Hence it is relatively easy to control procurement prices. Rapid technological change and relatively stable yields in the largely irrigated wheat environments of these countries have also facilitated the growing importance of wheat in government procurement strategies. In wheat-importing countries, the fact that wheat is readily available in world markets and usually passes through a small number of mills makes it relatively easy to control prices.[11]

Perhaps more important, urban populations—particularly middle- and upper-income groups who consume much of the imported wheat—are an important political power base capable of influencing policy. In almost all countries, wheat subsidies have been captured largely by urban populations and in many cases by the middle- and upper-income urban groups. For example, Alvarez estimated that before Peru eliminated food subsidies in the late 1970s (60% of which went for wheat), 83% of the subsidies were received by the urban population and 40% by the middle- and upper-income groups of Lima who made up only 10% of the total population.[12] A similar situation prevailed in Brazil and Indonesia.[13] Only in South Asia (India, Sri Lanka, and Bangladesh) has there been an effort to target wheat

TABLE 8 **Classification of Countries by Annual Percentage Change in Real Prices of Bread, 1971–81**

Region	No. of Countries Where Data Available	Annual Change in Real Price of Bread (% of Countries)					
		<−3%	−3%–−1%	−1%–1%	1%–3%	>3%	Total
Sub-Saharan Atrica	17	35	18	18	18	12	100
Middle East/North Africa	8	50	38	—	12	—	100
South Asia/Southeast Asia	12	—	8	25	8	58	100
Latin America	16	44	12	—	6	38	100
All developing countries	53	32	17	11	11	28	100
Industrialized countries	13	—	8	31	62	—	100

SOURCE: See Table 7. Consumer prices deflated by the consumer price index from IMF, *International Financial Statistics* (Washington, D.C.: various issues).

TABLE 9 **Changes in Real Prices of Wheat Flour, Rice, and Maize in Selected Countries, 1970s**

City and Country	Period	Change in Retail Prices (%)		
		Wheat Flour	Rice	Maize, Other Coarse Grain
São Paulo, Brazil	1969–79	−46	−1	167
Cali, Colombia	1970–80	7	3	62
Mexico City, Mexico	1970–80	−48	18	19[a]
Khartoum, Sudan	1971–81	−44	—	1[b]
Djakarta, Indonesia	1969–79	−22	−8	9
Dakar, Senegal[c]	1970–80	163	−30	10§
Manila, Philippines[c]	1968–78	168	−19	7

NOTE: Annual average consumer prices deflated by the consumer price index.
[a]Maize tortillas.
[b]Sorghum.
[c]Bread subsidies were drastically cut in Senegal, and import protection increased in Philippines in the 1970s.
[d]Millet.

SOURCE: See Table 5.

subsidies to low-income consumers. Many subsidy programs were initiated in 1974–75 to protect consumers from high world wheat prices at that time. Other countries instituted subsidies when wheat food aid was eliminated or reduced.[14] Finally, many governments with strict consumer price controls for flour or bread have been reluctant to raise prices in line with inflation, which has led to rapid real price declines and increasing subsidy levels in countries with high inflation rates (e.g., Mexico and Brazil).

Urban Food Supplies and Wheat Imports

There are also a number of factors operating on the supply side that influence wheat consumption in urban areas. With strong preferences for wheat products, lagging domestic production of staple foods, and poor infrastructure for transporting and marketing domestic food production in urban areas, there has been a natural tendency to import wheat to feed urban consumers, especially in countries where large cities are located on the coast. This is evident in the relatively low year-to-year variability in wheat imports by most countries (Table 10). In most cases, wheat imports have steadily increased with little relationship to domestic cereal production except in some major wheat-producing countries. Also, wheat imports are relatively inelastic with respect to world prices since both consumer and producer prices are usually fixed by government policy and often do not reflect changes in world prices.[15] Rice imports, on the other hand, are more variable and depend on domestic rice production as well as fluctuations in

TABLE 10 **Index of Variability in Wheat and Rice Imports: Selected Wheat-Producing and Non-Wheat-Producing Countries, 1966–80 (%)**

Country	Wheat	Rice
Wheat-producing:		
Syria	54	32
Iran	44	49
Morocco	13	[a]
Mexico	82	[a]
Chile	31	62
Non-wheat-producing:		
Ghana	20	16
Indonesia	26	29
Philippines	12	[a]
Honduras	11	50
Venezuela	12	[a]

NOTE: Calculated as $I = CV\sqrt{1 - \bar{R}^2}$, where CV is the coefficient of variability and R is the corrected coefficient of determination from a linear time trend regression. The lower the index, I, the less the variability around the trend line.

[a]Not calculated because country is exporter or insignificant importer of that commodity.

SOURCE: See J. D. A. Cuddy and P. A. Della Valle, "Measuring the Instability of Time Series Data," *Oxford Bulletin of Economics and Statistics*, 40 (1978): 79–85.

world rice prices.[16] This strategy of relying on wheat imports to supply urban consumers is most advanced in Latin America, where close to two-thirds of the population now lives in urban areas. In the Andean region, wheat consumption has reached 40 kilograms per capita, over 90% of which is imported and most of which is consumed in urban areas.

Using wheat imports to feed urban consumers is to some extent reinforcing. A marketing, storage, and processing infrastructure has been developed accordingly. Because these investments are usually oriented toward port facilities and located in large coastal cities, they cannot be readily utilized to market domestic food production. In addition, the wheat-processing sector (i.e., milling and baking) is highly wheat specific and cannot be converted to processing domestically produced food because either mills are located at a substantial distance from the wheat-producing region or, more commonly, wheat is not produced locally and is not likely to be, in the near future, in the tropical belt of countries. Indeed, the wheat-processing sector in developing countries is often a powerful interest group able to influence and even control grain-procurement strategies.[17] This sector has grown very rapidly in the last 10–20 years so that the proportion of wheat flour in international wheat trade has declined.[18] The most rapid growth of the milling industry has occurred in the tropical belt, where countries such

TABLE 11 **Examples of Tariff Protection Provided to Wheat-Milling Industry**

		Import Duty (%)	
	Year	Wheat Grain	Wheat Flour
Republic of Korea	1975	0	30
Philippines	1975	10	30
Kenya	1975	0	40
Sierra Leone	1974	0	167
Guatemala	1975	6	50
Ecuador	1979	0	70
Papua New Guinea	1982	0	Banned
Nigeria	1982	5	15

SOURCE: Data for 1975 are from FAO, *Review of Agricultural Policies* (Rome: FAO, 1976). Other data were collected by the author.

as Nigeria, Sri Lanka, and Indonesia—which were importing most of their wheat as flour in 1970—have recently become self-sufficient in flour production. Nigeria and Indonesia, in fact, have an excess of milling capacity beyond their annual consumption of 1.5–2.0 million tons of wheat. Ironically, the larger flour mills in the world are now located in these non-wheat-producing countries. While there are cost economies in grain versus flour transport, there is little evidence that it is an efficient use of resources to establish a capital- and foreign-exchange-intensive local milling industry in non-wheat-producing countries. This industry usually receives high tariff protection from imported flour (Table 11) and in many cases operates at a high margin relative to mills in developed countries.[19] More important, once established, the industry has a vested interest in continuing wheat imports, even if local production of cereals other than wheat offers the opportunity for import substitution. There are only a few cases in which wheat imports by non-wheat-producing countries have declined, and these have occurred in times of acute foreign exchange crises, such as in Sierra Leone, Guyana, and Ghana in 1982–83.

THE EXTERNAL INFLUENCES

World Wheat Prices and Policies of Exporting Countries

A number of external factors related to world wheat markets and policies of exporting countries have promoted wheat imports and consumption. The simplest of these is the fact that the price of wheat in international markets is significantly lower than the main competing food grain (i.e., rice), is less variable, and has tended to decline over time relative to rice.[20] Nonetheless, the costs of wheat imports are often underestimated since wheat is usually processed using foreign-exchange-intensive milling and baking methods and over one-quarter of the product (i.e., the bran) is used for animal feed.[21]

The lower price of wheat in world markets reflects rapid technological change in wheat-exporting countries as well as agricultural policies of exporting countries. The United States in the 1960s and the EEC in the 1970s have explicitly subsidized wheat exports. It is estimated that EEC export subsidies reduced the world market price of wheat by 11% in the 1970s.[22] In recent years, aggressive credit programs have provided attractive terms for purchase of wheat in world markets.

Food Aid

Food aid has also been a major external influence on wheat imports. Over 80% of cereal food aid is provided in the form of wheat or wheat flour, and this proportion holds for both countries where wheat is a traditional staple and countries where wheat is not a staple. Food aid originated with a specific objective of disposing of the surpluses of exporting countries and developing markets for commercial sales of these products. In the early 1960s, nearly 60% of Third World wheat imports (excluding China) were provided by food aid. In the 1970s, the amount of wheat food aid declined and now averages only 12% of total wheat imports of developing countries. Nonetheless, it remains important to some countries, such as Egypt, Sri Lanka, the Sudan, and Bolivia.

The impact of food aid on food imports and domestic cereal production is complex and country specific, and a full discussion is beyond the scope of this paper.[23] The most direct effect is to lower the real price of wheat imports (often to half or less than half of the price of commercial imports) and, in many cases, to provide wheat free of charge. Recent studies have shown that countries that receive significant amounts of wheat food aid (e.g., Bangladesh, Bolivia, and the Sudan) have higher per capita wheat imports than non-food-aid countries of comparable levels of income and urbanization.[24] Furthermore, current commercial imports of wheat by the tropical countries are positively related to the amount of wheat received as food aid in the past.[25] This long-run effect reflects several factors, such as *(a)* an established consumer exposure and even preference for wheat products, *(b)* market promotion activities often associated with food aid programs, *(c)* institutionalization of low wheat prices to urban consumers, and *(d)* establishment of a local wheat-processing industry to accommodate food aid imports.

Finally, the possible negative impact of food aid on domestic food production is a subject of continuing controversy. In the Andean region, domestic wheat production declined in response to reduced producer prices for wheat during the 1960s when most wheat was imported as food aid.[26] In other cases, such as Brazil, domestic producer prices for wheat were supported at a level above world prices, and domestic wheat production increased rapidly.[27]

Other External Influences

Wheat-exporting countries have actively promoted bread consumption in many countries. Private as well as public agencies of exporting countries have provided technical advice and training for the establishment of local milling and baking industries and for introducing new wheat products to consumers.[28] In contrast, export promotion efforts for rice and especially maize for food are relatively weak.

Furthermore, the milling and baking industry in many developing countries is owned or closely linked to the grain industry of the exporting countries. This is particularly the case in Latin America and Africa, where flour mills and large bakers or other manufacturing industries based on wheat (e.g., the biscuit industry) are frequently owned by multinational corporations with links to the grain-export business.[29] These industries often consist of one or a few firms that undertake sales and shipment of wheat as well as local processing and can exert considerable pressure on government policy. In some cases, foreign aid agencies of donor countries have actively supported the development of a baking industry.[30]

More recently, a fourth external influence, the International Monetary Fund, has exerted considerable pressure *against* the set of national policies discussed above.[31] With the current debt crisis, countries receiving loans from the IMF have committed themselves to more realistic exchange-rate policies and to elimination of bread subsidies. These policies have led to sharp increases in bread prices in 1982–83 in a number of countries, such as Brazil, Ecuador, and Nigeria. Nonetheless, the effect has been only partial, and growth of wheat consumption may have slowed but has not declined. Furthermore, the political significance of bread prices has recently been demonstrated by widespread protests in Tunisia and Morocco when bread subsidies were reduced in 1984. In both cases, governments reversed their decision to raise bread prices.

IMPLICATIONS FOR FOOD IMPORTS AND FOOD POLICY

The data presented here clearly demonstrate the special place of wheat in national and international food policy decisions. Governments have attempted to control both producer and consumer prices of wheat in almost all Third World countries. Relative to other food staples (except possibly rice), these policy interventions have been to a remarkable extent successful in controlling prices. With controlled producer and consumer prices, wheat imports have been the major instrument of food policy to equate supply and demand. Furthermore, while Third World food imports are often equated with efforts to reduce hunger and the interests of feeding the poor, the evidence of this paper suggests otherwise, especially in countries where wheat is not a traditional staple. Food imports in these countries repre-

sent a desire of middle-income urban consumers for a low-cost convenience food.

The size of the policy interventions and the number of countries involved are sufficient to account for much of the growth of food imports to the Third World in the last decade. Consumer subsidies alone account for a large share of wheat imports. Taking the large wheat importers alone (over 500,000 tons annually), the weighted average subsidy on wheat in 1981 was over 50% of consumer prices. Even assuming a relatively inelastic demand (−0.33), wheat imports by this group of countries would be at least one-third lower if market prices prevailed. These countries together make up well over half of commercial wheat imports by the Third World. This, together with wheat imports as food aid (over 6.0 million tons) and subsidized exports by the EEC (14 million tons), which are largely destined to Third World countries, suggests that a significant share of wheat imports by the Third World is accounted for by direct government interventions in wheat markets.

The regions with the strongest prospects for continuing rapid increases in wheat imports are the tropical belt of non-wheat-producing countries in Southeast Asia and sub-Saharan Africa. Here urbanization is still low but increasing rapidly. In sub-Saharan Africa, population growth in 35 major capitals now averages 9% annually.[32] At this rate, not only the marketed food surplus but also the associated marketing, transportation, and storage requirements must double in size every 8 years simply to maintain per capita food consumption in urban areas at current levels. The strategy of turning to imported wheat (reinforced by consumer pricing policies) to meet urban food supplies is likely to continue unless there is a drastic reversal in domestic food production and food policy. In Southeast Asia, pricing policies often lead to relatively high wheat prices, but rapidly rising incomes and urbanization still promote demand for wheat products.

Almost all Third World countries have expressed an objective of reducing food imports. For most countries, food policy measures are available to arrest the trend toward increased reliance on imported wheat. In the wheat-producing countries of the Middle East and North Africa, considerable potential exists for increasing domestic wheat production.[33] Targeting of urban consumer subsidies to the poor would also reduce demand and free resources for development of the domestic food sector.

For the non-wheat-producing countries of the tropics, substitution of wheat imports will require a combination of strategies including *(a)* increased domestic production of local food staples, *(b)* development of convenience food based on local staples (e.g., composite flours for bread), and *(c)* removal of policy-induced price disincentives against consumption of local staples. Sri Lanka, Colombia, and Senegal are examples of countries that reduced or eliminated bread subsidies in the 1970s. They are also among the handful of countries where per capita wheat consumption has declined. At the same time, acceptance of food aid in the form of local cereals will reduce the impact of wheat food aid (other than emergency aid) on consumer habits and slow the development of a wheat-processing industry. Importation of wheat as flour rather than grain would also provide a more temporary nature to wheat imports than the establishment of a local milling industry. The removal of tariff protection on wheat milling is probably sufficient in most countries to arrest the development of this industry.

There is now a renewed emphasis on finding ways to make local staples into acceptable convenience foods for urban consumers. This includes the numerous but not very successful attempts to produce composite flours by mixing local staples and wheat flour for bread making. In most cases, however, the major obstacle is pricing policy that maintains low wheat prices relative to local staples and provides no incentive to substitute for imported wheat.

All of these food policy alternatives to slow the trend in wheat imports are, of course, challenging the very interest groups that have led to the growth of wheat imports in the last 2 decades. Yet there is some hope for optimism, given the policy changes in a number of countries during the economic crisis of 1982–83. International and donor agencies can reinforce these trends through more appropriate food aid policies and more attention to the underlying causes of food imports. In particular, those charged with analyzing the "food gap" will need to pay more attention to variables such as urbanization and consumer price policies in making their projections. This argues for more analysis of food policy at the country level, which can then be built up into aggregate regional and world projections.

NOTES

1. See, e.g., projections in FAO, *Agriculture: Towards 2000* (Rome: FAO, 1979).
2. Imports of rice, the single most important food staple of developing countries, are only about one-sixth of wheat imports and have grown much more slowly. Imports of coarse grains by developing countries have risen rapidly, but almost all were destined to animal feed. See CIMMYT, *World Maize Facts and Trends*, Report no. 1 (El Batan, Mexico: CIMMYT, 1981).
3. D. Byerlee, *The Increasing Role of Wheat Consumption and Imports in the Developing World*, Economics Paper no. 5/83 (El Batan, Mexico: CIMMYT, 1983).
4. Throughout this paper, the term "tropical countries" refers to countries that are entirely or almost entirely within the latitude belt 23 degrees north to 23 degrees south.
5. Byerlee, (note 3 above).
6. D. Franklin, M. P. Demousin, and M. W. Harell, *Consumption Effects of Agricultural Policies: Bread Prices in the Sudan* (Raleigh, N.C.: Sigma One Corp., 1982).
7. This issue is analyzed in detail in D. Byerlee and G. Sain, "Food Pricing Policy in Developing Countries: Bias against Agriculture or for Urban Consumers?" *American Journal of Agricultural Economics*, 68 (1986), pp. 961–969. There is substantial evidence that producer pricing policy is more favorable to producers

than earlier studies had indicated. For earlier evidence, see W. L. Peterson, "International Farm Prices and the Social Cost of Cheap Food Policies," *American Journal of Agricultural Economics*, 61 (1979): 12–21; and E. Lutz and P. L. Scandizzo, "Price Distortions in Developing Countries: A Bias against Agriculture," *European Review of Agricultural Economics*, 7 (1980): 5–27. However, the large size of consumer subsidies relative to government revenues has undoubtedly reduced government investments in promoting domestic food production.

8. Assumes export prices of wheat, rice, and maize of x, 2x, and 0.75x, respectively; international freight and handling 0.3x; marketing margin of 15% of CIF price; milling rate .72; and a 10% markup to represent the mill to retail margin. Margins were based on data from several countries. See Byerlee (note 3) for details.
9. Recent estimates of price elasticities for wheat products are as follows: −0.8 for the Philippines [H. Bouis, "Demand for Cereal Staples in the Philippines," unpublished paper (Washington, D.C.: IFPRI, 1982)]; −0.9 for Brazil [W. Gray, *Food Consumption Parameters for Brazil and Their Application to Food Policy*, Research Report no. 32 (Washington, D.C.: IFPRI, 1982)]; −0.4 for the Sudan (Franklin et al.); −1.8 for Indonesia [S. L. Magiera, *The Role of Wheat in the Indonesian Food Sector*, Foreign Agricultural Economics Report no. 170 (Washington, D.C.: USDA, 1981)]; and −1.1 for Sri Lanka [H. Alderman and C. P. Timmer, "Consumption Parameters for Sri Lankan Food Policy Analysis, *Sri Lankan Journal of Agrarian Studies*, 1 (1980): 1–12].
10. For evidence, see Franklin et al. on the Sudan and Gray on Brazil.
11. C. Hodges and T. Roe, "Government Intervention into the Market for Wheat in Four Low-Income Countries" (paper presented at the meeting of the American Agricultural Economics Society, Logan, Utah, 1982).
12. E. Alvarez, *Política Agraria y Estancamiento de la Agricultura, 1967–77* (Lima: Instituto de Estudios Peruanos, 1980).
13. For Brazil, see Gray. For Indonesia, see A. J. Nyberg, "Food Policy—Import Substitution or Import Dependence" (paper presented to the Third Biennial Meeting of the Agricultural Economics Association of Southeast Asia, Kuala Lumpur, 1979).
14. This is partially supported by a negative correlation of −.46 between current bread prices and wheat food aid per capita received during 1955–75 in a cross-sectional analysis of 39 tropical countries. See Byerlee (note 3 above).
15. Econometric analyses of wheat imports also support this view. See P. C. Abbott, "Modeling International Grain Trade with Government Controlled Markets," *American Journal of Agricultural Economics*, 61 (1979): 22–31; and C. L. Jabara, "Cross-Sectional Analysis of Wheat Import Demand among Middle-Income Developing Countries," *Agricultural Economics Research*, 34 (1982): 34–37.
16. W. P. Falcon and E. A. Monke, "International Trade in Rice," *Food Research Institute Studies*, 17 (1979–80): 176–306.
17. W. J. Carbonell and H. Rothman, "An Implicit Food Policy: Wheat Consumption Changes in Venezuela," *Food Policy*, 2 (1977): 305–17.
18. Wheat flour production increased at an annual rate of 23.4% in Brazil, 7.6% in Indonesia, 11.1% in Kenya, 11.7% in Cuba, 14.4% in Guatemala, and 7.2% in the Philippines between 1975 and 1980. See United Nations, *Monthly Bulletin of Statistics* (various issues).

19. Personal communication with mill operators in Ghana, Indonesia, Senegal, Mexico, and the Dominican Republic suggests that milling margins (ex-mill price of flour in wheat equivalent divided by mill delivery price of wheat) are often of the order of 20%–40% compared with margins close to zero in industrial countries where the value of by-products pays for the milling cost. See also Magiera (note 9 above).
20. R. Barker and R. W. Herdt, *The Asian Rice Economy* (Washington, D.C.: Resources for the Future, 1985); and Falcon and Monke (note 16 above).
21. Flour milling of imported wheat is usually undertaken in large, capital-intensive mills. Baking techniques, however, may range from very small scale, labor-intensive firms to large, capital-intensive industries. See E. Chuta, *Choice of Appropriate Technique in the African Bread Industry with Special Reference to Sierra Leone*, World Employment Program Working Paper (Geneva: International Labor Organization, 1981); and C. B. Baron, ed., *Technology, Employment and Basic Needs in Food Processing in Developing Countries* (New York: Pergamon Press, 1980).
22. V. Koester, *Policy Options for the Grain Economy of the European Community: Implications for Developing Countries*, Research Report no. 35 (Washington, D.C.: IFPRI, 1982).
23. For a recent review of effects of food aid, see C. Stevens, *Food Aid and the Developing World* (London: Croom Helm, 1979).
24. See Byerlee (note 3 above); Abbott (note 15 above); Hodges and Roe (note 11 above).
25. Byerlee (note 3 above).
26. L. Dudley and R. J. Sandilands, "The Side Effects of Foreign Aid: The Case of Public Law 480 Wheat in Colombia," *Economic Development and Cultural Change*, 23 (1975): 325–36; and M. Valderrama, "Effecto de las Exportaciones Norte-americanas de Trigo a Bolivia, Perú, Ecuador y Colombia," *Estudios Rurales Latinoamericanos*, 2 (1979): 173–98.
27. L. Hall, "Evaluating the Effects of PL480 Wheat Imports on Brazil's Grain Sector," *American Journal of Agricultural Economics*, 62 (1980): 19–28.
28. See W. Wilson, "U.S. Wheat Associates: Recipe for Successful Marketing," *Foreign Agriculture*, 20 (1982): 18–19; "U.S. Export Development Programs," *Agriculture Abroad* (August 1981).
29. The large grain-exporting companies, Continental and Bunge, and U.S. flour millers such as General Mills, Pillsbury, and International Multifoods each own and operate flour mills in several Latin American countries. In West Africa, flour mills in Sierra Leone, Liberia, and Nigeria are owned by Seaboard Corporation, a grain-shipping company now linked to Cargill that also owns mills in Guyana and Ecuador. In Francophone countries, mills are owned by a French grain-marketing and milling cooperative. In many countries, such as Indonesia and Nigeria, the state also owns a significant interest in flour mills. See P. Barback and P. Flynn, *Agribusiness in the Americas* (New York: Monthly Review Press, 1980); M. Lajo, "Perú: Monopolio y Vulnerabilidad Alimentaria," *Comercio Exterior* (Mexico City), 32 (1982): 84–94; D. Johnson, "International Multifoods Strategy in Venezuela," *Agribusiness Worldwide* (February 1981), pp. 38–42, and "Pillsbury's Involvement with the Saudi Arabian Flour Mills," *Agribusiness Worldwide* (October 1980), pp. 38–43.)

30. L. Freeman, "CIDA, Wheat and Rural Development in Tanzania," *Canadian Journal of African Studies*, 16 (1982): 479–504. USAID involvement in a bakeries project is discussed in "Problems Delay Egyptian Plants," *Milling and Baking News* (Kansas City, Mo.), vol. 63 (October 4, 1983).
31. See D. K. Willis, "The Link between International Aid and Riots in African Streets," *Christian Science Monitor* (April 20–26, 1985).
32. J. Meerman and S. H. Cochrane, "Population Growth and Food Supply in Sub-Saharan Africa," *Finance and Development*, 19 (1982): 12–17.
33. See D. Byerlee and D. L. Winkelmann, *Accelerated Wheat Production in Semi-Arid Areas: Economic and Policy Issues*, Economics Working Paper no. 81/2 (El Batan, Mexico: CIMMYT, 1981).