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**THE WORLD GRAIN MARKET:  
OUTLOOK AND IMPLICATIONS FOR  
DEVELOPING COUNTRIES**

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## **FOREWORD**

This paper details the fundamental changes that have taken place in world grain markets over the past 15 years and examines the implications of those changes for the agricultural trade and development strategies of the developing countries. Because developing countries produce, export, and import grains, they need to be aware of changes in the world grain markets. Changes in price levels for grains and in relative prices among grains will call for policy adjustments in many developing countries if they are to use resources efficiently and maximize agricultural and economic growth.

## **ABSTRACT**

This paper reviews changes in the world grain economy over the past 15 years and the outlook for the next five years. It draws implications from this situation and outlook for grain prices, food security, and trade and development strategies of the developing countries. Since the situation in the eighties is vastly different from that of the seventies, policies for dealing with grain production, consumption, trade and food security should probably be modified to fit the conditions now prevailing. Among the factors affecting the grain situation are the policies of the United States and European Community (EC) which are having the effect of lowering grain prices. Changes in world grain price levels, relative prices among grains, and relative prices between grains and other agricultural commodities will require policy adjustments on the part of the developing countries.

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# THE WORLD GRAIN MARKET: OUTLOOK AND IMPLICATIONS FOR DEVELOPING COUNTRIES

## I. Introduction

This paper examines the fundamental changes that have taken place over the past 15 years in the world grain economy, the outlook for the next five years, and implications for world grain prices, food security, and trade and development strategies for developing countries.

The 1970's were characterized by grain shortages and high and unstable grain prices. This experience profoundly affected thinking around the world about man's most basic food. With the benefit of hindsight we can now say with some confidence that the 1970's were an aberration. We find ourselves in the 1980's back in a period of abundant grain supplies with prospects for low and relatively stable grain prices for at least the next five years. There will likely be years of bad crops in the future, but the world grain economy appears to be well prepared to accommodate production declines without causing major hardships, as it did in the 1950's and 1960's.

We describe how the world situation changed in the 1980's and what it means for at least the next several years. Policies based on the experience of the 1970's for dealing with grain production, consumption, trade, and food security should most likely be modified to fit the conditions likely to prevail over the rest of the 1980's.

Policy developments in the U.S. and European Community (EC) in response to growing grain surpluses have fundamentally altered the world grain price outlook. Grain prices will be sharply lower than they have been and there will be changes in relative prices among various types of grain.

Developing countries need to be aware of these changes since many are either importers or exporters of various types of grain. Changes in world grain price levels, relative prices among grains, and relative prices between grains and other agricultural commodities will call for adjustments in the policies of many developing countries if they are to use their resources efficiently and maximize both agricultural and economic growth.

## II. Historical Background

### A. Overview

World grain markets underwent dramatic changes during the past 15 years. The 1970's began with ample grain supplies (surpluses) and low and stable prices. Starting in 1972, weather conditions and economic and monetary factors resulted in wide swings in world grain prices and rapid growth in world grain trade. Grain markets were more unsettled during the balance of the decade than at any time since the late 1940's.

The 1980's started with the general perception that the basic trends of the 1970's would continue:

- The world economy would continue to grow in real terms at respectable rates.
- Inflation would continue and be reflected in commodity prices.
- World grain demand would press against production capacity and grain prices would remain high.
- World grain trade would continue to expand rapidly.

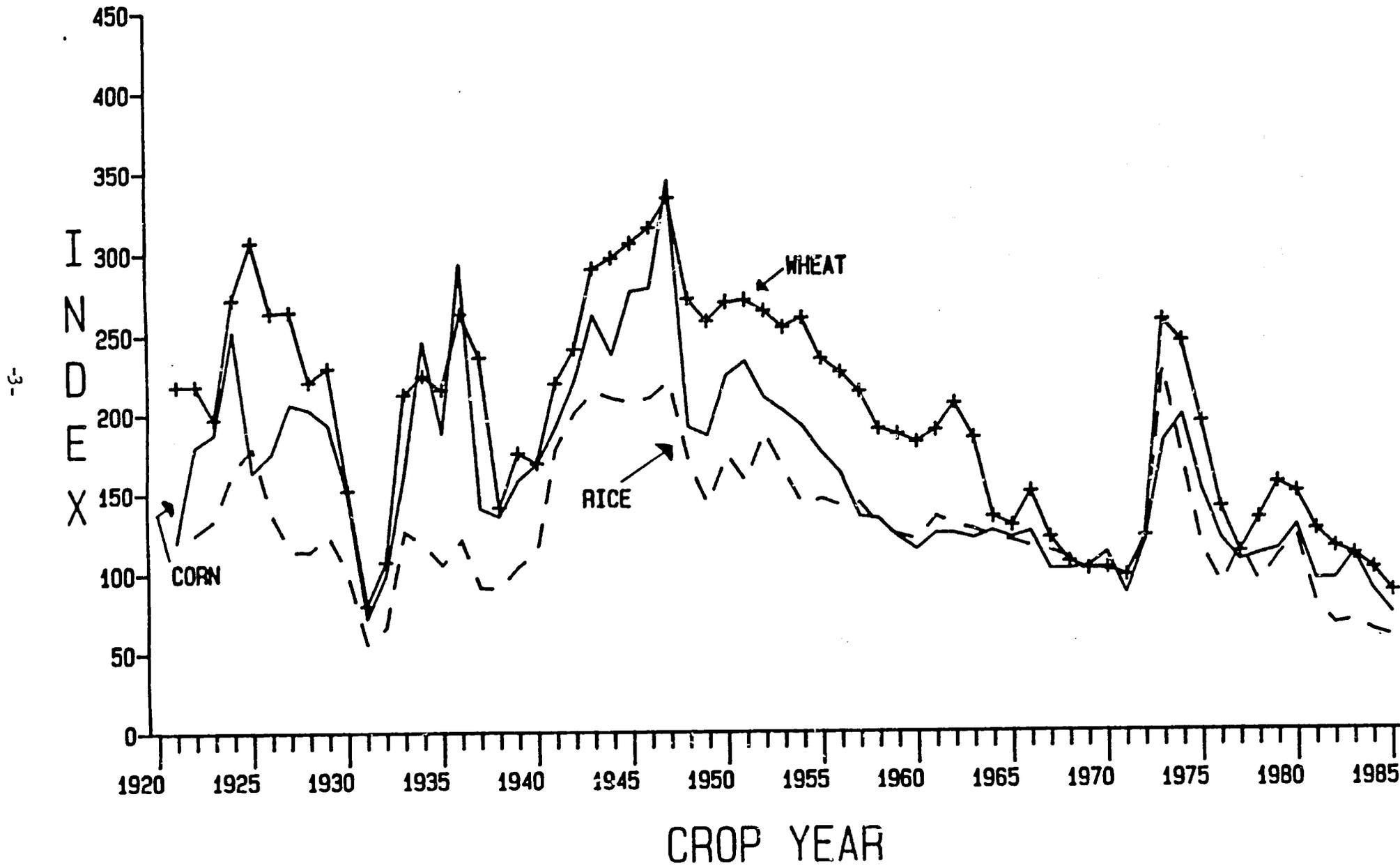
The actual experience during the first half of the 1980's turned out to be just the opposite of what was expected at the start of the decade. Economic growth was disappointing, inflation rates declined sharply, world grain trade declined, substantial surplus capacity in grain production emerged, and world grain prices have declined sharply in both nominal and real terms.

It is now generally recognized that the 1970's were "...an aberration. Those were unusual times triggered by unusual circumstances, the combination of which is not likely to be repeated."<sup>1/</sup> The nature of this aberration is shown in the following chart that depicts the behavior of deflated (real) commodity prices for the 1925-85 period for grains and cotton. Real prices for these commodities have trended downward since 1925, and especially since the late 1940's. Nominal grain prices were quite stable in the 1950-70 period and real prices declined steadily. Annual variations in prices were small during this 20-year period. Prices increased sharply in the early 1970's and were unusually volatile during most of that decade. However, real commodity prices have been falling in recent years and it appears that we are now back on the long-term downtrend.

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<sup>1/</sup> The Imperative of Successful Competition, Remarks by Daniel G. Amstutz, Under Secretary for International Affairs and Commodity Programs, U.S. Department of Agriculture, before the Kansas City Federal Reserve Bank Seminar, Kansas City, Kansas, October 31, 1985, p. 5.

# DEFLATED COMMODITY PRICE INDICES (1969-79=100)



The contrast between the 1970's and 1980's can also be seen in world grain production, consumption, stocks and trade (Tables 1 and 2). World grain production stagnated in the 1971/72-1975/76 period, and fluctuated markedly from one year to the next. Meanwhile demand continued to increase as a result of income and population growth. In this period, world grain stocks were reduced from 183 to 135 mmt, or by 26 percent. Many people considered the 135 mmt stock level in 1974/75 to be the absolute minimum (pipeline) level required for national and international grain markets to function. Grain stocks as a percent of consumption declined from about 15 percent at the beginning of the decade to about 11 percent in the middle of the decade. We also saw a major expansion in world grain trade in the 1971/72-1975/76 period -- an increase of 37 percent -- as countries with serious grain shortages turned to world markets to meet their needs.

The world grain situation improved in the latter half of the 1970's, but that improvement merely permitted the world grain economy to return to a more normal state. Production, consumption, and trade all grew and prices declined from the extremely high levels experienced earlier in the decade. Thus, recovery permitted an increase in world grain stocks, both in absolute size and relative to consumption.

In many ways the first half of the 1980's stands in sharp contrast to the previous decade. Production, consumption and stocks all increased. World grain production declined sharply in 1983/84 with most of the decline in the U.S. due to government programs and poor weather. But grain stocks were large enough to permit growth in world consumption. By 1985/86 world grain stocks were at a record 314 mmt or nearly 20 percent of consumption.

Table 1

<u>Year</u>	<u>World Grain Situation</u> <sup>1/</sup>		<u>Stocks</u>		<u>Ending Stocks as % of Consumption</u>
	<u>Production</u>	<u>Consumption</u>	<u>World</u>	<u>U.S.</u>	
	----- mmt -----				
1970/71	1,102.5	1,143.8	165.2	55.1	14.4
1971/72	1,196.5	1,178.5	183.3	74.0	15.6
1972/73	1,160.9	1,201.2	142.8	48.4	11.9
1973/74	1,272.6	1,266.3	148.5	31.3	11.7
1974/75	1,217.7	1,229.2	135.4	27.6	11.0
1975/76	1,246.7	1,237.8	142.1	35.7	11.5
1976/77	1,363.1	1,309.7	195.8	61.5	15.0
1977/78	1,337.2	1,338.9	193.7	74.8	14.4
1978/79	1,465.7	1,438.2	220.9	72.5	15.5
1979/80	1,426.6	1,450.2	197.2	78.2	13.6
1980/81	1,446.8	1,461.1	183.2	62.4	12.6
1981/82	1,498.9	1,462.8	219.2	100.3	15.0
1982/83	1,544.1	1,511.0	252.2	140.3	16.7
1983/84	1,484.3	1,551.6	185.0	72.1	12.0
1984/85	1,641.5	1,591.9	234.7	90.7	14.0
1985/86 Est.	1,663.2	1,584.4	313.7	169.0	19.8

Source: Grains, Foreign Agriculture Circular, FAS, USDA, various issues.

<sup>1/</sup> Wheat, coarse grains, and rice on milled basis.

Another change in the world grain situation is the decline in world trade during the 1980's, reflecting abundant supplies relative to demand and less pressure for many countries to meet their requirements through imports. World grain trade increased 96 percent or by 7 percent a year in the 1970/71-1980/81 period. In the 1980/81-1985/86 period, however, world grain trade declined 12 percent or 2.5 percent a year.

Table 2

<u>Year</u>	<u>World Grain Trade</u>			
	<u>Wheat</u>	<u>Coarse Grain</u>	<u>Rice</u>	<u>Total</u>
	----- mmt -----			
1970/71	55.0	46.0	8.6	109.6
1971/72	52.0	49.3	8.7	110.0
1972/73	67.0	59.2	8.4	134.6
1973/74	63.0	71.0	7.7	141.6
1974/75	64.3	65.0	7.3	136.6
1975/76	66.7	75.2	8.4	150.3
1976/77	63.3	83.9	10.6	157.7
1977/78	72.8	88.8	9.6	171.2
1978/79	72.0	92.7	12.0	176.7
1979/80	86.0	99.2	12.7	197.9
1980/81	94.1	108.0	13.1	215.2
1981/82	101.3	96.6	11.8	209.8
1982/83	98.6	89.9	11.9	200.5
1983/84	102.0	91.9	12.6	206.5
1984/85	106.1	101.6	11.4	219.1
1985/86 Est.	88.1	89.7	11.6	189.4

Source: See Table 1.

## B. Surplus Capacity :

Grain surpluses have once again emerged as a persistent feature of the world grain economy. In strict economic terms, a surplus is defined as the excess of production over consumption at a price. In some countries, stocks are a proxy for the size of the surplus, especially where governments intervene to support market prices. This is certainly true in the European Community (EC) and the U.S. In addition, the U.S. is about the only country in the world that pays farmers to idle acreage in order to control production. In this situation, the amount of land idled is also part of the surplus problem.

Table 3 shows harvested grain area in the U.S. and the EC and the magnitude of the grain surplus problem in terms of stocks of wheat and coarse grains (corn, sorghum, barley, oats, and rye). We focus on these two producing areas because they are major areas where grain stocks are directly tied to agricultural price and income support policies and represent a good proxy for surplus capacity. Some other countries also increase or decrease stocks as part of price support operations (e.g., India) but they are not large in relation to the world situation. Other countries carry stocks primarily for national security or food security reasons, but it is difficult to classify these stocks as mainly representing surpluses even though they may be larger in some years than countries desire.

Table 3

	<u>Harvested Area and Stocks of Wheat and Coarse Grains, U.S. and EC, 1980/81-1985/86</u>			
	<u>EC-10</u>		<u>U.S.</u>	
	<u>Harvested Area</u> mil. ha.	<u>Stocks</u> mmt	<u>Harvested Area</u> mil. ha.	<u>Stocks</u> mmt
1980/81	28.3	15.5	70.1	62.4
1981/82	28.1	13.8	76.1	100.3
1982/83	28.1	18.6	74.8	140.3
1983/84	27.5	12.7	57.7	72.1
1984/85	27.7	24.2	70.6	90.7
1985/86 Est.	27.2	23.6	71.6	169.0

In the EC-10, harvested area for wheat and coarse grains declined slightly in the first half of the 1980's as land was shifted to other crops (e.g., oilseeds). However, grain stocks increased from about 15 mmt for 1980/81 to about 24 mmt in 1984/85 and 1985/86. High price support levels in the EC-10 encouraged increases in grain yields and production, while total utilization stagnated in the 1980's.

The situation in the U.S. is complex because government policies led to both the accumulation of stocks and idled acreage. A drought in 1980/81 resulted in a decline in grain stocks, but good weather resulted in major stock increases in the following two years. A small amount of land was idled in 1982/83, but that was not enough to keep stocks from reaching the extremely burdensome level of 140 mmt. In reaction to this situation, the U.S. government instituted the largest acreage reduction program in history known as the payment-in-kind (PIK) program for 1983/84. Harvested area of wheat and coarse grains was reduced by 17.1 million hectares or by 23 percent. Reduced area together with a serious drought cut grain stocks in half. However, normal to excellent weather in the next two years resulted in grain stocks of 169 mmt at the end of 1985/86, well above the excessive levels at the end of 1982/83. During the past two years, harvested area for wheat and coarse grains was about 7 percent below 1981/82, the last year when no land was idled under government programs.

One way to get a current estimate of U.S. excess grain capacity is to look at full production potential in relation to disappearance in 1985/86. In doing so we also use normal or trend yields compared to those actually realized to eliminate the impact of extremely good weather that prevailed in the 1985 growing season.

In 1985/86, actual production exceeded total use by 80 mmt, and this amount was added to stocks (Table 4). If acreage had not been idled under government programs in 1985/86, total harvested grain area would have been 80 million hectares, 7.6 million hectares above the actual level. At the same time, coarse grain and rice yields were above trend in 1985/86 while wheat yields were below trend. Using trend yields and full production acreage, the total U.S. grain production potential in 1985/86 was 368.5 mmt, 18.5 mmt above actual output. Matched against 1985/86 total disappearance, excess grain production capacity was nearly 99 mmt, reflected partly in stock accumulation and partly in the form of idled land.

Table 4

1985/86 U.S. Grain Situation

	<u>Actual</u>	<u>Full Production Potential</u>
<u>Harvested Area (mil. ha.)</u>		
Wheat	26.2	30.5
Coarse grains	45.1	48.0
Rice	1.1	1.5
Total	<u>72.4</u>	<u>80.0</u>
<u>Yield (mt/ha)</u>		
Wheat	2.52	2.59
Coarse grains	6.08	5.85
Rice	6.09	5.83
Total		
<u>Production (mmt)</u>		
Wheat	70.0	79.0
Coarse grains	273.8	280.8
Rice	6.2	8.7
Total	<u>350.0</u>	<u>368.5</u>
<u>Total Disappearance (mmt)</u>		
Wheat	53.8	53.8
Coarse grains	210.5	210.5
Rice	5.3	5.3
Total	<u>269.6</u>	<u>269.6</u>
<u>Stock Increase (mmt)</u>		
Wheat	16.2	25.2
Coarse grains	63.3	70.3
Rice	0.9	3.4
Total	<u>80.4</u>	<u>98.9</u>

If grain yields continue to increase, as we expect them to, based on improved technology, U.S. production capacity will continue to grow. Offsetting this growth to some extent will be the movement of land out of crop production under the long-term conservation reserve program.

The magnitude of excess grain production capacity in both the EC-10 and the U.S. was about 101 mmt in 1985/86, with 99 mmt in the U.S. EC-10 production has exceeded total use by about 2 mmt a year in the 1980's. This excess capacity in the U.S. and EC-10 was equivalent to 53 percent of total world grain trade in 1985/86. Clearly, a major increase in world grain trade or shortfalls in world grain production can be easily accommodated without putting major upward pressure on grain prices.

In addition, there are currently about 76 mmt of grain stocks in the U.S. and the EC-10 in excess of desired levels, with 69 mmt in the U.S. and 8 mmt in the EC-10. This grain is immediately available to meet shortfalls in production. It provides a substantial cushion, for example, against lags between the time production is needed and when idled land in the U.S. can be brought back into production and harvested.

### C. World Wheat

#### Production

World wheat production increased by 61 mmt between 1980/81 and 1985/86, despite the fact that the U.S. held its production down through supply-control programs. The increase in world output was widespread. There were significant increases in major exporting countries other than the U.S. -- Canada, Australia, Argentina, and the EC-10. Production in the EC-10 alone increased by nearly 11 mmt. China increased its output by nearly 31 mmt as policies in that country favored increased agricultural output generally during the 1980's. Finally, other countries, mainly developing countries including India and Pakistan, increased output by nearly 19 mmt.

#### Consumption

World wheat consumption increased by 46 mmt in the 1980/81-1985/86 period, or by 15 mmt less than production. China and the category of other countries (mainly developing nations) together accounted for virtually all of the increase in world wheat consumption. Consumption trends were mixed among other countries.

Wheat is normally considered a food grain, but substantial quantities are used as animal feed in a number of major producing and consuming countries. In recent years, feed use as a percent of total domestic use was 30-35 percent in the U.S. and about 38 percent in the USSR. Substantial quantities of wheat are also fed in Western and Eastern Europe. Furthermore, there is a growing international market for feed wheat. Poor quality wheat crops in recent years in Australia, Canada, and the EC-10 have resulted in a boost in feed wheat exports. And, a growing number of countries have learned to use wheat in feed rations and have become willing importers.

## Stocks

Stock data are not available for the USSR, Eastern Europe, and China. For the former two areas, USDA estimates stock changes from one year to the next. In the case of China, stock changes are reflected in domestic use data.

Despite these limitations, world wheat stocks increased persistently over the 1980/81-1985/86 period by nearly 50 mmt. The share of world wheat stocks accounted for by the U.S. went from 34 percent in 1980/81 to 40 percent in 1985/86.

## Trade

World wheat trade has been relatively stagnant but erratic in the 1980's. The USSR is the single largest importer and its level of imports reflects variations in domestic production. China has been another major importer, but imports in the 1980's have declined by over 55 percent as a result of major gains in domestic production. Imports by the category of other countries, mostly developing nations, has exhibited a slight upward trend.

With respect to exports, those from the U.S. declined sharply from nearly 42 mmt in 1980/81 to 26 mmt in 1985/86. This decline reflected a serious deterioration in the U.S. competitive position in world markets as a result of sharp increases in the value of the dollar over most of the 1980/81-1985/86 period and high domestic price support levels. The decline in U.S. exports was offset by increases for Canada, Australia, Argentina and the EC-10.

Table 5  
World Wheat Production, Consumption, Trade, and Stocks <sup>1/</sup>

	<u>1980/81</u>	<u>1981/82</u>	<u>1982/83</u>	<u>1983/84</u>	<u>1984/85</u>	<u>1985/86</u>
	----- mmt -----					
<u>Production</u>						
United States	64.8	75.8	75.3	65.9	70.6	66.0
Canada	19.3	24.8	26.7	26.5	21.2	23.9
Australia	10.9	16.4	8.9	22.0	18.3	16.5
Argentina	7.8	8.3	15.0	12.8	13.2	8.5
EC-10	55.1	54.4	59.8	59.2	76.6	65.9
Eastern Europe	34.6	30.6	34.7	35.4	42.1	38.2
USSR	98.2	80.0	86.0	79.0	73.0	83.0
China	55.2	59.6	68.4	81.4	87.8	86.0
Others	97.1	98.5	104.3	108.7	111.9	115.8
Total	<u>443.0</u>	<u>448.4</u>	<u>479.1</u>	<u>490.9</u>	<u>514.7</u>	<u>503.8</u>
<u>Imports</u> <sup>2/</sup>						
EC-10	4.5	4.7	3.9	3.6	2.2	2.2
Eastern Europe	5.8	6.2	4.5	3.8	2.6	3.6
USSR	16.0	19.5	20.2	20.5	28.1	17.0
China	13.8	13.2	13.0	9.6	7.4	6.0
Others	54.0	57.7	57.0	64.4	65.8	59.3
Total	<u>94.1</u>	<u>101.3</u>	<u>98.6</u>	<u>101.9</u>	<u>106.1</u>	<u>88.1</u>
<u>Exports</u> <sup>2/</sup>						
United States	41.9	48.8	39.9	38.9	38.1	26.0
Canada	17.0	17.6	21.4	21.8	19.4	17.5
Australia	10.6	11.0	8.1	10.6	15.3	15.7
Argentina	3.9	4.3	7.5	9.7	8.0	6.1
EC-10	14.7	15.5	15.6	15.4	17.5	16.3
Eastern Europe	2.5	1.9	2.4	2.3	4.1	2.6
USSR	0.5	0.5	0.5	0.5	1.0	1.0
Others	3.0	1.7	3.2	2.7	2.7	2.7
Total	<u>94.1</u>	<u>101.3</u>	<u>98.6</u>	<u>101.9</u>	<u>106.1</u>	<u>88.1</u>
<u>Domestic Use</u>						
United States	21.3	23.1	24.7	30.2	31.4	29.3
Canada	5.2	5.2	5.1	5.6	5.4	5.9
Australia	3.5	2.6	4.1	3.4	3.3	3.0
Argentina	3.9	4.3	4.8	4.7	4.6	4.4
EC-10	43.9	44.5	44.7	49.6	52.7	53.2
Eastern Europe	38.5	35.1	36.9	37.1	39.9	38.7
USSR	114.7	102.0	105.7	97.0	96.1	97.0
China	69.0	72.8	81.4	91.0	95.2	92.0
Others	145.8	151.9	160.5	167.7	171.1	168.6
Total	<u>445.8</u>	<u>441.5</u>	<u>467.9</u>	<u>486.3</u>	<u>499.7</u>	<u>492.1</u>
<u>Ending Stocks (Stock Change)</u> <sup>3/</sup>						
United States	26.9	31.5	41.2	38.1	38.8	51.4
Canada	8.6	9.8	10.0	9.2	7.5	7.5
Australia	2.0	4.8	2.3	7.6	8.6	6.6
Argentina	0.4	0.8	1.1	1.3	0.5	0.4
EC-10	8.8	7.8	11.2	8.0	16.1	14.9
Eastern Europe	(0.1)	(-0.1)	(-0.1)	(-0.3)	(0.5)	(0.1)
USSR	(-0.1)	(-3.0)	(0)	(2.0)	(4.0)	(2.0)
China	NA	NA	NA	NA	NA	NA
Others	31.5	30.3	30.5	36.8	44.5	46.9
Total	<u>78.2</u>	<u>85.0</u>	<u>96.3</u>	<u>101.0</u>	<u>116.0</u>	<u>127.7</u>

1/ Includes flour  
2/ July-June Year  
3/ Crop Year  
Source: See Table 1

## D. World Coarse Grains

### Production

World coarse grain production increased by 111 mmt or 15 percent in the 1980/81-1985/86 period. However, this increase is influenced by the fact that the U.S., the world's major coarse grain producer, had a drought and very poor crops in 1980/81 and a record crop in 1985/86. Areas that experienced major increases in production in either percentage or absolute terms during the 1980's include Australia (+78 percent), Argentina (+85 percent), and Thailand (+62 percent). The fluctuations and apparent growth in USSR production are heavily influenced by the fact that weather and growing conditions were poorer during the first three years of the 1980's than in the most recent three years.

The other category of countries, mainly developing nations, did not make much progress in increasing coarse grain production in the 1980's, even though their consumption needs increased.

### Domestic Use

The pattern of domestic coarse grain use is quite interesting. Consumption has been relatively stable, with some increases and some declines, in major areas of the world -- the U.S., EC-10, and Eastern Europe. The USSR and China were able to increase domestic use modestly. But most of the increase has occurred in developing countries, especially the middle income nations such as Korea and Taiwan. Total world coarse grain consumption increased by 36 mmt in the 1980/81-1985/86 period, and the other category of countries accounted for about 50 percent of this increase.

The rate of growth in world coarse grain consumption was relatively slow in the 1980's by historical standards, averaging only 0.9 percent a year. Poor world economic growth and financial problems in a number of developing countries were responsible for this slow growth in world coarse grain use.

### Stocks

Despite two poor crops in the U.S. (1980/81 and 1983/84) and several poor USSR crops, world coarse grain stocks nearly doubled from 83 mmt to 162 mmt in the 1980/81-1985/86 period. Virtually all of the increase in stocks occurred in the U.S. In 1980/81 when the U.S. had a poor coarse grain crop and stocks were reduced sharply, it accounted for 42 percent of total reported world stocks. By 1985/86, the U.S. share increased to 71 percent.

Other than the U.S. (and recognizing our ignorance about actual stock levels in Communist countries), the rest of the world does not carry large stocks of coarse grains. Importing countries are dependent on world trade to make up the difference between needs and domestic production. The one exception is the EC-10 where coarse grain stocks increased by about 2 mmt in the 1980's as a result of high price support levels and the cost of exporting.

## Trade

World coarse grain trade declined in the 1980's. The USSR is the largest single importer, and its imports have fluctuated considerably in the 1980's in line with annual changes in production. The U.S. is the dominant exporter, but its exports declined from 69.5 mmt in 1980/81 to 43.8 mmt in 1985/86 with a corresponding decline in world market share from 64 percent to 49 percent. Again, a strong dollar and high price supports over the 1980/81-1985/86 period reduced U.S. competitiveness in world markets. Other countries that were able to increase their exports included Australia, Argentina, the EC-10, Thailand, and a number of smaller producers in the other country category. Also, China has emerged as a significant exporter of coarse grains.

Table 6

## World Coarse Grain Production, Consumption, Trade, and Stocks

	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86
	----- mmt -----					
<u>Production</u>						
United States	198.3	246.6	250.7	137.1	237.7	274.3
Canada <u>2/</u>	11.3	13.7	14.0	10.2	10.3	12.2
Australia <u>3/</u>	3.6	4.7	3.3	5.8	7.4	6.4
Argentina <u>4/</u>	9.4	10.0	17.6	16.6	16.4	17.4
EC-10	69.7	67.8	71.6	63.9	75.0	72.5
Eastern Europe	62.3	64.5	72.0	67.1	73.0	69.3
USSR	80.5	72.0	86.0	99.0	86.0	94.0
China	84.2	80.8	82.4	92.6	95.4	83.9
Thailand <u>5/</u>	3.2	4.4	3.4	4.0	4.4	5.2
South Africa <u>6/</u>	10.8	14.6	8.4	4.1	4.4	7.8
Others	199.6	190.7	169.7	185.2	198.0	201.0
Total	732.9	769.8	779.1	685.6	803.0	846.0
<u>Imports <sup>1/</sup></u>						
EC-10	11.1	8.3	6.0	5.5	4.0	2.7
Eastern Europe	10.2	6.1	4.9	4.2	3.4	5.4
USSR	18.0	25.5	11.3	11.5	26.9	13.0
China	0.9	1.3	2.7	0.2	0.1	0.3
Others	67.8	55.4	65.0	70.5	67.3	68.7
Total	108.0	96.6	89.9	91.9	101.7	89.7
<u>Exports <sup>1/</sup></u>						
United States	69.5	58.6	54.0	55.7	56.0	43.8
Canada <u>2/</u>	4.0	5.5	6.1	4.2	2.5	3.5
Australia <u>3/</u>	2.0	2.9	0.9	5.1	6.8	5.6
Argentina <u>4/</u>	13.9	10.1	11.4	10.7	10.5	11.7
EC-10	5.2	4.0	4.3	4.2	8.0	7.0
Eastern Europe	2.1	2.1	3.3	3.0	3.0	1.9
China	0.2	0.2	0.1	0.5	5.7	4.7
Thailand <u>5/</u>	2.1	3.3	2.1	3.0	3.0	3.5
South Africa <u>6/</u>	3.9	4.7	2.3	0.1	0.5	0.9
Others	5.1	5.2	5.4	5.4	5.7	7.1
Total	108.0	96.6	89.9	91.9	101.7	89.7
<u>Domestic Use</u>						
United States	147.1	154.8	167.9	147.8	163.8	166.8
Canada <u>2/</u>	6.8	7.0	7.3	7.9	7.7	7.5
Australia <u>3/</u>	1.2	1.7	1.4	1.5	1.5	1.2
Argentina <u>4/</u>	4.6	5.8	5.6	5.9	6.9	6.3
EC-10	57.5	55.4	53.7	50.2	50.1	49.4
Eastern Europe	72.5	69.1	71.6	68.5	72.0	73.8
USSR	99.5	98.5	98.3	109.5	110.9	107.0
China	85.0	81.9	85.0	92.4	89.9	79.4
Thailand <u>5/</u>	1.1	1.0	1.2	1.3	1.3	1.4
South Africa <u>6/</u>	6.8	7.1	7.7	7.5	6.2	6.8
Others	260.9	257.5	253.7	265.0	267.4	279.3
Total	743.0	739.8	753.4	757.5	777.7	778.9
<u>Ending Stocks (Stock Change)</u>						
United States	34.7	68.2	97.5	31.8	50.5	114.8
Canada <u>2/</u>	3.2	4.2	5.2	2.0	2.0	3.5
Australia <u>3/</u>	0.3	0.1	0.1	0.1	0.3	0.2
Argentina <u>4/</u>	0.1	0.3	1.0	0.5	0.3	1.1
EC-10	6.7	6.1	7.4	4.7	8.1	8.8
Eastern Europe	(-0.5)	(0.3)	(1.2)	(-0.5)	(1.9)	(-1.1)
USSR	(-1.0)	(-1.0)	(-1.0)	(1.0)	(2.0)	(0)
China	NA	NA	NA	NA	NA	NA
Thailand <u>5/</u>	0.1	0.1	0.3	0.1	0.1	0.4
South Africa <u>6/</u>	2.0	4.5	1.3	-	0.3	1.1
Others	35.7	29.4	25.8	27.5	35.4	32.2
Total	82.8	112.9	138.6	66.7	97.0	162.1

1/ July-June year or trade year

2/ Barley

3/ Barley and sorghum

4/ Corn and sorghum

5/ Corn

6/ Corn

Source: See Table 1

## E. World Rice

### Production

The bulk of the world's rice is produced in Asia, but the U.S. and many other countries in the Middle East, Africa, and Latin America also produce rice.

World rice output increased by 64 mmt or by 16 percent in the 1980's. China and India, the two largest producers, accounted for 59 percent of the growth in world rice output. Other major producers that experienced production growth include Bangladesh, Indonesia, and Thailand.

### Consumption

Most rice is consumed in the countries where it is produced. Consequently, world consumption growth was about the same as that for production.

### Stocks

World rice stocks have been relatively stable in the 1980's at about the 20 mmt level (milled basis). Fluctuations in stocks have been relatively small.

### Trade

World rice trade represents a smaller percent of production and consumption than in the case of wheat and coarse grain. Trade has been relatively stable in the 11-13 mmt range during the 1980's.

A large number of countries export rice. But Thailand and the U.S. are the two largest exporters together accounting for slightly over 50 percent of total world exports. There are also a large number of rice importers but no one country is very dominant.

Table 7

## World Rice Production, Consumption, Trade, and Stocks

	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86
	----- mmt -----					
<u>Production</u> <sup>1/</sup>						
Argentina	0.3	0.4	0.3	0.5	0.4	0.4
Australia	0.7	0.9	0.5	0.6	0.9	0.7
Bangladesh	20.8	20.5	21.3	21.8	21.9	23.1
Brazil	8.6	9.2	7.8	9.0	9.0	8.8
Burma	13.3	14.1	14.4	14.4	14.8	14.9
China	139.9	144.0	161.2	168.9	178.3	167.0
EC-10	1.1	1.1	1.1	1.1	1.1	1.3
India	80.5	80.0	70.7	90.2	88.0	91.5
Indonesia	29.7	32.8	33.6	35.3	38.1	39.0
Japan	12.2	12.8	12.8	13.0	14.8	14.6
South Korea	6.0	7.1	7.3	7.6	8.0	7.9
Pakistan	4.7	5.1	5.2	5.0	5.0	4.4
Thailand	17.4	17.8	16.9	19.5	18.7	19.8
U.S.	6.6	8.3	7.0	4.5	6.3	6.2
Others	57.0	58.8	59.4	61.4	62.7	63.8
Total	398.8	412.7	419.5	452.7	463.0	463.3
<u>Imports</u> <sup>2/ 3/</sup>						
EC-10	1.3	1.2	1.0	1.1	1.1	1.2
Indonesia	0.5	0.3	1.2	0.4	0.0	0.0
Iran	0.6	0.6	0.7	0.7	0.6	0.8
Iraq	0.3	0.4	0.5	0.5	0.5	0.5
South Korea	2.3	0.2	0.2	0.0	0.0	0.0
Nigeria	0.7	0.7	0.7	0.4	0.5	0.5
Saudi Arabia	0.4	0.5	0.5	0.5	0.5	0.5
Others	7.0	8.0	7.2	8.9	8.2	8.0
Total	13.1	11.8	11.9	12.6	11.4	11.6
<u>Exports</u> <sup>2/ 3/</sup>						
Burma	0.7	0.7	0.8	0.7	0.4	0.5
China	0.6	0.5	0.6	1.2	1.0	0.9
Japan	0.8	0.3	0.3	0.1	0.0	0.0
Pakistan	1.1	0.8	1.3	1.0	1.0	0.9
Thailand	3.0	3.6	3.7	4.5	4.0	4.3
U.S.	3.0	2.5	2.3	2.1	1.9	1.8
Others	3.9	3.4	2.9	2.9	3.1	3.2
Total	13.1	11.8	11.9	12.6	11.4	11.6
<u>Utilization</u> <sup>2/</sup>						
Bangladesh	13.6	14.1	14.6	14.9	14.9	15.8
China	97.5	100.5	112.4	117.1	123.9	116.1
India	53.3	54.1	48.5	58.2	57.0	60.3
Indonesia	21.3	22.3	23.7	25.3	25.2	26.2
South Korea	5.4	5.4	5.3	5.5	5.5	5.6
U.S.	2.1	2.2	2.0	1.8	1.9	1.9
Others	79.1	82.8	83.2	85.2	85.6	87.3
Total	272.2	281.5	289.6	308.1	314.0	313.3
<u>Ending Stocks</u> <sup>2/ 4/</sup>						
Bangladesh	0.7	0.3	0.3	0.1	0.5	0.3
India	6.5	5.0	3.5	6.0	7.5	8.0
Indonesia	1.8	2.3	1.8	1.6	2.8	2.7
South Korea	1.5	1.4	1.5	1.3	1.4	1.5
Thailand	1.1	1.3	0.8	1.1	1.3	1.7
U.S.	0.5	1.6	2.3	1.5	2.1	2.8
Others	10.0	9.4	7.1	5.7	6.3	6.9
Total	22.1	21.3	17.3	17.3	21.9	23.9

1/ Rough basis

2/ Milled basis

3/ Trade on calendar year basis

4/ Excludes a number of countries, especially China

Source: See Table 1

### III. Price Outlook for Grains to 1990

#### A. U.S. Policies

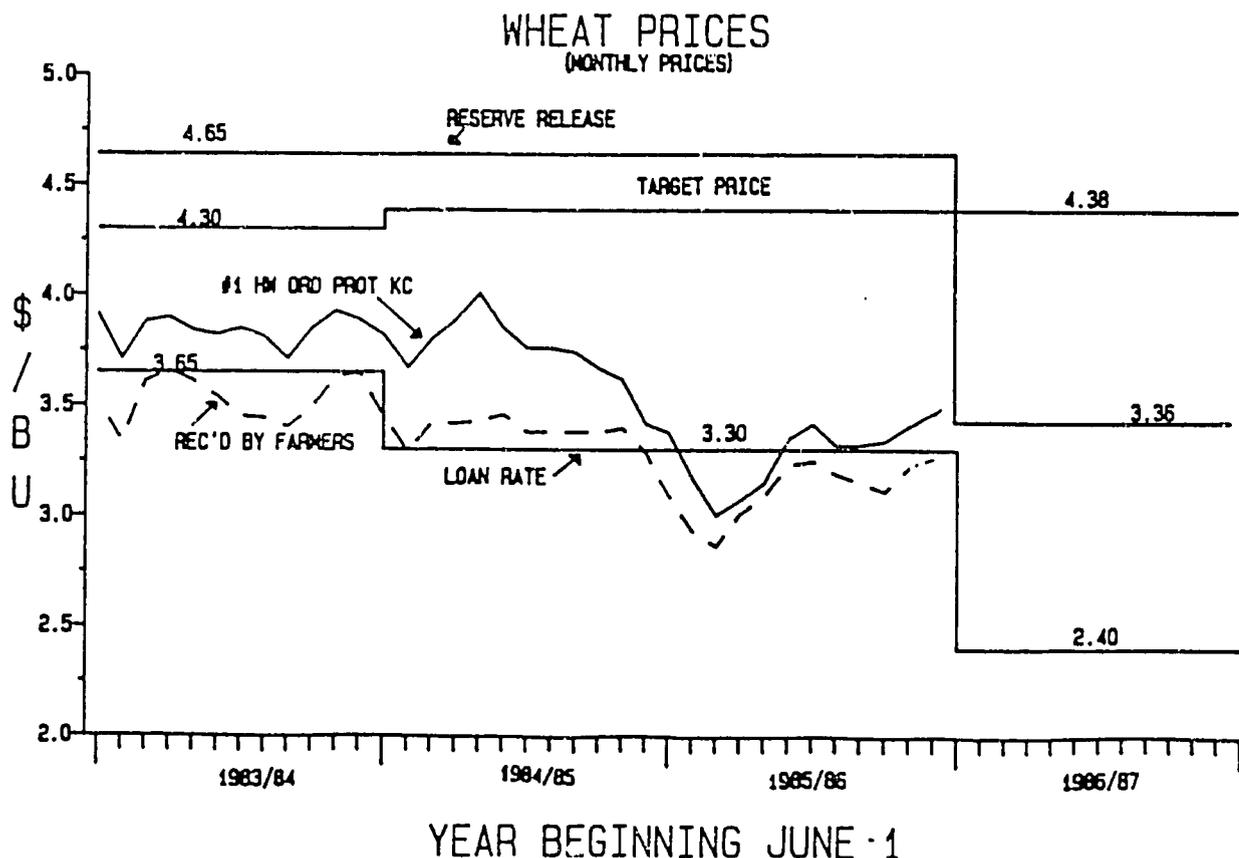
The U.S. plays a major role in determining the world price of grains through its policies and because it accounts for major shares of world wheat, coarse grain, and rice trade. While these shares declined in recent years, it is the intent of U.S. policy to restore them to a more normal level, and that means the U.S. will compete aggressively in world markets.

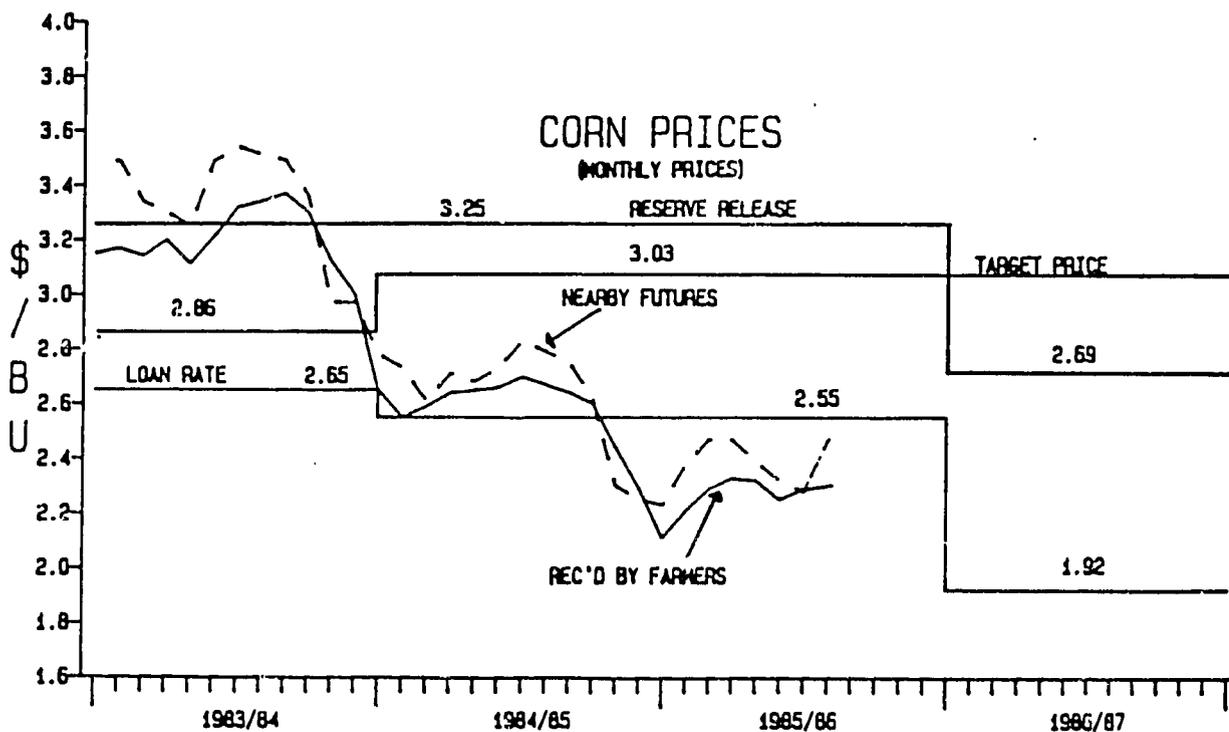
Grain prices are supported in the U.S. through nonrecourse commodity loans. By pledging commodities he has produced as collateral, a farmer may obtain a 9 month loan from the Commodity Credit Corporation (CCC). The loan rate--expressed as dollars per unit of commodity--is announced by the Secretary of Agriculture before each planting season. The interest rate charged for the loan has in recent years been set at the cost of money to the Treasury.

In making the loan, the CCC agrees to accept the commodity as full repayment if the farmer chooses not to repay the loan with interest by the date of maturity. For those farmers with a commodity under loan, this has the effect of setting a floor price. Nonrecourse loans are made for all grains.

As can be seen in the following charts for wheat and corn, prices may fall below loan or market support levels during harvest. But over time, farmers put grain under loan and prices received by farmers rise to or above loan levels.

Since the U.S. grain economy is open to the world market and because the U.S. is a major producer and exporter, U.S. policies that support domestic grain prices also support world market prices.





The actual mechanisms by which U.S. and world grain prices are supported over time by U.S. policy is through a combination of the accumulation of grain stocks or requiring farmers to idle grain acreage in order to be eligible for price and income benefits of government programs, as discussed earlier.

The U.S. also contributes to stability in world grain prices through stock policies. Some stocks are owned by the government. But most are in the form of a farmer-owned reserve. First authorized in 1977, the farmer-owned grain reserve has become a major component of farm policy. Under this program, eligible farmers may place wheat and feed grains under a nonrecourse loan for a period of 3 years. This grain may enter the reserve either directly after harvest (as in 1982) or after maturity of the 9 month nonrecourse loan. In return for agreeing to hold this grain off the market over this period, the farmer receives: a loan (sometimes set higher than the regular nonrecourse loan rate), annual storage payments (now 26.5¢ per bushel), and a waiver on interest charges for the second and third years of the loan.

This grain can be marketed only on maturity of the loan or if the market price reaches a release price level. Under the latter condition, storage payments are discontinued and interest is charged on the commodity loans as an incentive for farmers to remove their grain from the reserve and sell it. However, farmers are not forced to sell reserve grain once the reserve is in release status.

In the 1981/82-1985/86 period, U.S. policies ended up supporting world grain prices through a combination of high domestic price support levels and a strong dollar. As a result, U.S. agriculture suffered from a sharp decline in exports of grains and some other commodities.

The recent decline in the dollar will help improve the competitive position of the U.S. in world markets and should lead to a recovery in market share as the dollar stays low relative to other major currencies.

The U.S. decided in 1985, however, that it could not count on currency adjustments alone to stimulate agricultural exports. It also recognized that increasing exports was essential to reduce surplus agricultural capacity. The Food Security Act of 1985 provides the basis for a sharp reduction in U.S. market support levels during the 1986/87-1990/91 period and these reductions began for the 1986/87 crop season. Farmers will be compensated for lower market prices by increased government payments.<sup>2/</sup>

The changes in U.S. price support policies, which we will describe shortly, both permit a decline in nominal grain prices and provide a basis for changes in relative prices as well. It is instructive to review U.S. grain support policy over about the last 25 years since this is not the first time that support levels have been lowered and relative prices changed.

In the early 1960's, the U.S. faced considerable excess capacity in the form of large stocks of commodities and a substantial amount of land idled under government programs. The dollar was also overvalued and remained so until 1972. The U.S. competitive position in export markets was impaired, but offset by costly export subsidies.

Starting in 1963/64, the U.S. reduced loan or market support levels for wheat and feedgrains and kept supports at those lower levels into the early 1970's. The wheat loan declined by 33 percent and the corn loan by nearly 10 percent (Table 8). These adjustments lowered U.S. and world grain prices. They

also resulted in a sharp decline in the price of wheat relative to feed grains from an average ratio of about 1.53 in the early 1960's to a ratio of 1.11 in the second half of the 1960's and early 1970's. This latter ratio was judged about right in order to price wheat competitively with feed grains and to stimulate non-food uses of wheat.

During the 1970's, support levels increased but generally lagged behind increases in market prices. But it is significant that while market prices dominated, loan rates for wheat and feedgrains were kept in line in terms of their relative feeding values.

During the 1980/81-1985/86 period, the loan rate for wheat increased more than that for corn (feedgrains) and wheat became less competitive in feeding, although high levels of wheat feeding were actually achieved in the U.S. because wheat was attractively priced for part of each year.

The history for rice is similar to that for wheat and feed grains, but the timing of adjustments in price support levels was different. The loan level for rice remained fairly stable throughout the 1960's and into the early 1970's, but then escalated sharply between 1970/71 and 1975/76 in line with sharp increase in market prices. The loan rate was reduced by 23 percent in 1976/77, but then increased again into the mid-1980's.

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<sup>2/</sup> For a discussion of the U.S. agricultural policy debate and its outcome see, U.S. Agricultural Policy Process and the Role of Policy Analysis, prepared by Abel, Daft & Earley for Abt Associates, Inc. under the Agricultural Policy Analysis Project, USAID, Contract No. DAN-4084-C-00-3087-00, April 4, 1986.

Since rice and wheat are both primarily food grains, we compare the behavior of relative prices between the two commodities. The price of rice relative to wheat increased fairly steadily from the early 1960's until 1975/76, with the price ratio increasing from about 1.5 to 3.7. Starting in 1976/77, the ratio of rice to wheat prices declined very sharply and remained at a lower level into the mid-1980's.

Table 8

U.S. Loan Market Support Rates

<u>Year</u>	<u>Wheat</u>	<u>Corn</u> \$/mt	<u>Rice</u>	<u>Ratio of:</u>	
				<u>Wheat/Corn</u>	<u>Rice/Wheat</u>
1960/61	65.40	41.73	97.44	1.57	1.49
1961/62	65.77	47.24	103.84	1.39	1.58
1962/63	73.49	47.24	103.84	1.56	1.41
1963/64	66.87	42.12	103.84	1.58	1.55
1964/65	47.77	43.30	103.84	1.10	2.17
1965/66	45.93	41.34	99.21	1.11	2.16
1966/67	45.93	39.37	99.21	1.17	2.16
1967/68	45.93	41.34	100.31	1.11	2.18
1968/69	45.93	41.34	101.41	1.11	2.21
1969/70	45.93	41.34	104.06	1.11	2.27
1970/71	45.93	41.34	107.14	1.11	2.33
1971/72	45.93	41.34	111.77	1.11	2.43
1972/73	45.93	41.34	116.18	1.11	2.53
1973/74	45.93	41.34	133.82	1.11	2.91
1974/75	50.34	43.30	166.23	1.16	3.30
1975/76	50.34	43.30	187.83	1.16	3.73
1976/77	82.67	59.05	136.46	1.40	1.65
1977/78	82.67	78.74	136.46	1.05	1.65
1978/79	86.35	78.74	141.09	1.10	1.63
1979/80	86.35	82.67	149.69	1.05	1.73
1980/81	110.23	88.58	156.97	1.24	1.42
1981/82	117.58	94.48	176.59	1.24	1.50
1982/83	130.44	100.39	179.45	1.30	1.38
1983/84	134.11	104.32	179.85	1.29	1.34
1984/85	121.25	100.39	176.37	1.21	1.45
1985/86	121.25	100.39	176.37	1.21	1.45
1986/87 <sup>1/</sup>	88.18	75.59	79.37-158.73	1.17	0.90-1.80

<sup>1/</sup> The announced rice loan rate for 1986/87 is \$158.73/mt, but producers will be paid the difference between this level and market prices as low as 50 percent of the loan rate (market-payback loan). In future years, the loan rate cannot fall below \$143.30/mt, but the market payback loan can still be used and the effective market support level could be as low as \$71.65/mt.

Source: Agricultural Statistics, USDA, various issues and 1986 farm program announcements.

The likely loan rates for grains under the Food Security Act of 1985 are shown in Table 9 along with those for 1985/86 which were determined under previous legislation.

Table 9

U.S. Loan Rates for Grains

	<u>1985/86</u>	<u>1986/87</u>	<u>1987/88-1990/91</u>
	-----\$/mt-----		
Wheat	121.25	88.18	Based on 75-85 percent of a 5-year moving average of prices received by farmers excluding the high and low years, but cannot be reduced by more than 5 percent a year.
Corn	100.39	79.59	Same formula as for wheat.
Rice	176.37	79.37-158.73	Based on 85 percent of a 5-year moving average of prices received by farmers, excluding the high and low years, cannot be reduced by more than 5 percent a year, and cannot be lower than \$143.30/mt. However, a market payback loan program could make the effective market support rate as low as \$71.65/mt.

There are several important implications of the recent changes in U.S. policies. One is that loan rates will be set at levels low enough so that they will not determine market prices most of the time (supply and stock policies are discussed later). But loan rates and market prices could decline further in the 1987/88-1990/91 period under U.S. policy. The other is that over time, market forces will determine relative commodity prices. This means that the price of wheat may be determined primarily by its feeding value. The outlook for the price of rice relative to wheat is less clear. U.S. policy allows the rice support price to decline to \$158.73/mt in 1986/87 and to \$143.30/mt in subsequent years. However, the law and announced programs permit farmers to sell rice under loan for up to 50 percent below the announced loan and be compensated for the difference. Thus, the effective support rate can be as low as 50 percent of the announced loan. Such a program (market payback loan) is in effect for 1986/87 and could be used in subsequent years. As a consequence, there is a good chance the effective market price for rice could decline relative to wheat.

Another aspect of U.S. policy is the extent of excess production capacity and how it will be managed. The U.S. will continue to maintain a reserve of wheat and feed grains as a matter of policy and this quantity of grain will be substantial. Furthermore, reserve release prices will be reduced both in absolute terms and in relation to loan or market support levels. This means that reserve grain will be more readily made available to the market and the scope for absolute price variability will be less for wheat but more for corn than it has been in recent years as shown in Table 10.

In 1985/86, the reserve release price is about the loan rate by \$49.61/mt (41 percent) for wheat, and \$27.56/mt (27 percent) for corn. During the 1986/87-1990/91 period, the reserve release price for wheat and feed grains will be set at 140 percent of the loan rate. In the context of 1986 crop grain that enters the reserve, this means wheat and corn release prices that are \$35.27 and \$30.24/mt, respectively above their loan rates. The reserve release loan rate differential decreases for wheat but increases for corn.

Table 10

Reserve Release Prices and Loan Rates

	<u>1985/86</u>	<u>1986/87</u>	<u>1987/88-1990/91</u>
	-----\$/mt-----		
<u>Wheat</u>			
Reserve release price	170.86	123.45	Release price set at 140 percent of the loan.
Loan rate	121.25	88.18	
<u>Corn</u>			
Reserve release price	127.95	105.83	Same as wheat
Loan rate	100.39	75.59	

In addition to carrying stocks, the U.S. will be forced to idle large quantities of land because of the size of surplus capacity relative to even the most promising outlook for export growth over the next five years. This is another form of grain reserve that can be mobilized over time, to meet surges in demand. If the world has serious grain crop problems in one year, U.S. grain acreage could be increased in the following year. This is quite different than the situation in 1974/75 and 1975/76 when the U.S. was using its land resources fully.

The combination of comfortable U.S. grain stock levels and idle acreage will provide the world grain market with a substantial cushion against poor crops. As a consequence, world grain supplies for the rest of the 1980's should be more comfortable and grain price variability in absolute terms less than during most of the 1970's.

#### D. EC Policies

The EC is grappling with its own grain policies because they have become very costly, especially in view of the sharp declines in both the U.S. dollar and U.S. grain support levels. The enlarged EC, now made up of 12 nations since Spain and Portugal joined on January 1, 1986, has a very complex political situation with respect to making agricultural policy decisions. Therefore, we can only point out the general directions EC policy is likely to take over the next five years and their implications for world grain markets.

The cost of EC agricultural price support programs has escalated rapidly in the past year or so. The EC will have to make adjustments in its agricultural policies, some of which are already underway, even if they decide to spend more on agriculture for political reasons as the U.S. did in the Food Security Act of 1985. The general direction of these policy changes is likely to be:

- A modest decline in grain price support levels to bring domestic prices somewhat closer to world markets.
- Continuing to make oilseed production more profitable relative to grains with further acreage shifts out of grains into oilseeds.
- A continuation of existing policies to reduce huge dairy and beef surpluses.
- An increase in border protection that will raise the price of imported grain-substitute feeds and encourage greater use of domestically produced grain and oilseed products.

These policy changes will evolve slowly and the net effect on world grain markets is likely to be the following:

- Little reduction in EC grain production, with further increases in yields offsetting declines in area.

- Some increase in domestic grain use by making grain cheaper relative to imported grain substitute feeds, but total EC grain demand may not increase much because of offsetting reductions in cattle numbers as a result of efforts to reduce dairy and beef surpluses.
- The EC is likely to remain a substantial exporter of grain, and grain stocks could remain fairly high by EC standards.

### C. Other National Policies

Other grain exporters may adjust production and exports over time in response to the new price regime, but it will not necessarily be done through changes in national agricultural policies. Australia may reduce grain area, with some area being fallowed and some moving into sheep production in response to lower grain prices. Canada may increase the amount of fallow land, but the increase may not be large. Argentina is in the process of eliminating export taxes on grain and oilseeds. Thus, prices received by farmers may not decline as much since the reductions in export taxes may partially offset declines in world market prices.

The Communist countries -- Eastern Europe, the USSR, and China -- will continue existing policies since these are not influenced much by world market price levels. China has indicated that it will continue to emphasize increases in grain and oilseed production. The USSR has also launched some policy reforms to encourage increased grain output. And Eastern Europe will continue with existing policies to promote growth in agricultural production.

Reactions in developing countries will probably be mixed. A number of developing countries are responding to pressures from the World Bank, the IMF, and USAID to revise their agricultural policies and make them more market and private sector oriented. Some have already done so and more are likely to do so. The implications of these policy changes for grain production, consumption, and trade will have to be analyzed on an individual country basis. That analysis should include not only the impact of lower world market prices, but changes in relative prices among grains as well. In any event, policy reforms may make sense regardless of the level of world grain and other commodity prices.

## IV. Implications for Developing Countries

### A. Setting

Likely developments in world grain markets during the remainder of the 1980's have important implications for many developing countries. But the full import of these developments cannot be judged until one has evaluated other key commodity markets of interest to developing nations such as oilseeds and products,<sup>3/</sup> cotton, sugar, coffee, and cocoa, as well as key nonagricultural commodities such as metals and petroleum. Excess agricultural production capacity is likely to lead to lower commodity prices generally, affecting both the import and export positions of many countries. In addition, relative prices will probably be realigned among a wide range of commodities, not just among grains.

World commodity market developments will mean different things to different countries since nations differ with respect to:

- Levels of production, consumption, and trade for each commodity.
- Land and climate that determine which commodities can be produced and at what cost.
- The state of, and prospects for future improvements in, technology for producing crops and livestock.
- The state of current national commodity policies and the relationship between domestic and world commodity prices.
- National policies concerning both development of the agricultural sector and food security.

In the remainder of this section we examine the implications of the world grain market outlook for food security, agricultural development, and trade policies in developing countries.

### B. Food Security

We define food security policies as those that deal with protecting against fluctuations in supplies and prices of key foods such as grains. These policies can involve maintaining either reserve stocks of grains or financial reserves to meet periodic shortfalls in production, or may simply reflect a country's willingness to rely on imports to fill food gaps due to poor crops.

This is a narrower definition of food security than some people use since it does not include policies to increase food production in order to become either less dependent on imports or more dependent on exports. We view this latter set of policies as relating to agricultural development and trade, and they are dealt with in the next section.

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<sup>3/</sup> See for example, The World Oilseed Market: Outlook and Implications, forthcoming.

A great deal has been written about the optimum way to provide food security. The costs of national and international approaches to buffer stocks, financial reserves, and insurance schemes have all been studied extensively. We will not review the results of these studies here since this material is readily available. Rather we focus on what key aspects of the world grain outlook mean for food security policies in developing countries.

Global excess grain production capacity in the form of both large stocks and acreage idled under government programs in the U.S. for the rest of the 1980's will lead to sharply lower grain prices and less price volatility in absolute terms, but not necessarily in percentage terms, than was experienced in the 1970's. The threat of acute world grain shortages has been greatly reduced. There will still be fluctuations in production due to weather conditions in individual countries and globally. However, these can be accommodated quickly from existing stocks and within a year or so by bringing idle land back into production.

The key issues are how much money each country needs to spend to maintain a satisfactory degree of food security, and which policies are most appropriate in a period of abundant grain supplies. We are not suggesting abandonment of food security policies. Rather, each nation needs to look at the least cost approach.

One important factor to consider is that countries such as the U.S. and EC-12 will maintain either large grain stocks or acreage reserves for domestic policy reasons. While these countries are clearly concerned with the cost of their agricultural programs, there is every indication that they will continue to spend substantial amounts of money to protect incomes of their producers. Excess grain production capacity will therefore persist for at least the next five years. If key developed countries will continue to be willing to carry large grain reserves (in stocks or idled acreage), this provides developing countries an opportunity to spend less of their scarce resources on maintaining large grain stocks<sup>4/</sup> and to rely relatively more on imports to offset shortfalls in domestic production.

The extent to which a country should rely more on trade to meet its food security objectives is, however, a complicated issue that needs to be carefully addressed. First, while grain prices are likely to be significantly lower in the future making it less costly to import, prices of the main export commodities are also likely to be lower. Thus, it is not clear that cheaper grain prices will improve the foreign exchange situation in many countries. In such cases, foreign exchange considerations may prevent a strong shift toward greater reliance on trade to deal with food security.

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<sup>4/</sup> Countries may still want to carry some stocks for food security reasons and as an integral part of producer price support or price stabilization programs.

Second, the degree to which a nation wants to rely more on trade depends upon which grains are important to its consumers and the degree of substitutability among grains. Clearly, most of the world's grain stocks and excess production capacity are in wheat and coarse grains. These are also commodities where international trade is large relative to world production and consumption. On the other hand, stocks and world trade in rice are much smaller in relation to world output and use. Nations that depend heavily on rice consumption may be less willing to follow a food security strategy based on trade compared to those whose food consumption patterns are based heavily on wheat and coarse grains or where wheat can be readily substituted for rice.

Third, some nations may feel compelled to maintain stocks rather than rely on trade for political or logistical reasons. Political pressures against relying on imports may be very strong whether these imports are commercial or food aid. Also some nations may not have the transportation infrastructure to handle large quantities of imports. In any event, the cost of maintaining a stocks policy as an alternative to imports should be calculated.

### C. Development and Trade Strategies

Development strategies should be based on more than the absolute and relative prices of grains. Each country has to determine where its comparative advantage lies as between industrial and agricultural development and among a wide range of agricultural commodities. One cannot make general recommendations about agricultural development strategies without looking at the market outlook for a wide range of products.

We argued earlier that we are back on the long-term declining trend in real grain prices, and the same trend is likely to persist for many other agricultural commodities as well. From a world market standpoint, the sectoral terms of trade will probably shift against agriculture and in favor of industry. Countries with a good or promising industrial base relative to agriculture might very well want to emphasize industrial development at the expense of agriculture. But there will be many other developing countries where agricultural development should continue to receive high priority because the potential for industrialization is poor and because the industrial sector is too small to carry the economy forward.

Within the agricultural sector, relative prices are key in deciding which commodities to emphasize in development and trade strategies. We have argued that the price of wheat will be lower relative to coarse grains in the second half of the 1980's than it was in the first half. Movements in the price of rice relative to wheat is less clear, but there is a good chance that rice will become cheaper in a relative sense. Furthermore, the development of grain prices has to be looked at in relation to other agricultural and industrial commodities. Allowing comparative advantage to work within the agricultural sector can result in substantial economic benefits to many developing countries. The ideal production mix will depend on relative world market commodity prices, a country's resource and climatic environment, and prospects for technological improvements in production among various commodities.

One final point on development policies. In the past, numerous countries have intervened in their domestic commodity markets, distorted their domestic agricultural commodity prices relative to those in world markets. Developments in world market prices may make it easier or more difficult to correct these distortions. Countries that depressed domestic producer and consumer prices relative to world market levels could find it politically easier to eliminate these distortions in an environment where world prices are declining. For example, Argentina is in the process of eliminating export taxes on grains and oilseeds. Some of these taxes were as high as 25 percent. As this takes place, Argentine producer prices may not decline or decline by only a small amount despite the fact that world market prices will decline substantially.

On the other hand, countries that have supported some commodity prices well above world market levels will find the cost of this support increasing. Continuing to enforce existing domestic price levels could become very costly.

#### D. Conclusions

For the rest of the 1980's world grain prices are likely to be substantially lower than they were during the first half of the decade, and decline in real terms. Wheat prices are likely to decline relative to coarse grains, and rice prices might decline relative to both wheat and coarse grains.

The world grain economy will be characterized by substantial excess capacity in the form of either large stocks or idle acreage. Most of the surplus will be in the U.S. and the EC-12. This excess capacity provides a large buffer against world crop problems. Grain prices over the next several years are likely to be much less volatile in absolute terms than they were in the 1970's and early 1980's, although price fluctuations in percentage terms may still be fairly large.

The outlook for the world grain economy calls for re-examination of food security and agricultural development strategies in many developing countries. But this should be done in the broader context of all major agricultural commodities, not just grains.