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INTERNATIONAL MONETARY FUND

Research Department

Primary Commodities: Market Developments and Outlook

Prepared by the staff of the Commodities Division

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Summary

This paper presents an analysis of recent developments relating to prices of non-oil commodities and pays particular attention to developments in 1986. The paper provides both an overview of developments with respect to non-fuel primary commodities in general and detailed information on individual commodities.

In 1986 dollar prices for non-fuel commodities, as measured by the International Monetary Fund's world index of commodities, have fallen to their lowest level since 1976. In real terms, that is, commodity prices adjusted by the prices of manufactured goods, the prices are lower than those experienced at any time since before the Second World War. This weakness in commodity prices, which was already in evidence in the first half of the 1980s, although to a lesser degree, is in marked contrast with the upward movement of prices in the 1970s.

Both demand and supply factors have contributed to the weakness of commodity prices. Influencing the demand for metals and, to a lesser extent, the demand for agricultural raw materials in 1986 has been the fall in the rate of growth in industrial production in Japan and the United States, together with the continuation of only sluggish growth in most European countries. The sharp decline in petroleum prices in 1986 has had an impact on commodity prices through its effects on production and transport costs and on the prices of petroleum-based substitutes. Inflation in general continued to decline in most countries in 1986. Production of most agricultural commodities continued to increase in 1986 with new supplies adding to already large stocks. A notable exception was coffee: the price of coffee rose sharply late in 1985 in anticipation of a substantial decline in production--realized in 1986--on account of drought in Brazil. The agricultural commodities for which prices have declined the most since their recent peak in the first half of 1984 are the ones for which the supply increases have been the largest. Governments in a number of industrial countries have introduced policies designed to reduce carryover stocks and to improve the competitive position of their countries in export markets for agricultural products. These policies have served collectively to reduce international prices, while at the same time, at least initially, they have left incentives to production largely intact.

The short-term outlook for non-fuel primary commodity prices is for continued weakness. Supplies of agricultural commodities show little tendency to contract in response to low prices, and any tendency for the prices of metals to increase will continue to be limited by large excess capacity. Demand for primary commodities is expected to grow at only a modest rate. Thus, no significant increase in commodity prices is expected in the near future unless there are unforeseen supply shocks or major changes in the policies of producing countries.

Introduction

This study provides an analysis of recent developments relating to the major non-fuel primary commodities (hereafter referred to as commodities) entering international trade. Particular attention is given to market price movements (which are expressed in U.S. dollars, unless otherwise indicated) in 1986 and to the factors underlying these movements. In 1986 commodity prices continued to fall in U.S. dollar terms and, to a greater degree, in real terms. Supply factors as well as changes in world economic activity, inflation, and exchange rates are discussed in the context of their contribution to the movements in commodity prices.

Section I provides an overview of developments in commodity markets with the discussion centered around price movements as measured by the IMF commodity price indices. Sections II through V provide assessments of developments relating to individual commodities. Section II covers food commodities, Section III beverages, Section IV agricultural raw materials (including tropical timber), and Section V metals (and phosphate rock). The study is based on information available through October 1986.

I. Commodity Market Developments and Prospects

1. Commodity price movements

In 1986 dollar commodity prices, as measured by the IMF world index of commodity prices, have fallen to their lowest level since 1970. Commodity prices in real terms, that is, commodity prices deflated by prices of manufactures, have fallen to their lowest level since at least the 1930s.

The weakness of commodity prices in 1986, which was already in evidence, although to a lesser degree, in the early 1980s, is in marked contrast to the upward buoyancy of prices in the 1970s (Chart 1). After nearly two decades of relative stability, in the two-year period 1973-74 commodity prices in real terms rose by 40 percent. Several factors coincided to bring about this sharp rise. Important among them were a high rate of economic growth in industrial countries, rapidly rising petroleum prices and a low growth of agricultural production. The sharp increase in real commodity prices was reversed during the short, but severe, 1975 recession. However, the resumption of economic growth in 1976 and a sharp supply-related increase in beverage prices provided conditions which enabled real commodity prices to increase by about 9 percent in 1976-77. Subsequently, real commodity prices declined, so that by 1980 they had nearly returned to the 1971-72 levels.

The years 1980-86 have been characterized by relatively low rates of growth in many industrial countries, especially those in Europe, wide fluctuations in the value of the U.S. dollar in terms of other currencies, decreasing rates of inflation in most countries, and relatively high real

rates of interest. In addition, petroleum prices have tended to decline since 1981 and fell very sharply in the first half of 1986. Over this period both U.S. dollar commodity prices and real commodity prices have fluctuated around a declining trend. While the price decreases at the time of the 1981-82 recession were largely offset by increases in 1983 and early 1984, persistent declines began in mid-1984 and have lasted through the third quarter of 1986 (Table 1.1). The depreciation of the U.S. dollar in 1985-86 has meant that the declines in commodity prices, measured in terms of most other currencies and in terms of SDRs, have been much greater than those measured in terms of dollars (Table 1.2). In 1985-86 the decline of commodity prices in real terms has been greater than in U.S. dollar terms because of the upward trend in the dollar unit values of manufactured exports associated with the depreciation of the U.S. dollar.

The weakness in prices in 1985-86 has been shared by most commodities. The group indices for food, agricultural raw materials and metals have moved roughly in line with the overall index (Table 1.3). Only the group index for beverages has followed an independent pattern. A sharp increase in the price of coffee in late 1985 pushed the beverage index upwards and also created a margin between the overall price index for commodity exports of developing countries and the overall price index for commodity exports of industrial countries (Table 1.1).

2. Factors underlying commodity price movements in 1985-86

The major determinants of commodity price movements are economic activity in the major markets for primary commodities, inflation in both producing and consuming countries, and the supply of commodities. Changes in commodity-specific policies of major producing countries can also have a significant effect on commodity prices, as has recently been the case in some agricultural markets. Exchange rate movements influence commodity prices measured in different currencies, but have not been shown to have a significant influence on real commodity prices.

The overall influence of the above factors on commodity prices in both nominal and real terms in 1985-86 has been negative (Chart 2). Economic activity in the industrial countries, particularly industrial production, has decelerated significantly since 1984, and consequently, demand for industrial raw materials, particularly metals, has been weak. Inflation in the industrial countries has also decelerated, aided in 1986 by a sharp drop in the price of petroleum, a major input in the production of several synthetic substitutes for primary commodities. Technological innovation in the production of synthetics and in the use of "new" materials has reduced demand for traditional raw materials, especially metals. The supply of agricultural commodities increased sharply in 1984-85, and this increase, together with low capacity utilization in production of metals, was a major factor in depressing prices. Recent changes in agricultural policies to reduce the extent of price support--including the disposal of government-held stocks--have had a generally depressing effect on world prices of agricultural commodities, although lagged effects through

CHART 1 COMMODITY PRICES AND UNIT VALUES OF PETROLEUM AND MANUFACTURES, 1980-86

(In U.S. dollars, indices: 1980=100)

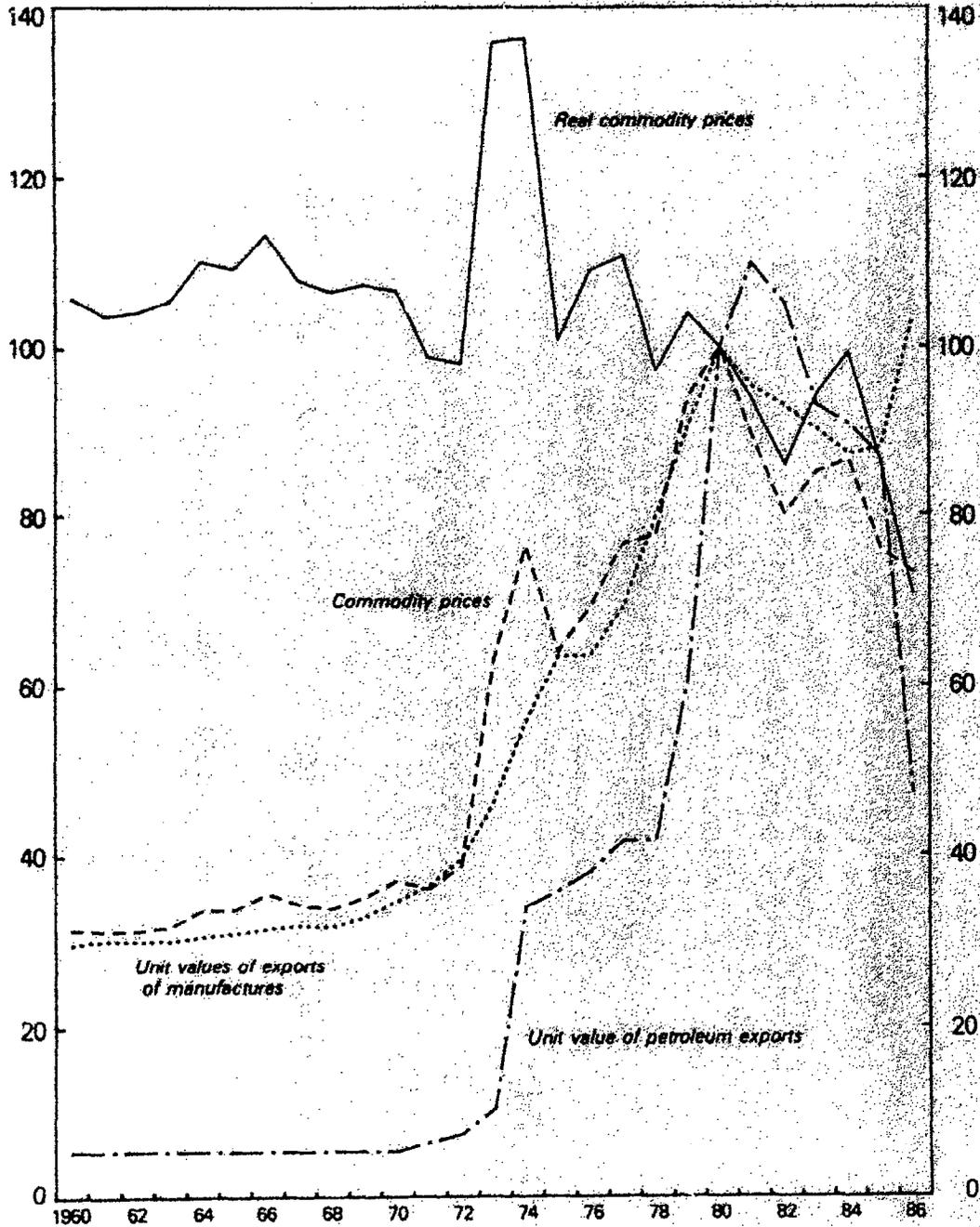


CHART 2

COMMODITY PRICES, 1980-86

(Indices: 1980=100)

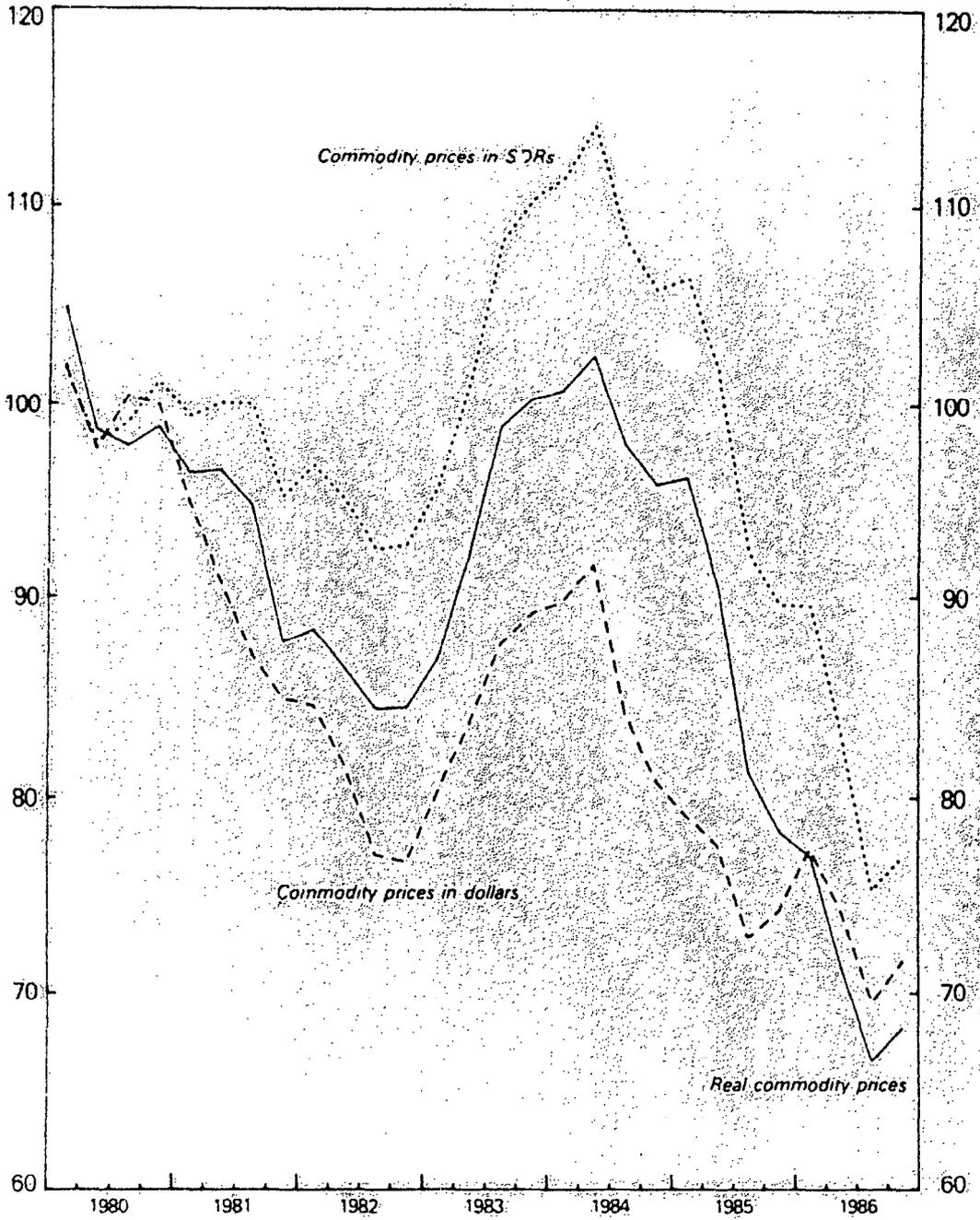


Table 1.1. Commodity Prices in Relation to Export Unit Values of Petroleum and Manufactures, 1960-86

(Indices: 1980=100)

	Nominal Prices in U.S. Dollars						Real Commodity Prices 4/		
	Commodities 1/		Export unit values			World	Industrial countries	Developing countries	
	World	Industrial countries	Developing countries	Petroleum 2/	Manufactures 3/				
1960-69	33.3	34.0	30.5	5.4	31.0	107.3	109.6	98.6	
1970-79	63.3	64.3	61.6	28.3	58.0	109.7	112.3	105.0	
1980-86	84.4	85.5	83.2	90.4	93.9	90.2	91.3	88.8	
1970	37.1	37.4	33.5	5.4	34.8	106.7	107.5	96.2	
1971	36.2	37.7	31.9	6.4	36.6	98.9	103.0	87.1	
1972	48.9	51.1	36.1	7.5	39.6	98.1	103.9	91.2	
1973	63.1	69.8	55.4	10.5	46.5	135.9	150.1	119.3	
1974	76.4	80.4	71.4	34.2	56.0	136.4	143.6	127.6	
1975	64.0	67.8	59.2	35.9	63.5	100.8	106.8	93.4	
1976	69.4	59.9	68.9	38.2	63.7	109.0	109.7	108.2	
1977	76.7	69.8	84.8	41.7	69.2	110.7	100.8	122.5	
1978	77.6	75.4	80.2	41.9	79.8	97.2	94.5	100.5	
1979	94.1	93.9	94.4	61.1	90.6	103.9	103.6	103.2	
1980	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
1981	89.4	92.2	86.1	109.8	95.3	93.8	96.7	93.3	
1982	80.0	82.1	77.4	105.1	93.1	85.9	88.2	83.2	
1983	85.7	87.2	82.9	93.1	90.2	94.4	96.7	91.9	
1984	86.5	87.1	86.0	90.8	87.2	99.3	99.9	98.6	
1985	75.9	76.2	75.3	86.9	88.1	86.2	86.5	85.7	
1986 5/	73.0	71.5	74.8	47.2	103.5	70.6	69.1	72.3	
1984 I	89.8	90.0	89.6	91.3	89.2	100.7	100.9	100.5	
II	91.6	92.5	90.7	91.3	89.4	102.5	103.4	101.4	
III	84.2	84.9	83.3	90.8	86.0	97.9	98.8	96.9	
IV	80.8	81.1	80.5	90.1	84.3	95.8	96.2	95.4	
1985 I	79.0	79.4	78.5	88.7	82.2	96.2	96.7	95.5	
II	77.6	77.9	77.1	86.7	85.7	90.5	90.9	90.0	
III	72.8	73.3	72.2	85.4	89.6	81.3	81.8	80.6	
IV	74.2	74.3	74.1	85.6	94.9	78.2	78.3	78.1	
1986 I	77.4	75.5	79.5	61.0	100.5	77.0	75.2	79.1	
II	76.1	73.6	74.6	42.3	104.0	71.3	70.8	71.7	
III	69.5	67.9	71.4	38.3	104.5	66.5	64.9	68.3	

Sources: Commodities Division and Current Studies Division, IMF Research Department.

1/ IMF price index, comprising 39 price series for 34 non-fuel primary commodities. See Appendix I of IMF, Primary Commodities Market Developments and Outlook 1986, for a description of this index.

2/ Oil exports of major fuel exporting countries.

3/ Unit value of manufactured exports of "developed market economies," United Nations, Monthly Bulletin of Statistics (New York), various issues.

4/ Commodity prices deflated by unit values of manufactures.

5/ Include projections for the final quarter of the year.

Table 1.2. Commodity Prices in Selected Currencies, 1960-86

Year	U.S. Dollar	Pound Sterling	Deutsche Mark	French Franc	Japanese Yen	SDR/ SDR	SDR/ U.S. Dollar Exchange Rate
	--(Indices: 1980 = 100)--						(Rate)
1960-69	33.3	28.6	73.5	39.1	52.8	43.3	1.000
1970-79	63.3	69.9	87.5	70.6	76.9	70.6	0.871
1980-86	84.4	120.7	112.2	136.5	84.2	98.0	0.896
1970	37.1	36.0	74.8	48.0	59.0	48.3	1.000
1971	36.2	34.7	69.5	47.4	55.7	46.9	0.997
1972	38.9	36.2	68.2	46.4	51.9	46.6	0.921
1973	63.1	59.9	92.8	66.6	75.7	68.9	0.839
1974	76.4	75.9	108.7	87.0	98.4	82.6	0.832
1975	64.0	67.2	86.6	64.9	83.7	68.6	0.824
1976	69.4	189.8	96.1	78.5	90.8	78.2	0.866
1977	76.7	102.1	97.9	89.1	90.8	85.5	0.857
1978	77.6	94.0	85.7	82.9	72.0	80.7	0.799
1979	94.1	103.3	90.9	94.8	91.0	94.8	0.774
1980	100.0	100.0	100.0	100.0	100.0	100.0	0.768
1981	89.4	103.4	111.2	115.0	87.0	98.7	0.848
1982	80.0	106.4	106.8	124.4	87.9	94.3	0.906
1983	85.2	130.7	119.7	153.7	89.3	103.8	0.935
1984	86.6	181.3	135.6	179.1	90.7	109.9	0.976
1985	75.9	137.5	123.0	161.4	79.9	97.3	0.985
1986 1/	73.0	114.6	88.0	120.6	53.9	80.9	0.852
1984 I	89.8	145.5	133.5	176.5	91.4	111.5	0.953
II	91.6	152.5	136.6	180.6	92.8	114.0	0.956
III	84.2	150.8	135.2	178.5	90.2	108.2	0.988
IV	80.8	154.5	135.7	179.0	87.7	105.8	1.006
1985 I	79.0	164.9	141.6	186.3	89.8	106.4	1.034
II	77.6	143.4	131.7	172.7	85.8	101.7	1.008
III	72.8	123.1	114.2	149.7	76.6	92.3	0.974
IV	74.2	120.1	105.6	138.6	67.8	89.6	0.927
1986 I	77.4	125.0	99.9	132.0	64.1	89.6	0.889
II	74.1	114.2	91.6	125.4	55.5	83.1	0.861
III	69.5	108.5	79.8	111.5	47.7	75.2	0.831

Source: Commodities Division, IMF Research Department. Commodity prices are measured by the IMF price index which comprises 39 price series for 34 non-fuel primary commodities, see Appendix I of IMF Primary Commodities Market Developments and Outlook 1986, for a description of this index. Data relate to a "world" index, that is, to a single basket of primary commodities and do not reflect differences in the composition of the basket of primary commodities imported by different countries.

1/ Includes projections for the final quarter of the year.

Table 1.3. Indices of Prices for Groups of Commodities, 1960-86

(In U.S. dollars; indices: 1980 = 100)

Year	Overall	Food	Beverages	Agricultural Raw Materials <u>2/</u>	Metals <u>3/</u>
1960-69	33.3	35.3	27.2	28.7	37.5
1970-79	63.3	68.2	68.3	52.9	62.2
1980-86	84.4	85.7	90.4	84.8	77.9
1970	37.1	38.4	31.8	29.8	45.4
1971	36.2	39.6	28.8	29.5	40.5
1972	38.9	42.8	31.6	33.6	40.7
1973	63.1	77.2	40.1	53.7	58.1
1974	76.4	95.4	48.6	55.9	75.8
1975	64.0	76.5	45.7	47.7	66.6
1976	69.4	71.7	84.6	61.1	65.5
1977	76.7	69.7	147.0	61.7	68.3
1978	77.6	78.9	109.9	65.6	70.3
1979	94.1	92.1	114.4	90.3	91.3
1980	100.0	100.0	100.0	100.0	100.0
1981	89.4	96.8	79.3	85.3	84.3
1982	80.0	82.1	79.6	81.1	74.8
1983	85.2	89.3	86.1	83.6	78.5
1984	86.6	88.6	100.0	87.8	74.2
1985	75.9	74.9	88.3	77.3	69.7
1986 <u>1/</u>	73.0	65.2	103.7	78.9	65.7
1984 I	89.8	92.4	103.8	88.7	78.3
II	91.5	95.2	103.5	93.0	77.0
III	84.2	86.2	96.8	86.2	71.2
IV	80.8	80.8	96.0	83.2	70.2
1985 I	79.0	80.3	92.6	77.4	71.0
II	77.6	77.4	85.7	78.3	72.8
III	72.8	70.8	81.0	75.9	69.2
IV	74.2	71.2	94.0	77.8	65.9
1986 I	77.4	71.7	116.0	79.1	66.0
II	74.1	68.7	101.1	78.6	65.4
III	69.5	60.8	98.1	75.4	64.9

Source: Commodities Division, IMF Research Department.

1/ Includes projections for the final quarter of the year.

2/ Includes forestry products.

3/ Includes phosphate rock.

reduced production may result in higher prices in the future. Finally, the substantial depreciation of the U.S. dollar since the first quarter of 1985, which has been a positive influence on commodity prices expressed in U.S. dollars, has only served to keep dollar commodity prices from falling even further, as indicated by the much sharper declines of prices in terms of other currencies.

a. Economic activity in major markets

Demand for primary commodities in the aggregate has historically been closely related to economic activity in the industrial countries. The influence of the business cycle on demand for primary commodities, and hence on prices, has been most important for agricultural raw materials and metals, while demand for food and beverages tends to be relatively more stable. Economic activity in industrial countries, as represented by industrial production, has accelerated significantly since 1984, when it increased by 8.5 percent; in 1985 growth in industrial production in the seven major industrial countries declined to 3.1 percent and in 1986 is estimated at only 1.1 percent (Table I.4). Most of the year-to-year variation is attributable to changes in growth rates for industrial production in the United States and Japan, which were very high in 1984 and decelerated sharply in 1985-86. Growth rates for industrial production in Europe, which is more dependent on imported raw materials than is the United States, have remained sluggish throughout the period.

Although much lower than growth in either industrial production or in real GNP in industrial countries, consumption of primary commodities grew by an estimated 3.3 percent in 1984, the largest increase since 1978. Consumption growth leveled off at 0.5 percent in 1985 and is provisionally estimated to increase by somewhat more than 2 percent in 1986. Stagnant consumption of food and beverages in 1985 exacerbated the supply imbalance for these commodities, but in 1986 the sharp reduction in prices of many agricultural commodities appears to have increased consumption of at least some of these commodities. In 1985, a 1.6 percent decline in consumption of metals (see Table V.1) resulted in the level of consumption of metals falling back to approximately its 1980 level, although industrial production in the major industrial countries in 1985 was 12 percent higher than its 1980 level. Little change is expected in overall consumption of metals in 1986. Thus, the historic relationship between economic activity, as measured by industrial production, and consumption of metals has been weakened in the 1980s. This weakening appears to have resulted from widespread substitution for, and conservation of metals in traditional uses. The reduction in the intensity of metals use has been influenced by advances in materials science and by trends toward downsizing, which have been accelerated in response to the high prices of energy and metals in the late 1970s.

b. Inflation

Inflation has a positive relationship with at least nominal commodity prices--both on the supply side and the demand side. On the supply side, inflation influences the costs of production in producing countries, while

Table 1.4. World Economic Activity, Commodity Consumption and Supply, and Commodity Prices, 1970-86

(Annual percentage changes)

	Economic Activity in Seven Industrial Countries			Consumption of Commodities Index <u>1/</u>	Supply of Commodities <u>1/</u>			Commodity Prices	
	Real GNP	Industrial production	Domestic fixed investment		Index of production	Index of supply <u>2/</u>	Index of closing stocks <u>3/</u>	Nominal (In U.S. dollars)	Real
1970	2.2	1.0	1.4	2.5	2.3	1.0	-10.2	5.3	-0.6
1971	3.3	2.0	5.8	3.7	5.2	2.3	0.9	-2.6	-7.3
1972	5.1	7.1	8.2	4.0	1.2	0.9	-7.4	7.4	-0.8
1973	5.9	8.9	7.7	6.0	5.0	3.3	-6.3	62.5	38.5
1974	0.2	-1.0	-5.5	-3.2	2.2	0.5	9.5	20.9	0.4
1975	-0.5	-8.3	-7.2	0.0	-0.8	0.8	12.2	-16.2	-26.1
1976	5.0	8.9	5.8	5.1	2.3	3.0	-3.2	8.5	8.2
1977	3.9	5.3	7.5	2.0	3.7	2.1	4.9	10.4	1.5
1978	4.6	4.8	6.9	7.4	4.6	4.4	-0.9	1.2	-12.2
1979	3.4	4.9	4.7	3.1	2.9	2.5	-5.0	21.3	6.9
1980	1.1	-0.2	-2.2	-1.6	0.2	-0.3	6.0	6.2	-3.7
1981	1.6	0.4	-0.2	1.7	3.0	3.1	15.5	-10.6	-6.7
1982	-0.6	-4.0	-4.9	2.2	-0.9	1.6	9.7	-10.6	-8.4
1983	2.8	3.8	3.6	1.4	-0.5	1.3	-9.8	6.5	9.9
1984	5.0	8.5	9.4	3.3	7.6	4.8	9.6	1.6	5.1
1985	3.0	3.1	5.5	0.5	1.2	2.3	13.9	-12.4	-13.2
1986 <u>4/</u>	2.7	1.1	3.0	2.3	-1.0	1.2	0.4	-3.8	-18.1

Sources: Commodities Division and Current Studies Division, IMF Research Department.

1/ Overall indices constructed using the same weights for the indices of individual commodities as in the overall price index.

2/ Production plus beginning of year stocks.

3/ End-of-year stocks.

4/ Provisional estimates.

on the demand side inflation influences the prices of substitutes for primary commodities. Inflation, represented by the GNP deflator in industrial countries, decelerated substantially, from 9.3 percent in 1980 to 3.6 percent in 1985, and is estimated to decelerate further in 1986 to 3.1 percent (Table 1.5).

The sharp decline in petroleum prices in 1986 has had a marked influence on inflation. In addition, the decline has affected commodity prices more directly through its effects on production and transport costs and on the prices of petroleum-based synthetic substitutes for primary commodities (e.g., rubber, cotton, and jute). Other factors have also served to reduce production costs for primary commodities. Low commodity prices have forced adjustments aimed at cutting costs in an effort to reduce losses. Some high-cost producers have had to cease operations altogether. In the case of metals, many producers, in addition to closing down their least profitable operations, have been able to achieve significant reductions in the operating costs of their remaining operations. In addition, in recent years there has been a shift in the location of production to lower-cost producers, in many cases to the developing countries.

Furthermore, the low inflation environment and the bleak outlook for commodity prices, combined with historically high real rates of interest, have served to weaken the speculative demand for primary commodities. This is in marked contrast to the 1970s when high inflation, negative real rates of interest, and generally increasing commodity prices resulted in a sharp rise in speculative demand not only for precious metals--the traditional hedge against inflation--but also for a number of other commodities.

c. Supply of commodities

In attempting to explain the influence of supply on commodity prices, it is useful to distinguish between the factors influencing the prices of agricultural commodities and the prices of metals. Supply has a dominant influence on agricultural prices since in the short run agricultural production can be controlled less easily than the production of metals, and demand, especially in the case of food and beverages, is relatively stable.

In 1983, overall food prices advanced by nearly 9 percent when adverse weather, with drought in many parts of the world and excessive rains elsewhere, was a major factor leading to a reduction in the production of most food commodities. A group index of production of food commodities, constructed by using the same weights for indices of production of individual food commodities as in the IMF group price index, shows a decline in production of food commodities of nearly 4 percent in that year (see Table II.1). In 1984 the situation was reversed and the group index of production of food commodities shows an increase of nearly 8 percent. As similar increases were recorded in the production of most beverages and agricultural raw materials in 1984,

Table 1.5. World Inflation and Commodity Prices, 1970-86

(Annual percentage changes)

Year	Domestic Prices in Seven Industrial Countries				Nominal Prices in U.S. Dollars			Real Commodity Prices ^{1/}
	Consumer price index		GNP deflator		Commodities	Export unit values		
	Unadjusted	In U.S. dollars	Unadjusted	In U.S. dollars		Petroleum	Manufactures	
1970	5.7	6.0	6.1	6.4	5.3	3.0	6.0	-0.6
1971	4.9	6.1	6.0	7.2	-2.6	20.0	5.1	-7.3
1972	4.3	8.4	5.4	9.5	7.4	16.4	8.2	-0.8
1973	7.5	12.3	7.8	12.5	62.5	40.0	17.3	38.5
1974	13.3	11.0	11.7	9.3	20.9	225.8	20.5	0.4
1975	10.8	11.9	10.9	12.0	-16.2	5.1	13.3	-26.1
1976	7.8	4.1	7.7	4.0	8.5	6.3	0.3	8.2
1977	7.9	9.4	7.6	9.1	10.4	9.4	8.8	1.5
1978	6.9	15.0	7.3	15.4	1.2	0.4	15.3	-12.2
1979	9.3	11.0	8.2	9.9	21.3	45.9	13.5	6.9
1980	12.1	12.2	9.3	9.4	6.2	63.6	10.4	-3.7
1981	9.9	2.7	8.7	1.6	-10.6	9.8	-4.7	-6.2
1982	6.9	-0.1	6.8	-0.2	-10.6	-4.3	-2.3	-8.4
1983	4.4	1.6	4.5	1.7	6.5	-11.4	-3.1	9.9
1984	4.4	0.4	3.8	-0.1	1.6	-2.4	-3.3	5.1
1985	3.8	2.5	3.6	2.3	-12.4	-4.3	1.0	-13.2
1986 ^{2/}	2.0	16.8	3.1	18.2	-3.8	45.7	17.5	-18.1

Sources: Commodities Division and Current Studies Division, IMF Research Department.

^{1/} Commodity prices deflated by unit values of manufacturers.^{2/} Provisional estimates.

an index of agricultural commodities (food, beverages, and raw materials) shows an increase in excess of 8 percent in 1984, by far the largest increase in the 25 years for which calculations have been made. This increase triggered the price decline for agricultural commodities, in most cases beginning in the third quarter of 1984.

Supplies of agricultural commodities (production plus opening stocks) increased by a cumulative 8 percent in 1984-85, the largest two-year increase since at least 1960. The agricultural commodities for which prices declined the most in 1985 were the commodities for which supplies increased by the largest amounts in 1984-85. For example, the prices of vegetable oils and protein meals fell by 25 percent in 1985 as supplies rose by 11 percent in 1984-85, cotton prices declined by 22 percent as supplies rose by 29 percent, and tea prices fell by 43 percent as supplies increased by 11 percent.

Apart from the short-term influences of favorable growing conditions, the large increases in agricultural supplies in recent years are due to several factors. Some industrial countries, which are major producers of temperate products, notably food, continued to subsidize agricultural production in spite of declining prices, with the result that agricultural surpluses have increased further. Production increases have also resulted from other long-term factors such as gains in productivity and the lagged response in production capacity to the high real prices prevailing in the mid and late 1970s. In addition, adjustment policies pursued by many developing countries, in many cases in the wake of serious food shortages, have had the effect of increasing production of agricultural commodities.

Production of metals can adjust more quickly than production of agricultural commodities to decreases in demand and, provided there is sufficient excess capacity, also to increases in demand. In the 1980s, production has tended to stagnate in line with consumption of metals. However, mining capacity adjusts more slowly than production of metals. As a result, the markets for metals in the 1980s have been affected by the large unutilized capacity that has developed since the mid-1970s as production moved to adjust at first to a slowing of growth in consumption, and then to stagnation in consumption. This large unutilized capacity prevented prices from rising even when consumption of metals increased in 1983-84, and added to the downward pressure on prices when consumption of metals declined in 1985.

d. Policies of producing countries

Over half of world agricultural exports (excluding beverages) is accounted for by the industrial countries, and for some commodities (e.g., wheat and maize) the share of industrial countries is much higher. Most of these exports originate from farmers who are protected in varying degrees from adverse developments in world markets. 1/ Policies put in

1/ See "Agricultural Trade Policies," Chapter IV in Trade Policy Issues and Development, Occasional Paper No. 38, IMF, July 1985, pp. 56-71.

place in the 1970s and in the early 1980s that strongly encouraged increased production are only recently being re-examined in light of the excess supply situation that has characterized world agricultural markets since 1984. Part of this excess supply undoubtedly was a result of the very policies that insulated farmers from the sharp price declines that have occurred since 1984.

In developing countries, on the other hand, domestic agricultural prices have historically often been below world market prices for various reasons (e.g., to provide government revenues, to keep domestic food prices low). In recent years, however, many developing countries have implemented policies to allow domestic prices to approximate more closely world prices in order to encourage increased production. These developments, in combination with continued adoption of improved inputs and higher-yielding varieties, have encouraged higher production.

In the past, policies to support producer prices and incomes in the United States and the EC have resulted in increased production of a number of commodities: cereals, cotton, oilseeds, sugar, meat, and dairy products. The movement of large quantities of cereals, cotton, and soybeans into government-held stocks because of high price support "loan rates" in the United States--the world's leading exporter of these commodities--helped support world market prices for these commodities at relatively high levels. In the case of sugar, however, comparatively high prices in the EC and U.S. markets have had the effect of reducing the price for sugar traded on the "free" market. High sugar prices in the European Community and the United States have led to increases in domestic sugar production while at the same time depressing consumption. As a consequence, net imports of sugar have declined. In the case of the United States this decline is reflected in progressively lower import quotas and in the case of the European Community by a maintenance of imports increasingly offset by exports.

Policy changes resulting from the implementation of the 1985 U.S. farm bill (officially called the Food Security Act of 1985), which sets U.S. farm policy until September 1990, are expected to exert downward pressure in 1986-87 on world market prices of commodities in which the United States has a major share of world trade and to have an indirect effect on some commodities which are close substitutes. The 1985 farm bill attempts to make U.S. farm policy more market-oriented and thereby reverse some of the effects of previous policies which, primarily through high price supports, had tended to make U.S. agricultural products less competitive in world markets. Perhaps the single most important feature of the new farm bill concerns the price support "loan rates", the prices used by the Commodity Credit Corporation to determine the value of stocks of crops held as collateral against loans to farmers. An attempt has been made to link loan rates more directly to market conditions through a formula tying them to past market prices. In addition, the U.S. Secretary of Agriculture has the discretionary power to reduce loan rates further if world prices or market competitiveness warrant such reductions. The bill protects farm incomes by freezing "target prices"

at 1985 levels, for two years in the case of wheat and feed grains and for one year in the case of cotton and rice. Farmers participating in the program receive deficiency payments calculated on the basis of the difference between target prices and market prices. Nominal target prices can decline by only 10 percent over the life of the bill but loan rates can decline much more sharply. Though the bill makes acreage reduction programs mandatory and provides for an acreage conservation reserve of 40-45 million acres, the impact of the bill on reducing supplies, at least in the short term, is expected to be quite limited because the income protection provided by relatively high target prices are expected to provide strong incentives to maximize yields on permitted acreage.

Sharply lower U.S. price support loan rates will make U.S. agricultural commodities available for export at much lower prices and U.S. loan rates are less likely to act as floor prices for world market prices for cereals, soybeans, and cotton. Supplies available for export from the United States are likely to increase because the lower loan rates will reduce the accumulation of government stocks. In the short run these considerations portend to lower world market prices for cereals, soybeans, and cotton. Over the medium term, as production declines in response to lower prices and the supply management policies in the United States and elsewhere, prices are likely to recover gradually. If stocks, which are presently very high for cereals, cotton, and soybeans, are drawn down over the medium term, world market prices for these commodities may be expected to become less stable than they have been during the last few years.

3. Outlook for Commodity Prices through 1987

Prices of most non-fuel primary commodities are projected to reach their trough in the last half of 1986 and begin to recover gradually in 1987. Exceptions to this general pattern are the prices of vegetable oils and protein meals which are forecast to continue to decline in the first half of 1987 before recovering in the latter part of the year, and coffee prices which, barring serious drought damage in either 1986 or 1987 or serious frost damage in 1987 in Brazil, are projected to continue to fall throughout 1987. In spite of the general upward movement of commodity prices during 1987 that is projected, average overall commodity prices in 1987 are still expected to remain 1.5 percent below the 1986 level.

The recovery in the prices of agricultural raw materials and metals in 1987 is projected to be stronger than that of food whose prices are expected to be restrained by the effects of large supplies. Moreover, the prices of agricultural raw materials and metals should be more influenced than the prices of food commodities by the projected recovery in world economic activity from the notably decelerated growth in 1986. As a result, the real prices of these two groups of commodities which are used as inputs into industrial production should remain steady in 1987, while real food prices are projected to continue to decline and

real beverage prices to fall after their rise in 1986. Other factors limiting commodity price increases in 1987 are the expected continuation of low rates of world inflation and the expected continuation of petroleum prices at much lower than in the early 1980s.

4. Export Earnings

Earnings from exports of non-fuel primary commodities in the period 1981-85 have fallen far below the level of 1980 and are expected to fall further in 1986 and 1987. Total earnings, in terms of U.S. dollars, of 18 leading commodities fell by 5 percent in 1986 (Table I.6). An aggregate index of volumes of exports for the 18 commodities shows little variation over the period 1980 to 1986 with volumes ranging between a low of 99.4 in 1981 and a high of 103.2 in 1985 (Table I.7). Consequently, the general decrease and the year-to-year variability in aggregate export earnings from commodities was attributed almost entirely to prices. This conclusion is supported by the movement in an aggregate index of unit values. *The movement of this index in 1980-86 closely mirrors that of the index of earnings.*

Although the aggregate index of volumes of exports of commodities has been stable in the 1980s, there has been a large shift in the origin of these exports. Aggregate volumes of exports for industrial countries have fallen by about 4 percent while those for developing countries have increased by about 11 percent (Table I.8). Thus the decline in earnings from exports of commodities by industrial countries has been greater than that of developing countries on account of the change in market shares.

In 1985, total earnings from exports of the 18 primary commodities declined by 11 percent from the level of 1984; all of this decline was accounted for by the decline in unit values. The decline affected the earnings of 14 of the 18 commodities, all except coffee, cocoa, iron ore, and tin, for which only modest increases were recorded. Estimates for 1986 indicate a further 4 1/2 percent decline in total earnings, almost all attributable to price falls. Exceptionally large decreases in earnings--in excess of 20 percent--are projected for maize, soybean oil, palm oil, cotton and tin. Small increases are projected for soybeans, hardwood and natural rubber, while larger increases are projected for soybean meal and aluminum. An exceptionally large increase is projected in earnings from exports of coffee--nearly 30 percent. For developing countries, coffee is by far the leading source of export earnings from non-fuel commodities (Table I.9) and the increase in coffee earnings served to mitigate the effects of downward price movements on the earnings of many individual developing countries. As a result, total earnings from the 18 leading commodities by developing countries are estimated in 1986 to fall by only 2 percent compared with a decline of 8 percent in the earnings of industrial countries from the export of these commodities. The continuing decline in market prices for commodities during 1986 and lack of any sign of a major reversal in 1987, suggest that export earnings from commodities are likely to decrease further in 1987.

Table I.6. Export Earnings from Major Commodities, 1980-86

(In billions of U.S. dollars)

	Calendar Years						
	1980	1981	1982	1983	1984	1985	1986
Total 18 commodities	<u>128.92</u>	<u>120.53</u>	<u>105.25</u>	<u>108.80</u>	<u>112.86</u>	<u>100.56</u>	<u>95.95</u>
Industrial countries ^{1/}	59.10	58.67	49.62	50.15	50.68	42.90	39.39
Developing countries	60.62	53.42	46.95	49.92	54.12	49.85	49.02
Non-Fund members	9.20	8.44	8.68	8.73	8.06	7.81	7.54
Cereals							
Wheat	18.67	20.04	18.15	17.92	18.17	15.92	13.74
Maize	12.01	12.23	8.94	9.84	10.20	9.24	6.60
Rice	5.05	5.78	4.15	3.61	3.79	2.98	2.68
Sugar	14.71	14.75	11.43	10.82	10.12	9.26	9.25
Vegetable oils and protein meals							
Soybeans	7.10	7.39	7.03	6.80	7.21	5.64	5.75
Soybean meal	4.22	5.05	4.43	5.19	4.38	3.67	4.29
Soybean oil	1.99	1.88	1.64	1.81	2.86	2.05	1.04
Palm oil	1.93	1.60	1.60	1.69	2.78	2.51	1.44
Beverages							
Coffee	11.67	8.07	8.99	9.24	10.63	10.85	14.05
Tea	1.66	1.58	1.39	1.67	2.50	1.59	1.41
Cocoa ^{2/}	3.83	2.95	2.51	2.45	3.36	3.37	3.23
Agricultural raw materials							
Hardwood	7.48	5.33	5.26	5.49	5.20	4.52	4.36
Cotton	7.82	7.38	6.36	6.47	6.86	5.60	4.36
Natural rubber	4.30	3.32	2.45	3.29	3.49	2.61	2.77
Metals							
Copper ^{3/}	8.45	6.32	5.69	6.52	5.23	5.15	5.07
Aluminium	7.98	6.96	6.34	7.92	7.64	6.91	8.28
Iron ore	7.13	7.37	6.90	6.23	6.67	6.73	6.60
Tin	2.92	2.53	1.99	1.84	1.77	1.96	0.83

Source: See tables on individual commodities in Sections II to V.

^{1/} Covers 21 countries as defined in the IMF, International Financial Statistics.

^{2/} Exports of countries producing cocoa beans.

^{3/} Exports of copper blister and refined copper.

Table 1.7. Indices of Earnings, Volumes and Unit Values for World Exports of Major Commodities, 1980-86

(Indices: 1980=100)

Earning Share in Total for 18 Commodities in 1980 (in percent)	Calendar Years							
	1980	1981	1982	1983	1984	1985	1986	
Earnings (in terms of U.S. dollars)	100.0	100.0	93.5	81.6	84.4	87.5	78.0	74.5
Wheat	14.5	100.0	107.3	97.2	96.0	97.3	85.3	73.6
Maize	9.3	100.0	101.8	74.4	81.9	84.9	76.9	55.0
Rice	3.9	100.0	114.5	82.2	71.5	75.0	59.0	53.1
Sugar	11.4	100.0	100.3	77.7	73.6	68.8	63.0	62.9
Soybeans	5.5	100.0	104.1	99.0	95.8	101.5	79.4	81.0
Soybean meal	3.3	100.0	119.7	105.0	123.0	103.8	87.0	101.6
Soybean oil	1.5	100.0	94.5	82.4	91.0	143.7	102.8	52.5
Palm oil	1.5	100.0	82.9	82.9	87.6	144.0	130.2	74.5
Coffee	9.1	100.0	69.2	77.0	79.2	91.1	93.0	120.4
Tea	1.3	100.0	95.2	83.7	100.6	150.6	95.8	84.9
Cocoa	3.0	100.0	77.0	65.5	64.0	87.7	88.0	84.3
Hardwood	5.8	100.0	71.3	70.3	73.4	69.5	60.4	61.0
Cotton	6.1	100.0	94.4	81.3	82.7	87.7	71.6	55.8
Natural rubber	3.3	100.0	77.2	57.0	76.5	81.2	60.7	64.4
Copper	5.6	100.0	74.8	67.3	77.2	51.9	60.9	60.0
Aluminum	6.2	100.0	87.2	79.4	99.2	95.7	86.6	103.8
Iron ore	5.5	100.0	103.4	96.8	87.4	93.5	94.4	92.6
Tin	2.3	100.0	86.6	64.2	63.0	60.6	67.1	28.4
Volumes 1/	100.0	99.4	100.1	101.9	102.4	103.2	103.1	
Wheat	100.0	106.1	105.8	112.6	116.9	112.8	117.3	
Maize	100.0	98.1	87.2	85.9	85.3	88.5	74.7	
Rice	100.0	100.8	91.1	89.2	96.2	91.5	93.8	
Sugar	100.0	106.7	112.3	108.0	103.6	99.3	99.3	
Soybeans	100.0	97.4	107.4	98.9	95.9	94.4	103.3	
Soybean meal	100.0	112.9	112.4	128.7	116.3	129.8	132.0	
Soybean oil	100.0	109.4	106.3	112.5	125.0	112.5	96.9	
Palm oil	100.0	89.1	105.7	111.5	121.3	160.1	186.8	
Coffee	100.0	101.2	107.8	110.5	114.5	118.5	111.7	
Tea	100.0	100.7	97.7	102.0	111.1	116.6	113.6	
Cocoa	100.0	111.0	109.6	104.4	112.5	121.3	124.3	
Hardwood	100.0	82.7	81.5	82.6	79.1	71.9	70.5	
Cotton	100.0	98.6	91.9	89.4	87.9	85.2	89.4	
Natural rubber	100.0	94.5	93.3	103.6	108.8	109.1	110.0	
Copper	100.0	91.1	95.3	102.2	94.2	90.0	90.9	
Aluminum	100.0	98.0	108.2	122.4	114.7	121.5	132.7	
Iron ore	100.0	95.6	95.7	80.8	95.2	98.6	98.9	
Tin	100.0	104.5	86.5	82.6	84.8	99.4	77.0	
Unit values (in terms of U.S. dollars) 2/	100.0	94.1	81.5	82.8	85.4	75.6	72.2	
Wheat	100.0	101.0	91.9	85.3	83.2	75.6	62.7	
Maize	100.0	102.9	85.3	85.3	99.5	86.9	73.6	
Rice	100.0	113.6	88.3	80.2	78.0	64.5	56.6	
Sugar	100.0	94.4	69.2	68.1	66.4	63.4	63.3	
Soybeans	100.0	106.9	92.2	96.9	105.8	84.1	78.4	
Soybean meal	100.0	106.0	91.4	95.6	89.3	67.0	77.0	
Soybean oil	100.0	86.4	77.5	80.9	115.0	91.4	54.2	
Palm oil	100.0	93.0	78.4	78.6	118.7	81.3	39.9	
Coffee	100.0	69.4	71.4	71.7	79.6	78.5	107.8	
Tea	100.0	94.5	85.7	98.6	135.6	82.2	74.7	
Cocoa	100.0	69.4	59.8	61.3	78.0	72.5	67.8	
Hardwood	100.0	88.4	86.3	88.9	87.9	84.0	85.5	
Cotton	100.0	105.4	88.5	92.5	99.8	84.0	62.4	
Natural rubber	100.0	81.7	61.6	73.8	74.6	55.6	58.5	
Copper	100.0	82.1	79.6	75.5	65.7	67.7	66.0	
Aluminum	100.0	89.0	73.4	81.0	83.7	69.6	78.2	
Iron ore	100.0	108.2	113.3	108.2	98.1	95.7	91.6	
Tin	100.0	82.9	78.8	76.3	71.5	67.5	36.9	

Source: See tables on individual commodities in Sections II to V.

1/ Aggregate index of volumes constructed by weighting volume indices for individual commodities by their respective 1980 earnings shares.

2/ Aggregate index of unit values constructed by dividing aggregate index of earnings by aggregate index of volumes.

Table I.8. Indices of Aggregate Earnings, Volumes and Unit Values for Major Commodity Exports for Industrial Countries and for Developing Countries, 1980-86

(Indices: 1980 = 100)

	Calendar years						
	1980	1981	1982	1983	1984	1985	1986
Earnings (in terms of U.S. dollars)							
World ^{1/}	100.0	93.5	81.6	84.4	87.5	78.0	74.5
Industrial countries	100.0	99.3	84.0	84.9	85.8	72.6	66.7
Developing countries	100.0	88.2	77.5	82.4	89.3	82.3	80.9
Volumes							
World ^{1/}	100.0	99.4	100.1	101.9	102.4	103.2	103.1
Industrial countries	100.0	98.2	96.9	97.4	97.0	94.3	96.3
Developing countries	100.0	100.7	101.7	106.4	108.3	113.1	111.3
Unit Values (in terms of U.S. dollars)							
World ^{1/}	100.0	94.1	81.5	82.8	85.4	75.6	72.2
Industrial countries	100.0	101.1	86.7	87.2	88.5	77.0	69.3
Developing countries	100.0	87.6	76.2	77.4	82.5	72.8	72.7

Source: See table on individual commodities in Sections II to V. Aggregate of individual commodities in accordance with earnings share in total for 18 commodities in 1980 for world, industrial countries and developing countries.

^{1/} Includes non-Fund members.

Table 1.4. Average Annual Export Earnings of Industrial, Developing Countries and other Countries, 1980-86

	Average Earnings			Shares			
	Total	Industrial countries ^{1/}	Developing countries	Non-Fund members	Industrial countries ^{1/}	Developing countries	Non-Fund members
	----- (In billions of U.S. dollars) -----			----- (Percentages) -----			
Total 18 commodities	110.42	50.06	52.01	8.35	45	47	8
Cereals							
Wheat	17.52	15.46	1.52	0.54	88	9	3
Maize	9.87	7.83	1.99	0.05	79	20	1
Rice	4.01	1.67	2.24	0.10	62	56	2
Sugar	11.47	2.95	3.83	4.69	26	33	41
Vegetable oils and protein meals							
Soybeans	6.71	5.47	1.24	--	82	18	--
Soybean meal	4.46	2.38	2.08	--	53	47	--
Soybean oil	1.90	1.19	0.71	--	63	37	--
Palm oil	1.94	--	1.94	--	--	100	--
Beverages							
Coffee	10.50	--	10.39	0.11	--	99	1
Tea	1.69	--	1.69	--	--	100	--
Cocoa	3.10	--	3.10	--	--	100	--
Agricultural raw materials							
Hardwood	5.40	0.95	4.43	0.02	18	82	--
Cotton	6.40	2.22	3.00	1.18	35	47	18
Natural Rubber	3.18	--	3.18	--	--	100	--
Metals							
Copper	5.06	1.85	4.06	0.15	31	67	2
Aluminum	7.43	4.89	1.71	0.83	66	23	11
Iron ore	6.81	2.98	3.15	0.68	44	46	10
Tin	1.97	0.22	1.75	--	11	89	--

Source: See tables on individual commodities in Sections II and V.

^{1/} Covers 21 countries as defined in the IMF, International Financial Statistics.

II. Food Commodities

The index of dollar prices for food commodities in the first three quarters of 1986 averaged 29 percent below the average for the first half of 1984 and 33 percent below the average for 1980 (Chart 3). In 1983, a variety of factors, many weather-related, which are described in the discussions on individual food commodities in this section, led to a reduction in supplies of food commodities and to a temporary reversal of the downward price trend which had begun in the first quarter of 1981. However, production of food commodities in the 1984/85 crop year increased by a particularly large amount and stocks accumulated with the result that from mid-1984, the downward trend in prices resumed. A further increase in production of food commodities was recorded in the 1985/86 crop year and the stock build-up was even greater than in the previous year (Table II.1). The downward trend in the prices of food commodities was reinforced in the first half of 1986 by changed policies concerning agricultural price supports, particularly in the United States. The changes in agricultural price support policies have resulted from an increasing unwillingness in industrial countries to maintain large, and increasing, carryover stocks of food commodities and have led to greatly increased competition for export markets. These events have coincided with a growing self-sufficiency of food supplies in many developing countries and a number of years of generally favorable weather conditions for food crop production in most major producing regions.

i. Cereals

Prices of the three main cereals in world trade--wheat, maize, and rice--remained at relatively low levels throughout 1985 and during the first half of 1986 on account of abundant supplies (Table II.2). Furthermore, during the first half of 1986, cash prices and futures prices in contracts for the old crop (1985/86) remained well above futures prices in contracts for the new crop (1986/87), mainly because of a sharp reduction in the U.S. price support loan rates for grain in the 1986/87 marketing year. The tight "free supplies," resulting from record amounts of grain tied up in government-held stocks in the United States, also contributed to the unusually high premiums recorded by cash and old crop futures contracts over new crop futures contracts. The ample supply situation, including the large level of world cereal stocks and the prospect of another large world cereal harvest in 1986/87, has led to an intensification of competition amongst the major grain exporters which is expected to exert further downward pressure on cereal prices in 1986/87.

An increase in yields has been the main source of the growth in world grain output in recent years. While grain yields have increased by over 50 percent from the 1960s to the 1980s, the total area harvested increased by only 9 percent (Table II.3). These productivity gains were achieved by the use of high-yielding varieties and the greater use of complementary inputs such as fertilizers, irrigation, and pesticides. Government policies have played a major role in the increase in world

CHART 3 FOOD COMMODITY PRICES, 1980-86

(In U.S. dollars, indices: 1980=100)

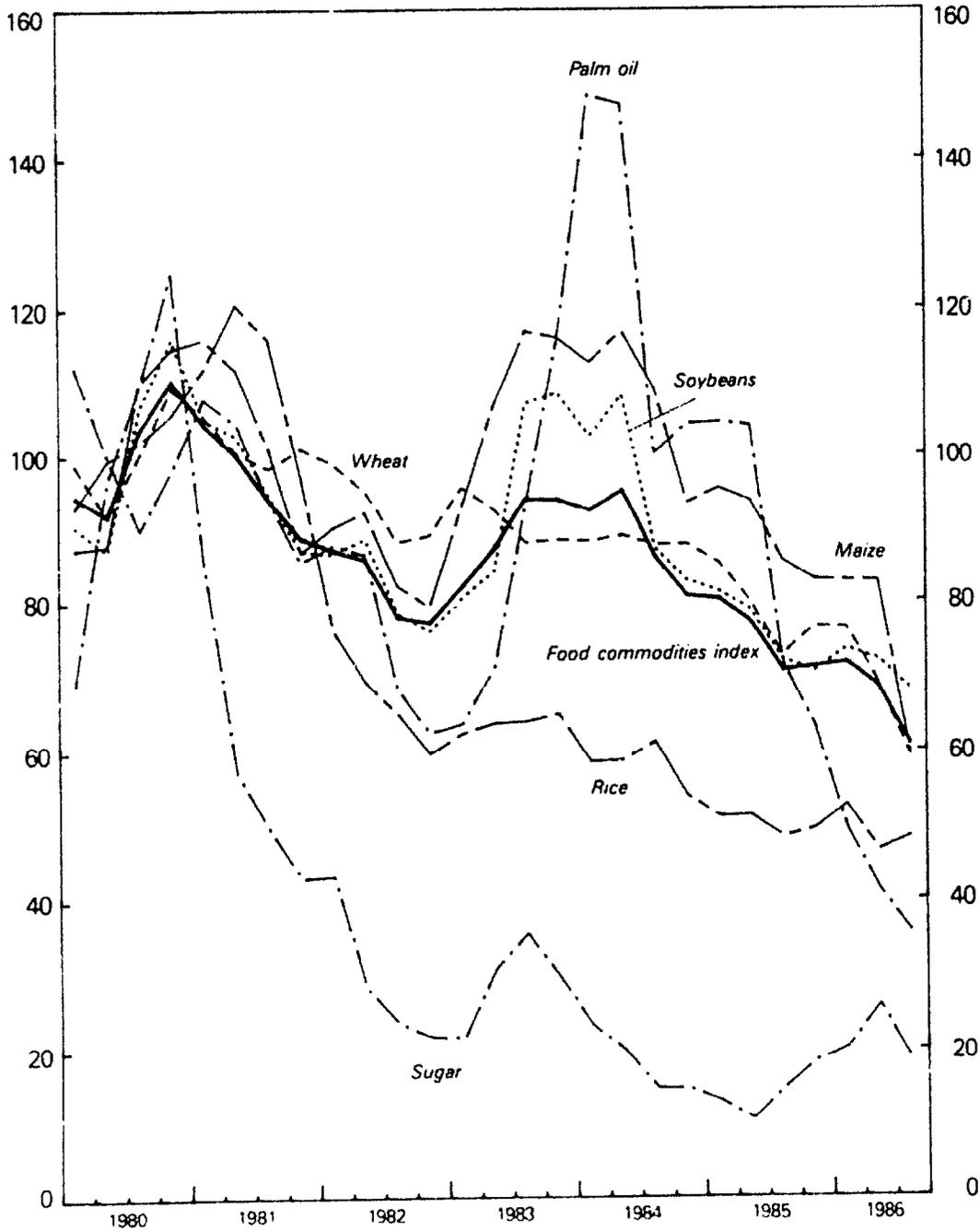


Table 11.1. Food Commodity Prices and Selected Underlying Factors, 1970-86

(Annual percentage changes)

Year	Food Commodity Prices		Real GNP in Seven Industrial Countries	GNP Deflator in Seven Industrial Countries		Supply of Food Commodities 1/			Index of Consumption of Food Commodities 1/
	Nominal (In U.S. dollars)	Real 2/		Unadjusted	(In U.S. dollars)	Index of production	Index of supply 3/	Index of closing stocks 4/	
1970	5.1	-0.8	2.2	6.0	6.3	2.6	0.7	-23.3	4.4
1971	3.3	-1.7	3.6	5.7	6.9	7.1	2.7	4.6	2.5
1972	8.0	-0.2	5.5	5.1	9.2	-0.1	0.4	-17.4	3.1
1973	80.4	53.8	5.9	7.8	12.6	9.4	6.4	14.1	7.0
1974	25.6	2.5	0.1	11.7	9.4	-3.4	-1.9	-0.9	-4.1
1975	-19.8	-29.2	-0.6	11.0	12.0	6.3	5.6	16.4	4.7
1976	-6.2	-6.5	5.0	7.8	4.0	4.5	5.3	14.0	5.4
1977	-2.8	-10.7	3.9	7.6	9.2	2.7	4.0	3.3	4.6
1978	13.3	-1.7	4.6	7.3	15.5	7.7	6.9	12.9	7.0
1979	16.6	2.7	3.3	8.2	9.9	2.9	3.9	1.0	4.7
1980	8.6	-1.6	1.1	9.3	9.4	-1.0	-0.8	1.8	-2.2
1981	-3.2	1.6	1.6	8.7	1.5	4.1	3.8	9.5	3.4
1982	-15.2	-13.2	-0.6	6.9	-0.1	4.9	5.5	14.8	4.4
1983	8.7	12.2	2.8	4.5	1.7	-3.8	-1.2	-17.0	0.8
1984	-0.7	2.7	4.9	4.0	--	7.9	4.5	21.1	2.2
1985	-15.5	-16.3	2.7	3.6	2.3	1.6	3.7	23.7	0.6
1986 5/	-9.0	-22.3	2.6	3.1	16.3	1.7	4.3	9.3	3.8

Sources: Commodities Division and Current Studies Division, IMF Research Department.

1/ Group indices constructed using same weights for indices of individual food commodities as in group price index.

2/ Deflated by unit values of manufactured exports.

3/ Production plus beginning of year stocks.

4/ End of (crop) year stocks.

5/ Provisional estimates.

Table 11.2. Prices of Cereals, 1960-86

(In U.S. dollars a ton)

Year	Wheat <u>1/</u>	Maize <u>2/</u>	Rice <u>3/</u>
1960-69	62	52	161
1970-71	118	95	285
1980-86	153	119	310
1970	55	58	143
1971	62	58	130
1972	70	56	150
1973	140	97	297
1974	180	132	542
1975	149	120	363
1976	133	112	254
1977	103	95	272
1978	128	101	369
1979	160	116	334
1980	173	126	434
1981	175	131	483
1982	160	108	293
1983	157	136	277
1984	152	136	252
1985	136	112	217
1986 <u>4/</u>	115	85	213
1984 I	152	142	254
II	154	147	255
III	152	137	266
IV	152	117	234
1985 I	147	120	222
II	138	118	223
III	126	108	210
IV	132	104	215
1986 I	132	104	229
II	119	95	202
III	103	75	210

Source: Commodities Division, IMF Research Department.

1/ U.S. No. 1, hard winter wheat, ordinary protein, f.o.b. Gulf of Mexico ports.

2/ U.S. No. 2, yellow corn, f.o.b. Gulf of Mexico ports.

3/ Thai white milled rice, 5 percent broken, f.o.b. Bangkok.

4/ Includes projections for the final quarter of the year.

Table 11.3. Cereals: World Supply and Utilization, 1960/61-1986/87

	Area Harvested	Yield	Production	Utilization <u>1/</u>	Ending Stocks <u>2/</u>	Stocks/ Utili- zation Ratio <u>3/</u>
	(In millions of hectares)	(In tons per hectare)	----- (In million tons) -----			(In percent)
1960/61-						
1969/70	660	1.43	945	942	183	19.4
1970/71-						
1979/80	700	1.83	1,279	1,278	177	13.8
1980/81-						
1986/87	719	2.17	1,560	1,538	255	16.6
1970/71	671	1.64	1,103	1,144	165	14.4
1971/72	680	1.73	1,197	1,179	183	15.5
1972/73	670	1.73	1,161	1,201	143	11.9
1973/74	698	1.82	1,273	1,266	149	11.8
1974/75	700	1.74	1,218	1,224	140	11.4
1975/76	717	1.74	1,247	1,237	148	12.0
1976/77	719	1.90	1,363	1,310	201	15.3
1977/78	717	1.86	1,337	1,337	201	15.0
1978/79	717	2.04	1,466	1,436	231	16.1
1979/80	713	2.00	1,427	1,450	207	14.3
1980/81	724	2.00	1,447	1,452	197	13.2
1981/82	736	2.04	1,498	1,461	229	15.7
1982/83	719	2.15	1,543	1,509	263	17.4
1983/84	708	2.10	1,484	1,554	193	12.3
1984/85	716	2.30	1,644	1,595	242	15.2
1985/86 <u>4/</u>	717	2.32	1,664	1,587	319	20.1
1986/87 <u>5/</u>	713	2.31	1,648	1,618	350	21.6

Source: U.S. Department of Agriculture, Foreign Agricultural Circular: Grains (Washington), July 1986.

1/ For countries for which stocks data are not available, utilization estimates represent "apparent" utilization, i.e., include annual stock level adjustments.

2/ Stocks data are based on an aggregate of differing local marketing years and should not be construed as representing world stock levels at a fixed point in time. World stock levels have been adjusted for estimated year-to-year changes in U.S.S.R. grain stocks, but do not purport to include the absolute level of U.S.S.R. grain stocks. Data do not include stocks in China, in some countries in Eastern Europe and in some other countries for which stocks data are not available.

3/ Ratio of marketing year ending stocks to utilization.

4/ Preliminary.

5/ U.S. Department of Agriculture forecast.

cereal production. Production in major importing countries, such as India, China, and Indonesia, increased in response to government policies aimed at increasing self-sufficiency in cereals, while government policies to support farm incomes such as those in the European Community (EC) and the United States also contributed to production increases. The increase in world cereal production has been further enhanced by generally favorable weather conditions in the main grain exporting and importing countries during the last five crop years.

World cereal production has fluctuated around this rising trend and the degree of stability of cereal prices has largely been determined by the level of cereal stocks in relation to the level of cereal utilization. During the period between 1972/73 and 1974/75, world grain utilization exceeded world cereal production and prices rose sharply as stocks were drawn down and the ratio of stocks to utilization fell. During the next four crop years production exceeded utilization and prices declined as stocks were replenished. World grain utilization again exceeded world grain production in the period between 1979/80 and 1980/81 and a decline in the ratio of world stocks to world utilization resulted in a substantial rise in cereal prices. Beginning in 1981/82 world cereal production has once again exceeded world cereal utilization due to generally favorable weather and rising yields, except in 1983/84 when production fell largely due to a drought-related drop in U.S. maize production. The ratio of stocks to utilization fell from 17.4 percent in 1982/83 to 12.3 percent in 1983/84. The ratio of stocks to utilization recovered to 15.2 percent in 1984/85 and rose to 20.1 percent in 1985/86 and a further increase to 21.6 percent is forecast for 1986/87. These are the highest levels that the this ratio has reached since the 1960s.

Increased cereal production resulting from high support prices designed to protect farm incomes has led to large increases in government-held stocks, entailing sharply rising budgetary outlays. The United States, which dominates the export market for maize, is the largest exporter of wheat and is a major exporter of rice, currently holds about 16 percent of the world's stocks of maize, 41 percent of the world's stocks of wheat and 12 percent of the world's stocks of rice. The bulk of this grain is held in government stocks under various price support programs. The 1985 farm bill (officially called the Food Security Act of 1985), which covers crop years 1986 through 1990, attempts to make U.S. agricultural policy more market-oriented. The most important feature of the new bill is that it ties farm price support loan rates to an average of past market prices. As a result, loan rates for grains in the 1986/87 crop year have been reduced sharply. Farm incomes will be protected by freezing target prices at 1985 levels for two years for wheat and feed grains and for one year for rice. To qualify for federal price and income supports farmers have to participate in acreage reduction programs which are mandatory when stocks exceed certain specified levels. The bill provides that at least 5 percent, and possibly more, of the deficiency payments to farmers could be in the form of payment-in-kind (PIK) commodities from government-held stocks. In the past, the movement of large quantities of grain into government stocks due to high price

support loan rates, has helped to support world grain prices at relatively high levels. The sharp reduction in loan rates will make U.S. grain available for export at much lower prices. The 1985 farm bill also contains a number of trade and related provisions which seek to enhance further the competitive position of U.S. grain exports mainly through government credits and other forms of assistance. Unchanged target prices and sharply lower loan rates are expected to result in substantial budgetary outlays in 1986-87.

The EC also is faced with increasing problems in the cereals sector due to the production increases, stimulated by high support prices, and the large outlays to subsidize exports. The EC recently agreed on a farm price package for 1986/87 which attempts to address these problems. The principal changes include a new 3 percent tax on cereal producers called a co-responsibility levy, stricter quality standards, and fractionally lower intervention prices for certain types of grains. The extent of effective changes in intervention prices for grains will vary between member states because of changes in the "green rates", the notional exchange rates used to calculate farm prices. Nevertheless, the reduction, if any, in EC intervention prices is likely to be quite small in relation to a projected decline in world cereal prices stemming partly from the sharp reduction in U.S. price support loan rates. This, and the recent depreciation of the U.S. dollar against the European Currency Unit (ECU), are expected to sharply increase the cost of EC export subsidies.

a. Wheat

Since the 1980/81 crop year (July/June), the growth in world wheat production has outpaced the increase in world wheat consumption. Four successive record world harvests caused production to increase from 443 million tons in 1980/81 to 515 million tons in 1984/85 (Table II.4). The area of wheat harvested declined slightly during this period, so that the increase in wheat production can be attributed entirely to higher yields. Favorable weather conditions and sustained increases in the use of high yielding varieties caused yield per hectare to grow steadily from 1.88 tons in 1980/81 to 2.23 tons in 1984/85. In 1985/86, world wheat production declined to 503 million tons with the yield declining slightly to 2.19 tons per hectare. As world wheat consumption lagged behind world production, the ratio of world wheat stocks to world wheat utilization increased from 17.5 percent in 1980/81 to 25.2 percent in 1985/86. This rapid rise in the ratio of stocks to consumption was associated with a progressive decline in wheat prices from \$175 per ton in 1981 to \$136 per ton in 1985 and \$118 per ton during the first three quarters of 1986. ^{1/}

The 1984/85 crop year represented an exception to the general downward trend in wheat prices. A drought-related reduction in the U.S. feed grain harvest and a narrowing in the normal wheat/maize price ratio led to

^{1/} Price quotations refer to the U.S. No. 1 hard red winter wheat ordinary protein, f.o.b. Gulf or Mexico ports.

Table II.4. Wheat: World Commodity Balance, 1980/81-1986/87

(In millions of tons, unless otherwise indicated)

	June/July Years						
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86 ^{1/}	1986/87 ^{2/}
Production	442.8	448.4	479.1	490.9	515.6	503.7	505.6
China	54.2	59.6	68.4	81.4	87.8	85.8	87.5
EC	61.4	58.1	64.7	63.8	82.8	71.7	70.2
United States	64.6	75.8	75.3	65.9	70.6	66.0	57.7
U.S.S.R.	98.2	80.0	86.0	79.0	73.0	83.0	76.0
Other countries	164.4	174.9	184.7	200.8	201.4	197.2	214.2
Utilization	445.7	441.5	467.9	486.4	500.2	494.4	506.8
China	67.9	72.8	81.4	91.0	95.2	92.4	94.5
United States	21.1	23.1	24.7	30.2	31.4	28.6	29.3
U.S.S.R.	116.7	102.0	105.7	97.0	96.1	97.7	97.0
Other countries	240.0	243.6	256.1	268.2	277.5	275.7	286.0
Closing Stocks	78.2	85.1	96.3	101.0	116.4	123.5	122.3
United States	26.9	31.5	41.2	38.1	38.8	51.7	49.0
Others	51.3	53.6	55.1	62.9	77.6	71.8	73.3
Stocks/utilization ratio (percent)	17.5	19.3	20.6	20.8	23.3	25.0	24.1

Source: U.S. Department of Agriculture, Foreign Agriculture Circular: Grains (Washington), various issues.

^{1/} Preliminary.

^{2/} U.S. Department of Agriculture forecast.

a sharp increase in wheat fed to livestock which helped to sustain prices above \$150 per ton. However the prospect of a record 1984/85 wheat crop, and large carryover stocks caused prices to weaken in May 1984 and by July 1984 prices had fallen to \$147 per ton. Adverse weather conditions, especially in the U.S.S.R., and associated heavy wheat purchases by the U.S.S.R. early in the new marketing year, caused prices to recover to \$155 per ton in September. A reduction in the rate of U.S.S.R. and Chinese purchases, improving prospects for the Southern Hemisphere harvest and intensified competition for markets amongst the major exporters led to a weakening of prices in the final quarter of 1984 and the first quarter of 1985. Prices in the second quarter of 1985 began to decline more sharply due to the prospect of another large wheat crop in 1985/86 and limited prospects for an increase in wheat exports. In June 1985, as the Northern Hemisphere harvest gained momentum, prices fell to \$134 per ton.

In the beginning of the 1985/86 crop year prices fell further, reaching to \$123 per ton in August 1985, on account of the extremely large carryover stock and the expectation that world wheat production, although somewhat lower than in 1984/85, would exceed consumption for the fifth successive year. A small increase in prices was recorded in September on the expectation of increased purchases by the U.S.S.R. and prices strengthened during the fourth quarter of 1985 as large numbers of U.S. farmers put their crops under government loan program on account of local market prices being below the loan rate. By the end of November about 30 percent of the U.S. wheat crop had been placed under the government loan program. Concern that wet weather had affected the quality of the wheat crop in Canada and Europe also helped to support prices which recovered to \$137 per ton by December 1985.

During the first four months of 1986 wheat trading in the United States was dominated by short term factors. In spite of an underlying chronic oversupply situation, supplies of wheat available to the market remained extremely tight because by the end of April, wheat held under various government support programs was virtually equivalent to the total U.S. carryover projected for the end of the 1985/86 crop year. The enactment of the 1985 U.S. farm bill and the announcement of sharply lower U.S. loan rates for wheat in 1986 coupled with good prospects for the 1986/87 crop, caused cash wheat and old crop futures contracts to command unusually high premiums over new crop futures contracts.

Wheat prices advanced sharply in early May because of speculation about damage to the U.S.S.R. wheat crop in the Ukraine as a result of the nuclear accident at Chernobyl. However, the run up in prices was quite brief; when no major crop damage was apparent and attention was focused again on market fundamentals, prices resumed their downward course. Movement of wheat to mills from the harvest in the southern United States caused prices to decline sharply starting in the third week of May; in June prices declined further to \$106 per ton. In the first quarter of 1986/87 crop year, that is July-September 1986, prices averaged \$102 per ton, the lowest level since the beginning of the 1977/78 crop year.

World wheat production in 1985/86, estimated at 504 million tons, was 2.3 percent lower than the record 1984/85 harvest. Production in the EC, which reached a record 82.8 million tons in 1984/85, is estimated to have declined by 13 percent to 71.7 million tons in 1985/86 due to lower yields resulting from weather damage to crops in France and United Kingdom. ^{1/} The 1985/86 United States wheat crop, estimated at 66.0 million tons, was 4.6 million tons smaller than the 1984/85 crop because of reduced acreage and lower yields of winter wheat. In Argentina, after a bumper harvest in 1984/85, the 1985/86 wheat harvest is estimated to have declined by 36 percent to 8.5 million tons because of unfavorable weather. Australian production, which was also affected by wet weather, is estimated to have declined by 14 percent in 1985/86. Generally favorable growing conditions led to a recovery in wheat production in the U.S.S.R. where the 1985/86 crop is estimated at 83 million tons or 10 million tons more than the drought affected 1984/85 crop. Wheat production in Eastern Europe in 1985/86 is estimated to be 10 percent lower than in 1984/85 largely because of lower yields resulting from dry hot weather. The crops in both China and India in 1985/86 are estimated to be marginally lower than the record levels of 1984/85.

After reaching a record level of 500 million tons in 1984/85, world wheat utilization is estimated to have declined by 1 percent to 494 million tons in 1985/86 because of a 4 percent decline in wheat consumption in China and a 6 percent decline in wheat utilization in the United States, the latter largely due to a decline in the use of wheat for animal feed.

Despite the existence of a buyers market, characterized by ample supplies and low prices, world wheat exports are estimated to have declined by 17 percent in the 1985/86 crop year. A sharp recovery in the U.S.S.R. wheat crop in 1985/86 enabled that country to reduce its wheat imports from 28.1 million tons in 1984/85 to an estimated level of 16.0 million tons in 1985/86. Wheat imports by developing countries as a group are estimated to have declined by about 10 percent in 1985/86 because of improved harvests in many countries as well as the limited availability of foreign exchange for wheat purchases.

Ample export availabilities in the main exporting countries, in the face of reduced import demand in the 1980s, has resulted in intense competition for markets with increasing emphasis on credit facilities and other export promoting schemes or, as in the case of Argentina, through price reductions. The brunt of the sharp decline in exports was borne by the United States because high domestic price support loan rates for wheat made U.S. export prices uncompetitive. Exports from the United States are estimated to have declined by 32 percent in 1985/86. World carryover stocks, which increased during each of the previous four crop years are estimated to have increased by a further 7.1 million tons to a

^{1/} Data in this report on the EC over the 12 member countries of the EC, unless otherwise indicated.

record 123.5 million tons in 1985/86. The ratio of ending stocks to total world wheat utilization at the end of the 1985/86 crop year is estimated at 25.0 percent--the highest level since the 1976/77 crop year.

Since 1981, despite falling prices and keen competition among exporters, the increase in the volume of world wheat trade has been quite modest (Table II.5). The volume of world exports, which was 105 million tons in both 1981 and 1982, increased to 112 million tons in 1983 and to 116 million tons in 1984 before declining to an estimated level of 112 million tons in 1985. A fall in export unit values caused export earnings to decline from \$20.0 billion in 1981 to \$17.9 billion in 1983. However, earnings recovered to \$18.2 billion in 1984 because a 4 percent increase in export volume more than outweighed a decline in export unit value of about 2 percent. Earnings are estimated to have declined to \$16.0 billion in 1985 because of an estimated decline in both export volume and export unit value. A sharp decline in wheat prices is expected to result in an increase in the volume of the world wheat trade in 1986. Export volume is forecast to recover to 1984 levels but export earnings are expected to decline to 13.7 billion because of a projected 14 percent decline in export unit value.

The transitional forces and changes resulting from the 1985 U.S. farm bill are likely to dominate the world wheat market situation over the next few years. Under the new farm bill a formula is used to link the price support loan rates for wheat to an average of past prices; the U.S. Secretary of Agriculture has the discretion to reduce the loan rate computed by the formula by a further 20 percent if past prices or market competitiveness warrant such a reduction. The loan rate for wheat for the 1986 crop was set at the lowest rate permitted under the Act: \$88.18 per ton in 1986 as compared with \$121.25 per ton in the previous year. The minimum loan rates possible under the formula (based on the formula and a maximum 20 percent discretionary reduction in each year) are \$83.76 per ton in 1987, \$79.73 per ton in 1988, \$75.69 per ton in 1989, and \$71.65 per ton in 1990. The minimum target price, on which income support payments for wheat are based, will remain at the 1985 level of \$160.94 per ton in 1986 and 1987 after which they could decline to \$157.63 per ton in 1988, and to \$152.65 and \$146.97 per ton in 1989 and 1990, respectively. In order to qualify for price support loans and deficiency payments farmers are required to participate in acreage reduction programs which the Secretary of Agriculture is authorized to implement if stocks of wheat are expected to exceed 27.22 million tons. To be eligible for price and income supports wheat farmers would have to reduce their wheat acreage by 25 percent of their wheat acreage base in 1986 and by 27.5 percent in 1987. Acreage reductions for 1988-90 would range between 20 and 30 percent of wheat acreage base if stocks are expected to exceed 27.22 million tons. If stocks are less than 27.22 million tons, acreage reductions cannot exceed 20 percent of wheat acreage base.

The effects of the supply limiting provisions of the 1985 U.S. farm bill on U.S. wheat output are likely to be quite modest because, the target price for wheat, on which income support payments are based, has

Table II.5 Wheat: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984	1985 ^{1/}	1986 ^{1/2/}
Market prices ^{3/} (in U.S. dollars a ton)	<u>173</u>	<u>175</u>	<u>160</u>	<u>157</u>	<u>152</u>	<u>136</u>	<u>115</u>
Exports							
Volumes (in millions of tons)	<u>99.3</u>	<u>105.4</u>	<u>105.1</u>	<u>111.8</u>	<u>116.1</u>	<u>112.0</u>	<u>116.5</u>
Industrial countries	<u>88.7</u>	<u>95.4</u>	<u>94.1</u>	<u>94.3</u>	<u>101.9</u>	<u>97.8</u>	<u>103.0</u>
Australia	(15.0)	(10.7)	(11.0)	(8.3)	(10.6)	(10.0)	(11.0)
Canada	(17.6)	(16.2)	(19.6)	(22.2)	(21.6)	(22.0)	(22.5)
France	(12.0)	(14.8)	(12.7)	(14.7)	(15.8)	(16.5)	(17.0)
United States	(36.9)	(45.1)	(41.6)	(41.1)	(43.6)	(39.6)	(42.0)
Other	(7.2)	(8.6)	(9.2)	(8.0)	(10.3)	(9.7)	(10.5)
Developing countries	<u>7.9</u>	<u>7.1</u>	<u>7.5</u>	<u>14.6</u>	<u>11.8</u>	<u>11.2</u>	<u>10.4</u>
Argentina	(4.5)	(3.8)	(3.8)	(10.2)	(7.4)	(6.9)	(6.0)
Other	(3.4)	(3.3)	(3.7)	(4.4)	(4.4)	(4.3)	(4.4)
Non-Fund members	<u>2.7</u>	<u>2.9</u>	<u>3.5</u>	<u>2.9</u>	<u>2.4</u>	<u>3.0</u>	<u>3.1</u>
Unit values (in U.S. dollars a ton)	<u>188.0</u>	<u>190.1</u>	<u>172.6</u>	<u>160.3</u>	<u>156.5</u>	<u>143.0</u>	<u>118.0</u>
Industrial countries	<u>187.5</u>	<u>188.5</u>	<u>171.5</u>	<u>161.5</u>	<u>158.0</u>	<u>143.6</u>	<u>117.5</u>
Developing countries	<u>182.7</u>	<u>200.0</u>	<u>174.9</u>	<u>148.6</u>	<u>140.2</u>	<u>125.0</u>	<u>116.3</u>
Non-Fund members	<u>219.2</u>	<u>220.9</u>	<u>199.1</u>	<u>179.7</u>	<u>171.8</u>	<u>160.0</u>	<u>139.7</u>
Earnings (in billions of U.S. dollars)	<u>18.67</u>	<u>20.04</u>	<u>18.15</u>	<u>17.92</u>	<u>18.17</u>	<u>15.92</u>	<u>13.74</u>
Industrial countries	<u>16.63</u>	<u>17.99</u>	<u>16.14</u>	<u>15.23</u>	<u>16.10</u>	<u>14.04</u>	<u>12.10</u>
Developing countries	<u>1.45</u>	<u>1.41</u>	<u>1.32</u>	<u>2.17</u>	<u>1.65</u>	<u>1.40</u>	<u>1.21</u>
Non-Fund members	<u>0.59</u>	<u>0.64</u>	<u>0.69</u>	<u>0.52</u>	<u>0.42</u>	<u>0.48</u>	<u>0.43</u>

Source: Commodities Division, IMF Research Department for prices. UN Food and Agriculture Organization, FAO Trade Yearbook (Rome), various issues, for exports.

^{1/} Data on exports are estimates of Commodities Division, IMF Research Department.

^{2/} Includes projections for the final quarter of the year.

^{3/} U.S. No. 1 hard red winter wheat, ordinary protein, f.o.b., Gulf of Mexico ports.

been kept at the relatively high 1985 level of \$160.94 per ton for both 1986 and 1987. However, with the sharp 27 percent reduction in the U.S. loan rate for wheat in 1986, the U.S. price support loan rate is no longer likely to act as a floor price for the world wheat market and prices can be expected to move towards sharply lower market clearing levels.

Responding to the increased competition from lower U.S. wheat price support loan rates, the Canadian Wheat Board lowered its initial payment for the 1986/87 wheat crop by 19 percent in terms of Canadian dollars. The EC has maintained the intervention price for breadmaking wheat at 1985/86 levels in terms of ECUs but lowered intervention prices for feed wheat by 5 percent and introduced stricter quality standards for acceptance of grain into intervention. A 3 percent co-responsibility levy was also introduced. However, because of the decline in the U.S. dollar against the ECU, in terms of U.S. dollars, the EC intervention prices for wheat are substantially higher than in 1985/86. This and the declining world price of wheat in terms of dollars are likely to sharply increase the cost of EC export subsidies for wheat. Argentina, on the other hand, increased its support price for wheat by about 11 percent in terms of U.S. dollars.

The impact of the prospect of sharply lower world wheat prices on world wheat production in 1986/87 is likely to be quite small because income support payments are still high in most major exporting countries and because the bulk of the Northern Hemisphere crop had already been planted, before prices started to weaken. World wheat production in 1986/87, projected by the U.S. Department of Agriculture at 505 million tons, would be marginally above that of 1985/86. U.S. wheat production is expected to decline by about 13 percent to 58 million tons due to the effects of acreage reduction programs and a spring drought in the south-eastern United States. If weather conditions remain favorable, Canadian wheat production should recover by about 28 percent to 31 million tons. Production in the EC is expected to be marginally lower than in 1985/86. Adverse weather conditions are expected to reduce production in the U.S.S.R. by about 7 million tons. On the other hand, very favorable growing conditions are expected to result in a record Indian wheat harvest of 47 million tons. In the 1987/88 and subsequent crop years, the production response in a number of wheat-producing countries to the low wheat prices can be expected to be much greater.

Lower prices in 1986/87 are expected to stimulate consumption and result in greater wheat utilization in the main wheat producing countries. Lower oil prices, the depreciation of the U.S. dollar, the availability of credit, and increased competition amongst major exporters through credit, subsidies and/or lower prices are all expected to result in higher wheat import demand in the short run. In the longer run, wheat import demand may strengthen if low world wheat prices discourage self-sufficiency programs in wheat importing countries.



b. Maize

World maize market conditions are strongly influenced by maize production and policy in the United States which accounts for about 45 percent of world maize production and about three fourths of total world maize exports. The anticipation of a 49 percent decline in the U.S. maize harvest in 1983/84 (October/September years) (Table II.6) was the main cause of a sharp increase in the price of maize from \$108 per ton in January 1983 to \$153 per ton in August 1983. ^{1/} The decline in U.S. production was caused by a 26 percent reduction in planted acreage due to the attractive payment-in-kind (PIK) provisions of the 1983 maize program and a 28 percent decline in yields due to the effects of severe drought in the U.S. maize belt, the worst in 50 years. As a consequence of this drop in U.S. production, world maize production fell from 439 million tons in 1982/83 to 346 million tons in 1983/84. Maize prices in 1983 were also bolstered by a low level of free stocks in the United States, a drought-related failure of the South African maize crops, buoyant industrial demand for maize in the United States and strong import demand for maize from South Africa and Mexico.

Near the end of 1983 the price of maize declined gradually but tight supplies kept prices firm during the first three quarters of 1984 when they averaged \$142 per ton. However, as the Northern Hemisphere harvest gained momentum and the supply situation eased, prices weakened to \$117 per ton during the fourth quarter of 1984. A 33 percent increase in planted area and a 33 percent recovery in yields from the drought-reduced levels of 1983/84, raised U.S. maize production from 106 million tons in 1983/84 to 195 million tons in 1984/85. Despite a 111 million ton increase in world maize production in 1984/85, world ending stocks increased by only 21 million tons because world consumption of maize increased by 6 percent to 436 million tons. A doubling of the level of the U.S.S.R. maize imports in 1984/85 because of lower coarse grain harvests, helped to boost 1984/85 world maize imports by 10 percent to 66.7 million tons.

In the first quarter of 1985, supplies available to the market fell as maize was placed under nonrecourse U.S. Government loans and prices staged a small post-harvest recovery to \$120 per ton. However, during the second quarter of 1985 when attention turned to the prospects for the 1985/86 crop, market conditions turned bearish because of an increase in planted area and very favorable growing conditions indicated a record harvest, while stagnating utilization and weak export demand were expected to result in sharply higher carry-over stocks. Prices declined to \$107 per ton in the third quarter.

World maize production in 1985/86 increased by 5 percent to 480 million tons largely on account of increases in yields and in the area harvested in the United States. Yields in the U.S. rose by 11 percent to

^{1/} Price quotations refer to U.S. No. 2 yellow corn, f.o.b. Gulf of Mexico ports.

Table 11.6. Maize: World Commodity Balance, 1980/81-1986/87

(In millions of tons, unless otherwise indicated)

	October/September Years						
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	<u>1/</u> 1986/87 <u>2/</u>
Production	408.0	439.5	438.5	346.1	457.1	480.3	471.2
China	62.6	59.2	60.3	68.2	73.4	64.0	72.0
United States	168.6	206.2	209.2	106.0	194.9	225.2	200.9
Other countries	176.8	174.1	169.0	171.9	188.8	191.1	198.3
Utilization	411.7	412.9	417.8	412.7	436.2	419.8	445.3
China	63.4	60.2	52.8	67.9	68.3	58.8	67.4
United States	123.8	127.3	137.7	121.7	131.3	134.1	135.9
Other countries	224.5	225.4	217.3	223.1	236.6	226.9	242.0
Closing stocks	59.4	86.0	106.7	40.1	61.0	121.5	147.0
United States	35.4	64.4	89.5	25.6	41.9	101.9	127.6
Others	24.0	21.6	17.2	14.5	19.1	19.6	19.4
Stocks/utilization ratio (in percent)	<u>14.4</u>	<u>20.8</u>	<u>25.5</u>	<u>9.7</u>	<u>14.0</u>	<u>28.9</u>	<u>33.0</u>

Source: U.S. Department of Agriculture, Foreign Agriculture Circular: Grains (Washington), various issues.

1/ Preliminary.

2/ U.S. Department of Agriculture forecast.

a record 3 tons per acre while the planted area rose by 6 percent. Maize production in Thailand is estimated to have risen by 18 percent due to increased plantings, increased use of hybrid seed and favorable weather conditions. However, production in the second largest maize producing country, China, declined by 13 percent to 64 million tons because of adverse weather conditions in the major maize producing areas. Similarly, maize production in Brazil is estimated to have declined by about 14 percent due to a drought in the major producing states.

World maize utilization on the other hand declined by over 16 million tons in 1985/86. A recovery in production of other coarse grains and a reduction in maize imports contributed to reduction of about 10 million tons in maize utilization in the U.S.S.R. Utilization in China declined by nearly 10 million tons because of the smaller harvest in that country. As a result of this projected increase in production and the projected decline in maize utilization, world stocks of maize increased sharply to 122 million tons by the end of the 1985/86 crop year; at this level stocks were twice as high as the 61 million tons carried over from the 1984/85 crop. World trade in maize on a crop year basis is estimated to have declined by over 10 million tons, largely because of sharply lower imports by the U.S.S.R.

Despite delays in harvesting in the United States, the ample world maize supply situation and the prospect of a record U.S. maize crop caused prices to weaken to \$104 per ton during the fourth quarter of 1985. The farm price in the United States fell below the loan rate of \$100 per ton and widespread placement of grain under government loans provided some support to the market by reducing "free" supplies of maize. Large supplies from the 1985 U.S. maize harvest, a sharp reduction in the U.S. loan rate for the 1986 U.S. maize crop, coupled with weak import demand and intense competition among major exporters caused prices to fall precipitously from an average of \$104 per ton in the first half of 1986 to \$75 per ton in the third quarter.

The value of world trade in maize increased sharply from \$8.9 billion in 1982 to \$9.8 billion in 1983 and \$10.2 billion in 1984 largely because of a sharp increase in prices (Table 11.7). Despite a sharp drop in world maize production in 1983/84, maize export volume declined by only 1 percent in both 1983 and 1984. In 1985, export volume is estimated to have recovered to 1982 levels but earnings are estimated to have declined to \$9.2 billion because of an estimated 13 percent fall in export unit value. Earnings are forecast to fall further to \$6.6 billion in 1986 because of an expected decline in both export volume and export unit value.

The provisions relating to maize in the 1985 U.S. farm bill will have a major impact on the world market for maize over the next few years. The price support loan rate for maize was reduced from \$100.39 per ton in 1985 to \$75.59 per ton in 1986 while the target price in 1986 and 1987 has been frozen at the 1985 level of \$119.29 per ton. Participants in the maize program would be subject to a mandatory acreage reduction program if the



Table II.7. Maize: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984	1985 ^{1/}	1986 ^{1/2/}
Market prices ^{3/} (in U.S. dollars a ton)	<u>126</u>	<u>131</u>	<u>108</u>	<u>136</u>	<u>136</u>	<u>112</u>	<u>85</u>
Exports							
Volumes (in millions of tons)	<u>80.3</u>	<u>79.4</u>	<u>70.0</u>	<u>69.0</u>	<u>68.5</u>	<u>71.1</u>	<u>60.0</u>
Industrial countries	<u>69.2</u>	<u>60.7</u>	<u>55.2</u>	<u>54.5</u>	<u>56.8</u>	<u>55.9</u>	<u>41.2</u>
United States	(63.2)	(54.9)	(48.9)	(47.6)	(49.1)	(48.0)	(32.2)
Other countries	(6.0)	(5.8)	(6.3)	(6.9)	(7.7)	(7.9)	(9.0)
Developing countries	10.9	18.5	14.6	14.3	11.5	15.0	18.6
Non-Fund members	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Unit values (in U.S. dollars a ton)	<u>150</u>	<u>154</u>	<u>128</u>	<u>143</u>	<u>149</u>	<u>130</u>	<u>110</u>
Industrial countries	<u>146</u>	<u>153</u>	<u>127</u>	<u>145</u>	<u>150</u>	<u>132</u>	<u>112</u>
Developing countries	170	156	130	133	142	120	105
Non-Fund members	241	243	247	233	247	200	175
Earnings (in billions of U.S. dollars)	<u>12.01</u>	<u>12.23</u>	<u>8.94</u>	<u>9.84</u>	<u>10.20</u>	<u>9.24</u>	<u>6.60</u>
Industrial countries	<u>10.10</u>	<u>9.28</u>	<u>7.00</u>	<u>7.90</u>	<u>8.53</u>	<u>7.40</u>	<u>4.61</u>
Developing countries	1.85	2.89	1.89	1.90	1.63	1.80	1.95
Non-Fund members	0.06	0.06	0.05	0.04	0.04	0.04	0.04

Source: Commodities Division, IMF Research Department for prices. UN Food and Agriculture Organization, FAO Trade Yearbook (Rome), various issues, for exports.

^{1/} Data on exports are estimates of Commodities Division, IMF Research Department.

^{2/} Includes projections for the final quarter of the year.

^{3/} U.S. No. 2 yellow corn, f.o.b. Gulf of Mexico ports.

Secretary of Agriculture deems maize supplies to be excessive. For 1986, participants would be subject to an acreage reduction of 17.5 percent plus a paid (in kind) land diversion of 2.5 percent. The 25 percent reduction in the U.S. loan rate for the 1986 maize crop is expected to result in sharply lower market prices for the 1986/87 world maize crop. The price effects of the acreage reduction programs are expected to be more limited because of high target prices and the very high level of world maize stocks.

Given normal weather conditions, world maize production in 1986/87 is expected to exceed world maize utilization for the third consecutive year, and already burdensome carryover stocks are expected to increase further. The early season outlook is for another large world maize crop of about 471 million tons in 1986/87, or about 2 percent lower than the 1985/86 harvest. Production in the United States is expected to decline by about 11 percent in 1986/87 due to expected reduction of about 10 percent in planted area and a return to trend yields, although growing conditions have been near optimal. On the other hand, production in China and Brazil is expected to recover to 1984/85 levels because of an expected increase in harvested area and yields.

World maize utilization is expected to increase by about 6 percent in 1986/87, while world trade in maize is expected to increase by about 11 percent. Sharply lower maize prices will make maize more competitive with feed wheat and manioc. Price-sensitive importers, such as Korea and Japan may shift back from feed wheat and manioc to maize. However, due to a lag of up to two years between lower maize prices and increased demand in maize for livestock production, the increase in maize demand resulting from lower prices is likely to be quite modest because of the depressed state of the livestock industry in many countries. The availability of credit may be a major determinant of imports by potentially large importers such as Mexico and Egypt.

d. Rice

Production shortfalls in India in 1980 and in Korea in 1981 increased import demand and caused rice prices to reach an average level of \$483 per ton in 1981, 45 percent above the 1979 average.^{1/} However, during the next four consecutive years world rice prices declined steadily as rice supplies have remained ample due to favorable weather conditions in the main rice producing countries. Import demand remained weak due to increasing self-sufficiency in a number of former large rice-importing countries such as India, Indonesia, and Korea. Strong competition among major exporters exerted further downward pressure on world rice prices which declined to \$293 per ton in 1982, \$277 per ton in 1983 and \$252 per ton in 1984. An increase in the level of world stocks and a rise in the ratio of world rice stocks to world rice consumption to record levels caused price to fall more sharply to in 1985 to \$217 per ton. Although

^{1/} Price quotations refer to Thai milled white rice 5 percent broken, 100 lb., Bangkok.



rice prices rose to \$240 per ton in January 1986, prices fell sharply as major changes in the U.S. price support system were announced and became effective. Prices of rice fluctuated between \$200 and \$215 per ton over the period April through September 1986.

Following the increases of 8 percent in 1983/84 and 3 percent in 1984/85, world rice production is estimated to have declined by 1 percent in 1985/86 to 465 million tons (Table II.8). The decline in production in 1985/86 is largely due to lower output in China. After a bumper crop of 178 million tons in 1984/85, rice production in China is estimated to have declined to 169 million in 1985/86 because of sharp reductions in price incentives to farmers who produce above their contracted amounts. Increased usage of higher-yielding varieties and fertilizer is reported to have contributed towards record 1985/86 rice crops in Bangladesh, India, and Indonesia.

Most of the world's rice is consumed in the countries in which it is produced, and only about 4 percent of production enters international trade. The favorable weather and large crops in the main rice-importing countries caused imports to stagnate at a level of around 12 million tons during the last four years. In 1985 Indonesia, formerly the world's largest rice importer had an exportable surplus, while India was able to meet its requirements from its large domestic crop. However, imports by Brazil and the Philippines rose sharply in 1985 because of production shortfalls and the need to replenish stocks. The major exporting countries were affected by a 5 percent decline in world trade in 1985 (Table II.9); Thailand's rice exports fell by 11 percent; Burma's exports declined by 37 percent, while U.S. exports declined by 5 percent.

Owing to large crops in 1985/86 in the major rice-exporting and rice-importing countries, a high level of world rice stocks and weak import demand, rice supplies are expected to remain ample during 1986. Exports are forecast at 12.2 million tons in 1986, about 0.3 million tons more than in 1985 because of likely increases in import demand from Brazil, China, Kampuchea, Peru and Vietnam. Earnings from rice exports, which fell by 21 percent to \$3.0 billion in 1985, are expected to decline by a further 18 percent to \$2.7 billion in 1986 because the impact of a small rise in export volume is expected to be more than outweighed by a 12 percent decline in export unit values.

In the past, the U.S. price support system operated so as to prevent actual market prices for U.S. rice from declining below the loan rate. The marketing loan feature of the 1985 U.S. farm bill, which enables U.S. rice growers to repay their farm loans at a rate equal to the world market price, allows U.S. rice prices to move up and down with the world market prices. Consequently, the U.S. loan rate for rice no longer acts as a support level for world market prices and competition between the United States and other major exporters has intensified. The harvesting of the main rice crops has commenced in some countries in the northern hemisphere and the current outlook is for an increase in output in a

Table II.8. Rice: World Commodity Balance, 1980/81-1986/87

(In millions of tons)

	Crop Years 1/						
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86 2/	1986/87 3/
Production							
(unmilled basis)	398.8	412.6	419.5	452.7	467.5	464.7	471.0
China	139.9	144.0	161.2	168.9	178.3	168.5	174.0
India	80.5	80.0	70.7	50.2	88.0	91.5	90.0
Indonesia	29.7	32.8	33.6	38.0	38.1	39.0	39.4
Bangladesh	20.8	20.5	21.3	22.0	21.9	22.8	23.4
Thailand	17.4	17.8	16.9	19.5	18.3	19.8	19.5
Other countries	110.5	117.5	115.8	114.1	122.9	123.1	124.7
Production							
(milled basis)	271.0	280.5	285.7	308.0	318.3	316.3	320.6
Utilization							
(milled basis)	272.3	281.4	289.6	308.1	313.8	314.0	321.4
China	97.5	100.5	112.4	117.3	123.9	117.2	121.1
India	53.3	54.1	48.5	58.2	57.0	60.3	60.8
Indonesia	21.3	22.3	23.7	25.3	25.2	26.2	26.8
Bangladesh	13.6	14.1	14.6	14.9	14.9	15.4	15.8
Other countries	86.6	90.4	90.4	92.4	92.8	94.9	96.9
Closing stocks							
(milled basis)	22.1	21.3	17.3	17.2	21.7	24.0	23.3
India	6.5	5.0	3.5	6.0	7.5	8.0	7.0
Indonesia	1.8	2.3	1.8	1.6	2.8	2.8	2.5
United States	0.5	1.6	2.3	1.5	2.0	2.8	2.6
Others	13.3	12.4	9.7	8.1	9.4	10.4	11.2

Source: U.S. Department of Agriculture, Foreign Agriculture Circular: Grains (Washington, D.C.), various issues.

1/ Rice is harvested over a six to eight month period; thus crop year 1980/81 represents crops harvested in late 1980 and early 1981 in the Northern Hemisphere and in early 1981 in the Southern Hemisphere.

2/ Preliminary.

3/ U.S. Department of Agriculture forecast.

Table 11.9. Rice: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984	1985 ^{1/}	1986 ^{1/2/}
Market prices ^{3/} (in U.S. dollars a ton)	<u>434</u>	<u>483</u>	<u>293</u>	<u>277</u>	<u>252</u>	<u>217</u>	<u>213</u>
Exports							
Volumes (in millions of tons)	<u>13.0</u>	<u>13.1</u>	<u>12.1</u>	<u>11.6</u>	<u>12.5</u>	<u>11.9</u>	<u>12.2</u>
Industrial countries	<u>5.1</u>	<u>5.3</u>	<u>4.4</u>	<u>4.1</u>	<u>3.5</u>	<u>3.1</u>	<u>3.4</u>
United States	(3.1)	(3.1)	(2.5)	(2.4)	(2.0)	(1.9)	(2.2)
Other countries	(2.0)	(2.2)	(1.9)	(1.7)	(1.5)	(1.2)	(1.2)
Developing countries	<u>7.6</u>	<u>7.5</u>	<u>7.5</u>	<u>7.3</u>	<u>8.8</u>	<u>8.5</u>	<u>8.5</u>
Thailand	(2.8)	(3.0)	(3.8)	(3.5)	(4.6)	(4.0)	(4.1)
Other countries	(4.8)	(4.5)	(3.7)	(3.8)	(4.2)	(4.5)	(4.4)
Non-Fund members	<u>0.3</u>	<u>0.3</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.3</u>	<u>0.3</u>
Unit values (in U.S. dollars a ton)	<u>387</u>	<u>441</u>	<u>342</u>	<u>311</u>	<u>303</u>	<u>250</u>	<u>220</u>
Industrial countries	<u>426</u>	<u>487</u>	<u>418</u>	<u>395</u>	<u>415</u>	<u>342</u>	<u>300</u>
Developing countries	<u>359</u>	<u>409</u>	<u>296</u>	<u>265</u>	<u>258</u>	<u>215</u>	<u>186</u>
Non-Fund members	<u>433</u>	<u>443</u>	<u>363</u>	<u>348</u>	<u>339</u>	<u>300</u>	<u>267</u>
Earnings (in billions of U.S. dollars)	<u>5.05</u>	<u>5.78</u>	<u>4.15</u>	<u>3.61</u>	<u>3.79</u>	<u>2.98</u>	<u>2.68</u>
Industrial countries	<u>2.18</u>	<u>2.56</u>	<u>1.83</u>	<u>1.60</u>	<u>1.43</u>	<u>1.06</u>	<u>1.02</u>
Developing countries	<u>2.73</u>	<u>3.08</u>	<u>2.24</u>	<u>1.93</u>	<u>2.28</u>	<u>1.83</u>	<u>1.58</u>
Other countries	<u>0.14</u>	<u>0.14</u>	<u>0.08</u>	<u>0.08</u>	<u>0.08</u>	<u>0.09</u>	<u>0.08</u>

Sources: Commodities Division, IMF Research Department for prices. UN Food and Agriculture Organization, FAO Trade Yearbook (Rome), various issues, for exports.

^{1/} Data on exports are estimates of Commodities Division, IMF Research Department.

^{2/} Includes projections for the final quarter of the year.

^{3/} Thai milled white rice, f.o.b. Bangkok.



number of Asian and African countries. At this point in the season, the overall outlook for production remains favorable. These factors suggest a continuation of weak prices for rice through most of 1987.

2. Sugar

The world market for sugar continues to be characterized by oversupply, despite a weather-related decline in production during the crop year ended August 1986 (Table II.10). The oversupply was in part in response to price boom caused by a production shortfall in 1979/80 which in turn was largely the result of unfavorable weather. The high prices from late 1979 until early 1981, and a similar boom in 1974, stimulated investment in productive capacity, and led to increased production. The persistence of the supply situation relates more fundamentally to policies which serve to support production in many countries, in particular in the EC and the United States. The price of sugar in the free market fell precipitously from an average of 29 U.S. cents per pound in 1980 to 8 cents in 1982, and following a small increase in 1983, fell sharply again, to 4 cents in 1985 (Table II.11). ^{1/} Despite these much lower prices, world production exceeded world consumption in four out of the five years beginning in 1981/82. World stocks of sugar increased from 24 million tons in the 1980/81 crop year, 27 percent of world consumption, to 45 million tons at the end of 1984/85: stocks at the end of 1984/85 were 47 percent of world consumption, compared with a "normal" level of stocks as a ratio to consumption of around 25 percent. A small decrease in world stocks was recorded in 1985/86.

A major reason for the lack in responsiveness of production to lower free market prices is the protection provided to sugar producers in industrial countries, and to a lesser degree, in developing countries, who have been cushioned from the full effects of the fall in free market prices in the 1980s. The degree of protection in two markets, the European Community and the United States, is reflected in the movement of their prices compared to those in the free market (Table II.11). The price of sugar in the EC in terms of U.S. dollars held at 22 cents in 1980, fell to 16 cents in 1985 and increased to 19 cents by the third quarter of 1986; in terms of ECUs, the price over this six-year period increased by 29 percent. The price of sugar in the U.S. market, after falling from 30 cents in 1980 to 20 cents in 1981, remained more or less constant over the same period. The degree of protection in markets other than the EC and U.S. is reflected in the insulation of production from world trade, despite the availability of extremely low-priced free market supplies. Between 1980 and 1985 production, excluding production in the EC and U.S., grew by 26 percent, to 83.8 million tons, while net exports to the world fell by 3 percent, to 15 million tons.

^{1/} The representative price for the free market is the International Sugar Agreement price, which is the average of the New York Contract No. 11 spot price and the London Daily price, stowed in bulk, f.o.b. Caribbean ports.

Table II.10. Sugar: World Commodity Balance, 1980/81-1986/87

(In millions of tons, raw value, unless otherwise indicated)

	September/August Years						
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87 ^{1/}
Commodity balance							
Production	88.8	100.3	101.3	96.7	100.7	98.0	100.5
Australia	3.4	3.4	3.5	3.4	3.5	3.4	3.4
Brazil	8.5	8.4	9.3	9.4	2.3	8.2	8.8
China	3.0	3.4	4.1	3.8	4.6	5.2	5.7
Cuba	7.5	8.2	7.2	8.3	8.1	6.7	7.6
EC	14.0	17.1	16.0	13.3	14.4	14.4	13.8
India	6.5	9.7	9.5	7.0	7.0	7.3	8.7
United States	5.5	5.5	5.4	5.3	5.3	5.4	5.6
U.S.S.R.	7.2	6.4	7.4	8.7	8.6	7.8	8.5
Other countries	33.2	38.2	38.9	37.5	39.9	39.6	38.4
Consumption	88.5	90.5	93.8	95.9	96.8	98.0	99.8
Brazil	6.1	5.8	6.2	6.3	6.3	6.3	6.3
China	3.9	4.5	4.9	5.0	5.6	6.0	6.3
EC	11.8	11.9	11.7	11.5	11.7	11.5	11.6
India	6.4	6.8	7.6	8.9	9.1	9.5	9.9
United States	8.9	8.4	8.0	7.9	7.4	7.3	7.3
U.S.S.R.	12.9	13.0	13.0	13.3	13.3	13.3	13.5
Other countries	38.5	40.1	42.4	43.0	43.4	44.1	44.9
Losses (+), discrepancy	--	--	0.1	0.1	0.8	1.5	1.0
Closing stocks	24.2	34.0	41.4	42.1	45.2	43.7	43.4
Change from previous year (in percent)	--	10.2	7.4	1.7	7.6	-3.3	-0.7
Stocks/ consumption ratio	27.3	38.0	44.1	43.9	46.7	44.6	43.5

Sources: Commodities Division, IMF Research Department for prices. Data for world commodity balance from U.S. Department of Agriculture, Foreign Agriculture Circular: Sugar, Molasses, and Honey (Washington), various issues.

^{1/} U.S. Department of Agriculture forecasts for production and Commodities Division, IMF Research Department forecasts for consumption and stocks.

Table II.11. Prices of Sugar, 1960-86

(In U.S. cents a pound)

Year	Free Market <u>1/</u>	European Community <u>2/</u>	United States <u>3/</u>
1960-69	3.5	5.6	6.4
1970-79	11.3	11.2	14.0
1980-86	11.3	18.2	22.1
1970	3.8	5.1	7.5
1971	4.5	5.2	7.9
1972	7.5	6.8	8.5
1973	9.6	6.7	10.3
1974	29.9	10.6	29.5
1975	20.6	15.4	22.5
1976	11.6	13.4	13.3
1977	8.1	14.0	11.0
1978	7.8	15.9	14.0
1979	9.7	19.3	15.5
1980	28.7	22.1	30.0
1981	16.9	18.9	19.7
1982	8.4	18.1	19.9
1983	8.5	17.6	22.0
1984	5.2	16.0	21.7
1985	4.1	16.1	20.4
1986 <u>4/</u>	6.2	18.7	20.9
1984 I	6.7	16.7	21.8
II	5.7	16.6	22.0
III	4.2	15.9	21.8
IV	4.2	14.9	21.4
1985 I	3.7	13.7	20.7
II	3.0	15.4	21.1
III	4.2	17.1	20.4
IV	5.3	17.8	19.2
1986 I	5.8	17.9	20.7
II	7.4	18.8	20.7
III	5.2	19.0	20.9

Source: Commodities Division, IMF Research Department.

1/ International Sugar Agreement price which is an average of the New York contract No. 11 spot price and the London Daily Price, f.o.b. Caribbean ports.

2/ Unpacked sugar, c.i.f. European ports.

3/ New York Contract No. 12 spot price, c.i.f. Atlantic and Gulf of Mexico ports.

The relatively higher sugar prices in the EC were obtained through a system of controls involving quotas on domestic production and imports for which there are guaranteed prices, in terms of ECUs. While the import quotas, which are determined by agreement between the EC and the ACP countries (Table II.12), remained relatively constant since 1973, the sugar regime transformed the EC from a net importer of sugar in the 1970s, to one of the world's leading sugar exporters.

The main controls in the U.S. sugar market are the import quotas and the guaranteed loans for domestic producers. In order to maintain the price of sugar in the United States at a level many times that of the price in the free market in the 1980s, the import quotas were progressively reduced (Table II.13). In turn, the relatively high sugar price in the United States encouraged substitution of high fructose corn syrup (HFCS) for sugar in processed foods and consequently served to reduce the size of the U.S. sugar market. The degree to which the U.S. import market for sugar is likely to continue to contract is largely dependent on U.S. support policies. The Food Security Act of 1985 mandates the U.S. Administration to operate the sugar program through 1990 at no cost to the Government by preventing the accumulation of sugar by the Commodity Credit Corporation (CCC). In addition, the Act sets the "loan rate" for raw cane sugar at no less than 18 cents a pound, implying a market stabilization price (MSP) of at least 21.5 cents a pound. 1/ If the U.S. Government is not to incur added costs in providing financial assistance for sugar, then the import quotas need to be set low enough to keep the spot market prices at or near to MSP. 2/

Policies of various types serve to protect sugar producers in many other countries from the low prices prevailing on the free market. For example, production in Cuba, the world's leading exporter, has been supported by purchases by the Soviet Union at very high rates of compensation. In Japan, the third largest importer of sugar, import, stabilization fund, customs and consumption taxes increased the price of imported sugar six-fold; sugar production in Japan increased by 17 percent over the period 1980-85.

1/ The loan rate is the rate at which a processor would "forfeit" sugar to the CCC. If instead the processor sold the sugar in the U.S. spot market, he would have to incur added loan, insurance and transportation charges, totaling U.S. 3.5 cents per pound. Hence, the MSP is the price which should be compared to the actual market price, when evaluating whether sugar under guaranteed government loans might be forfeited.

2/ Three recent events in the U.S. market are expected to add to the pressure for a reduction in the U.S. import quotas for 1987 which are expected to be announced in December 1986; the sale by the CCC of "forfeited" sugar to China at near free market prices, the possibility of additional "forfeitures" of sugar from the 1985/86 crop and the prospect of increased sugar production in the United States in 1986/87.



Table II.12. EC Sugar Quota Allocations by Country, 1980/81-1985/86

(In thousands of tons, raw value) 1/

Country	Years Ending June					
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86 2/
Barbados	53.6	53.6	53.6	53.6	54.4	53.6
Belize	42.8	42.8	42.8	42.8	43.6	42.8
Congo	5.4	5.4	5.4	8.7	10.9	10.9
Cote d'Ivoire	--	--	--	2.2	10.9	10.9
Fiji	177.8	177.8	177.8	177.8	179.2	177.8
Guyana	171.4	171.4	171.4	171.4	172.8	171.4
India	27.1	--	--	10.9	10.9	10.9
Jamaica	128.6	128.6	128.6	128.6	128.6	128.6
Kenya	.1	.1	4.3	4.3	5.4	5.4
Madagascar	10.9	10.9	10.9	10.9	11.4	10.9
Malawi	21.7	21.7	21.7	21.7	22.4	21.7
Mauritius	529.6	529.6	529.6	529.6	532.5	529.6
St. Christopher and Nevis	16.1	16.1	16.1	16.1	16.7	16.1
Surinam	1.8	--	--	--	--	--
Swaziland	126.5	126.5	126.5	126.5	127.7	126.5
Tanzania	10.9	10.9	10.9	10.9	10.9	10.9
Trinidad and Tobago	75.0	75.0	75.0	75.0	47.3	75.0
Uganda	--	--	--	--	--	--
Zimbabwe	--	6.6	27.2	27.2	32.6	32.6
Total	<u>1,399</u>	<u>1,377</u>	<u>1,401</u>	<u>1,418</u>	<u>1,418</u>	<u>1,436</u>

Sources: Regulation 3225/80 (Protocol No. 7) giving the text of the Second Lome Convention. Regulation 1255/82 on Zimbabwe's accession to the Lome Convention. Regulation 1243/84 partially restoring India's quota. Regulation 1764/84 giving the Cote d'Ivoire an ACP quota. Regulation 1763/84 giving full ACP membership to St. Christopher and Nevis, and Regulation 1256/82 doing the same for Belize. Council Decision 75/456/EEC of July 15, 1975 on India's sugar quota. Notices of the Commission in Official Journal C112 (May 13, 1978), C97 (April 18, 1979), C108 (April 29, 1982), C124 (May 15, 1982), and C328 (December 14, 1982). Reallocation of Trinidad's shortfall by Commission Decision.

1/ Converted from white equivalent at 1 raw ton = 0.92 white tons.

2/ Estimated.



Table 11.13. U.S. Sugar Quota Allocations by Country, 1982/83-1985/86 ^{1/}

(In thousands of tons, raw value)

Country	10/01/82- 09/30/83 ^{2/}	09/26/83- 09/30/84 ^{3/}	10/01/84- 11/30/85 (14 months)	12/01/85- 12/31/86 (13 months)
Argentina	109.2	118.7	99.1	66.9
Australia	210.8	229.0	191.3	129.2
Barbados	17.8	19.3	16.1	11.3
Belize	27.9	30.4	25.3	17.1
Bolivia	20.3	22.1	18.4	12.5
Brazil	368.3	400.1	334.1	225.7
Canada	27.9	30.4	25.3	17.1
Colombia	60.9	66.2	55.3	37.4
Congo	--	15.2	11.3	11.3
Costa Rica	38.1	56.6	47.4	31.5
Dominican Republic	447.1	485.7	405.5	274.0
Ecuador	27.9	30.4	25.3	17.1
El Salvador	66.0	80.9	67.0	45.4
Fiji	17.8	19.3	16.1	11.3
Gabon	--	--	11.3	11.3
Guatemala	121.9	132.5	110.6	74.7
Guyana	30.5	33.1	27.7	18.7
Haiti	15.0	15.2	11.3	11.3
Honduras	25.4	54.0	45.4	29.7
India	20.3	22.1	18.4	11.5
Cote d'Ivoire	15.0	15.2	11.3	11.3
Jamaica	27.9	30.4	25.3	17.1
Madagascar	15.0	15.2	11.3	11.3
Malawi	17.8	26.6	32.1	15.6
Mauritius	27.9	30.4	25.3	27.7
Mexico	15.0	15.2	11.3	11.3
Mozambique	33.0	35.9	30.0	20.2
Nicaragua	53.3	5.4	5.4	--
Panama	73.7	80.0	66.8	45.1
Papua New Guinea	--	--	11.3	11.3
Paraguay	15.0	15.2	11.3	11.3
Peru	104.1	113.1	94.5	63.8
Philippines	342.9	372.6	311.1	210.1
St. Christopher-Nevis	15.0	15.2	11.3	11.3
South Africa	58.4	63.5	53.0	35.8
Swaziland	40.6	44.2	36.9	24.9
Taiwan, Prov. of	30.5	33.1	27.7	18.7
Thailand	35.6	38.6	32.2	21.8
Trinidad and Tobago	17.8	19.3	16.1	11.3
Uruguay	--	15.2	11.3	11.3
Zimbabwe	30.5	33.1	27.7	18.7
Total	2,622	2,879	2,426	1,675
Total prorated to 12 months	2,622	2,879	2,079	1,546
(percent change)	(--)	(9.8)	(-27.8)	(-25.6)

Source: U.S. Department of Agriculture. Converted at 1 short ton = .907 metric tons.

^{1/} Previous to these yearly quotas, quotas were in effect as follows: May 11, 1982-June 30, 1982-199.6 thousand tons; July 1, 1982-September 30, 1982-381.0 thousand tons.

^{2/} Does not reflect global reallocation of shortfalls via Ecuador and Trinidad and Tobago of a combined 45.7 thousand tons.

^{3/} Reflects global allocation of 1,901 thousand ton increase enacted on April 1, 1984.

In 1985 less than 30 percent of world sugar production entered international trade (Table II.14). Of that, roughly one fifth was traded through long-term bilateral agreements, some of which were concluded immediately after the 1974 and 1979-80 price shocks at prices well above the free market prices of 1984 and 1985. The combination of sales at relatively high prices to the preferential U.S. and EC markets and markets covered by bilateral agreements, as well as sales on the free market resulted in a decline in average unit value received by developing countries--which accounts for nearly half of world exports--from 12.4 cents per pound in 1982 to 10.1 cents in 1985. The 19 percent decline in unit value represented a significant insulation from the 51 percent reduction in free market price which occurred over the same period. The volume of exports by developing countries also declined over the period, by 14 percent, from nearly 14 million tons to 12 million tons in 1985, reflecting lower imports by the U.S.S.R., Japan and the United States which became increasingly self sufficient. As a result, the value of sugar exports by developing countries declined by 30 percent between 1982 and 1985, and is estimated to have declined by another 10 percent in 1986, reflecting both lower unit values and volumes.

World production in 1985/86 fell to 98.0 million tons, compared with 100.7 million tons the year before, due principally to poor weather in Cuba and the U.S.S.R., and a planned reduction in production by Brazil. In Cuba output of sugar from cane fell by 17 percent to 6.7 million tons after a three-year period of below-normal rainfall followed by a hurricane in November 1985. Beet production in the Soviet Union declined by 9 percent, to 7.8 million tons, following a cool, wet spring and June floods which may have aided the spread of disease and slowed crop development. The 12 percent decline in Brazilian output was the result of a pre-announced cutback in production of cane earmarked for sugar, as opposed to alcohol production. These declines were offset somewhat by significant production increases in China and India due to improved production incentives, and, in the case of India, a return to more normal growing conditions following a year of drought and disease. While production in other countries remained fairly stable, notable declines were registered by several significant exporters--Argentina, Australia, the Dominican Republic, the Philippines, and South Africa--mostly because of bad weather, but also on account of financial difficulties in some of their sugar industries.

Consumption in 1985/86 grew by 1.2 percent, to 98.0 million tons. A strong growth in demand in some developing countries due to population and per capita income growth--current per capita consumption of sugar in developing countries is roughly half that in industrial countries--was partly offset by declines in demand in industrial countries resulting from the displacement of sugar by HFCS and noncaloric sweeteners. Because of competitive pricing policies, consumption of HFCS grew by 13 percent in the United States in 1985, while consumption of sugar from beet and cane fell by 2 percent. HFCS now accounts for 40 percent of U.S. sweetener use, having completely displaced sugar in the soft drink industries, and partly displaced it in candies, baked goods, jams and other processed foods. HFCS is currently available only in liquid form, and a technical

Table 11.3. Sugar: Market prices and World Trade, 1980-86

	1980	1981	1982	1983	1984	1985 ^{1/}	1986 ^{1/2/}
Market prices (in U.S. cents a pound)							
Free market ^{3/}	28.7	16.9	8.4	8.5	5.2	4.1	6.2
European Community ^{4/}	22.1	18.9	18.1	17.6	18.0	18.0	18.7
United States	30.0	19.7	19.9	22.0	21.7	20.4	20.9
Exports							
Volumes (in million tons, raw equivalent)							
Industrial countries	27.6	29.3	31.0	29.8	28.6	27.4	27.4
Australia	8.1	9.9	9.1	8.9	8.3	8.4	8.9
EC-12 ^{5/}	(2.2)	(2.6)	(2.5)	(2.5)	(2.4)	(2.3)	(2.2)
Other	(5.1)	(6.0)	(6.2)	(5.8)	(5.5)	(5.7)	(6.3)
Other	(0.6)	(1.3)	(0.4)	(0.6)	(0.4)	(0.4)	(0.4)
Developing countries	17.8	12.1	13.9	13.7	13.0	12.0	11.7
Brazil	(2.6)	(2.9)	(2.8)	(2.6)	(3.2)	(2.7)	(2.5)
Other	(10.2)	(9.2)	(11.1)	(11.1)	(9.8)	(9.3)	(9.2)
Non-Fund members	6.1	7.3	8.0	7.2	7.3	7.0	6.8
Cuba	(6.2)	(6.8)	(7.4)	(6.7)	(6.7)	(6.5)	(6.3)
Other	(0.5)	(0.5)	(0.6)	(0.5)	(0.6)	(0.5)	(0.5)
Unit values (in U.S. cents a pound)							
Industrial countries	24.1	27.8	16.7	16.5	16.1	15.3	15.3
Developing countries	21.6	23.7	14.7	12.1	11.5	10.6	12.6
Non-Fund members	21.1	20.0	17.4	11.5	11.0	10.1	9.3
Non-Fund members	33.0	27.0	26.5	31.6	30.2	30.0	30.0
Earnings (in billions of U.S. dollars)							
Industrial countries	16.71	14.75	11.23	10.82	10.12	9.26	9.25
Developing countries	3.27	3.07	2.95	2.37	2.10	1.96	2.35
Non-Fund members	5.97	5.34	3.82	3.47	3.16	2.67	2.40
Non-Fund members	4.87	4.34	4.66	4.98	4.86	4.63	4.90
Imports							
Volumes (in million ton raw equivalent)							
Industrial countries	27.2	28.7	29.5	28.4	28.3	27.1	27.0
EC-12 ^{5/}	9.9	9.7	8.7	8.3	9.3	8.4	8.1
United States	(2.6)	(2.4)	(2.5)	(2.5)	(3.0)	(2.8)	(2.7)
Japan	(3.7)	(4.6)	(2.6)	(2.7)	(3.1)	(2.5)	(2.4)
Other	(2.3)	(1.6)	(1.2)	(1.8)	(1.8)	(1.8)	(1.8)
Other	(1.3)	(1.1)	(1.4)	(1.3)	(1.4)	(1.3)	(1.2)
Developing countries	11.7	12.9	12.7	13.1	12.1	12.2	12.4
Non-Fund members	5.6	6.1	8.1	7.0	6.9	6.5	6.5
U.S.S.R.	(5.0)	(5.2)	(7.4)	(6.0)	(5.8)	(5.5)	(5.5)
Other	(0.6)	(0.9)	(0.7)	(1.0)	(1.1)	(1.0)	(1.0)
Unit values (in U.S. cents a pound)							
Industrial countries	26.1	25.1	18.7	17.6	17.4	15.8	16.1
Developing countries	24.7	27.3	14.7	12.9	12.3	13.8	15.9
Non-Fund members	24.4	25.0	16.7	12.9	11.8	9.7	8.5
Non-Fund members	14.3	32.3	26.1	29.5	31.7	31.0	31.0
Values (in Millions of U.S. dollars)							
Industrial countries	15.28	16.95	12.19	10.98	10.88	9.47	9.66
Developing countries	5.24	6.54	2.81	2.71	2.92	2.56	2.84
Non-Fund members	6.79	7.16	4.69	3.73	3.14	2.47	2.37
Non-Fund members	4.25	4.32	4.69	4.52	4.80	4.44	4.56

Sources: Commodity Division, IMF Research Department for prices; US Food and Agriculture Organization, *FAO Trade Yearbook* (Rome), various issues, for exports and imports.

^{1/} Data on exports and imports are estimates of Commodity Division, IMF Research Department.

^{2/} Includes projections for the final quarter of the year.

^{3/} International Sugar Agreement price which is an average of the New York Contract No. 11 spot price and the London Fall Price, i.e., Caribbean ports.

^{4/} European Community (EC) European ports.

^{5/} Includes Japanese trade.

limit to substitution in soft drinks and processed foods may have been reached. However, a granular form of fructose from corn is being tested. If this technology proves successful, there may be further scope for substitution in processed foods as well as direct sales to end-use customers.

The price of sugar on the free market in the 1985 fell to its lowest level since 1970. The low price reflected the effects of the increased production of 1984/85, which added over 3 million tons to the already large carryover stocks of sugar, and the expiration of the 1977 International Sugar Agreement at end-December 1984, which increased sugar availability by releasing exporting countries from their quota and stocking obligations. In the second quarter of 1985, the free market prices fell to 3 cents per pound, and although the price subsequently increased, the average for the year was only 4 cents per pound. In early 1986, the price increased partly due to the production shortfall of 1985/86 which lowered world stocks slightly for the first time since 1979/80, and to speculation regarding lower current production, briefly fueled by the possibility of adverse effects on production in the U.S.S.R. of the nuclear accident at Chernobyl. The free market price averaged above 7 cents per pound in the second quarter of 1986 but fell to an average of little more than 5 cents in the third quarter.

Any further short-term increases in free market prices in the near future are likely to be moderated by a continued excess in production and slow growth in demand. In the 1986/87 crop year, production is expected to total 100.5 million tons, as output from Cuba and the U.S.S.R. recovers, and Brazil implements a planned increase by assigning slightly more cane to sugar than to ethanol production. Sugar production in India is expected to show the greatest increase, at 19 percent, as government policies that support an expansion in cultivated area become effective. The EC is the only major sugar producing area which is expected to show a decline, by 4 percent, because of a 1 percent reduction in acreage and unfavorable weather through April 1986 which led to late sowing. World consumption in 1986/87 is expected to grow by 1.8 percent to 99.8 million tons, with particularly slow growth in demand from industrial countries countered by robust growth in developing countries, especially China and India. After adjusting for losses and discrepancies, world stocks are expected to decline by less than 1 percent, leveling off at the equivalent of 43 percent of annual consumption.

In the medium-term, improvements in the free market prices are likely to occur, contingent upon the eventual drawdown of the large overhang of world stocks. Given the persistence of a very high degree of protection in most importing countries, the adjustment is likely to come mainly from exporting countries as the unit values they receive move closer in line with free market prices, reflecting a decreasing proportion of sales to the preferential U.S. and EC markets and the expiration of long-term contracts. Another severe weather-related shortfall in world production could also lead to a lowering of world stock levels and a recovery in world prices. In the past, such shortfalls have occurred on an average of about once in nine years. However, the price effects of



such a shortfall might be mitigated should Cuba shift more exports from the market in centrally planned economies to the free market or Brazil move cane from ethanol to sugar production.

3. Vegetable oils and protein meals

After rising by 26 percent between 1982 and 1984, the index of market prices for vegetable oils and protein meals declined by 25 percent in 1985 alone, and fell by an additional 15 percent in the first three quarters of 1986 to the lowest level since 1972 (Table II.15). The recent decline in prices, despite the depreciation of the exchange rate of the U.S. dollar since early 1985, may be partly attributable to the adverse effects on demand of slower, albeit continuing, world economic growth and to the deceleration of inflation. However, the major factor underlying the decline is the strong recovery of production and the accumulation of stocks to unprecedented levels, after several coincidental factors reduced supply in 1983 and 1984. These variations in production reflect supply shocks caused by weather, fluctuations in yields, partly because of biological pollination in the case of palm oil, increases in areas harvested, and, in the case of tree crops, past and ongoing increases in the stock of trees.

Vegetable oils and protein meals are mainly derived from oilseeds, which are crushed to expell their oil content for further processing and to produce meal. The demand for vegetable oils emanates mainly from the food and soap manufacturing industries, while that for meals is derived from the demand for livestock products, as meals are primarily produced as ingredients in animal feeds. The scope for substitution in demand in both of these markets is considerable. Technological improvements in processing have increased the interchangeability of the various oils and, consequently, the importance of relative prices in the choice of oil by consumers. However, a relatively small share of each oil's consumption occurs in a "captive" market, where it enjoys a strong technical advantage, such as coconut oil and palm kernel oil in soap manufacture and groundnut oil in culinary use.

On the supply side, the market is considerably more heterogenous and complex. Oilseeds are produced as annual crops (e.g., soybeans, groundnuts, rapeseed, sunflowerseed) and as perennial tree crops (e.g., coconut and oil palm). While producers of annual crops can adjust supply rapidly to changes in market prospects, producers of tree crops, with long gestation periods and economic life spans and relatively low variable costs after the trees have been planted, are considerably less responsive.

From 1980/81 to 1985/86, world oilseed production increased steadily and sharply in each year, with the exception of 1983/84. As a result, total production reached 54.8 million tons, in terms of oil equivalent, compared with 41.5 million tons in 1980/81 (Table II.16). Most of the growth in this period is attributable to four oilseeds: palm oil (23 percent of the growth), soybeans (21 percent), rapeseed (20 percent), and sunflowerseed (18 percent). Sunflowerseed oil and rapeseed oil are the

Table 11.13. Prices of Vegetable Oils and Protein Meals, 1960-65

(In U.S. dollars a ton, unless otherwise indicated)

Year	Index of Prices of Vegetable Oils and Protein Meals	Soybean Oil 1/	Palm Oil 2/	Sunflower Seed Oil 3/	Rapeseed Oil 4/	Coconut Oil 5/	Groundnut Oil 6/	Soybean Meal 7/	Groundnut Meal 8/	Fish Meal 9/
1960=100										
1960-69	36.5	232	220	234 10/	201 11/	311	302	87	103	154
1970-79	75.8	495	441	587	475	555	714	186	193	340
1980-85	89.9	531	511	585	498	637	813	215	210	394
1961	42.1	286	260	330	280 12/	379	378	103	115	197
1962	43.2	304	282	374	295	353	446	102	110	168
1963	45.6	241	217	326	232	248	426	129	137	239
1964	44.8	436	376	481	410	513	544	303	299	352
1965	48.6	832	691	969	745	998	1,058	184	196	372
1966	71.1	563	420	739	551	394	778	155	158	245
1967	75.1	438	397	581	415	418	691	198	198	376
1968	92.4	580	530	639	584	578	846	230	245	454
1969	92.1	607	600	664	597	583	1,079	213	231	410
1970	102.8	662	654	762	676	985	889	243	238	395
1980	160.0	598	583	633	571	673	859	259	272	504
1981	95.8	507	571	629	483	570	1,043	253	269	468
1982	79.6	442	445	529	417	467	585	218	208	354
1983	92.5	517	501	558	499	736	741	238	229	451
1984	100.4	725	729	767	687	1,155	1,017	197	198	373
1985	75.8	576	501	602	560	596	905	157	146	280
1986 13/	64.1	340	245	368	291	276	573	185	161	327
1986 1	104.8	694	865	725	677	1,117	1,031	209	225	458
11	113.5	843	858	891	818	1,298	1,162	214	194	365
111	91.9	690	584	747	650	1,176	960	178	166	331
12	97.5	674	688	703	603	1,029	684	168	163	319
1987 1	83.4	653	609	662	624	818	902	152	148	291
11	80.4	675	606	680	621	669	1,007	145	136	268
111	69.8	518	419	563	476	468	863	151	143	259
12	69.3	456	369	503	417	406	849	175	158	310
1988 1	68.9	407	289	422	378	330	607	188	169	302
11	64.5	346	241	382	320	251	572	184	161	332
111	61.3	294	208	318	252	227	548	182	159	328

Source: Commodity Division, IMF Research Department.

- 1/ Dutch, f.o.b. ex-mill Rotterdam.
- 2/ Sumatra/Malaysia oil, c.i.f. Northwest European ports.
- 3/ Any origin, ex-land Rotterdam.
- 4/ Dutch, f.o.b. ex-mill.
- 5/ Philippines/Indonesia oil, in bulk, c.i.f. Rotterdam.
- 6/ Any origin, in bulk, c.i.f. Rotterdam.
- 7/ U.S. origin, c.i.f. Rotterdam.
- 8/ Argentine meal, in bulk, c.i.f. Rotterdam.
- 9/ Any origin, c.i.f. Hamburg.
- 10/ 1960-69.
- 11/ 1968-69.
- 12/ Estimated.
- 13/ Includes projections for the final quarter of the year.

Table 11.16. Major Oilseeds (Oil Equivalent): World Commodity Balance, 1980/81-1986/87

	October/September Years						
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86 1/	1986/87 2/
	(In millions of tons, oil equivalent) 3/						
Production	41.5	45.1	47.3	45.3	51.7	54.8	55.6
Soybeans	14.5	15.1	16.7	15.0	16.8	17.3	17.6
Palm oil	5.1	6.0	5.9	6.3	7.0	8.2	8.7
Sunflowerseed	5.2	5.8	6.6	6.2	7.0	7.6	7.4
Rapeseed	4.3	4.5	5.3	5.2	6.2	6.9	7.3
Groundnuts	4.7	5.8	5.2	5.4	5.8	5.8	5.9
Cottonseed	3.9	4.1	3.9	3.8	4.9	4.5	4.2
Vepra	3.1	3.0	2.9	2.5	3.0	3.3	3.3
Palm kernels	0.7	0.8	0.8	0.9	1.0	1.2	1.2
Neerash use	6.0	7.3	7.4	7.5	7.6	8.2	8.5
Soybeans	2.0	2.7	2.6	2.8	2.7	2.7	3.1
Groundnuts	1.9	2.4	2.4	2.4	2.5	2.7	2.7
Other	2.1	2.2	2.4	2.3	2.4	2.8	2.7
Crushings/oil							
production	36.2	38.3	39.7	38.6	42.8	45.7	46.4
Soybean oil	12.9	12.7	13.5	12.8	13.3	13.6	14.0
Palm oil	5.1	6.0	5.9	6.3	7.0	8.2	8.7
Sunflowerseed oil	4.7	5.6	5.7	5.5	6.2	6.5	6.4
Rapeseed oil	4.1	4.4	5.0	4.9	5.6	6.3	6.4
Groundnut oil	2.7	3.3	2.9	2.9	3.1	3.2	3.2
Cottonseed oil	3.2	3.3	3.1	3.0	3.9	3.5	3.3
Ground oil	2.9	2.9	2.8	2.4	2.7	3.3	3.2
Palm Kernel oil	0.6	0.7	0.8	0.8	1.0	1.1	1.2
Oil consumption	36.1	38.5	39.7	38.6	42.2	45.0	46.3
Soybean oil	12.6	13.1	13.4	13.1	13.2	13.3	14.0
Palm oil	5.2	5.7	6.1	6.0	6.8	8.0	8.6
Sunflowerseed oil	4.7	5.1	5.6	5.5	6.0	6.5	6.5
Rapeseed oil	4.0	4.4	5.0	4.8	5.6	6.2	6.4
Groundnut oil	2.8	3.3	2.9	2.9	3.1	3.2	3.2
Cottonseed oil	3.2	3.2	3.1	3.1	3.8	3.5	3.2
Ground oil	3.0	3.0	2.8	2.4	2.8	3.2	3.2
Palm kernel oil	0.6	0.7	0.8	0.8	0.9	1.1	1.2
Ending stocks	7.4	6.7	6.9	6.0	7.8	9.4	10.1
As oilseeds 4/	4.3	3.8	4.0	3.1	4.3	5.2	5.9
Soybeans	(2.9)	(2.6)	(3.1)	(2.4)	(3.1)	(4.1)	(4.5)
Other	(1.4)	(1.2)	(0.9)	(0.7)	(1.2)	(1.1)	(1.4)
As oil 5/	3.1	2.9	2.9	2.9	3.5	4.2	4.2
Soybean oil	(1.7)	(1.4)	(1.5)	(1.2)	(1.3)	(1.6)	(1.7)
Palm oil	(0.8)	(0.8)	(1.5)	(0.8)	(1.0)	(1.3)	(1.4)
Other	(0.9)	(1.7)	(0.9)	(0.9)	(1.2)	(1.3)	(1.1)

Source: U.S. Department of Agriculture, Foreign Agriculture Survey: Oilseeds and Oils (Washington), various issues.

1/ Preliminary.

2/ U.S. Department of Agriculture forecast.

3/ Conversion: Oilseed data using standard conversion factors.

4/ Ending oilseed stocks equals production less consumption less crushings.

5/ Ending oil stocks equals oil production less oil consumption.

third and fourth most important vegetable oils produced, each representing 14 percent of world production, compared with about 7 percent each for groundnut oil and coconut oil. Another rise in total oilseed production is projected for 1986/87. Consumption also has risen steadily since 1980/81, with the exception of 1983/84, but not as rapidly as production. Reflecting this, the level of stocks has risen by 30 percent in 1984/85, 21 percent in 1985/86, and is projected to rise by another 7 percent in 1986/87.

The complexity of the market reflects the fact that while the demand for oils and the demand for meals are governed by different market forces, all oils are produced jointly with the in crushing for meal, the relative importance of each component varying considerably among oilseeds (Tables II.16 and II.17). Soybeans, for example, are 80 percent meal and 18 percent oil by weight and are produced mainly in response to meal demand. Consequently, soybean oil generally is produced as a by-product, with supply determined by the demand for meal rather than the direct demand for soybean oil. This typically has resulted in expanding supplies of soybean oil, irrespective of the oil prices, when meal demand has been strong.

Although the leadership of soybean oil in the vegetable oil market has been narrowed in the 1980s by increased production of palm oil, the soybean complex continues to dominate prices in the rest of the sector. The by-product soybean oil has strongly influenced the prices of other vegetable oils. Prices of vegetable oils can be highly unstable because of the supply structure for soybean oil, combined with the gestation lags in production and relatively long economic life spans of the trees from which a number of the other oilseeds are obtained. The prices of protein meals have been relatively stable, however, because of substitution with other feeds, particularly maize.

In 1985, vegetable oil prices declined significantly from the record high levels attained by most of these prices in 1984 and continued to decline during the first nine months of 1986. On the other hand, meal prices, which had fallen significantly in 1984, reflecting weak meal demand, began to recover in mid-1985 and continued to rise through the first quarter of 1986. Since then, meal prices generally have remained strong, mainly in response to a high level of meal demand in the EC, encouraged by the relatively low soybean meal/feed wheat price ratio in the EC. As a result, the more typical structure of oilseed product prices has re-emerged since the latter part of 1985. With the notable drop in the oil to meal price ratio in the soybean complex, the meal content of soybeans again has accounted for over two thirds of that oilseed's value, whereas by mid-1985, it had fallen to only about 50 percent.

The rise in oil prices in 1983 and 1984 is attributable mainly to tighter supplies stemming from (i) a considerable reduction in soybean production in the United States in the 1983/84 season as a result of the impact of the government area reduction program (the payment-in-kind or PIK program) and poor yields because of drought; (ii) reduced palm oil

Table II.17. Major Oilseeds (Meal Equivalent): World Commodity Balance, 1980/81-1986/87

	October/September Years						
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86 ^{1/}	1986/87 ^{2/}
(In millions of tons, meal equivalent) ^{3/}							
Production	97.9	106.0	113.0	102.8	118.9	122.2	123.2
Soybeans	64.1	68.2	74.2	64.9	73.1	76.0	77.4
Cottonseeds	11.8	12.9	12.2	12.0	16.1	14.3	13.5
Rapeseed	6.6	7.6	9.0	8.7	10.4	11.6	12.1
Sunflowerseed	6.1	6.8	7.9	7.2	8.3	9.0	8.7
Groundnuts	6.8	8.0	7.1	7.6	8.2	8.2	8.3
Copra	1.7	1.6	1.6	1.3	1.6	1.7	1.8
Palm kernels	0.8	0.9	1.0	1.1	1.2	1.4	1.4
Noncrush use	15.3	19.5	19.7	20.3	20.4	21.2	22.7
Crushings/meal							
production	84.6	87.7	91.8	86.0	94.7	96.7	98.2
Soybean meal	56.9	57.3	60.5	55.5	58.2	59.8	61.7
Cottonseed meal	9.7	10.2	9.8	9.7	12.7	11.3	10.6
Rapeseed meal	6.2	7.4	8.5	8.1	9.4	10.4	10.7
Sunflowerseed meal	5.5	5.9	6.7	6.4	7.3	7.7	7.5
Groundnut meal	4.0	4.5	3.9	4.1	4.4	4.5	4.5
Copra meal	1.6	1.6	1.5	1.3	1.5	1.7	1.7
Palm kernel meal	0.7	0.8	0.9	0.9	1.2	1.3	1.4
Meal consumption	83.8	88.1	91.4	85.1	95.0	96.9	98.5
Soybean meal	56.2	57.8	59.9	54.9	58.6	60.0	61.9
Cottonseed meal	9.6	10.1	10.0	9.6	12.6	11.2	10.7
Rapeseed meal	6.2	7.4	8.4	8.1	9.4	10.4	10.8
Sunflowerseed meal	5.5	5.9	6.7	6.4	7.3	7.7	7.5
Groundnut meal	4.0	4.5	3.9	4.1	4.4	4.5	4.5
Copra meal	1.6	1.6	1.5	1.1	1.5	1.8	1.7
Palm kernel meal	0.7	0.8	1.0	0.9	1.2	1.3	1.4
Closing stocks	17.7	16.2	18.1	15.5	19.0	23.1	25.1
As oilseeds ^{4/}	14.6	13.5	15.0	11.5	15.3	19.6	21.9
Soybeans	(12.8)	(11.8)	(13.7)	(10.5)	(13.7)	(17.9)	(19.9)
Rapeseeds	(0.9)	(0.6)	(0.5)	(0.4)	(0.7)	(0.8)	(1.3)
Other	(0.9)	(1.1)	(0.8)	(0.6)	(0.9)	(0.9)	(0.7)
As meal ^{5/}	3.1	2.7	3.1	4.0	3.7	3.5	3.2
Soybean meal	(2.4)	(1.9)	(2.6)	(3.1)	(2.7)	(2.5)	(2.3)
Other	(0.7)	(0.8)	(0.5)	(0.9)	(1.0)	(1.0)	(0.9)

Source: U.S. Department of Agriculture, Foreign Agriculture Survey: Oilseeds and Products (Washington), various issues.

^{1/} Preliminary.

^{2/} U.S. Department of Agriculture forecast.

^{3/} Derived from oilseed data using standard conversion factors.

^{4/} Change in oilseed stocks equals production less noncrush use less crushings.

^{5/} Change in meal stocks equals meal production less meal consumption.



and palm kernel oil production in Malaysia in 1983 as a result of drought, tree stress following the introduction of biological pollination and low fertilizer useage induced by poor prices; and (iii) reduced copra production in the Philippines, following drought and serious typhoon damage that curtailed yields. However, in 1985, both Malaysian palm oil production and coconut production in the Philippines recovered markedly, and this was accompanied by increased exports of palm oil by Indonesia. In addition, soybean supplies in the United States and Brazil increased, reflecting improved yields and increases in areas harvested, and supplies of other oilseeds rose significantly, including rapeseed and sunflowerseed, which also have contributed to downward pressure on prices of vegetable oils. The swings in vegetable oil prices dominate movements in the overall index of prices for oils and meals. Despite the steep drop in meal prices throughout 1984, the index rose under the influence of rising oil prices from an average level of 92.8 in 1983 to 100.4 in 1984 (1980=100). The turnaround in oil prices in 1985 and the continued decline in 1986 caused the index to fall throughout this period to a low of 60.4 in September 1986.

Total export earnings for oilseeds and product exports are substantial, but earnings fell sharply in 1985 and are expected to decline further in 1986. Export proceeds from the major oilseeds and their products (soybeans, soybean oil, soybean meal, and palm oil) rose from \$15 billion in 1980 to \$17 billion in 1984 but declined to \$14 billion in 1985 (Tables II.18, II.19, II.20, and II.21). Most of the decline has been borne by the industrial countries, whose share in total earnings has fallen from 66 percent in 1980 to 48 percent in 1985. The decline in total earnings is attributable to the decline in vegetable oil prices and the weak level of meal prices in 1985, caused partly by the sharp expansion in export volumes from developing countries.

Sunflowerseed and rapeseed and their respective oils also are important in international trade, representing 13 percent and 12 percent of the volume of world exports (in oil equivalent), respectively, compared with significantly lower shares for the following oilseeds and their respective oils: copra (8 percent), groundnuts (3 percent), palm kernels (4 percent), and cottonseed (2 percent). Most of the world's exports of rapeseed, rapeseed products, and sunflowerseed emanate from industrial countries, whereas most sunflowerseed oil and meal exports emanate from developing countries, particularly Argentina.

a. Soybeans and soybean products

As a share of world oilseed production, soybeans are the single most important oilseed. The strong recovery in soybean production in the 1984/85 marketing year (October/September) contributed importantly to the weakening of both oil and meal prices in 1985. Total oilseed production in terms of oil equivalent (see Table II.16) increased by 14 percent in that year to 51.7 million tons, after falling by 4 percent in the previous year. Soybean production rose by 12 percent and accounted for 28 percent of the increase in total production.

Table II.18. Soybeans: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984	1985	1986 <u>1/2/</u>
Market prices (in U.S. dollars a ton) <u>3/</u>	<u>296</u>	<u>288</u>	<u>245</u>	<u>282</u>	<u>282</u>	<u>224</u>	<u>209</u>
Exports							
Volumes (in millions of tons)	<u>26.9</u>	<u>26.2</u>	<u>28.9</u>	<u>26.6</u>	<u>25.8</u>	<u>25.4</u>	<u>27.8</u>
Industrial countries	<u>22.2</u>	<u>22.1</u>	<u>25.9</u>	<u>22.9</u>	<u>19.7</u>	<u>17.0</u>	<u>21.4</u>
United States	(21.8)	(21.8)	(25.5)	(22.7)	(19.5)	(16.9)	(21.1)
Other countries	(0.4)	(0.3)	(0.4)	(0.2)	(0.2)	(0.1)	(0.3)
Developing countries	4.7	4.1	3.0	3.7	6.1	8.4	6.4
Argentina	(2.7)	(2.2)	(1.9)	(1.5)	(3.1)	(3.0)	(2.8)
Brazil	(1.6)	(1.5)	(0.5)	(1.3)	(1.6)	(3.5)	(1.4)
Other countries	(0.4)	(0.4)	(0.6)	(0.9)	(1.4)	(1.9)	(2.2)
Unit value (in U.S. dollars a ton)	<u>264</u>	<u>282</u>	<u>243</u>	<u>256</u>	<u>280</u>	<u>222</u>	<u>207</u>
Industrial countries	<u>270</u>	<u>284</u>	<u>245</u>	<u>261</u>	<u>278</u>	<u>221</u>	<u>206</u>
Developing countries	235	270	228	224	284	224	210
Earnings (in U.S. dollars a tons)	<u>7.10</u>	<u>7.39</u>	<u>7.03</u>	<u>6.80</u>	<u>7.21</u>	<u>5.64</u>	<u>5.75</u>
Industrial countries	<u>6.00</u>	<u>6.29</u>	<u>6.33</u>	<u>5.98</u>	<u>5.49</u>	<u>3.76</u>	<u>4.41</u>
Developing countries	1.10	1.10	0.70	0.82	1.72	1.88	1.34

Sources: Commodities Division, IMF Research Department for prices. UN Food and Agriculture Organization, FAO Trade Yearbook (Rome), various issues, for exports; data on volume of exports for 1985 from Oil World: Statistical Update (Hamburg), September 5, 1986.

1/ Data on exports are estimates of Commodities Division, IMF Research Department.

2/ Includes projections for the final quarter of the year.

3/ U.S. origin, c.i.f. Rotterdam.



Table II.19. Soybean Oil: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984	1985 ^{1/}	1986 ^{1/2/}
Market prices (in U.S. dollars a ton) ^{3/}	<u>598</u>	<u>507</u>	<u>447</u>	<u>527</u>	<u>725</u>	<u>576</u>	<u>340</u>
Exports							
Volumes (in millions of tons)	<u>3.2</u>	<u>3.5</u>	<u>3.4</u>	<u>3.6</u>	<u>4.0</u>	<u>3.6</u>	<u>3.1</u>
Industrial countries	<u>2.3</u>	<u>2.0</u>	<u>2.2</u>	<u>2.0</u>	<u>2.3</u>	<u>2.0</u>	<u>2.0</u>
United States	(1.1)	(0.8)	(0.9)	(0.7)	(1.0)	(0.6)	(0.6)
EC	(0.8)	(0.7)	(0.7)	(0.7)	(1.0)	(1.4)	(1.4)
Other countries	(0.4)	(0.5)	(0.6)	(0.5)	(0.3)	(0.1)	(--)
Developing countries	<u>0.9</u>	<u>1.5</u>	<u>1.2</u>	<u>1.6</u>	<u>1.7</u>	<u>1.6</u>	<u>1.1</u>
Brazil	(0.7)	(1.3)	(0.8)	(1.1)	(0.9)	(1.0)	(0.5)
Argentina	(0.1)	(0.1)	(0.2)	(0.3)	(0.5)	(0.5)	(0.5)
Other countries	(0.1)	(0.1)	(0.2)	(0.2)	(0.3)	(0.1)	(0.1)
Unit value (in U.S. dollars a ton)	<u>625</u>	<u>542</u>	<u>480</u>	<u>498</u>	<u>716</u>	<u>568</u>	<u>337</u>
Industrial countries	<u>644</u>	<u>560</u>	<u>497</u>	<u>533</u>	<u>726</u>	<u>577</u>	<u>341</u>
Developing countries	<u>576</u>	<u>515</u>	<u>455</u>	<u>453</u>	<u>703</u>	<u>557</u>	<u>329</u>
Earnings (in U.S. dollars a ton)	<u>1.99</u>	<u>1.88</u>	<u>1.64</u>	<u>1.81</u>	<u>2.86</u>	<u>2.05</u>	<u>1.04</u>
Industrial countries	<u>1.46</u>	<u>1.14</u>	<u>1.10</u>	<u>1.09</u>	<u>1.69</u>	<u>1.16</u>	<u>0.68</u>
Developing countries	<u>0.53</u>	<u>0.74</u>	<u>0.54</u>	<u>0.72</u>	<u>1.17</u>	<u>0.89</u>	<u>0.36</u>

Sources: Commodities Division, IMF Research Department for prices. UN Food and Agriculture Organization, FAO Trade Yearbook (Rome), various issues, for exports.

^{1/} Data on exports are estimates of Commodities Division, IMF Research Department.

^{2/} Includes projections for the final quarter of the year.

^{3/} Dutch, f.o.b. ex-mill Rotterdam.

Table II.20. Soybean Meal: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984	1985 ^{1/}	1986 ^{1/2/}
Market prices (in U.S. dollars a ton) ^{3/}	<u>259</u>	<u>253</u>	<u>218</u>	<u>238</u>	<u>197</u>	<u>157</u>	<u>185</u>
Exports (in millions of tons)							
Volumes	<u>17.8</u>	<u>20.1</u>	<u>20.0</u>	<u>22.9</u>	<u>20.7</u>	<u>23.1</u>	<u>23.5</u>
Industrial countries	<u>10.5</u>	<u>10.3</u>	<u>10.7</u>	<u>11.7</u>	<u>9.1</u>	<u>10.4</u>	<u>11.6</u>
United States	(7.0)	(6.3)	(6.2)	(6.5)	(4.5)	(4.7)	(6.5)
EC	(3.2)	(3.7)	(4.3)	(5.2)	(4.6)	(5.7)	(5.0)
Other countries	(0.3)	(0.3)	(0.2)	(--)	(--)	(--)	(0.1)
Developing countries	<u>7.3</u>	<u>9.8</u>	<u>9.3</u>	<u>11.2</u>	<u>11.6</u>	<u>12.7</u>	<u>11.9</u>
Brazil	(6.6)	(8.9)	(7.8)	(8.5)	(7.6)	(8.6)	(7.5)
Other countries	(0.7)	(0.9)	(1.5)	(2.7)	(3.8)	(4.1)	(4.4)
Unit value (in U.S. dollars a ton)							
Industrial countries	<u>237</u>	<u>251</u>	<u>222</u>	<u>226</u>	<u>212</u>	<u>159</u>	<u>182</u>
Developing countries	<u>247</u>	<u>262</u>	<u>234</u>	<u>238</u>	<u>230</u>	<u>170</u>	<u>193</u>
Earnings (in billions of U.S. dollars)							
Industrial countries	<u>4.22</u>	<u>5.05</u>	<u>4.43</u>	<u>5.19</u>	<u>4.38</u>	<u>3.67</u>	<u>4.29</u>
Developing countries	<u>2.59</u>	<u>2.70</u>	<u>2.49</u>	<u>2.78</u>	<u>2.08</u>	<u>1.77</u>	<u>2.24</u>
Developing countries	<u>1.63</u>	<u>2.35</u>	<u>1.94</u>	<u>2.41</u>	<u>2.30</u>	<u>1.90</u>	<u>2.05</u>

Source: Commodities Division, IMF Research Department for prices. UN Food and Agriculture Organization, FAO Trade Yearbook (Rome), various issues, for exports.

^{1/} Data on exports are estimates of Commodities Division, IMF Research Department.

^{2/} Includes projections for the final quarter of the year.

^{3/} U.S. origin, c.i.f. Rotterdam.

Table II.21. Palm Oil: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984	1985 ^{1/}	1986 ^{1/2/}
Market prices (in U.S. dollars a ton) ^{3/}	<u>583</u>	<u>571</u>	<u>445</u>	<u>501</u>	<u>729</u>	<u>501</u>	<u>245</u>
Exports							
Volumes (in millions of tons)	<u>3.48</u>	<u>3.10</u>	<u>3.68</u>	<u>3.88</u>	<u>4.22</u>	<u>5.57</u>	<u>6.50</u>
Developing countries	<u>3.48</u>	<u>3.10</u>	<u>3.68</u>	<u>3.88</u>	<u>4.22</u>	<u>5.57</u>	<u>6.50</u>
Malaysia	(2.14)	(2.36)	(2.70)	(2.91)	(2.96)	(3.50)	(4.15)
Other countries	(1.34)	(0.74)	(0.98)	(0.97)	(1.26)	(2.07)	(2.35)
Unit values (in U.S. dollars a ton)	<u>553</u>	<u>518</u>	<u>434</u>	<u>435</u>	<u>657</u>	<u>451</u>	<u>221</u>
Earnings (in billions of U.S. dollars)	<u>1.93</u>	<u>1.60</u>	<u>1.60</u>	<u>1.69</u>	<u>2.78</u>	<u>2.51</u>	<u>1.44</u>
Developing countries	<u>1.93</u>	<u>1.60</u>	<u>1.60</u>	<u>1.69</u>	<u>2.78</u>	<u>2.51</u>	<u>1.44</u>

Source: Commodities Division, IMF Research Department for prices. UN Food and Agriculture Organization, FAO Trade Yearbook (Rome), various issues, for exports. Export data include only exports from palm oil producing countries.

^{1/} Data on exports are estimates of Commodities Division, IMF Research Department.

^{2/} Includes projections for the final quarter of the year.

^{3/} Sumatra/Malaysia oil, c.i.f. Northwestern European ports.

Soybean production in the United States rose by 14 percent in 1984/85, reflecting higher yields and some expansion in soybean acreage as a result of a smaller acreage reduction program, and accounted for most (64 percent) of the increase in world soybean production (Table II.22). Production in Brazil, the second largest producer, rose by 18 percent, also reflecting higher yields and an expansion in soybean acreage. World soybean crushings, after falling by about 7 percent in the previous year, rose by 4 percent. The resulting rise in oil production (Table II.23) was reflected in the decline in the soybean oil price from an average of \$725 per ton in 1984 to \$576 per ton in 1985. The soybean oil price weakened during the first half of 1985 and continued weak during most of the remainder of the year. Soybean meal prices also declined in the first half of 1985 to \$141 per ton in June, the lowest level since February 1975, but strengthened in the second half of the year. The rise in meal production was exceeded by the expansion in meal consumption, leading to a reduction in meal stocks in 1984/85 (Table II.24). The weakening in meal consumption in the previous year stemmed partly from lower prices for competing feedgrains and other livestock feeds in the United States and the EC and lower purchases by the U.S.S.R. With the decline in meal prices, demand recovered in the United States, and purchases increased by the EC, the U.S.S.R., and other countries.

Soybean production in 1985/86 increased by 4 percent to 96.3 million tons, the highest level in six years. Although production in Brazil declined by 27 percent as a result of drought, this was more than compensated by increases in production in other countries, particularly the United States. Production in the United States rose by 12 percent, despite a reduction in soybean acreage, because favorable weather conditions boosted yields to record levels. However, the rise in crushings fell short of the rise in total production, as a result of which closing stocks of soybeans rose to a record 22.7 million tons. The modest gain in crushings in 1985/86 is attributable to the slow growth in world consumption of soybean meal. In the United States, soybean meal consumption declined slightly partly because of herd liquidation by cattle and hog producers. In the EC, nearly three quarters of the increase in protein meal consumption in 1985/86 was met with rapeseed and sunflower-seed meals, of which EC production has been expanding rapidly, while soybean meal consumption remained at about the previous year's level. Meal prices strengthened from mid-1985 to March 1986, increasing from \$141 per ton to \$194 per ton, and after declining in the second quarter rose again in the final quarter to levels achieved at the beginning of the year. The modest rise in soybean oil production in 1985/86 as a result of the increased meal production was accompanied by a slight increase in consumption, partly reflecting increased competition from burgeoning supplies of other vegetable oils, particularly lower priced palm oil. During the first nine months of 1986, the price of soybean oil fell from \$457 per ton in January to \$271 per ton in August, before increasing slightly to \$276 in September. The weakening soybean product prices has been reflected in lower soybean prices.

Table 11.22. Soybeans: World Commodity Balance, 1980/81-1986/87

(In millions of tons)

	October/September Years						
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87 2/
Production	81.0	86.1	93.6	83.2	92.8	96.3	98.4
Argentina	3.5	4.2	4.2	7.0	6.5	7.3	7.5
Brazil	15.2	12.8	14.8	15.5	18.3	13.4	16.5
China	7.9	9.3	9.0	9.8	9.7	10.5	11.0
United States	48.9	54.1	59.6	44.5	50.6	57.1	54.2
Other countries	5.5	5.7	6.0	6.1	7.5	8.0	9.2
Crushings	71.9	72.5	76.2	71.1	73.8	73.8	79.5
Brazil	13.8	12.8	13.7	12.5	13.1	12.8	12.8
EC	13.3	15.2	14.7	12.9	12.4	12.6	13.0
United States	27.8	28.0	30.2	26.6	28.0	29.3	29.3
Other countries	17.0	16.3	17.6	18.9	20.3	21.1	23.4
Noncrush uses	10.9	13.2	15.2	15.6	15.0	15.2	17.3
Closing stocks	16.2	14.9	17.1	13.4	17.6	22.7	25.3
United States	8.5	6.9	9.4	7.8	8.6	15.6	16.3
Other countries	7.7	8.0	7.7	8.6	8.8	8.1	9.0

Source: U.S. Department of Agriculture, Foreign Agriculture Circulars, Oilseeds and Products (Washington), various issues.

1/ Preliminary.

2/ U.S. Department of Agriculture Circular.

Table II.23. Soybean Oil: World Commodity Balance, 1980/81-1986/87

(In millions of tons)

	October/September Years						
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1/ 1986/87 2/
Production	<u>12.9</u>	<u>12.7</u>	<u>13.6</u>	<u>12.8</u>	<u>13.3</u>	<u>13.6</u>	<u>14.0</u>
Brazil	2.6	2.4	2.6	2.4	2.5	2.3	2.4
EC	2.4	2.6	2.6	2.3	2.2	2.2	2.3
United States	5.1	5.0	5.5	4.9	5.2	5.3	5.4
Other countries	2.8	2.7	2.9	3.2	3.4	3.8	3.9
Consumption	<u>13.1</u>	<u>13.0</u>	<u>13.2</u>	<u>13.0</u>	<u>13.1</u>	<u>13.3</u>	<u>13.8</u>
Brazil	1.5	1.5	1.6	1.5	1.6	1.8	1.9
EC	1.6	1.7	1.5	1.4	1.4	1.4	1.5
United States	4.1	4.3	4.5	4.4	4.5	4.5	4.7
Other countries	5.9	5.5	5.6	5.7	5.6	5.6	5.7
Closing stocks	<u>1.7</u>	<u>1.4</u>	<u>1.5</u>	<u>1.2</u>	<u>1.3</u>	<u>1.6</u>	<u>1.7</u>

Source: U.S. Department of Agriculture, Foreign Agriculture Circular: Oilseeds and Products (Washington), various issues.

1/ Preliminary.

2/ U.S. Department of Agriculture forecast.

Table 11.24. Soybean Meal: World Commodity Balance, 1980/81-1986/87

(In millions of tons)

	October/September Years						
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86 ^{1/}	1986/87 ^{2/}
Production	56.9	57.3	60.5	55.5	58.2	59.8	61.7
Brazil	10.6	9.9	10.6	9.7	10.2	9.6	9.9
EC	10.6	12.2	11.7	10.3	9.9	10.1	10.3
United States	22.1	22.4	24.2	20.7	22.3	22.7	23.0
Other countries	13.6	12.8	14.0	14.8	15.8	17.4	18.5
Consumption	56.4	58.0	59.8	56.1	59.3	61.2	62.7
EC	16.7	19.7	18.1	17.7	18.1	18.0	18.0
United States	16.0	16.1	17.5	16.0	17.7	17.2	17.7
Other countries	23.7	22.2	24.2	22.4	23.5	26.0	27.0
Closing stocks	2.4	1.9	2.5	3.1	2.8	2.6	2.3

Source: U.S. Department of Agriculture, Foreign Agriculture Survey: Oilseeds and Products (Washington), various issues.

^{1/} Preliminary.

^{2/} U.S. Department of Agriculture forecast.

The outlook for soybean supply and prices is likely to be influenced importantly by the provisions of the recently signed 1985 farm bill in the United States. Soybean prices are supported at the farm level through nonrecourse loans from the Commodity Credit Corporation (CCC). The price support loan rate set by the Government acts as a floor price for soybeans. In years when market prices have fallen below the soybean loan rate, the CCC has acquired large quantities of soybeans, and these have in turn been sold by the CCC when market prices have risen above the loan rate. One of the objectives of the 1985 farm bill is to improve the competitiveness of U.S. soybeans and their flow into the market, rather than into government storage, by lowering loan rates. While the 1985 farm bill initially maintained the loan rate for soybeans at \$5.02 per bushel for 1986 and 1987, it also authorized the Secretary of Agriculture to lower the loan rate by up to 5 percent to \$4.77, if necessary, to improve competitiveness. Effective September 12, 1986, the loan rate for the 1986 crop was lowered to \$4.77 per bushel. Furthermore, implementation of the Gramm-Rudman law has reduced the effective loan rate for soybeans by an additional 4.3 percent to \$4.56 per bushel. For the 1987 crop, the Secretary of Agriculture again will have the option of reducing the initial loan rate of \$5.02 per bushel by up to 5 percent. At this time, it is expected that there will not be any reduction of the announced loan rate for the 1987 crop because of the Gramm-Rudman law. As a result, the effective loan rate is expected to be in the range of \$4.77 to \$5.02 per bushel. For the 1988-90 period, the announced loan rate is to be set at 75 of the previous five-year average market price, excluding the high and low years, and not be reduced by more than 5 percent in any year. The price for each year may be reduced by an additional 5 percent by the Secretary of Agriculture, but the announced low rate may not be set below \$4.50 per bushel. However, implementation of the Gramm-Rudman law could reduce the effective loan rate below this level. A further increase in soybean production is forecast for 1986/87 contributing a continuation of the current oversupply situation. These developments, combined with the expected reduction in support price loan rates in the United States, are expected to continue to exert downward pressure on soybean prices through 1987.

b. Palm oil

Palm oil production has expanded rapidly over the past 15 years, with increases averaging over 9 percent annually. In those years, only one slight decline in world production has been recorded. Most of this growth is attributable to Malaysia, whose share in world production has increased from 30 percent in 1971 to about 60 percent in 1986. Output has been expanding rapidly in Indonesia, which in 1984/85 accounted for 17 percent of world production, half of which was exported (Table II.25).

Palm oil has been the largest single contributor to the strong rise in oilseed production in the period 1980/81 to 1985/86, accounting for 22 percent of the overall increase, in terms of oil equivalent, thereby raising its share from 12 percent to 15 percent of total output (Table II.16). Palm oil is second only to soybeans in production and



Table 11.25. Palm Oil: World Commodity Balance, 1980/81-1986/87

(In millions of tons)

	October/September Years						
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86 <u>1/</u>	1986/87 <u>2/</u>
Production	5.06	5.95	5.91	6.29	7.04	8.24	8.68
Indonesia	0.75	0.88	0.98	1.06	1.20	1.50	1.60
Malaysia	2.69	3.35	3.18	3.32	3.82	4.75	5.00
Other	1.62	1.72	1.75	1.91	2.22	1.99	2.08
Consumption	4.95	5.53	5.97	5.85	6.73	8.02	8.51
EC	0.55	0.59	0.68	0.55	0.63	0.75	0.83
India	0.43	0.41	0.59	0.50	0.73	0.78	0.78
Indonesia	0.57	0.61	0.67	0.98	0.59	0.60	0.60
Nigeria	0.66	0.69	0.65	0.61	0.60	0.67	0.67
Pakistan	0.23	0.27	0.34	0.33	0.48	0.51	0.52
Other	2.51	2.96	3.04	2.88	3.70	4.71	5.11
Closing stocks	<u>0.49</u>	<u>0.77</u>	<u>0.54</u>	<u>0.83</u>	<u>1.07</u>	<u>1.30</u>	<u>1.42</u>

Source: Based on statistics of U.S. Department of Agriculture, Foreign Agriculture Survey: Oilseeds and Products (Washington), various issues.

1/ Preliminary.

2/ Based on U.S. Department of Agriculture forecast.

accounts for an estimated 24 percent of world exports of oilseeds and oil, in terms of oil equivalent, compared with 35 percent for soybeans and soybean oil.

Palm oil and soybean oil prices have broadly moved together over price cycles, reflecting the ease of substitution in consumption between these two oils. In the period 1980-84, the absolute differential in average annual prices for palm oil and soybean oil has been less than \$30 per ton, in four out of five years, with palm oil prices at a slight discount of no more than 5 percent in three of those years. Reflecting the strong recovery of production in Malaysia, palm oil recently has traded at a considerable and widening discount to soybean oil. In 1985, the discount rose from 7 percent in the first quarter to 19 percent in the third quarter, the seasonal peak in Malaysian production, as palm oil prices declined from \$609 per ton to \$419 per ton. The discount narrowed slightly, reflecting the seasonal recovery in prices, in the final months of 1985, but rose sharply in 1986, averaging about 30 percent during the first nine months of the year. The monthly price declined from \$342 per ton in January 1986 to \$197 per ton in August, the lowest monthly price since February 1972, before rising to \$207 per ton in September. The sharp decline in prices in 1985 reflects the further rise in palm oil production in 1985/86 combined with record carry-over stocks from the preceding year.

In 1985/86 the rate of growth of palm oil production accelerated to 17 percent, reaching another record level--8.2 million tons. This is the largest absolute increase ever recorded and is mainly attributable to the growth leader, Malaysia, where production increased by 24 percent, compared with 15 percent in 1984/85. Malaysian oil palms have recovered from the effects of overpollination caused by release of the "Cameroon weevil" in early 1981 and also from the effects of two droughts--in early 1982 and early 1983--which adversely affected yields in 1984 and early 1985. Yields picked up markedly in the final quarter of 1985, peaking later than in the more normal productive cycle and achieving even higher levels than in the period following introduction of the weevil and rainfall in the 25 months prior to each month of the January-September 1986 period has been above normal. Indonesian production also is estimated to have increased, reflecting the expansion of mature acreage and some improvement in yields, following tree stress caused by introduction of the weevil in 1984, and the coming into production of a large number of young trees, with low yields, for the first time.

Stimulated by record low prices, palm oil consumption increased rapidly by 19 percent in 1985/86, compared to 15 percent in the previous year, with the largest absolute increases estimated for the United States, the EC, and India. Palm oil consumption is estimated to have increased by 73 percent in the United States, albeit from a low level, to 295 thousand tons, and by 19 percent in the EC, the second largest consumer after India and the largest importer in the world, to 747 thousand tons. Consumption in India is estimated to have increased by 7 percent in 1985/86 to 175 thousand tons, compared with 46 percent in 1984/85, reflecting the

slowdown in the rise in palm oil imports. This large increase is mainly attributable to the displacement of soybean oil imports by palm oil imports in India in recent years. As a result of these movements in production and consumption, world stocks of palm oil at end-1985/86 reached a record 1.3 million tons, compared with 1.1 million tons at end-1984/85. About 700 thousand tons, or 54 percent of the total, is held in Malaysia. The ratio of stocks to consumption thus rose to 16.2 percent, the highest ratio in the 1980/81-1985/86 period. In 1986/87, palm oil production is forecast to rise by an additional 5 percent. The expanding supplies of palm oil are expected to be channeled into exports on a regular basis, since palm oil is a tree crop and storage capacity is limited. This is expected to continue to exert downward pressure on this and other vegetable oil prices through 1987.

e. Coconut oil

Since reaching its most recent peak of \$1,431 per ton in June 1984, the average monthly price of coconut oil has fallen by 85 percent to a low of \$211 per ton in August 1986, the lowest monthly price since January 1973, before increasing to \$241 per ton in September. As a result, prices have fallen from an average level of \$1,155 per ton in 1984 to \$289 per ton in the first nine months of 1986. Coconut oil's premium over soybean oil, which had been 4 percent in 1982, rose to 70 percent in the third quarter of 1984. The premium declined sharply in the remainder of 1984, and coconut oil was quoted at a widening discount to soybean oil from the second quarter of 1985 until July 1986, when the discount reached over 30 percent. In August and September, however, the discount was reduced. On average, coconut oil has continued to trade at a premium to palm kernel oil, its closest substitute among the lauric oils, ^{1/} although that premium also has declined significantly from an average of 11 percent, or \$118 per ton, in 1984 to 7 percent, or \$39 per ton, in 1985. In the first quarter of 1986, coconut oil traded at an average premium of 11 percent or \$34 per ton to palm kernel oil, but the premium declined to \$1 per ton in April and was converted into a discount of 3 percent, or \$10 per ton, in the following three months. Since then, coconut oil again has traded at a premium to palm kernel oil, reaching 6 percent, or \$13 per ton, in September 1986.

The steep decline in coconut oil prices in 1985 and 1986 is mainly attributable to the substantial recovery of copra production in the Philippines from the severe typhoon damage and drought-induced decline in 1983/84 and the marked expansion in vegetable oil production, in general, since the overall decline in 1983/84. In terms of oil equivalent, world production of copra increased by 20 percent in 1984/85 to 3.0 million tons and by an additional 10 percent in 1985/86, when production reached second highest level on record, a level only slightly lower than the previous record level achieved in 1975/76.

^{1/} Coconut oil, palm kernel oil, and babassu oil are classified as lauric oils, which are suitable for edible as well as inedible usage.

The Philippines is the largest producer of copra in the world, currently accounting for about 45 percent of world production; furthermore, the Philippines provides about 46 percent of world coconut oil production and about 70 percent of world exports of coconut oil. In 1984/85, copra production in the Philippines increased by 16 percent after the severe drought in the period late-1982 to June 1983 and typhoons in 1984 damaged trees and reduced average yields in 1983/84 to about 40 percent below normal, and a further production increase of 39 percent is estimated for 1985/86. The accelerating recovery is attributable largely to the lagged effect of improved average rainfall on yields. In 1984/85, average rainfall was 21 percent above normal and copra yields per bearing tree increased by about 15 percent. Average rainfall continued above normal by about 12 percent in 1985/86 and copra yield per bearing tree is estimated to have risen by 37 percent in that year. Copra production also increased sharply in Indonesia, the second largest copra producer in the world, where drought also had reduced production in 1983/84. In addition to improved weather and a recovery in yields, this increase reflected acreage expansion.

World exports of copra and coconut oil are expected to expand sharply in 1986, mainly reflecting developments in the Philippines. The previous ban established on copra exports in 1982, which had been introduced to bolster exports of coconut oil, was lifted on March 19, 1986, but copra exports are being inhibited by the small number of copra crushers outside of the Philippines and aflatoxin concerns in Europe, one of the largest potential markets for copra. About 130 thousand tons of copra is expected to be exported from the Philippines in 1986. The volume of coconut oil exports from the Philippines is expected to rise from 655 thousand tons in 1985 to 1.2 million tons in 1986, reflecting record levels of production and stocks. The expected increases in copra and coconut oil production combined with high levels of copra and coconut oil stocks, continued expansion of palm kernel oil production, a joint product of palm oil production and the closest competing oil with coconut oil, as well as the general oversupply situation in the vegetable oils, are expected to continue to exert downward pressure on coconut oil prices in 1986 and 1987.

d. Groundnuts and groundnut oil

Groundnuts account for about 11 percent of world oilseed production in terms of oil equivalent. Of this production, about 47 percent is consumed directly as nuts. In recent years, groundnut oil has accounted for only about 7 percent of world vegetable oil production and groundnut meal has accounted for 7 percent of world meal production. Only a small share of world production of groundnuts and groundnut oil (about 10 percent) has entered international trade.

Groundnut product prices have been particularly volatile, mainly reflecting the market structure and the propensity for weather-related fluctuations in production. Fluctuations in the volume of exports are generally greater than changes in the volume of production. The major

sources of exports of groundnuts and groundnut products are Argentina, Brazil, China, Senegal, the Sudan, and the United States. The United States and China are the main exporters of groundnuts for confectionary use.

Since reaching its most recent peak of \$1,171 per ton in May 1984, the average market price of groundnut oil has fallen to a low of \$534 per ton in September 1986, or by 54 percent. The fall in prices was not as pronounced as for other major vegetable oils. While average annual prices for groundnut oil declined from \$1,017 per ton in 1984 to \$905 per ton in 1985, its premium over soybean oil increased from an average of 40 percent to 58 percent in those years. In the first and second quarter of 1986, groundnut oil traded at an average premium of 49 percent and 64 percent to soybean oil, respectively, and its premium rose to over 86 percent in the third quarter. This mainly has been attributable to the relatively slow growth of supplies of groundnuts and groundnut oil available for export. While total groundnut production rose by about 7 percent in 1984/85, compared with about 4 percent in 1983/84, exports of groundnuts for crushing and groundnut oil rose by only about 6 percent in 1984/85 after declining by 30 percent in the previous year.

In 1985/86, production of groundnuts and groundnut oil remained virtually unchanged from the 1984/85 level, with an expansion in China's production and a recovery of production in Senegal and Argentina, and some moderate declines in the United States, Brazil, and elsewhere. The distribution of production, however, permitted exports of groundnuts and groundnut oil, in terms of oil equivalent, to rise by 14 percent in 1985/86. This increase in supply, the recent production increases for cottonseed and sunflowerseed oil, groundnut oil's closest competitors, as well as the increase and projected further increases in the supply of other vegetable oils, have been exerting downward pressure on groundnut oil prices. In 1986/87, a small increase--2 percent--in groundnut production is forecast and exports of groundnuts and groundnut oil, in terms of oil equivalent, are expected to be 11 percent lower than in 1985/86.

The average monthly price of groundnut meal fell from its most recent peak of \$294 per ton in September 1983 to \$130 per ton in June 1985, when it began to increase again with the general strengthening of the demand for meals in the second half of 1985 and the first quarter of 1986. Prices of groundnut meal and other protein meals are expected to remain relatively low through 1987 because of price competition from other, relatively lower priced feeds, particularly grains.

e. Rapeseed oil

Rapeseed is an annual or biennial crop grown mainly in temperate climates and in the subtropics during cool seasons. Over 80 percent of world rapeseed production is concentrated in Canada, China, the EC, and India. Between 1980/81 and 1985/86, world rapeseed production, in terms

of oil equivalent, increased by 60 percent and a further rise of 6 percent is forecast for 1986/87. Forty-one percent of the growth during the period 1980/81-1985/86 is attributable to increased production in China, while the EC, 1/ Canada, and India each contributed 13 percent. However, world exports of rapeseed and rapeseed oil are dominated by the EC and Canada. 2/ The EC's harvested rapeseed area increased from an estimated 0.76 million hectares in 1980/81 to 1.29 million hectares in 1985/86. As a result, rapeseed production in the EC increased by over 80 percent during those years to 3.72 million tons (20 percent of world production). Canada's harvested rapeseed area has fluctuated considerably between a low of 1.40 million hectares in 1981/82 and a high of 3.09 million hectares in 1984/85, with 2.80 million hectares in 1985/86. This has been reflected in substantial variations in Canada's rapeseed production; in 1985/86, however, production reached a peak level of 3.51 million tons (18 percent of world production). Both the EC and Canada have been promoting low erucic acid (LEAR) varieties in order to increase the suitability of rapeseed meal as an animal feed.

World consumption of rapeseed oil has increased rapidly from 4.0 million tons in 1980/81 to 6.2 million tons in 1985/86. In the EC, rapeseed oil appears to have been making substantial inroads into markets held by other vegetable oils, especially soybean oil. EC consumption of rapeseed oil has increased from 0.77 million tons in 1982/83 to 1.04 million tons in 1985/86 and is projected at 1.03 million tons in 1986/87, raising its share in total vegetable oil consumption from 7 percent to 13 percent in both 1985/86 and 1986/87. This expansion has been accompanied by an absolute decrease in soybean oil consumption from 1.54 million tons in 1982/83 to 1.41 million tons in 1985/86, decreasing the share of this oil from 21 percent to 18 percent of EC oil consumption in 1985/86.

The price of rapeseed oil, after rising sharply in 1983 and 1984-- by 20 percent and 37 percent, respectively, because of the relatively low supply and high prices of vegetable oils in general in those years--

1/ In the EC, an oilseed regime was introduced in 1966, when the EC, which at that time relied almost entirely on imported seeds, establishing production grants to crushers of the Community's seeds in order to make them competitive with cheaper imports from nonmember countries. Following market disruptions in 1972/73, when exportable supplies of protein meals were tight because of several factors--reductions in the supply of fish meal from Peru, increased import demand from the U.S.S.R., poor groundnut crops in major exporting countries, and controls on exports of soybeans and soybean products from the United States beginning June 27, 1973 and controls on U.S. exports of 41 feedstuffs and fats and oils announced on July 5, 1973--the EC introduced a new policy designed to encourage oilseed production in the Community. As a result of these "production aids," the output of sunflowerseed, rapeseed, and other oilseed and protein crops has increased sharply.

2/ In 1985/86, the members of the EC and Canada together accounted for 88 percent (or 46 percent and 42 percent, respectively) of world export exports of rapeseed (including intra-EC trade) and 75 percent of world exports of rapeseed oil (or 62 percent and 13 percent, respectively).

declined in 1985 and the first nine months of 1986 (see Table II.15). The average annual price of rapeseed oil declined from \$687 per ton in 1984 to \$540 per ton in 1985, reflecting the recovery of world vegetable oil supplies in general and a record level of world rapeseed production, particularly in major exporting countries. Rapeseed oil generally has traded at a discount of about 5 percent to soybean oil, although the discount widened to an average of over 10 percent, in the first nine months of 1986. The price of rapeseed oil has been declining throughout 1986, from \$411 in January to a level of \$235 in September, or 66 percent below the average level of 1984. This decline reflects the rise in production and exports of rapeseed and rapeseed oil in 1985/86 as well as increased competition from burgeoning supplies of other vegetable oils, particularly palm oil, which has been trading at a discount of about 17 percent to rapeseed oil in recent months.

f. Sunflowerseed oil

Most of the world's sunflowerseed production is produced in countries with temperate climates, with the U.S.S.R., Argentina, the EC, China, and the United States, accounting for over 75 percent of world production. World sunflowerseed production rose by 46 percent during the period 1980/81-1985/86. The EC accounted for about 49 percent, and Argentina for 36 percent, of the growth in output since 1981/82. Argentina is the world's largest exporter of sunflowerseed oil and meal. The EC has been the main market for exports of sunflowerseed meal from Argentina and sunflowerseeds from the United States. However, the EC's import requirements have been declining as its own production has been increasing under support programs introduced in the early 1970s. The EC's sunflowerseed area, has expanded from 0.96 million hectares in 1981/82 to an estimated 1.78 million hectares in 1985/86, with France and Spain the largest producers, as land have been shifted from other crops, particularly grains, into sunflowerseed. France is forecast to increase the area under sunflowerseed cultivation by 44 percent to a record 0.84 million hectares in 1986/87, and total EC production is projected to rise 11 percent in that year. EC consumption of sunflowerseed oil has risen from 0.96 million tons in 1981/82 to an 1.22 million tons in 1985/86 and is projected to rise to 1.24 million tons in 1986/87. Together rapeseed and sunflowerseed oil are estimated to account for about 29 percent of vegetable oil consumption in the EC in 1985/86, compared with 20 percent in 1981/82.

In 1985, the average annual price of sunflowerseed oil declined from its most recent peak of \$767 per ton in 1984 to \$602 per ton, reflecting strong recovery in sunflowerseed production from the slight decline recorded in 1983/84, and the increasing supplies of other major oilseeds and vegetable oils. While sunflowerseed oil has traded at a premium to soybean oil--on average 5 percent in 1983-85, it has traded at a discount to groundnut oil, a major competitor in the French market. In 1984, the average discount to groundnut oil was 25 percent and in 1985 and the first nine months of 1986 the average discount was 30 percent. Partly reflecting the increase in production in 1985/86 and the 16 percent increase in total stocks of sunflowerseed and sunflowerseed oil, in terms

of oil equivalent, the price of sunflowerseed oil in 1986 fell from \$482 per ton in January to \$310 per ton in September. The September 1986 price was consequently about one half the average level in 1985. Exporters of record supplies of sunflowerseed oil are expected to face strong competition from palm, coconut, and rapeseed oils, although the considerable price discount to groundnut oil and cottonseed oil will tend to promote consumption of sunflowerseed oil.

g. Fish meal

The price of fish meal generally has moved in line with, and sold at a premium to, other protein meals. Like other protein meals, the fish meal price has declined sharply in recent years from an annual level of \$453 per ton in 1983 to \$280 per ton in 1985. Since mid-1985, the average monthly price recovered somewhat--from \$254 per ton in July 1985 to \$339 per ton in September 1986. In 1985 and in the first nine months of 1986, fish meal has generally traded at a premium of over 70 percent to soybean meal.

Chile is the largest producer of fish meal in the world, followed by Japan and Peru. In recent years, fish meal production has recovered markedly from the low levels achieved in 1982/83, when the effects of "El Nino" lowered production in Peru. World production rose by 13 percent in 1983/84, 6 percent in 1984/85, and 2 percent in 1985/86 to a record level of over 6 million tons. Stimulated by relatively low prices, the growth rate of fish meal consumption accelerated from about 3 percent in 1983/84 to 12 percent in 1984/85, with a further increase of 2 percent in 1985/86. Consumption in the EC is estimated to have risen by 37 percent in 1984/85 and 9 percent in 1985/86, to 969 thousand tons, with the Federal Republic of Germany and the United Kingdom accounting for most of the EC's fish meal imports. Consumption also picked up by an estimated 37 percent in the United States to 577 thousand tons in 1984/85 but declined slightly in 1985/86. Nevertheless, the level of world stocks rose by 5 percent between 1983/84 and 1985/86. In 1986/87, fish meal production is projected to remain virtually unchanged the previous year's level. Consumption is expected to increase but by only 1 percent, reflecting increased competition from soybean and other protein meals. Fish meal prices are expected to remain relatively low in 1986 and 1987, also reflecting competition from soybean and other protein meals and relatively weak demand for protein meals in general.

The volume of fish meal exports rose by 18 percent to 2.69 million tons in 1984 and increased by an additional 22 percent in 1985 to 3.28 million tons.

4. Other food commodities

a. Beef

Beef prices, which averaged 111 U.S. cents per pound in 1983 and 103 cents per pound in 1984, fell to 98 cents per pound in 1985

(Table II.26) as supplies remained ample in the face of slack demand and increased competition from poultry and pork. ^{1/} Prices remained stable, at 99 U.S. cents per pound during the first quarter of 1986, but declined to 99 cents per pound during the second quarter, largely because of an anticipated rise in supplies of manufacturing grade beef supplies in the United States resulting from larger dairy cow slaughter under the Dairy Termination Program of the 1985 U.S. farm bill. Export prices for beef from countries not permanently free of foot and mouth disease were particularly weak during 1985, because of strong competition from EC beef exports in the traditional markets for this type of beef in the countries in the Middle East and Africa and in the U.S.S.R.

World production of bovine meat increased by about 1.5 percent in 1985. Among the major producers, production in North America increased slightly due to greater production in both the United States and Canada. In the EC, beef production rose sharply in 1984 because of increased dairy cow slaughter, but in 1985, beef production declined slightly in lagged response to the previous year's reduction in the dairy cow population. In 1985, production in the U.S.S.R. is estimated to have increased slightly as a severe winter and temporary feed shortages resulted in larger slaughterings. Herd rebuilding in Argentina was disrupted by a rise in slaughterings in response to very low returns in both the export and domestic markets, and beef production rose by about 6 percent in 1985. Though herd rebuilding continued during 1985 in both Australia and New Zealand, because of high export prices resulting from the strength of the U.S. dollar there was some rise in slaughtering and beef production in Australia.

Although beef consumption in most major markets was higher in 1985, due to ample supplies and lower prices, demand for beef remained weak. Per capita beef consumption in the U.S. is estimated to have declined to 79 pounds in 1985, as compared to a 1976 peak of 94 pounds. This was largely a reflection of a change in meat consumption patterns with a shift away from red meat towards poultry meat; U.S. per capita consumption of poultry increased by 22 pounds during the last decade to 70 pounds per capita in 1985. In the EC beef supplies continued to exceed domestic and external demand and intervention stocks rose from 665,000 tons at the end of 1984 to 741,000 tons by the end of 1985. World beef stocks are estimated to have risen from 1.7 million tons at the beginning of 1985 to 1.9 million tons at the beginning of 1986. In 1985, exports from Argentina and Uruguay, which were subject to intense competition from EC exports, remained at virtually the same level as in the previous year. On the other hand, aided in part by the appreciation of the U.S. dollar, exports from Australia increased sharply from 607,000 tons in 1984 to 670,000 tons in 1985, while New Zealand's exports increased from 313,000 tons to 374,000 tons over the same period.

^{1/} Price quotations refer to imported frozen boneless beef, separate, 85 percent lean, from Australia and New Zealand, f.o.b. U.S. ports.

Table II.26. Prices of "Other" Food Commodities, 1960-85

Year	Beef ^{1/} (in U.S. cents a pound)	Lamb ^{2/} (in U.S. cents a pound)	Bananas ^{3/} (In U.S. dollars a 40-pound box)
1960-69	40	31	3.12
1970-79	78	68	4.00
1980-86	107	103	6.95
1970	59	34	3.01
1971	61	37	2.55
1972	67	49	2.93
1973	91	63	2.99
1974	72	65	3.34
1975	60	68	4.46
1976	72	72	4.69
1977	68	78	4.95
1978	97	101	5.20
1979	131	109	5.91
1980	125	131	6.80
1981	112	125	7.28
1982	108	109	6.80
1983	111	88	7.79
1984	103	88	6.70
1985	98	84	6.90
1986 ^{4/}	95	94	6.40
1984 I	106	86	7.09
II	109	95	7.86
III	101	88	6.56
IV	97	82	5.30
1985 I	103	78	7.70
II	96	85	8.00
III	94	88	6.68
IV	98	83	5.22
1986 I	99	85	6.43
II	93	95	7.15
III	91	97	6.02

Source: Commodities Division, IMF Research Department.

^{1/} Frozen boneless beef, Australian and New Zealand origin, f.o.b. U.S. ports.

^{2/} New Zealand lamb, grade PL, Smithfield market, London.

^{3/} Central American and Ecuadoran origin, U.S. ports.

^{4/} Includes projections for final quarter of the year.

Beef supplies are expected to remain ample in the short run. In the United States, the increased slaughter of dairy cattle under the Dairy Termination Program is expected to result in larger supplies of manufacturing grade beef which is the main type of beef imported by the United States. Lower feed grain prices and larger supplies of poultry are expected to hold down any price gains that may result from a long delayed cyclical rebuilding of herds in the United States and the ongoing herd rebuilding in Australia and New Zealand which is expected to continue until 1990. Latin American beef exporters will continue to face stiff competition from the EC as it tries to reduce its large stocks of beef. Beef demand in the Near East is likely to be curtailed by declining oil revenues and increased competition from poultry.

b. Lamb

World production of sheep and goat meat is estimated to have increased by about 2 percent in 1985 due to larger output in Australia, the EC, New Zealand, Pakistan and Turkey. Lamb prices, which averaged 125 cents per pound in 1981, weakened to 88 cents per pound in both 1983 and 1984 due to a buildup in stocks in the United Kingdom and reduced imports by the U.S.S.R. ^{1/} During 1985, an acceleration in flock liquidation in New Zealand due to reduced profitability caused lamb supplies and stocks to increase, and competition for markets caused lamb prices to weaken further to an average level of 84 cents per pound. Prices remained weak during the first two months of 1986, but a shortage of supplies, during the peak Easter season, resulting in a meat workers' strike in New Zealand, caused prices to rise sharply during March, April and May of 1986.

The market for lamb is expected to remain depressed over the short term. Demand in the Near East is expected to remain weak because of low petroleum prices and competition from poultry. Import demand in other major markets such as Europe, the U.S.S.R. and Japan is not expected to rise appreciably. Supplies on the other hand are expected to remain ample because of large stocks and an expected increase in production in Australia. A sharp reduction in returns to sheep producers in New Zealand resulting from a removal of government price supports and an appreciation of the New Zealand dollar vis-a-vis the U.S. and Australian dollars is expected to lead to a reduction in sheep numbers and lamb production. However, due to record 1984/85 (October/September) lamb production and high end-of-season lamb stocks in New Zealand, the effect of a reduction in sheep numbers is only likely to be reflected in market prices over the medium term.

c. Bananas

Bananas are grown in most tropical countries and are an important part of the diet in many of these countries. Banana production for export tends to be a specialized operation quite distinct from banana production

^{1/} Price quotations refer the New Zealand lamb, grade PL, Southfield Market, London.

for local consumption and exports account for only one fifth of world production. As bananas move from the exporting country to the consumer in the importing country, the perishability of the product has necessitated the development of special facilities for handling, transportation, storage, and ripening. The need for these special facilities and the pattern of historical trade links has led to a segmentation of the international market. ACP countries have preferential access to the EC under a special protocol of successive Lome conventions which provide special quota and licensing arrangements. In addition, the overseas departments of Martinique and Guadeloupe are important in the supply of bananas to France, as are the Canary Islands in supplies to Spain, and Madeira in supplies to Portugal. Japan imports almost exclusively from the Philippines, while the United States is supplied by Latin American countries.

Banana prices, as measured by the import price in the United States of bananas from Central America and Ecuador, rose to record high levels in 1983 on account of unfavorable weather in a number of exporting countries (Table II.26). In Ecuador, the world's leading exporter, severe flooding in the banana growing region led to a reduction in exports of 36 percent. Windstorm damage resulted in a 22 percent reduction in exports from Honduras, while drought reduced Philippine exports by 30 percent. Although some other countries increased exports to cover part of these shortfalls, world exports in 1983 fell by 12 percent from the 1982 level; average import prices in the United States increased by 15 percent. In 1984 average import prices fell by 20 percent below the average for 1983 as supply conditions improved and, allowing for seasonality, prices remained at this level in 1985. The seasonal differences in import prices for bananas are substantial; U.S. prices in the period of seasonal high, February through May, in the 1980s have averaged one third higher than prices in the period of the seasonal low, October through December.

World exports of bananas in 1985 are estimated by the FAO at 6.9 million tons, or 3 percent higher than in 1984. A second successive large annual increase by Ecuador enabled that country to approach the level of exports prior to the severe 1983 floods. Imports into the United States increased by about 6 percent in 1985 as the world's largest market for bananas continued to expand in contrast to markets for bananas in EC countries and in Japan.

In the first half of 1986 normal weather conditions prevailed in the major banana exporting countries. Prices in the United States in January and February 1986 were below those in the same months of 1985 but rose sharply in March 1986 largely on account of a strike of banana workers at a large plantation in Panama. With the settlement of the strike in April, prices again fell to a substantial discount in relation to comparable months in 1985 and are expected to remain lower than 1985 prices through the rest of 1986.

III. Beverages

In sharp contrast with the movement in the indices for other groups of commodities, the dollar price index for beverages in the first three quarters of 1986 averaged 19 percent above the level for 1985. This represents a continuation of a pattern in which beverage prices have tended to move independently of the prices of other primary commodities. In addition, during the 1980s the prices of coffee, tea, and cocoa--the three commodities discussed in this section--have also tended to move independently of each other 1/ (Chart 4). In the late 1970s the prices of the three beverages appeared to be more inter-dependent. Adverse weather conditions during a period of low production in the production/price cycles for both coffee and cocoa led to rapidly rising prices in 1976-77, and the shortage of coffee appears to have had some effect on the demand for tea, causing the tea price also to peak in 1977 (Table III.1).

Compared with the late 1970s, the 1980s have been a period of high production and generally low prices for both coffee and cocoa. However, both of these commodities, as well as tea, for which there is less evidence of a long-term cyclical production pattern, have experienced during the 1980s short periods of rapidly rising prices on account of weather-related drops in production. The first was for cocoa and occurred on account of drought in West Africa. The increase, which was less pronounced and less precipitous than those for the other two commodities, was spread over 1983 and the first quarter of 1984. The second, for tea, resulted in a near doubling of tea prices within a four-month period at the end of 1983. This increase was triggered by drought which affected production in Sri Lanka and southern India. Comparatively high tea prices were maintained for more than a year because of supply uncertainty but the eventual production response led to a sharp fall in prices in early 1985. The rapid price increase for coffee occurred in the final quarter of 1985 as a result of expectations regarding the effects of drought on Brazilian coffee production in 1986. Because of the size of coffee stocks previously accumulated and the volume of exports in the wake of the price increase, the high prices recorded in the first quarter of 1986 have not been sustained.

1. Coffee

Coffee prices began to rise rapidly in mid-October 1985 in a manner not experienced since the 1970s. Following a brief lull in November, the price surge resumed in December and continued through early January 1986. Prices then fell, but by early March prices had returned to near their early January level. As a consequence, coffee prices in the first quarter

1/ Cocoa is included in this group because of its traditional association with coffee and tea as a beverage and because it shares with them certain characteristics with respect to supply. However, it should be noted that the use of cocoa in chocolate confectionary is much more important than its use as a beverage.



CHART 4

PRICES OF BEVERAGES, 1980-86

(In U.S. dollars, indices: 1980 = 100)

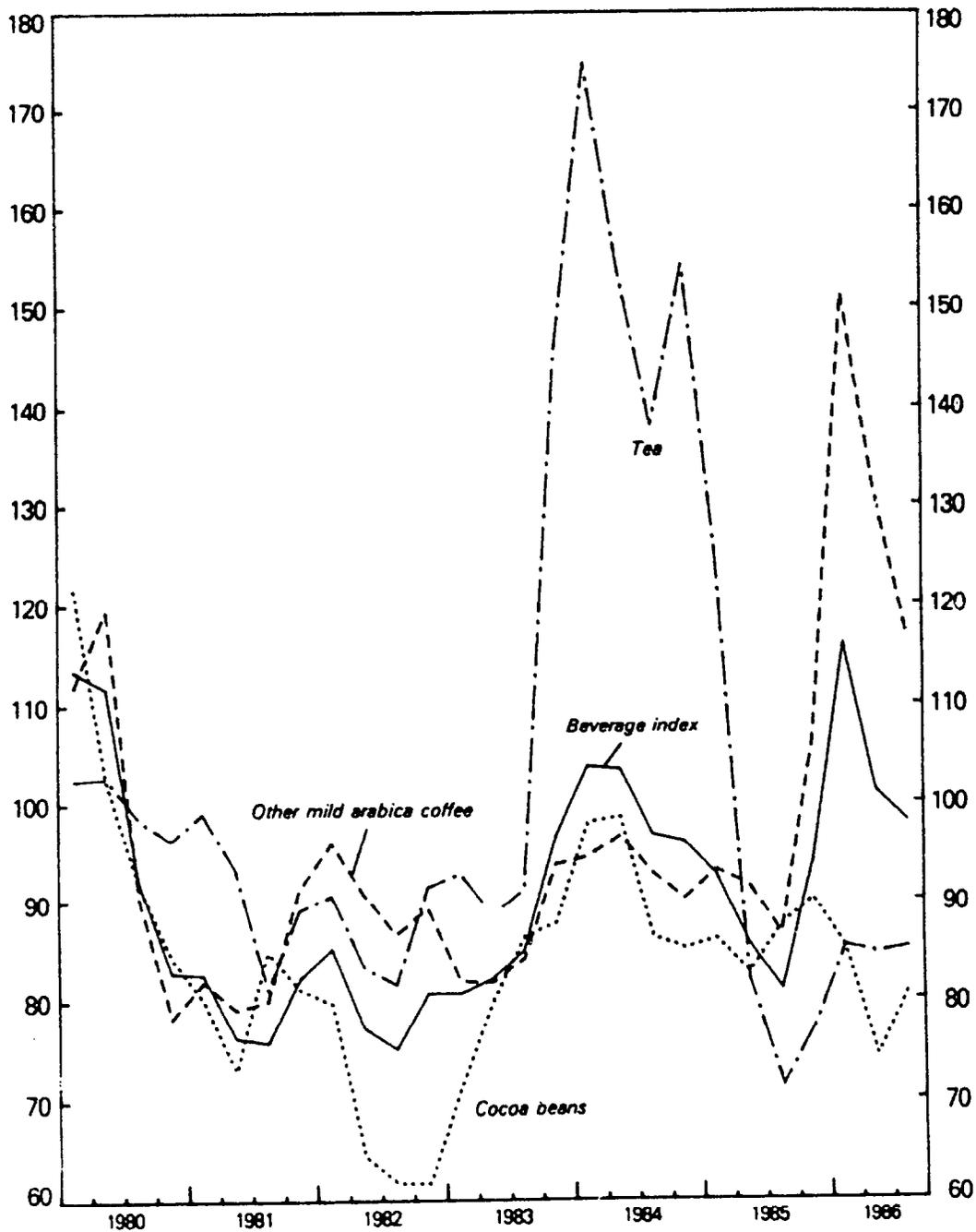




Table III.1. Prices of Beverages, 1960-86

(In U.S. dollars)

	Coffee			Tea ^{3/} (a kg)	Cocoa Beans ^{4/} (a pound)
	Other milds ^{1/} (a pound)	Robusta ^{2/}	Average		
1960-69	0.41	0.32	0.36	1.26	0.26
1970-79	1.06	0.96	1.01	1.56	0.83
1980-86	1.49	1.28	1.38	2.26	0.99
1970	0.52	0.41	0.47	1.09	0.31
1971	0.45	0.42	0.44	1.05	0.24
1972	0.50	0.45	0.48	1.05	0.29
1973	0.62	0.50	0.56	1.06	0.51
1974	0.66	0.59	0.62	1.40	0.71
1975	0.65	0.61	0.63	1.38	0.57
1976	1.43	1.28	1.35	1.54	0.93
1977	2.35	2.24	2.29	2.69	1.72
1978	1.63	1.47	1.55	2.19	1.54
1979	1.74	1.65	1.70	2.16	1.49
1980	1.54	1.47	1.51	2.23	1.18
1981	1.28	1.03	1.16	2.02	0.94
1982	1.40	1.11	1.25	1.93	0.79
1983	1.32	1.2	1.28	2.32	0.96
1984	1.44	1.38	1.41	3.46	1.09
1985	1.46	1.21	1.33	1.98	1.02
1986 ^{5/}	1.99	1.50	1.75	1.91	0.95
1984 I	1.46	1.37	1.41	3.89	1.16
II	1.49	1.43	1.46	3.42	1.16
III	1.43	1.40	1.42	3.07	1.02
IV	1.39	1.33	1.36	3.44	1.01
1985 I	1.44	1.26	1.35	2.79	1.02
II	1.41	1.22	1.31	1.83	0.98
III	1.33	1.06	1.20	1.59	1.03
IV	1.64	1.31	1.48	1.72	1.06
1986 I	2.33	1.68	2.01	1.90	1.01
II	2.03	1.42	1.72	1.89	0.88
III	1.80	1.42	1.61	1.90	0.95

Source: Commodities Division, IMF Research Department.

^{1/} Central American and Mexican origin, average of prices ex-dock New York and ex-dock Bremen/Hamburg.

^{2/} African origin, average of prices of ex-dock New York and ex-dock Le Havre/Marseilles.

^{3/} Any origin, average London auction prices.

^{4/} International Cocoa Council Organization daily prices, averages of three nearest trading months on New York Cocoa Exchange and London Cocoa Terminal Market.

^{5/} Includes projections for the final quarter of the year.

of 1986 averaged two thirds above those in the third quarter of 1985, that is, in the period immediately prior to the price surge. A sharp fall in coffee prices occurred during the second quarter in 1986, but this was partly reversed by an increase in September.

Coffee prices have risen sharply in a similar manner on numerous occasions in the past, usually in response to frost damage to Brazilian production. In this instance, however, the cause was drought damage to Brazilian production. A prolonged period of dry weather in 1985 in the major coffee producing states of Parana, Sao Paulo and Minas Gerais seriously disrupted and greatly reduced the flowering of coffee trees which normally occurs in the period mid-September to early November. The rains which occurred in early November and again in early December were insufficient to reverse the damage caused to the 1986 crop. The 1986 crop (April 1986-March 1987) in Brazil is now estimated at about 11 million bags of 60 kilograms (Table III.2) in comparison with the 26-28 million bags which might have been expected with normal weather on an off-year in the two-year Brazilian production cycle.

As a result of the increases in market prices, the export quotas established by the International Coffee Organization (ICO) in accordance with the provisions of the 1983 International Coffee Agreement were first increased, and then suspended. The International Coffee Council at its meeting in September 1985 set the ICO "global quota," which is the total of authorized exports by exporting member countries to importing member countries, for the 1985/86 coffee year (October 1985-September 1986) at 58 million bags. This global quota was roughly equal to the final quota for the preceding coffee year, 1984/85, the quota after the three reductions from the initial global quota established in September 1984 for that coffee year. The quota reductions in 1984/85 occurred on account of low market prices.

In early October 1985 at the beginning of the 1985/86 coffee year, the ICO composite indicator price, which is the average of the market prices for "other milds" and for "robusta" coffee, was 120 U.S. cents a pound. If the indicator price had stayed at this level, a quota reduction of one million bags would automatically have been triggered in accordance with the Council's decision. However, on account of the price surge which began mid-month, by the beginning of November the daily price had passed the upper limit of the price range. On November 19, the 15-day moving average of daily prices also exceeded 140 cents and in accordance with the Council's decision, there was an automatic increase of 1 million bags in the global export quota. Rising market prices led to further increases in December in accordance with the Council's quota decision and the provisions of the 1983 Agreement: one million bags on December 11 and three million bags on December 12. The persistence of high prices led to the automatic suspension of export quotas, in accordance with the provisions of the 1983 Agreement, on February 18, 1986.

Table III.2. Coffee: Commodity Balance for Brazil, Estimates and Projections by Quarter, 1986-89

(In millions of 60-kilogram bags)

	1986				1987			
	Jan.- March	April- June	July- Sept.	Oct.- Dec.	Jan.- March	April- June	July- Sept.	Oct.- Dec.
Beginning stocks	17.9	16.4	13.2	13.6	12.5	7.7	3.4	8.6
Production ^{1/}	2.4	0.7	4.8	4.6	0.9	1.5	11.0	10.5
Domestic consumption	0.7	1.8	1.8	1.7	1.7	1.8	1.8	1.7
Exports	3.2	2.1	2.6	4.0	4.0	4.0	4.0	4.5
Closing stocks	16.4	13.2	13.6	12.5	7.7	3.4	8.6	12.9

	1988				1989			
	Jan.- March	April- June	July- Sept.	Oct.- Dec.	Jan.- March	April- June	July- Sept.	Oct.- Dec.
Beginning stocks	12.9	8.7	4.0	9.6	14.6	10.5	5.6	13.2
Production ^{1/}	2.0	1.6	11.9	11.3	2.2	2.0	14.5	13.9
Domestic consumption	1.7	1.8	1.8	1.8	1.8	1.9	1.9	1.8
Exports	4.5	4.5	4.5	4.5	4.5	5.0	5.0	5.0
Closing stocks	8.7	4.0	9.6	14.6	10.5	5.6	13.2	20.3

Source: Commodities Division, IMF Research Department, on assumption of no major damage in years 1987-89 due to frost or drought.

^{1/} The quarterly distribution of crop year production is as reported by ICO: 6 percent April-June, 44 percent July-September, 42 percent October-December, and 8 percent January-March.

In the latter part of March 1986 market prices began to weaken. Although prices stabilized in April, in May and June they fell further, despite the approach of the Brazilian frost season. In June, the ICO indicator price averaged 150 cents per pound, that is, about 30 percent above the level of the third quarter of 1985. The reduction from March through June 1986 was in response to the large volume of exports of coffee as a result of the increasing and eventual removal of quotas in the first half of the coffee year, and to the expectation that the Brazilian crop would recover to about 25 million bags in 1987. Prices then stabilized until late August when an increase began in response to a reduction in the estimate of the Brazilian 1986 crop, fears concerning the effect of relatively dry weather on Brazil's 1987 crop and reports that Brazil was importing robusta coffee to help supply the domestic market. The ICO indicator price averaged 187 cents per pound in September 1986.

Compared with a share in world coffee exports of over 75 percent in the first quarter of this century, and over 50 percent in the second quarter, Brazil's share in the 1980s has been little more than 25 percent. In addition, in contrast to the situation in the 1960s when Brazil's coffee stocks equalled more than one year's world coffee consumption, Brazil no longer holds most of the world's stocks of coffee. Nevertheless, as these developments during the 1985/86 coffee year indicate, Brazil continues to occupy the pivotal position in the world coffee market. Indeed, the fact that Brazil's stocks have been comparatively low in the 1980s appears to have increased rather than to have reduced the vulnerability of the world market to variations in Brazil's production.

The 1985 drought has reduced Brazil's production in 1986 to below half its normal level and stock levels in Brazil are likely to remain relatively low until 1989. Stocks are projected to fall to little more than 3 million bags at end-June 1987 and to rise to only 4 million bags at end-June 1988. These projections are made on the assumption of a gradual increase in exports from about 12 million bags in 1986 to nearly 20 million bags in 1989. The analysis shows the likely delayed impact of the drought damage on production, quantities exported, and stocks, and indicates that international coffee prices will be particularly vulnerable to any frost damage in Brazil through the 1988 frost season, unless production in either 1986/87 or 1987/88 is considerably higher than presently forecast.

Data presented in Table III.3 relate developments in Brazil to the broader context of the world coffee demand and supply situation. The data presented are on the basis of the October/September international coffee year, and as a result, the low Brazilian production for the 1986/87 Brazilian coffee year measured on an April/March year, are spread between the 1985/86 and 1986/87 international coffee years. While the high prices of the late 1970s encouraged considerable expansion of productive capacity in a number of countries, for which the best example is Indonesia, world production recorded for years 1983/84 through 1985/86, and that projected for 1986/87, has fallen below that for years 1980/81 through

Table 11.1. Coffee: World Commodity Balance, 1980/81-1986/87

(In millions of 60 kilogram bags)

	October/September Years						
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87 ^{1/}
Production	90.5	91.2	90.5	86.3	88.0	82.1	81.5
Brazil	25.9	26.6	23.4	24.7	25.9	20.5	18.0
Colombia	13.1	14.5	12.3	13.0	11.0	11.5	11.5
Other countries ^{2/}	51.5	50.1	54.8	48.6	51.1	50.1	52.0
Consumption	82.2	84.6	86.1	85.2	85.9	85.0	84.6
Exporting countries	19.0	19.6	19.8	19.0	19.5	19.5	19.6
Brazil	(7.7)	(7.8)	(7.6)	(7.2)	(7.0)	(7.0)	(7.0)
Colombia	(1.5)	(1.8)	(1.8)	(1.6)	(1.8)	(1.8)	(1.9)
Other countries ^{2/}	(9.8)	(10.0)	(10.4)	(10.2)	(10.7)	(10.7)	(10.7)
Importing countries	63.2	65.0	66.3	66.2	66.4	65.5	65.0
ICO members ^{3/}	(55.4)	(56.0)	(56.8)	(56.2)	(55.9)	(57.0)	(56.5)
Nonmembers ^{4/}	(7.8)	(9.0)	(9.5)	(10.0)	(10.5)	(8.5)	(8.5)
Losses ^{5/}	1.2	1.3	1.4	1.4	1.4	1.4	1.3
Closing stocks	56.7	62.0	65.0	64.7	65.4	61.1	56.7
Exporting countries	41.6	49.4	54.2	51.3	50.8	45.8	41.7
Brazil	(15.1)	(17.1)	(15.4)	(12.8)	(13.4)	(13.6)	(8.6)
Colombia	(6.3)	(10.0)	(11.3)	(12.7)	(12.3)	(10.8)	(9.4)
Other countries	(20.2)	(22.3)	(27.5)	(25.8)	(25.1)	(21.4)	(23.7)
Other stocks	15.1	12.6	10.8	13.4	14.6	15.3	15.0
Inventories in							
importing countries	(6.1)	(5.0)	(4.4)	(5.0)	(5.4)	(7.2)	(6.4)
stocks in free ports	(2.2)	(2.0)	(1.9)	(2.6)	(2.8)	(3.2)	(2.8)
at float, etc. ^{6/}	(6.8)	(5.6)	(4.5)	(5.8)	(6.4)	(4.9)	(5.8)

Source: Based on statistics of the International Coffee Organization (ICO).

^{1/} Projections of Commodities Division, IMF Research Department.

^{2/} Includes estimates for producing countries which are not members of ICO, as follows: production, 0.2 million bags a year; consumption 0.1 million bags a year; and exports, 0.1 million bags a year.

^{3/} Net imports adjusted for changes in visible inventories.

^{4/} Estimates based on data on exports to nonmembers and data on consumption by members.

^{5/} Calculated as 1 percent of supply, that is, beginning stocks plus production.

^{6/} Based on September exports and partly residual.

1982/83. Contributing to the reduction in world production in the recent years, in addition to the 1985 Brazilian drought, were the 1981 frost in Brazil which reduced the 1982 Brazilian crop (in this case distributed between the 1981/82 and 1982/83 international crop years), and the severe droughts in Cote d'Ivoire in 1982 and 1983 which greatly reduced the 1983/84 crop in that country. Furthermore, the lower level of market prices in the early 1980s as compared with the late 1970s reduced incentives for the maintenance of coffee farms. In the same way, the impetus given to coffee production by the recent higher prices may serve to improve crop husbandry and encourage new planting and thus delay somewhat the next upward phase of the coffee cycle. The shorter the duration of the period of higher prices, the less important this factor is likely to be.

The much increased level of supplies of coffee in the early 1980s as compared with the late 1970s and the related lower levels of prices, has been associated with higher levels of world consumption. The upward adjustment in world consumption, however, appears to have occurred by 1982/83 when consumption exceeded 86 million bags, a level not since surpassed. Consumption increased particularly in importing countries which were not members of the ICO. In these countries prices fell by more than 50 percent in the early 1980s; consumption, as measured on the basis of exports of exporting countries to these markets increased by over 15 percent per annum in 1981/82 and by about 5 percent in the next three years. However, in 1985/86 consumption in these markets is estimated to have fallen by more than 20 percent as prices nearly doubled at a time when some of these countries are facing foreign exchange difficulties as a result of the sharp fall in prices of petroleum and other energy commodities. For ICO importing member countries an increase in consumption is shown in 1985/86 and a decrease in 1986/87, but these changes largely result from the use of net imports adjusted for changes in visible inventories as a basis for the measure of consumption. The changes reflect to a considerable degree a build-up of stocks by roasters, wholesalers, retailers and consumers in 1985/86 and the expected decrease in these stocks in 1986/87. There has been no apparent trend in the consumption of coffee in exporting countries in the 1980s as decreases in Brazil have been offset by increases elsewhere.

With world production exceeding world consumption through 1984/85, closing world stocks increased each year in the 1980s through 1984/85, however, stocks in exporting countries, around three quarters of the total, reached their maximum in 1982/83 and have subsequently declined. In addition, there has been considerable uncertainty as to the quality of stocks held in producing countries other than Brazil and Colombia. It has been claimed that these stocks to a considerable degree represent merely accumulated statistical surpluses. In this regard, it should be noted that the international coffee year (October/September) does not match the appropriate production year in many countries so that the closing stocks estimate can give a very misleading impression of the level of available stocks. This is evident in the case of Brazil, as is shown by the calculations in Table III.2 which illustrates that the



seasonal low for Brazilian stocks occurs at end-June. In this regard, the ICO uses a concept of net stocks which excludes certain working stocks in order to take account of this seasonality situation; in the mid-1980s the ICO data on net stocks were about 18 million bags lower than the data on gross stocks. Stocks in importing countries fell to low levels in 1982/83. The subsequent increase reflects a variety of factors including the desire of importers and roasters to give themselves greater cover in the face of supply uncertainty. This has particularly been the case during the 1985/86 coffee year.

The volume of exports increased by about 15 percent from the early to the mid-1980s (Table III.4). In 1985, partly as a result of larger shipments in the final quarter, a 3 1/2 percent increase was recorded. A decrease of nearly 6 percent is projected for 1986 as a consequence of a buildup of stocks in importing countries and the higher prices, particularly in nonquota markets, which have served to check consumption. Unit values in 1986 for exports to quota markets are estimated to be one third higher than in 1985 and unit values for exports to nonquota markets to be two-thirds higher. Export earnings in 1986, therefore, are estimated to increase by nearly 30 percent.

3. Tea

A large increase in production in 1985 brought to an end the period of high tea prices which prevailed from the final quarter of 1983 to the first quarter of 1985. Prices fell from an average of \$3.15 per kilogram in January 1985 to \$1.65 in May 1985 and have remained close to that level through the first three quarters of 1986. 1/

Over the ten years prior to 1983 consumption of tea tended to increase at a rate slightly in excess of production. This situation meant that inventories were relatively low when fears arose of sharply reduced supplies on account of the 1983 drought in India and Sri Lanka. The market reaction to these fears was accentuated by the partial export ban that India imposed on exports of CTC (crush, tear, curl) tea at the end of 1983 in order to protect the supply of tea for the domestic market. While Sri Lanka's production in 1983 did fall by 4 percent from the relatively low level of the previous year, production in India actually increased by 5 percent (Table III.5). Production losses in southern India were more than offset by production gains in northern India. World production in 1983 turned out to be 5 percent above that of 1982. However, a relatively low crop in Kenya and continued uncertainty surrounding export supplies from India held world market prices at a high level through 1984 despite a further 6 1/2 percent increase in world production in that year. In 1985 the replenishment of stocks, favorable weather in major producing areas and incentives given to production by the high tea prices ended the tea price boom. Production in Kenya rose by 27 percent in 1985 and there were large increases in many of the small producing countries which produce tea mainly for export.

1/ Price quotations refer to the London auction price, average all teas.

Table III.4. Coffee: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984	1985	1986 ^{1/}
Market prices							
ICO daily composite indicator (in U.S. dollars a pound)	1.51	1.16	1.25	1.28	1.41	1.33	1.75
Other milds ^{2/}	1.54	1.28	1.40	1.32	1.44	1.46	1.99
Robusta ^{3/}	1.47	1.03	1.11	1.24	1.38	1.21	1.50
Exports							
Volumes (in millions of 60-kg bags)	<u>60.0</u>	<u>60.7</u>	<u>64.7</u>	<u>66.3</u>	<u>68.7</u>	<u>71.1</u>	<u>67.0</u>
Developing countries	59.0	59.7	63.7	65.5	68.1	70.6	66.5
To ICO members ^{4/}	(53.2)	(52.1)	(54.6)	(55.5)	(58.3)	(60.6)	(59.0)
To nonmembers of ICO	(5.8)	(7.6)	(9.1)	(10.0)	(9.8)	(10.0)	(7.5)
Non-Fund members ^{5/}	1.0	1.0	1.0	0.8	0.6	0.5	0.5
To ICO members	(0.3)	(0.4)	(0.6)	(0.3)	(0.3)	(0.3)	(0.3)
To nonmembers of ICO	(0.7)	(0.6)	(0.4)	(0.5)	(0.3)	(0.2)	(0.2)
Unit values (in U.S. dollars a pound)	<u>1.47</u>	<u>1.01</u>	<u>1.05</u>	<u>1.05</u>	<u>1.17</u>	<u>1.15</u>	<u>1.59</u>
To ICO countries	1.47	1.01	1.09	1.12	1.24	1.20	1.60
To nonmembers of ICO ^{6/}	1.47	0.97	0.82	0.70	0.76	0.88	1.47
Earnings (in billions of U.S. dollars)	<u>11.67</u>	<u>8.07</u>	<u>8.99</u>	<u>9.24</u>	<u>10.63</u>	<u>10.85</u>	<u>14.05</u>
Developing countries	11.47	7.94	8.86	9.15	10.55	10.78	13.95
To ICO members ^{4/}	(10.34)	(6.96)	(7.87)	(8.22)	(9.56)	(9.62)	(12.49)
To nonmembers of ICO	(1.13)	(0.98)	(0.99)	(0.93)	(0.99)	(1.16)	(1.46)
Non-Fund member ^{5/}	0.20	0.13	0.13	0.09	0.08	0.07	0.10
To ICO members	(0.06)	(0.05)	(0.09)	(0.04)	(0.05)	(0.05)	(0.06)
To nonmembers of ICO	(0.14)	(0.08)	(0.04)	(0.05)	(0.03)	(0.02)	(0.04)

Sources: Commodities Division, IMF Research Department for prices. Export data are based on statistics of the International Coffee Organization (ICO).

- ^{1/} Includes projections for the final quarter of the year.
- ^{2/} Ex-dock New York and Bremen/Hamburg.
- ^{3/} Ex-dock New York and Le Havre/Marseilles.
- ^{4/} Includes exports of an estimated 0.1 million bags a year from nonmembers of ICO.
- ^{5/} Angola, Cuba, and other countries that are not members of the Fund.
- ^{6/} Export quotas were in effect from October 1980 to February 1986. Unit values of exports to members and nonmembers are assumed equal in the absence of quotas.

Table III.5. Tea: World Commodity Balance, 1980-86

(In thousands of tons)

	Calendar Years						
	1980	1981	1982	1983	1984	1985	1986 ^{1/}
Production	1,836	1,871	1,932	2,037	2,170	2,300	2,275
Green tea	390	424	481	488	489	520	535
China	(233)	(269)	(328)	(333)	(341)	(365)	(375)
Other countries	(157)	(155)	(153)	(155)	(148)	(155)	(160)
Black tea	1,446	1,447	1,451	1,549	1,681	1,780	1,740
India	(562)	(554)	(553)	(583)	(645)	(657)	(640)
Kenya	(90)	(91)	(96)	(120)	(116)	(147)	(135)
Sri Lanka	(191)	(210)	(187)	(179)	(208)	(214)	(205)
Other countries	(603)	(592)	(615)	(667)	(712)	(762)	(760)
Consumption (black and green)	1,834	1,922	1,933	2,019	2,128	2,250	2,325
Tea-producing countries ^{2/}	1,072	1,163	1,197	1,260	1,321	1,450	1,525
China	(196)	(251)	(291)	(275)	(283)	(310)	(325)
India	(346)	(360)	(372)	(386)	(400)	(440)	(460)
Japan	(116)	(114)	(108)	(113)	(105)	(120)	(130)
U.S.S.R.	(186)	(208)	(200)	(201)	(215)	(230)	(240)
Other countries	(228)	(230)	(226)	(285)	(318)	(350)	(370)
Tea-importing countries ^{3/}	762	759	736	759	807	800	800
Asian countries	(196)	(197)	(188)	(206)	(219)	(240)	(230)
United Kingdom	(183)	(181)	(174)	(168)	(177)	(160)	(170)
Other countries	(383)	(381)	(374)	(385)	(411)	(400)	(400)
Implied change in total Stocks	<u>2</u>	<u>-51</u>	<u>-1</u>	<u>18</u>	<u>42</u>	<u>50</u>	<u>-50</u>
Closing stocks in the United Kingdom	<u>91</u>	<u>58</u>	<u>67</u>	<u>55</u>	<u>62</u>	<u>56</u>	<u>60</u>

Sources: Estimates of Commodities Division, IMF Research Department, derived from statistics of the International Tea Committee and the UN Food and Agriculture Organization.

^{1/} Estimated by Commodities Division, IMF Research Department.

^{2/} For India, adjustments have been made for stock changes; for other countries domestic consumption is derived as production less exports plus imports.

^{3/} Net imports adjusted for stock changes where possible. Covers only countries which do not produce tea on a large scale.

Because the production increase in both India and Sri Lanka was only 2 percent, however, the increase in world production was limited to 6 percent.

Tea consumption has been increasingly rapidly in tea-producing countries in Asia and in Asian tea-importing countries in response to increases in consumer income in these countries. In the United Kingdom, still the largest import market, the consumption trend has been downward. In most other markets, consumption has been relatively stagnant. These trends are illustrated clearly in provisional data for 1985 which show a 10 percent increase in consumption both in tea-producing countries and in the Asian tea-importing countries, but a 5 percent decrease in non-Asian tea-importing countries. These data, however, may overstate the decrease in the non-Asian importing countries as some of the decrease shown in the data reflect reductions in consumer and retailer stocks which were built to higher-than-usual levels in 1984 on account of the price uncertainty at that time.

A decrease in world production is forecast for 1986 because of the disappearance of the incentives to production given by the high market prices that fueled the production expansion of 1984 and 1985 and because of adverse weather in both northern India and Kenya. A prolonged drought in northern India resulted in production in the first four months being 27 percent below the 1985 level. A very low crop intake has been reported in the eastern part of the tea-growing region of Kenya. With reference to consumption, there is doubt as to whether rates of growth in imports will be maintained in some of the tea-importing countries. In the Middle East, where large increases in consumption have been recorded in recent years, changed economic conditions as a result of the sharp fall in petroleum prices in 1986, together with an intensification of regional hostilities, may reduce consumer incomes, numbers of migrant workers and foreign exchange availability. These factors may affect other tea-importing countries in Asia through a reduction in remittances from migrant workers. World consumption growth is expected to slow to 3 percent in 1986 from the 4-6 percent of the previous three years. Little change is expected in market prices for the remainder of the year.

The sharp 1983-84 price rise provided tea-exporting countries with record earnings of \$2.5 billion in 1984 (Table III.6). However, this windfall proved to be short-lived as the price fall in 1985 resulted in earnings in that year of less than \$1.6 billion. Earnings are projected to fall further in 1986 to around \$1.4 billion.

3. Cocoa

The price of cocoa beans during the 1984/85 and 1985/86 international cocoa years (October/September) has been relatively stable, particularly when compared with the volatile and much higher prices which prevailed in the late 1970s. Monthly averages of the International Cocoa Organization (ICCO) daily price, which is an average of futures market prices on the

Table III.6. Tea: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984	1985	1986 ^{1/}
Market prices (in U.S. dollars a kilogram ^{2/})	<u>2.23</u>	<u>2.02</u>	<u>1.93</u>	<u>2.32</u>	<u>3.46</u>	<u>1.98</u>	<u>1.91</u>
Exports							
Volumes (in thousands of tons)	<u>858</u>	<u>864</u>	<u>838</u>	<u>875</u>	<u>953</u>	<u>1,000</u>	<u>975</u>
Developing countries	<u>858</u>	<u>864</u>	<u>838</u>	<u>875</u>	<u>953</u>	<u>1,000</u>	<u>975</u>
India	(224)	(246)	(190)	(209)	(217)	(230)	(220)
Kenya	(85)	(84)	(91)	(101)	(91)	(126)	(115)
Sri Lanka	(185)	(183)	(181)	(158)	(204)	(198)	(190)
Other countries	(364)	(351)	(376)	(407)	(441)	(446)	(450)
Unit values (in U.S. dollars a kilogram)	<u>1.93</u>	<u>1.83</u>	<u>1.66</u>	<u>1.91</u>	<u>2.62</u>	<u>1.59</u>	<u>1.45</u>
Earnings (in billions of U.S. dollars)	<u>1.66</u>	<u>1.58</u>	<u>1.39</u>	<u>1.67</u>	<u>2.50</u>	<u>1.59</u>	<u>1.41</u>
Developing countries	<u>1.66</u>	<u>1.58</u>	<u>1.39</u>	<u>1.67</u>	<u>2.50</u>	<u>1.59</u>	<u>1.41</u>

Sources: Commodities Division, IMF Research Department for prices. Export data are estimates of Commodities Division, IMF Research Department, derived from statistics of the International Tea Committee and the UN Food and Agriculture Organization.

^{1/} Includes projections for the final quarter of the year.

^{2/} London auction price, average all teas.

London Cocoa Terminal Market and the New York Cocoa Exchange, remained between 95 and 106 U.S. cents per pound in 1984/85. During 1985/86 the ICCO price rose to an average of 108 cents in December 1985 before falling back gradually to nearly 86 cents in May-June 1986. The price rose somewhat over the period July to September 1986 with the successful negotiation of a new international cocoa agreement and with concern as to the effect of dry weather on the 1986 crop in West Africa. The price in September averaged 100 cents per pound.

Over 85 percent of the world's production of cocoa is exported by the producing countries, about three quarters in the form of beans and about one quarter in the form of products. ^{1/} World stocks at the end of the crop year typically represent three to five months world consumption (grindings). Stocks are held largely in the form of beans and largely in importing countries.

Cocoa consumption has increased with rising per capita incomes, but the income elasticities tend to be low, between 0.3 and 0.4, except for low consumption markets and new markets, where much higher values can be obtained, at least initially. Throughout much of this century, consumption of cocoa has largely been confined to Europe and North America, apart from a few cocoa producing countries, most notably Colombia where consumption has been high. Throughout the 1960s and in the early 1970s the U.S.S.R. and Eastern European countries provided rapidly growing markets and in the early 1960s Japan also provided a growing market. As a consequence, consumption has become geographically less concentrated than was the case earlier in the century.

Despite the evident competition of chocolate with other confectionery and snack foods in many countries and the observed behavior of manufacturers in raising the chocolate content in their products when cocoa prices are low and reducing it when prices are high, econometric studies have consistently yielded very low estimates of price elasticity of world demand. These estimates have been about -0.15 to -0.20 for the short run, when world consumption is related to world market prices of up to one year earlier, and about -0.30 when various longer lagged responses in world consumption are taken into consideration.

Because of the situation of relative stability of demand, changes in supply are particularly important in explaining price movements for cocoa. Three types of supply changes can be differentiated. First, there are short-term changes in response to weather, particularly the amount and distribution of rainfall in the main producing regions, and in response to various factors causing short-term changes in the use of inputs, such

^{1/} Cocoa products are obtained by "grinding" cocoa beans. They consist of cocoa butter, cocoa powder and cake, and cocoa paste, all of which are derived entirely from cocoa beans (apart from small amounts of other vegetable fats which some countries permit to be included in cocoa butter). Roughly 80 percent of a cocoa bean is used to make these products, the remaining 20 percent is waste or a low-valued by-product.

as insecticides, fungicides, and fertilizers, and in the thoroughness of harvesting. The annual change in world production from 1899/1900 to 1984/85 averaged 9.0 percent, and much of this was related to these short-term factors.

Second, there are longer-run responses to periods of relatively high prices and to periods of relatively low prices. This type of response is illustrated by the production increase in West Africa in the late 1950s and the early 1960s following extensive planting of cocoa trees at the time of high prices of the early and mid 1950s. These high prices in turn were the result of a virtual suspension of new planting at the time of the depressed prices in the 1930s and of restricted marketing opportunities in the 1940s. This type of response is the cause of the cyclical pattern of prices with high and low prices alternating roughly each decade: relatively high prices in the decade of 1950s, relatively low prices in the 1960s, relatively high prices in the 1970s, and relatively low prices in the 1980s.

Third, there are longer-run shifts in production in response to technological change, developments of infrastructure, and other factors. This structural change is best illustrated by the widespread adoption of cocoa as a major crop in West Africa in the early decades of the century. A somewhat similar development has been occurring in recent years in Malaysia and seems likely to extend to Indonesia. To a considerable degree the production expansion in Brazil and the Cote d'Ivoire in the late 1970s was of a structural nature, although it was facilitated by the price movements at the time.

Underlying the developments in the cocoa market in the 1980s has been continuing growth in productive capacity, as trees planted during the period of high prices in the second half of the 1970s, especially in Cote d'Ivoire, Brazil and Malaysia, reach maturity. Three successive record crops in 1979/80, 1980/81 and 1981/82, well above the level of world consumption, brought end-September 1982 stocks to just under 50 percent of annual consumption (Table III.7). Average prices fell by 21 percent in 1980, 20 percent in 1981 and 16 percent in 1982. However, in 1982-83 two successive years of very low rainfall in West Africa cut world production in both the 1982/83 and 1983/84 cocoa years by 12 percent below its level in 1981/82. As a result, consumption exceeded production by 7 percent in 1982/83 and by 12 percent in 1983/84. End-September 1984 stocks fell to a little more than one quarter of world consumption. Prices in 1983 increased on average by 22 percent and in 1984 increased a further 13 percent.

The 1984/85 cocoa crop set a new record high at 1.95 million tons, an increase of 28 percent over the 1983/84 crop. The production of the largest producing country, Cote d'Ivoire, was 570 thousand tons, 29 percent of world production and more than one third greater than the drought-reduced 1983/84 crop. As world production exceeded world consumption by a considerable margin, stocks were replenished. In spite of this, the price decline in 1985 was limited to 6 percent because of early expectations

Table III.7. Cocoa: World Commodity Balance
for Cocoa Beans, 1980/81-1986/87

(In thousands of tons)

	October/September Years						
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87 ^{1/}
Production ^{2/}	<u>1,700</u>	<u>1,720</u>	<u>1,520</u>	<u>1,520</u>	<u>1,950</u>	<u>1,920</u>	<u>1,940</u>
Brazil	350	310	330	300	410	380	410
Cameroon	120	120	110	110	120	120	120
Cote d'Ivoire	420	460	360	420	570	560	540
Ecuador	90	90	40	40	120	100	90
Ghana	260	230	180	160	180	220	220
Malaysia	50	60	70	90	100	120	130
Nigeria	160	180	160	120	150	110	120
Other countries	250	270	270	280	300	310	310
Grinding (consumption)	<u>1,570</u>	<u>1,580</u>	<u>1,630</u>	<u>1,700</u>	<u>1,840</u>	<u>1,850</u>	<u>1,880</u>
Cocoa bean producing countries	520	470	490	510	590	600	610
EC	540	570	570	610	640	640	640
United States	190	200	190	210	200	200	200
U.S.S.R.	110	130	150	140	170	160	170
Other countries	210	210	230	230	240	250	260
End of year stocks	<u>660</u>	<u>780</u>	<u>660</u>	<u>460</u>	<u>550</u>	<u>600</u>	<u>640</u>

Sources: International Cocoa Organization (ICCO), Quarterly Bulletin of Cocoa Statistics (London), various issues.

^{1/} Projected by Commodities Division, IMF Research Department.

^{2/} Gross production. For comparison with grindings (consumption), deduct approximately 1 percent.

of a lower 1985/86 crop on account of less favorable growing conditions in Brazil, Cote d'Ivoire and Nigeria. However, production in 1985/86 in Cote d'Ivoire nearly matched the levels of the previous year, the reduction in Brazil was less than expected and a large increase in Ghana almost offset the large decrease in Nigeria. As a result, world production in 1985/86 came near the record 1984/85 level. These changes in the assessment of 1985/86 crop have contributed to the weakening of cocoa prices early in 1986.

Also influencing cocoa prices was the conclusion in July 1986 in Geneva of a new International Cocoa Agreement after a lengthy period of negotiations beginning in November 1984. During the period of negotiations market prices strengthened whenever it has appeared that the negotiations might result in a new Agreement; they weakened whenever an agreement has seemed unlikely, particularly because of the threat of liquidation of the buffer stock.

The 1986 Agreement, like the 1980 Agreement, provides for a buffer stock of 250 thousand tons of cocoa. Under the 1980 Agreement, 100 thousand tons of cocoa beans were purchased by the buffer stock manager during the period September 1981-March 1982 (valued at \$235 million) in defense of the minimum price specified in the Agreement. The purchases were discontinued when the funds for the buffer stock were depleted and the cocoa beans purchased have been held in storage, mostly in Europe, under the control of ICCO, with rotation as necessary, since that time. Under the new Agreement, the buffer stock manager will have from the outset sufficient funds to purchase an additional 100 thousand tons of cocoa, which would raise the buffer stock to 80 percent of its capacity. The price objectives of the new agreement are expressed in terms of SDRs with the initial lower intervention price, the price which triggers mandatory purchases by the buffer stock manager, set at SDR 1,600 per ton and the initial upper intervention price, the price triggering mandatory sales from the buffer stock, set at SDR 2,270 per ton. These prices may be compared with the September 1986 price of SDR 1,821 per ton (100 U.S. cents per pound). The new Agreement provides greater flexibility than its predecessor regarding purchases and sales by the buffer stock manager including price zones in which buying and selling is optimal. There are also new provisions which should facilitate the review and revision of trigger prices during the life of the Agreement. Provision is also made in the Agreement for the withholding of up to 120 thousand tons of cocoa by exporting countries should such action be deemed warranted to defend agreed prices.

The 1986 Agreement has been signed by Cote d'Ivoire, the leading exporter of cocoa but not a member of the 1986 Agreement, and by all other major cocoa-exporting countries, apart from Malaysia. The United States, which has not signed any of the previous cocoa agreements, has indicated that it also will not join this Agreement. However, all of the countries of the EC as well as the U.S.S.R. and a number of other European countries have already formally signed the Agreement. Because of the short period between the conclusion of the new Agreement in July

1986 and the expiration of the 1980 Agreement at end-September 1986, cocoa-exporting and cocoa-importing countries had insufficient time to bring the new agreement into operation by the beginning of October 1986. As a result, the International Cocoa Council, at its meetings in September, decided to make use of the transitory provisions of the 1980 Agreement to maintain certain measures established under that Agreement for an interim period lasting until end-January 1987. These measures enable the continued holding of cocoa in the buffer stock and the continuation of the collection of the levy on trade which is the main source of finance for buffer stock operations.

Prices should remain near the September level for the remainder of 1986, resulting in a 7 percent decline for 1986 as a whole from the 1985 average. Export volumes are projected to increase over the levels of 1985 but their effects on export earnings is projected to be outweighed by lower export unit values (Table III.8). Export earnings, therefore, are projected to decline by approximately 4 1/2 percent in 1986.

The increasing trend in world cocoa production is likely to continue in the late 1980s. While there may be some small decrease in production in Cote d'Ivoire in 1986/87 on account of dry weather in 1986, the trend of production remains upward in that country. Production in Cote d'Ivoire in the mid-1980s has been greater than earlier expected because recovery from the 1982 and 1983 drought damage was much more rapid than expected and the extent of new planting in recent years in Cote d'Ivoire greater than earlier realized. Part of the response of production is the result of a favorable producer price for cocoa beans in Cote d'Ivoire in comparison with that for coffee. By contrast, in Brazil, despite the relatively young tree stock as a result of widespread replanting undertaken in the 1970s, it appears that the lower market prices and the decreased production incentives in the form of credit and of subsidies on other inputs has served, and will continue to serve, to check the increase in production. Production in Malaysia continues to increase steadily and rapidly and there are signs of a similar development in Indonesia. New policies which contributed to a 22 percent increase in production in 1984/85 in Ghana, are likely to continue to have an effect on production in that country. However, because of the heavy predominance of old trees, it is expected that the production increases there will be modest. Because of the lower world prices in the 1980s in both nominal and real terms than in the late 1970s, and the relatively old tree stock, most other producing countries will do well to maintain current levels of production in the near future.

In the near future the continuation of the upward trend in world cocoa production plus the existence of 100 thousand tons of cocoa in the buffer stock of the ICCO should contain any sharp upward movement in prices as a result of short-term weather or other supply shocks. The ability of the buffer stock manager of the ICCO to purchase quickly a further 100 thousand tons of cocoa plus the potential use of other support provisions of the new Agreement, in particular the stock

Table III.8. Cocoa: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984	1985 ^{1/}	1986 ^{1/2/}
Market prices of cocoa beans (in U.S. dollars a pound) ^{3/}	<u>1.18</u>	<u>0.94</u>	<u>0.79</u>	<u>0.96</u>	<u>1.09</u>	<u>1.02</u>	<u>0.95</u>
Exports of cocoa beans and products ^{4/}							
Volumes (in thousands of tons)							
Beans	<u>1,030</u>	<u>1,190</u>	<u>1,190</u>	<u>1,100</u>	<u>1,200</u>	<u>1,300</u>	<u>1,320</u>
Products	<u>520</u>	<u>530</u>	<u>530</u>	<u>560</u>	<u>600</u>	<u>630</u>	<u>650</u>
Developing countries	<u>330</u>	<u>320</u>	<u>300</u>	<u>320</u>	<u>330</u>	<u>350</u>	<u>370</u>
Industrial countries	<u>190</u>	<u>210</u>	<u>230</u>	<u>240</u>	<u>270</u>	<u>280</u>	<u>280</u>
Unit values (in U.S. dollars a pound)							
Beans	<u>1.20</u>	<u>0.80</u>	<u>0.71</u>	<u>0.73</u>	<u>0.92</u>	<u>0.85</u>	<u>0.80</u>
Products	<u>1.74</u>	<u>1.31</u>	<u>1.13</u>	<u>1.09</u>	<u>1.34</u>	<u>1.28</u>	<u>1.19</u>
Developing countries	<u>1.53</u>	<u>1.24</u>	<u>0.97</u>	<u>0.97</u>	<u>1.27</u>	<u>1.21</u>	<u>1.10</u>
Industrial countries	<u>2.08</u>	<u>1.42</u>	<u>1.35</u>	<u>1.25</u>	<u>1.43</u>	<u>1.37</u>	<u>1.30</u>
Earnings (in billions of U.S. dollars)							
Beans	<u>2.72</u>	<u>2.09</u>	<u>1.86</u>	<u>1.77</u>	<u>2.43</u>	<u>2.44</u>	<u>2.33</u>
Developing countries	<u>2.72</u>	<u>2.09</u>	<u>1.86</u>	<u>1.77</u>	<u>2.43</u>	<u>2.44</u>	<u>2.33</u>
Products	<u>2.00</u>	<u>1.52</u>	<u>1.31</u>	<u>1.35</u>	<u>1.78</u>	<u>1.78</u>	<u>1.70</u>
Developing countries	<u>1.11</u>	<u>0.86</u>	<u>0.65</u>	<u>0.68</u>	<u>0.93</u>	<u>0.93</u>	<u>0.90</u>
Industrial countries	<u>0.89</u>	<u>0.66</u>	<u>0.66</u>	<u>0.67</u>	<u>0.85</u>	<u>0.85</u>	<u>0.80</u>

Sources: Commodities Division, IMF Research Department for prices. UN Food and Agriculture Organization, FAO Trade Yearbook (Rome), various issues, for exports. For cocoa beans, export data include only exports from cocoa bean producing countries.

^{1/} Data on exports are estimates of Commodities Division, IMF Research Department.

^{2/} Includes projections for the final quarter of the year.

^{3/} Averages of ICCO daily prices.

^{4/} Cocoa products are obtained by grinding cocoa beans. They consist of cocoa butter, cocoa powder and cake and cocoa paste, all of which are derived entirely from cocoa beans (apart from small amounts of other vegetable fats which some countries permit to be included in cocoa butter). Roughly 80 percent of a cocoa bean is used to make these products; the remaining 20 percent is waste or a low-valued by-product.

withholding scheme, combined with an apparent slowing of the rate of increase in world production should help contain any sharp price decline in years of large production due to unusually favorable weather.

IV. Agricultural Raw Materials

The group index of dollar prices of agricultural raw materials remained relatively stable during 1985 and the first three quarters of 1986, at about 12 percent below the level for 1984 (Chart 5). During the mid-1980s consumption demand for this rather heterogeneous group of commodities--non-food agricultural commodities which are used primarily as industrial inputs--appears to have been rather buoyant in comparison with that for other commodity groups. Although the index of consumption of agricultural raw materials has a rather narrow coverage insofar as it does not include hardwood, its movement can be taken at least as indicative of developments for the group as a whole. Substantial increases in this index of consumption were recorded in years 1982 through 1985 (Table IV.1). Contributing to the strength of demand for agricultural raw materials have been (1) the relatively high prices of petroleum until 1986, and hence of petroleum-based products, which compete with agricultural raw materials, (2) a relatively strong demand for imported timber on account of income growth in Japan and the United States, and (3) abundant supplies of most agricultural raw materials which have tended to provide downward pressure on their prices. The downward pressure on prices on account of abundant supplies has been most pronounced in the case of cotton (Chart 5 and Table IV.2).

1. Hardwood

The major changes in the pattern of world production and trade in hardwoods in recent years are (i) the increasing share of tropical hardwoods in total output due to a relative shortage of temperate hardwoods, and (ii) the increasing share of developing countries in processed product exports, reflecting efforts by log-producing countries to conserve their forest resources and to raise export earnings by shifting to higher value-added products. The share of tropical hardwood logs (which are produced entirely in developing countries) in total hardwood log production increased from 62 percent in 1980 to an estimated 65 percent in 1985 (Table IV.3). Over the same period the volume of exports of hardwood logs by developing countries declined by 41 percent while the volume of their exports of sawnwood rose by 9 percent (Table IV.4). Partial data suggests that the recent growth of their plywood and veneer exports may be considerably larger than the growth of sawnwood exports.

No comprehensive price data for tropical hardwoods are available due to the many species traded, so that the price of a major species of hardwood logs in the largest importing country, Japan, is assumed to be representative of log export prices industry-wide. With housing demand curtailed by high interest rates and the recession in industrial countries, the price of Indonesian lauan logs in Japan fell by 30 percent to \$136 per



CHART 5

PRICES OF AGRICULTURAL RAW MATERIALS, 1980-86

(In U.S. dollars, indices, 1980 = 100)

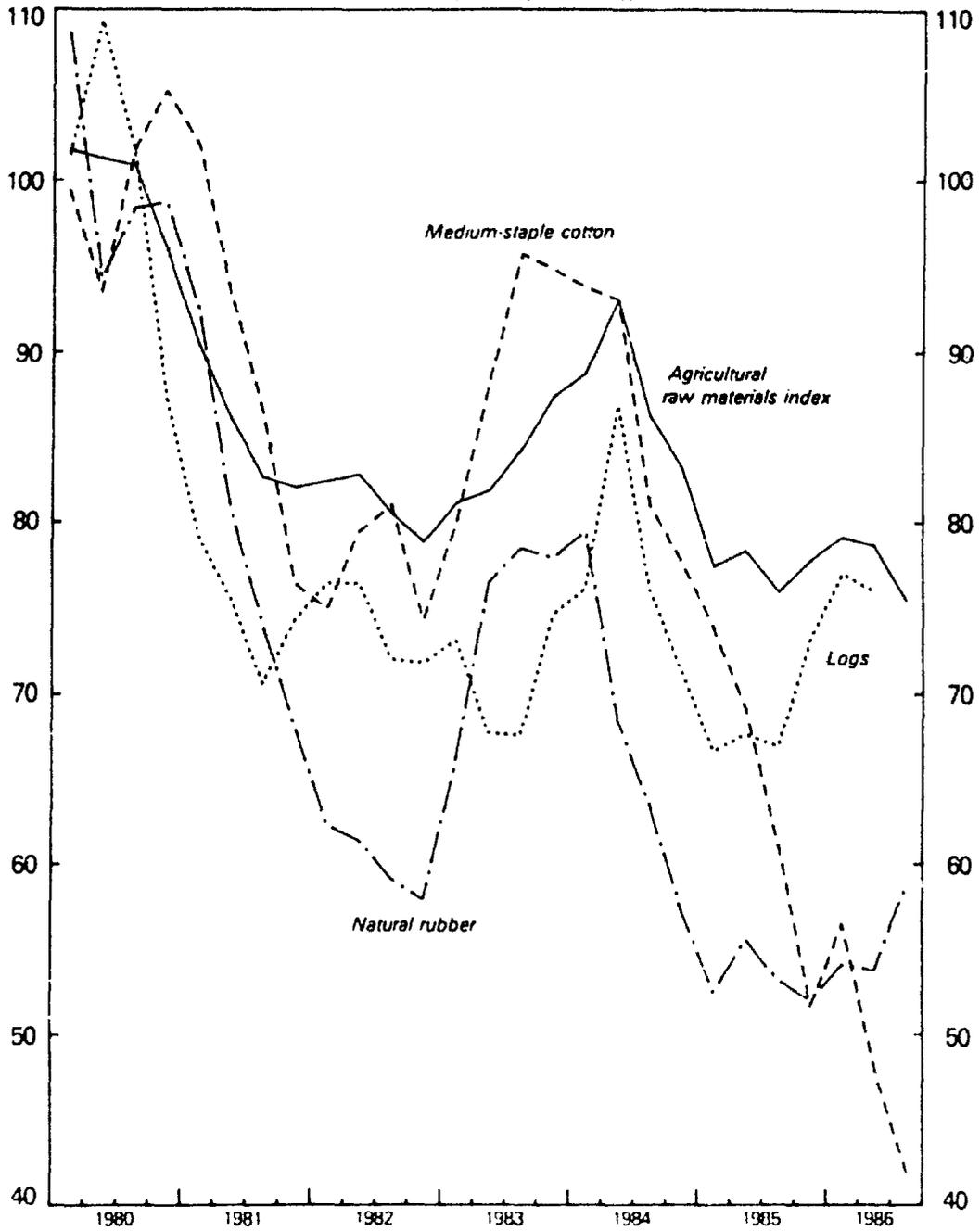




Table IV.1. Prices of Agricultural Raw Materials and Selected Underlying Factors, 1970-86

(Annual percentage changes)

Year	Prices of Agricultural Raw Materials		Real GNP in Seven Industrial Countries	Price of Petroleum	GNP Deflator in Seven Industrial Countries		Index of Supply of Agricultural Raw Materials <u>2/3/</u>	Index of Consumption of Agricultural Raw Materials <u>3/</u>
	Nominal (In U.S. dollars)	Real <u>1/</u>			Unadjusted	In U.S. dollars		
1970	2.2	-3.6	2.2	3.0	6.0	6.3	1.8	1.9
1971	-1.1	-5.9	3.6	20.0	5.7	6.9	1.3	3.8
1972	13.9	5.3	5.5	16.4	5.1	9.2	0.1	2.9
1973	60.0	36.3	5.9	40.0	7.8	12.6	2.7	2.7
1974	4.1	-13.6	0.1	225.8	11.7	9.4	1.5	-1.4
1975	-14.7	-24.7	-0.6	5.1	11.0	12.0	-2.6	1.6
1976	28.0	27.6	5.0	6.3	7.8	4.0	2.5	1.4
1977	1.1	-7.1	3.9	9.4	7.6	9.2	1.5	1.2
1978	6.4	-7.7	4.6	0.4	7.3	15.5	1.7	2.3
1979	37.6	21.2	3.3	45.9	8.2	9.9	1.7	3.2
1980	10.7	0.3	1.1	63.5	9.3	9.4	-1.0	0.7
1981	-14.7	-10.5	1.6	9.9	8.7	1.5	0.5	0.3
1982	-4.9	-2.6	-0.6	-4.2	6.9	-0.1	0.7	2.8
1983	3.1	6.3	2.8	-11.7	4.5	1.7	3.5	2.2
1984	5.0	8.6	4.9	-2.1	4.0	0.0	5.7	4.5
1985	-12.0	-12.9	2.7	-4.7	3.6	2.3	3.3	3.8
1986 <u>4/</u>	2.1	-13.1	2.6	-41.4	3.1	16.3	1.0	2.1

Source: Commodities Division and Current Studies Division, IMF Research Department.

1/ Deflated by unit values of manufactured exports.2/ Production plus beginning of (crop) year stocks.3/ Group index constructed using same weights for indices of individual agricultural raw materials as in group price index.4/ Provisional estimates.

Table IV.2. Prices of Agricultural Raw Materials, 1960-86

(In U.S. dollars)

Year	Lauan Logs 1/ (a cubic meter)	Medium-Staple Cotton 2/ (a pound)	Natural Rubber 3/ (a pound)	Tobacco 4/ (a pound)	Fine Wool 5/ (a kilogram)	Jute 6/ (a long ton)	Sisal 7/ (a ton)	Hides 8/ (a pound)
1960-69	35.7	0.29	0.24	0.68	2.54	265	249	0.14
1970-79	77.8	0.58	0.31	1.00	4.05	330	494	0.33
1980-86	149.8	0.75	0.45	1.72	5.47	400	600	0.49
1970	43.2	0.29	0.18	0.81	1.97	274	161	0.13
1971	43.3	0.34	0.15	0.73	1.78	286	185	0.14
1972	40.6	0.36	0.15	0.80	2.98	299	252	0.30
1973	68.1	0.62	0.31	0.84	6.99	289	536	0.34
1974	81.5	0.65	0.34	0.96	4.92	353	1,056	0.24
1975	67.5	0.53	0.25	1.04	3.87	377	580	0.23
1976	92.0	0.77	0.35	1.06	7.99	300	468	0.34
1977	89.8	0.71	0.37	1.14	4.30	324	511	0.37
1978	91.6	0.72	0.45	1.24	4.43	404	475	0.48
1979	160.6	0.77	0.57	1.35	5.25	391	713	0.73
1980	193.0	0.94	0.65	1.43	5.97	319	765	0.46
1981	144.4	0.84	0.51	1.61	6.13	283	645	0.42
1982	143.1	0.73	0.39	1.83	5.73	288	595	0.39
1983	136.4	0.84	0.48	1.86	5.40	303	571	0.45
1984	149.6	0.81	0.43	1.86	5.59	579	584	0.59
1985	132.3	0.60	0.34	1.84	4.95	710	525	0.51
1986 <u>9/</u>	150.0	0.46	0.36	1.64	4.54	319	513	0.64
1984 I	146.8	0.88	0.51	1.79	5.80	412	568	0.55
II	167.6	0.87	0.44	1.80	5.85	410	590	0.59
III	146.5	0.76	0.41	1.87	5.36	614	597	0.63
IV	137.4	0.73	0.37	1.96	5.34	880	580	0.58
1985 I	128.6	0.69	0.34	1.86	5.13	947	541	0.44
II	130.4	0.65	0.36	1.88	5.14	950	537	0.49
III	129.1	0.57	0.34	1.83	4.91	537	519	0.51
IV	141.1	0.48	0.34	1.81	4.63	404	501	0.60
1986 I	148.5	0.53	0.35	1.69	4.72	374	503	0.58
II	146.5	0.45	0.35	1.68	4.82	400	511	0.67
III	141.4 <u>10/</u>	0.39	0.38	1.61	4.33	290 <u>11/</u>	524 <u>11/</u>	0.67

Source: Commodities Division, IMF Research Department.

- 1/ Philippine logs, average wholesale price, Japan.
- 2/ Liverpool Index A, c.i.f. Liverpool.
- 3/ Malaysian RSSI, f.o.b. Malaysia.
- 4/ United States, average, estimated prices received by producers.
- 5/ U.K. Dominion, 50's.
- 6/ Bangladesh BWD, f.o.b. Chittagong/Chalna.
- 7/ East African origin, c.i.f. European ports.
- 8/ U.S. wholesale price, Chicago, f.o.b. shipping point.
- 9/ Including projections for the final quarter of the year.
- 10/ July price.
- 11/ Average of July and August prices.

Table IV.3. Hardwood Logs and Sawwood: World Production, 1980-86

(In millions of cubic meters)

	1980	1981	1982	1983	1984	1985	1986
Production							
Logs	<u>258.6</u>	<u>244.9</u>	<u>233.6</u>	<u>242.8</u>	<u>242.1</u>	<u>241.5</u>	<u>241.0</u>
Industrial countries	72.6	68.3	55.5	59.4	58.3	58.1	57.9
Developing countries	160.6	151.0	153.1	158.2	158.7	158.0	157.8
Brazil	(14.3)	(14.3)	(14.3)	(14.3)	(14.3)	(14.2)	(14.4)
China	(13.7)	(14.4)	(15.0)	(15.8)	(15.8)	(16.5)	(16.7)
Indonesia	(27.6)	(23.3)	(22.4)	(25.5)	(26.0)	(18.0)	(18.0)
Malaysia	(28.5)	(26.6)	(30.3)	(33.0)	(31.6)	(31.0)	(31.5)
Other	(76.5)	(72.4)	(71.1)	(69.6)	(71.0)	(78.3)	(77.2)
Non-Fund members	25.4	25.6	25.0	25.2	25.1	25.4	25.3
Sawwood	<u>113.5</u>	<u>111.1</u>	<u>106.9</u>	<u>108.8</u>	<u>111.7</u>	<u>110.5</u>	<u>112.0</u>
Industrial countries	37.9	35.0	29.2	29.9	31.8	32.0	32.2
Developing countries	61.6	61.9	63.6	64.9	66.0	65.1	66.5
Brazil	(7.7)	(8.4)	(8.4)	(8.4)	(8.4)	(8.4)	(8.5)
China	(7.8)	(8.2)	(8.6)	(9.0)	(9.0)	(8.1)	(8.2)
Indonesia	(4.8)	(5.2)	(6.8)	(6.2)	(6.3)	(7.0)	(7.3)
Malaysia	(5.9)	(6.2)	(6.4)	(7.1)	(7.1)	(6.6)	(6.8)
Other	(35.4)	(33.9)	(33.4)	(34.2)	(35.2)	(35.0)	(35.7)
Non-Fund members	14.0	14.2	14.1	14.0	13.9	13.4	13.3

Sources: UN Food and Agriculture Organization, Yearbook of Forest Products for 1981-84. Commodities Division, IMF Research Department for estimates for 1985-86.



Table IV.4. Hardwood Logs and Sawwood: Market Prices and Exports, 1980-86

	1980	1981	1982	1983	1984	1985	1986 ^{1/}
Market prices (in U.S. dollars a cubic meter)							
Logs ^{2/}	<u>193.0</u>	<u>144.4</u>	<u>143.1</u>	<u>136.4</u>	<u>149.6</u>	<u>132.3</u>	<u>150.0</u>
Sawwood ^{3/}	<u>365.1</u>	<u>314.1</u>	<u>302.0</u>	<u>304.3</u>	<u>306.8</u>	<u>276.3</u>	<u>265.0</u>
Exports							
Logs							
Volume (in millions of cubic meters)	<u>42.0</u>	<u>33.1</u>	<u>33.4</u>	<u>32.5</u>	<u>30.0</u>	<u>26.1</u>	<u>25.7</u>
Industrial countries	<u>2.7</u>	<u>2.7</u>	<u>2.2</u>	<u>2.5</u>	<u>2.7</u>	<u>2.8</u>	<u>2.5</u>
Developing countries	<u>38.9</u>	<u>30.1</u>	<u>30.9</u>	<u>29.7</u>	<u>27.0</u>	<u>23.1</u>	<u>23.0</u>
Non-Fund members	<u>0.4</u>	<u>0.3</u>	<u>0.3</u>	<u>0.3</u>	<u>0.3</u>	<u>0.2</u>	<u>0.2</u>
Unit value (in U.S. dollars a cubic meter)	<u>105.3</u>	<u>87.5</u>	<u>87.9</u>	<u>86.6</u>	<u>87.8</u>	<u>84.8</u>	<u>92.1</u>
Industrial countries	<u>151.6</u>	<u>113.4</u>	<u>115.9</u>	<u>108.8</u>	<u>105.2</u>	<u>103.6</u>	<u>107.9</u>
Developing countries	<u>102.4</u>	<u>85.2</u>	<u>86.0</u>	<u>84.8</u>	<u>86.1</u>	<u>82.4</u>	<u>89.9</u>
Non-Fund members	<u>68.0</u>	<u>84.1</u>	<u>84.8</u>	<u>85.9</u>	<u>82.6</u>	<u>80.8</u>	<u>80.4</u>
Value (in billions of U.S. dollars)	<u>4.42</u>	<u>2.89</u>	<u>2.93</u>	<u>2.81</u>	<u>2.63</u>	<u>2.21</u>	<u>2.37</u>
Industrial countries	<u>0.41</u>	<u>0.30</u>	<u>0.26</u>	<u>0.27</u>	<u>0.29</u>	<u>0.29</u>	<u>0.28</u>
Developing countries	<u>3.99</u>	<u>2.57</u>	<u>2.65</u>	<u>2.52</u>	<u>2.32</u>	<u>1.90</u>	<u>2.07</u>
Non-Fund members	<u>0.02</u>						
Sawwood							
Volume (in millions of cubic meters)	<u>12.5</u>	<u>10.9</u>	<u>11.0</u>	<u>12.5</u>	<u>13.1</u>	<u>13.1</u>	<u>12.7</u>
Industrial countries	<u>2.8</u>	<u>2.7</u>	<u>2.5</u>	<u>2.8</u>	<u>3.0</u>	<u>2.5</u>	<u>2.0</u>
Developing countries	<u>9.7</u>	<u>8.2</u>	<u>8.5</u>	<u>9.7</u>	<u>10.1</u>	<u>10.6</u>	<u>10.7</u>
Unit value (in U.S. dollars a cubic meter)	<u>245.1</u>	<u>222.4</u>	<u>211.4</u>	<u>214.7</u>	<u>195.9</u>	<u>177.0</u>	<u>173.0</u>
Industrial countries	<u>298.8</u>	<u>270.9</u>	<u>261.1</u>	<u>254.6</u>	<u>234.1</u>	<u>211.8</u>	<u>207.0</u>
Developing countries	<u>230.2</u>	<u>207.0</u>	<u>197.3</u>	<u>203.2</u>	<u>184.5</u>	<u>168.1</u>	<u>166.0</u>
Value (in billions of U.S. dollars)	<u>3.06</u>	<u>2.44</u>	<u>2.33</u>	<u>2.68</u>	<u>2.57</u>	<u>2.31</u>	<u>2.19</u>
Industrial countries	<u>0.84</u>	<u>0.73</u>	<u>0.65</u>	<u>0.72</u>	<u>0.71</u>	<u>0.53</u>	<u>0.41</u>
Developing countries	<u>2.22</u>	<u>1.71</u>	<u>1.68</u>	<u>1.96</u>	<u>1.86</u>	<u>1.78</u>	<u>1.78</u>

Sources: Commodities Division, IMF Research Department for prices. For exports, UN Food and Agriculture Organization, Yearbook of Forest Products, for 1981-84 and estimates of Commodities Division, IMF Research Department, for 1985-86.

^{1/} Including projections for the final quarter of the year.

^{2/} Indonesian lauan logs, average wholesale price in Japan.

^{3/} Malaysian meranti, select and better quality, c.i.f. French ports.

cubic meter (cum) between 1980 and 1983 but then recovered to an average of \$157 per cum in the first half of 1984. This reflected an upsurge in housing starts in the United States and Japan, but in the second half of 1984, housing starts in the United States declined and prices weakened to \$142 per cum. The fall in prices was also due in part to the appreciation of the U.S. dollar, since contract prices for lauan are generally expressed in Japanese yen. Prices fell further to \$129 per cum in the first quarter of 1985, but despite the reversal of exchange rate movements in the second and third quarters and a sharp pick up in housing starts in both the United States and Japan, prices remained stable. The lack of response was attributable both to the ready availability of logs from Malaysia and a fairly stable demand for logs in Japan as the construction industry turned to lower cost Indonesian plywood and panels. ^{1/}

In the final quarter of 1985, log prices rose significantly to \$141 per cum and increased further to average \$147.5 per cum in the first half of 1986. This reflected the inability of supply to respond to the surge in demand for housing in both the United States and Japan; housing starts in the United States in the first half of 1986 averaged nearly 2 million (at an annual rate), which was the highest level recorded since 1978. The limitation on supply was intensified in the first quarter of 1986 by a ban on logging in a major producing area of the Philippines. Also influencing the upswing in prices was the sharp depreciation of the U.S. dollar from October 1985 onward. By contrast, the price of sawnwood (as represented by the price of Malaysian meranti in Europe, expressed in U.S. dollars) was 10 percent lower, on average, in 1985 compared with 1984, and declined by a further 6 percent during the first four months of 1986. This mainly reflected the increasing availability of processed products from Indonesia and Malaysia.

Although prices of hardwood logs increased in 1984, the volume of log exports from the developing countries, which account for about 90 percent of world hardwood log exports, declined by 9 percent due to the shift into processed products. As a result, their earnings from log exports fell by about 8 percent to \$2.3 billion (Table IV.4). Further reductions in both price and volume lowered earnings to an estimated \$1.9 billion in 1985, but a small increase in earnings is expected to result from price movements in 1986. Reflecting lower unit values, developing country earnings from sawnwood exports are estimated to have declined by 4 percent in 1985 to below \$1.8 billion and are expected to be slightly lower in 1986. Offsetting increases in earnings from the higher-priced products were achieved, but comprehensive data are not available for these exports to allow quantification with a reasonable degree of certainty.

Log prices in 1986-87 are projected to rise moderately by the second half of 1987 on the assumption that low interest rates in the United States and easier financial policies in Japan will maintain

^{1/} Indonesian plywood shipments to Japan doubled in 1985, and Indonesia now supplies 40 percent of the Japanese market for flooring plywood.

housing demand at a high level. Moreover, the policies restricting the export of logs from the major producing countries are expected to remain in force. The price of sawwood and other processed product exports is projected to decline further as the trend of increasing supply of these products continues.

2. Cotton

The price of medium-staple cotton declined steadily throughout 1985 as a result of large crops that greatly exceeded consumption, and, as a consequence, stocks rose to an all time high. ^{1/} The price in 1985 on average was 26 percent below the average for 1984 and in the final quarter of the year fell below 50 U.S. cents per pound. After a two-month recovery at the beginning of 1986, prices continued to decline at a rapid rate to below 40 cents in July-August due mainly to the implementation of measures in the U.S. 1985 Food Security Act which aim at making U.S. cotton more competitive in world markets. The Act reduced price supports and established a program of export subsidies in order to reduce government held stocks and to recapture market share lost to other producers.

World cotton production has exceeded world cotton consumption for a number of years due to three main reasons. First, yields have increased; the average yield rose from 411 kilos per hectare (k/ha) during 1973/74-1975/76 to 510 k/ha during during 1983/84-1985/86. The higher yields in the 1980s reflect not only better cultivation practices, the use of higher-yielding cotton varieties and better pest control, but also the effects of uninterrupted favorable weather conditions in most major cotton-producing areas for a number of years, an important exception being the weather in the United States for the 1983/84 crop. Acreage has remained practically unchanged at 32-33 million hectares. Second, cotton prices were comparatively remunerative from the early 1970s until 1985. After averaging 29 U.S. cents per pound in the 1960s, prices more than doubled in the early 1970s to reach 65 cents per pound in 1974. Following a brief decline during the 1975 recession, cotton prices recovered in 1976 and, except for a brief period in 1977-78, remained above 70 cents per pound until 1985. The reason that prices remained high in the presence of ample supply was partly related to the willingness of the United States to hold a high volume of cotton stocks as a consequence of government price-support operations. Third, cotton consumption has increased at a rather sluggish pace with world demand

^{1/} Unless specified otherwise, "cotton prices" refer to medium-staple cotton. Price quotations for medium-staple cotton refer to the Liverpool Index "A", 1 3/32 inch staple, average of the cheapest five of ten styles, c.i.f., Liverpool. The decline in medium-staple cotton in 1985 was not matched by a similar decline in the price of long-staple cotton because of a succession of poor crops in Egypt, the principal supplier of long-staple cotton. As a result, the price differential between these two types of cotton has widened from around 60 cents a pound in 1980-83 to over 100 cents a pound in 1985-86.

rising by little more than the rate of increase in population. Demand elasticity for cotton with respect to income is much lower in industrial countries, where it approaches zero, than in developing countries. Within the group of developing countries, some middle income countries have a very low, or even negative, demand elasticity with respect to income because as incomes rise a substitution of synthetics for cotton takes place, while demand is more elastic for the lowest income countries.

In the 1984/85 crop year (August/July) world cotton production increased by over 29 percent to a record level, 24 percent above world consumption (Table IV.5). A large part of the increase was a result of a 35 percent increase in the crop in China. In 1985/86 world production fell by 10 percent, although it remained 6 percent above world consumption. The largest reduction in output is estimated to have taken place in China, where production declined by one third. Following the very large 1984/85 crop in China, in 1985/86 limits were placed on procurement and policies were revised to give more emphasis to quality in order to meet international trade requirements. Production also declined in India due to poor weather conditions, and in Brazil due to both reduced acreage and prolonged dry weather. Despite the acreage reduction program in the United States, output in that country increased by 4 percent due to higher yields and less than full participation by farmers in the program. Production also increased in Pakistan and in some African countries.

Consumption is estimated to have increased by 4.7 percent in 1985/86, a large increase by historical standards, due mostly to higher consumption in the two major producing countries. In China, the government subsidized sales of low quality cotton for use as padding in quilts. In the United States, favorable factors included growing consumer preference for natural fibers. Consumption elsewhere appears largely unchanged.

World stocks have increased steadily in recent years because of persistent surplus production. With the record 1984/85 crop, stocks increased by more than two thirds to the equivalent of over 60 percent of annual consumption. The estimated 11 percent increase during the 1985/86 year was largely due to a more than doubling of stocks in the United States, where high support prices had been encouraging crops well in excess of domestic consumption requirements, while high domestic prices discouraged exports. Stocks held in China are estimated to have declined marginally due to the Government's policies to dispose of low quality cotton in order to ensure that storage space is available for the higher grades. Stocks in the rest of the world remained at relatively high levels.

The single most important influence on cotton prices in 1986 was the U.S. Food Security Act. The provisions relating to cotton in this Act are expected to bring support prices closer to world market levels, reduce the cost of federal farm programs, enable the United States to regain world market shares lost to lower cost producers, and reduce the

Table IV.5. Cotton: World Commodity Balance, 1980/81-1986/87

(In millions of tons)

	August/July Years						
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86 <u>1/</u>	1986/87 <u>2/</u>
Production <u>3/</u>	14.05	15.36	14.75	14.71	19.02	17.08	15.83
China	2.71	2.97	3.60	4.64	6.26	4.15	4.25
United States	2.42	3.40	2.60	1.69	2.83	2.95	2.29
U.S.S.R.	2.97	2.83	2.65	2.67	2.41	2.58	2.57
Other countries	6.05	6.16	5.90	5.71	7.52	7.40	6.72
Consumption <u>3/</u>	14.39	14.33	14.77	15.06	15.33	16.05	16.44
China	3.27	3.50	3.57	3.55	3.53	3.88	3.92
United States	1.28	1.15	1.20	1.29	1.21	1.37	1.48
U.S.S.R.	1.94	1.95	1.97	1.98	1.99	2.03	2.09
Other countries	7.90	7.73	8.03	8.24	8.60	8.77	8.95
Closing stocks <u>3/4/</u>	4.72	5.70	5.76	5.65	9.43	10.46	9.82
China	0.66	0.60	0.69	1.61	4.10	3.91	3.83
United States	0.58	1.44	1.73	0.60	0.89	2.06	1.45
Other countries	3.48	3.66	3.34	3.44	4.44	4.49	4.54

Sources: International Cotton Advisory Committee, Cotton: World Statistics (Washington), various issues.

1/ Estimate.

2/ International Cotton Advisory Committee forecast.

3/ All staples.

4/ May not agree with production and consumption data because of difference in coverage.

large amount of cotton held in government warehouses. In addition, export subsidies calculated on the basis of world prices would be granted in order to dispose of government held stocks over the next five years. The combined effect of these measures is to lower the price of cotton on world markets because of increased supplies of U.S. cotton. The announcement of the farm bill had the effect of reversing the recovery in cotton prices that had started in December 1985 and had continued through most of January and February 1986 when poor weather in India, China, and in the Southern Hemisphere led the trade to anticipate the cotton shortages that might have materialized in the absence of the U.S. farm bill. Another depressing influence on cotton prices has been the sharp fall in petroleum prices in 1986 and its consequences for prices of synthetic substitutes for cotton.

The volume of world cotton exports in 1985 was close to that in 1984, but the pattern of trade was quite different. United States exports were much lower than in 1984 due to the lack of competitiveness of U.S. cotton. In 1986, lower prices are expected to lead to an increase in exports, particularly by the United States, because of increased price competitiveness and export subsidies established under the U.S. farm bill. China could become a major cotton exporter in the next few years as the quality of its cotton improves. World export earnings from cotton declined by 18 percent in 1985, reflecting the drop in prices (Table IV.6). Earnings of industrial countries fell by 37 percent because of the reduction in U.S. exports in that year, while export earnings of developing countries fell by only 5 percent as these countries increased their market share at the expense of the United States.

Production in 1986/87 is expected to be about 15.8 million tons, a 7 percent reduction with respect to 1985/86, mainly due to an anticipated reduction in U.S. output. Consumption is projected to increase by 2.4 percent to 16.4 million tons due to the growing popularity of natural fibers, which has been strengthened by low prices, and the measures taken by China to draw down inventories. Therefore, cotton inventories are projected to decline slightly after two years of being at record levels. Prices are expected to remain under pressure as the United States continues disposing of its large stocks and subsidizing exports. In 1987, however, prices could firm somewhat as cotton producers adjust to the new U.S. policy.

3. Natural Rubber

A sharp upward movement of rubber prices in 1983 associated with the international economic upswing was reversed completely in 1984 due to the emergence of an excess supply on the world market caused by the rapid growth of output. Market conditions remained weak in 1985, and further price declines were limited by substantial purchases by the buffer stock of the International Natural Rubber Organization. Weather-related supply limitations enabled prices to rise again in the first nine months of 1986, but with an underlying excess supply situation still prevailing, this recovery is expected to be temporary.

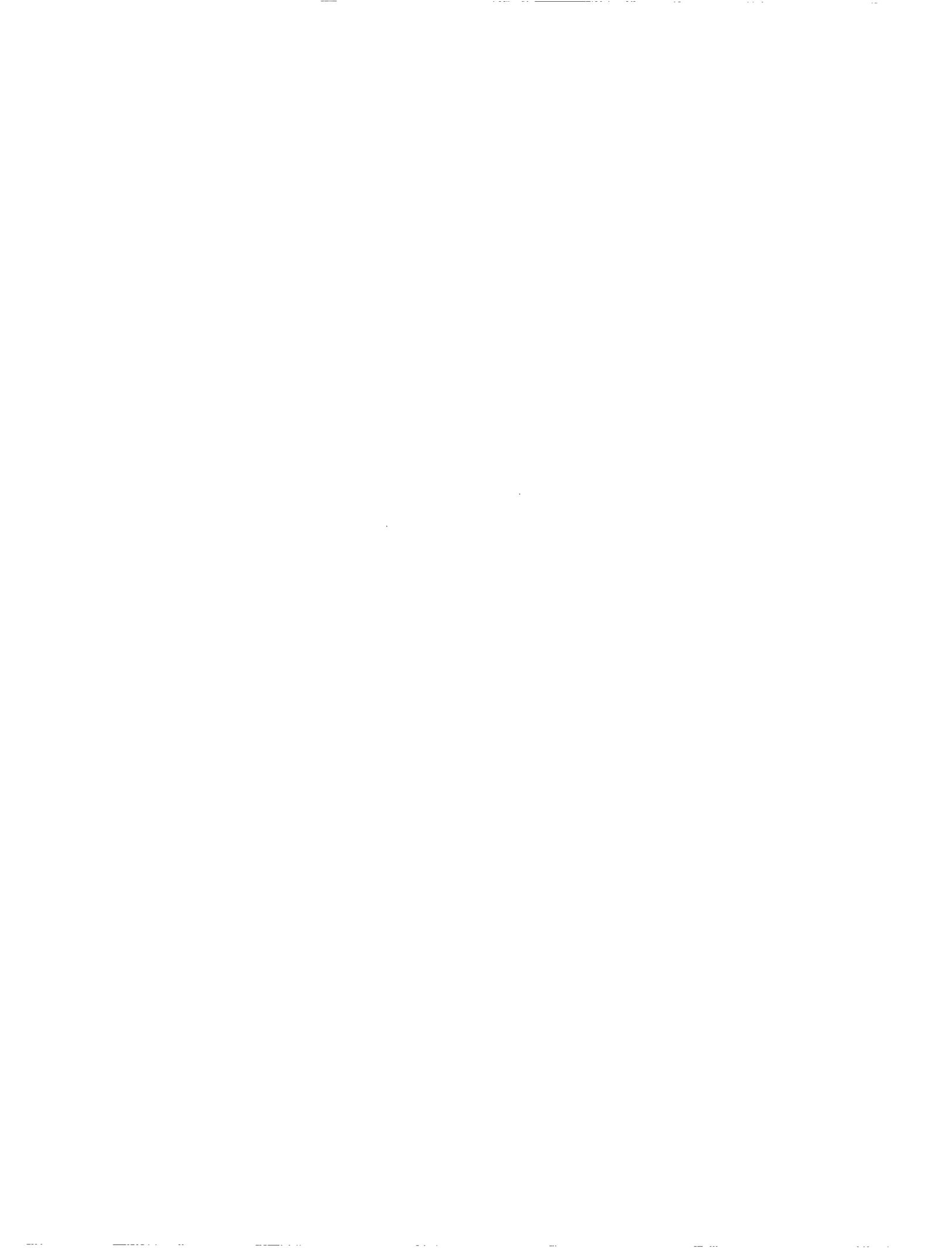


Table IV.6. Cotton: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984	1985 <u>1/</u>	1986 <u>1/2/</u>
Market prices (in U.S. cents a pound)							
Medium-staple <u>3/</u>	93.7	84.0	72.5	84.1	80.9	59.9	45.5
Long-staple <u>4/</u>	153.5	152.0	124.9	140.0	163.8	164.0	157.6
Exports <u>5/</u>							
Volumes (in millions of tons)							
Industrial countries	4.81	4.31	4.42	4.30	4.23	4.10	4.30
United States	1.91	1.37	1.53	1.38	1.61	1.20	1.60
Others	(1.82)	(1.27)	(1.39)	(1.20)	(1.50)	(1.10)	(1.50)
Developing countries	(0.09)	(0.10)	(0.14)	(0.18)	(0.11)	(0.10)	(0.10)
China	2.04	2.01	1.92	2.10	1.97	2.25	2.05
Egypt	--	--	(0.02)	(0.13)	(0.20)	(0.40)	(0.35)
Others	(0.16)	(0.18)	(0.20)	(0.21)	(0.17)	(0.18)	(0.18)
Non-Fund members <u>6/</u>	(1.88)	(1.83)	(1.70)	(1.76)	(1.60)	(1.67)	(1.52)
Others	0.86	0.93	0.97	0.82	0.65	0.65	0.65
Unit Values <u>7/</u> (in U.S. cents a pound)							
Industrial countries	73.6	77.7	65.3	68.2	73.5	62.0	46.0
United States	71.5	80.8	64.4	68.4	74.2	63.0	45.0
Others	75.8	78.1	64.1	66.9	73.8	61.0	47.0
Developing countries	73.4	72.4	69.1	71.2	70.7	63.0	48.0
China							
Egypt							
Others							
Non-Fund members <u>6/</u>							
Others							
Earnings (in billions of U.S. dollars)							
Industrial countries	7.82	7.38	6.36	6.47	6.86	5.60	4.36
United States	3.00	2.45	2.17	2.08	2.64	1.67	1.55
Others	3.42	3.45	2.71	3.10	3.20	3.03	2.12
Developing countries	1.40	1.48	1.48	1.29	1.02	0.90	0.69
China							
Egypt							
Others							
Non-Fund members <u>6/</u>							
Others							

Source: Commodities Division, IMF Research Department for prices. UN Food Agriculture Organization, FAO Trade Yearbook (Rome), various issues, for exports.

- 1/ Data on exports are estimates of Commodities Division, IMF Research Department.
2/ Includes projections for the final quarter of the year.
3/ Liverpool Index A, c.i.f. Liverpool.
4/ Egyptian, c.i.f. Liverpool.
5/ All staples.
6/ Mainly U.S.S.R.
7/ Derived and therefore an average of medium- and long-staple unit values.



After reaching a three-year peak in the first quarter of 1984, the price of natural rubber fell sharply during the last three quarters of 1984. The price of first quality ribbed smoked sheets (RSS1), f.o.b. Malaysia, fell from 51 U.S. cents per pound in the first quarter to 37 cents per pound in the final quarter. This fall in 1984 in response to a slowdown in the pace of economic growth in industrial countries, a mild "wintering" resulting in a smaller-than-normal reduction in supply in the second quarter of the year, a marked increase in output in Thailand and Indonesia in the last quarter, and falling prices of synthetic rubber substitutes resulting from declining oil prices. Prices fell further in the first quarter of 1985, averaging 34 cents per pound due to the continuing appreciation of the U.S. dollar. However, with a reversal of exchange rate movements from the second quarter onward, and influenced also by a normal seasonal reduction in supply, prices firmed a little in the second quarter to 36 cents per pound. As the effect of wintering on world market conditions waned midway through the second quarter and a situation of excess supply was re-established, prices again weakened. Despite substantial purchases by the buffer stock of the International Natural Rubber Agreement (INRA) discussed below, prices declined through the remainder of the year, averaging 34 cents per pound in the final quarter. This was the lowest nominal price recorded since early 1976 in the recovery phase of the 1975 recession.

Similar movements occurred in the market indicator price (MIP) of the INRA in 1984-85. This price declined from above the upper intervention price (where the buffer stock manager "may sell" rubber) in the first quarter of 1984 to below the lower intervention price into the "may buy" region in November 1984 where it remained until mid-January 1985 when limited support purchases by the buffer stock manager raised the price temporarily. In mid-March, the MIP moved above the lower intervention price in response to the onset of wintering, but fell back into the "may buy" region of the price range in mid-May when supply returned to normal. Buffer stock purchases were resumed at the end of May and continued through the remainder of 1985. Cumulative purchases increased from 278 thousand tons at end-January to 375 thousand tons at end-December. In June, when purchases reached 300 thousand tons the price range of the INRA was automatically lowered by 3 percent. This adjustment was made effective in August, and it enabled the MIP, which trended downward through December 1985, to remain in the "may buy" region of the price range except for two days in November when uncertainty stemming from the tin crisis pushed the MIP into the "must buy" region.

After increasing by nearly 6 percent in 1984, world production of natural rubber rose by less than 2 percent in 1985 to 4.34 million tons as production from new planting and replanting programs in Thailand and Indonesia coming-on-stream slightly exceeded a decline in Malaysian output reflecting, in part, the substitution of oil-palm for rubber production (Table IV.7). The growth of world consumption of natural rubber slowed from over 6 percent in 1984 to under 3 percent in 1985, mainly in response to a significant decline in imports of natural rubber by Eastern European countries and efforts by tire manufacturers in the market economies to

Table IV.7. Natural Rubber: World Commodity Balance, 1980-86

(In thousands of tons)

	Calendar Years						
	1980	1981	1982	1983	1984	1985	1986 ^{1/}
Commodity balance							
Production	3,850	3,705	3,750	4,025	4,260	4,340	4,350
Indonesia	1,020	868	880	997	1,115	1,130	1,100
Malaysia	1,530	1,510	1,494	1,564	1,529	1,458	1,470
Thailand	501	504	552	587	610	715	750
Other countries	799	823	824	877	1,006	1,037	1,030
Consumption	3,760	3,700	3,680	3,985	4,240	4,355	4,425
EC	800	755	727	728	756	788	799
Japan	427	436	439	504	525	540	535
United States	585	635	585	665	751	764	740
Other countries	1,948	1,874	1,929	2,088	2,208	2,263	2,351
Closing stocks	1,635	1,640	1,710	1,750	1,770	1,755	1,680
Commercial stocks	1,635	1,640	1,479	1,481	1,501	1,399	1,320
INRO buffer stock ^{2/}	--	--	231	269	269	356	360

Source: International Rubber Study Group, Rubber Statistical Bulletin (London), various issues.

^{1/} Estimates of Commodities Division, IMF Research Department.

^{2/} Stocks in store are lower than cumulative net buffer stock purchases due to defaults, cancellations, rejections, losses and damage.

reduce excess inventories. Although for 1985 as a whole world consumption exceeded world production by 15 thousand tons, the deficit occurred in the wintering months, and the market was in substantial surplus in the second half of the year. Under conditions of high real interest rates, falling prices, and the ready availability of supplies for immediate needs, consumers continued to run down their inventories through most of this period. Taking into account an increase of 87 thousand tons in the size of the buffer stock during the year, commercial stocks of 1.4 million tons at end-1985 were about 100 thousand tons less than at end-1984. This level is believed to be the lowest ever recorded just before the onset of a wintering period.

Natural rubber is produced and exported entirely by developing countries. The volume of world exports in 1985 was about the same as in 1984, but export earnings expressed in U.S. dollars declined by 25 percent after increasing by 6 percent in 1984 (Table IV.8). The fall in average unit values exceeded the 20 percent decline in the average price of RSS1 between 1984 and 1985 because the premium of RSS1 over lower grades of rubber widened in 1985. The distribution of export earnings among major producers reflected changes in their levels of production; the export receipts of Thailand and Indonesia increased, while those of Malaysia declined.

Both the MIP and the price of RSS1 in Malaysia recovered somewhat in January 1986 and then rose sharply in February as consumers seeking to rebuild inventories were faced with a lower supply availability due to heavy rainfall in producing areas. The increase in the MIP was somewhat greater than the rise in the price of RSS1 due to a more severe shortage of lower grades of rubber. Despite the absence of a surplus in the market and the onset of wintering, prices started to decline in mid-March and the MIP fell below the lower intervention price for a few days in April. This turnaround was due to the collapse in oil prices leading to lower feedstock prices for competing synthetic rubber, sluggish demand in industrial countries with consumers requesting deferral of deliveries, uncertainty engendered by large exchange rate changes, and financial problems in the Singapore rubber market. However, the effects of wintering then moved the MIP well above the lower intervention price in May and deficient rainfall in the third quarter of the year limited supply and helped support prices. Nevertheless, constrained by low prices for synthetic rubber, and a re-emerging surplus of natural rubber, the MIP is expected to decline again toward the end of 1986. For 1986 as a whole, the price of RSS1 is expected to be 5 percent higher than in 1985. World production of natural rubber in 1986 is projected to be about the same as in 1985, while world consumption, which will be boosted by strong demand from China and the U.S.S.R. and higher automobile sales in the United States, is expected to rise by about 2 percent. Reflecting the slow growth of consumption, the volume of world exports is projected to rise by 1 percent and export earnings are expected to increase by 6 percent (Table IV.8).

Table IV.8. Natural Rubber: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984	1985 <u>1/</u>	1986 <u>1/2/</u>
Market prices (in U.S. cents a pound) <u>3/</u>	<u>64.6</u>	<u>50.9</u>	<u>38.9</u>	<u>48.3</u>	<u>43.4</u>	<u>34.4</u>	<u>36.1</u>
Exports (in thousands of tons)							
Volumes	<u>3,290</u>	<u>3,110</u>	<u>3,070</u>	<u>3,410</u>	<u>3,580</u>	<u>3,590</u>	<u>3,620</u>
Developing countries	<u>3,290</u>	<u>3,110</u>	<u>3,070</u>	<u>3,410</u>	<u>3,580</u>	<u>3,590</u>	<u>3,620</u>
Indonesia	(980)	(810)	(800)	(940)	(1,010)	(1,070)	(1,100)
Malaysia	(1,530)	(1,490)	(1,380)	(1,560)	(1,590)	(1,425)	(1,400)
Thailand	(460)	(470)	(550)	(560)	(590)	(685)	(725)
Other countries	(320)	(340)	(340)	(350)	(390)	(410)	(395)
Unit values (in U.S. cents a pound)	<u>59.3</u>	<u>48.4</u>	<u>36.3</u>	<u>43.7</u>	<u>44.2</u>	<u>33.0</u>	<u>34.7</u>
Earnings (in billions of U.S. dollars)							
Developing countries	<u>4.30</u>	<u>3.32</u>	<u>2.45</u>	<u>3.29</u>	<u>3.49</u>	<u>2.61</u>	<u>2.77</u>

Source: Commodities Division, IMF Research Department for prices. Data on exports from UN Food and Agricultural Organization, FAO Trade Yearbook (Rome), various issues, and include only exports of rubber-producing countries.

1/ Data on exports are estimates of Commodities Division, IMF Research Department.

2/ Includes projections for the final quarter of the year.

3/ Malaysian RSS1, f.o.b. Malaysia.

Downward pressure on prices is anticipated in 1987 due to an excess of world production over consumption. The market may also be expected to be influenced by the outcome of negotiations for a new INRA to replace the present Agreement upon its expiration in October 1987.

4. Other agricultural raw materials

a. Tobacco

World production of unmanufactured tobacco in 1986 is forecast by the the U.S. Department of Agriculture at 4 percent below that of 1985 and roughly equal to production in 1984. Reduced production in Brazil, India, and the United States is expected to outweigh increases in Argentina, Pakistan, and Zimbabwe. However, the importance of these production changes is over-shadowed by the existence of large stocks of unmanufactured tobacco, particularly in the United States. World stocks are estimated to equal 15-16 months of world usage.

Tobacco usage in cigarettes production continues to increase because increases in usage in developing countries outweighs decreases in industrial countries. In 1985, world production of cigarettes increased by 4 percent, with a 10 percent increase occurring in China.

Because of the partial segmentation of the international tobacco market both on a geographical basis and on the basis of different types of leaf and methods of curing, developments in some countries can be partly isolated from developments elsewhere. However, the changes in the production and marketing policies of the leading exporting countries, in particular the United States, can have widespread repercussions on tobacco markets throughout the world. Despite the increasing shift in production and consumption of tobacco to developing countries, the United States remains the second largest producer of tobacco (after China), is the leading exporter of unmanufactured tobacco with a share of around 18 percent of world exports (in comparison with a share of around 13 percent for Brazil, the second exporter) and holds about 40 percent of the world tobacco stocks. Currently, U.S. policy is to reduce publicly-held stocks of old tobacco and to reduce support prices. The Flue-Cured Stabilization Cooperative, the Burley Stabilization Cooperative and the Commodity Credit Cooperation have sold 1976-84 crop tobacco from their stocks to manufacturers at discounts ranging from 10 percent to 90 percent depending on the age of the tobacco. Under the Budget Reconciliation Act of 1985, the price support level for the 1986 flue-cured crop was reduced by 13 percent while that for burley tobacco was left unchanged. As a consequence of this policy, the price of tobacco leaf in the United States fell by 10 percent in the first three quarters of 1986 from the 1985 level after four years of relative stability (Table IV.2).



b. Wool

The price of fine wool, expressed in terms of U.S. dollars, fell by 11 percent in 1985 and, after a brief recovery in the first half of 1986, fell by 10 percent in the third quarter. ^{1/} However, these declines reflected changes in the exchange rate of the currency of the dominant exporter--Australia. In 1985 the Australian dollar depreciated vis-a-vis the U.S. dollar by 20 percent, and in the third quarter of 1986 a further 13 percent depreciation occurred. In terms of Australian dollars, the market price of fine wool actually increased by 11 percent in 1985 and the price was higher in the third quarter of 1986 than earlier in the year. ^{2/}

World production of wool in 1984/85 is estimated to have increased by 2 percent with respect to the previous season and is estimated to have declined by 0.6 percent in the 1985/86 season. The recovery in world sheep numbers, following a period of reductions because of extensive drought in a number of the major producing countries, has been halted, somewhat short of their previous peak in 1981/82, but still nearly 10 percent more than the average in the mid-1970s. The profitability of rearing sheep for wool is still considered relatively high in comparison with that of other agricultural activities and the numbers of sheep are expected to remain stable in the near future.

Wool consumption data are rather fragmentary, with only nine countries reporting regularly. These data indicate that wool consumption increased by about 6 percent in 1984 because of buoyant wool textile manufacturing activity and the success of a campaign by the Australian Wool Corporation to promote wool use. In 1985, wool consumption is estimated to have increased by a further 1 1/2 percent. In early 1986, there was strong demand from Eastern Europe, China, and Japan, and the Australian Wool Corporation supplemented market offerings from its own stocks for the first time during the 1985/86 season. However, demand appeared to weaken as the year progressed due to the sluggish pace of economic activity in the developed countries that are the major wool buyers and low petroleum prices that caused a scarcity of convertible currency in the Soviet Union and China. Wool stocks remain at historically high levels.

^{1/} Price quotations for fine wool refer to U.K. Dominion, 64's clean, dry combed basis.

^{2/} A similar situation occurred in the market for coarse wool which is dominated by exports from New Zealand. The price for coarse wool in terms of New Zealand dollars increased in both 1984 and 1985, but these increases, because of exchange rate changes, are not reflected in prices measured in terms of U.S. dollars.

c. Jute

The price of jute has experienced extreme fluctuations in recent years. 1/ Low prices resulting from an excess of world production over world consumption in the early 1980s were followed in 1983/84 and 1984/85 by two years of poor crops and high prices. In 1985/86 increased plantings and a bumper crop caused prices to fall sharply once again. The immediate cause triggering these fluctuations was the exceptionally low 1983/84 crop in Bangladesh which was caused by drought in the planting season and severe flooding in the harvest season. The 1984/85 crop, although 8 percent higher than that of the previous crop year, was still 10 percent below the average for the period 1978/79-1980/81. Thus, following an increase of over 90 percent in 1984, in 1985 prices rose by a further 23 percent to an all time high. High prices encouraged larger plantings, and the 1985/86 crop is estimated to be 21 percent above the 1984/85 crop. By August 1986, prices had declined to around the level prevailing in the early 1980s, 60 percent below the average for 1985.

World jute consumption has remained fairly stable since the late 1970s, but the distribution of consumption between developing and industrial countries has changed markedly. Whereas developing countries accounted for 70 percent of total consumption in the 1978-80 period, they accounted for 77 percent in 1984, the last year for which complete data are available; consumption by industrial countries has declined steadily over time because of competition from synthetic fibers. The fluctuations in price, in addition to periods of scarcity when contracts cannot be fulfilled, are believed to be an important factor causing the world market share of jute to shrink in favor of synthetic fibers, whose regular availability and less volatile prices are valued by buyers. The sharp fall in the price of petroleum in 1986 may lead to lower prices of synthetic fibers which may result in a further reduction in demand for jute.

Prices are expected to remain weak in 1986 as a result of the large 1985/86 crop but to recover in 1987 as the current low prices discourage plantings and the production/price cycle is repeated. Proposals for the creation of a buffer stock for raw jute to smooth out price fluctuations have been discussed, but concerted international action in the near future is unlikely. In view of this, Bangladesh has constituted its own buffer stock on the basis of the carry-over from the 1984/85 crop.

d. Sisal

The price of sisal declined by 10 percent in 1985 due to a fall off in demand that resulted in considerable accumulation of stocks early in the year in Tanzania and Kenya. 2/ Import demand for raw sisal fell because of a drop in the demand for baler and binder twine in Northern Europe due to wet and cold weather which reduced hay production.

1/ Raw Bangladesh jute, BWD, f.o.b. Chittagong-Chalna.

2/ The price refers to East African sisal, upgraded, c.i.f. European ports.



In order to dispose of unwanted stocks, both Tanzania and Kenya, which produce high-quality sisal, offered discounts that reduced the price differential with respect to the lower quality Brazilian sisal. By year-end, most of the stocks had been sold to European baler twine manufacturers which traditionally purchase Brazilian sisal. These sales, together with lower production in East Africa (although not in Brazil) in 1985, led to a reduction in the pressure of supply on the sisal market in 1986. Prices increased by 4 percent during January-July, 1986, as reports of insufficient rainfall in Tanzania, Kenya, and Madagascar caused concern regarding availability of good quality sisal. In the short-run, sisal prices are expected to continue their recovery because of relatively low supplies.

e. Hides

The price of hides, which declined sharply from 73 cents per pound in 1979 to 39 cents per pound in 1982 due to the worldwide recession, recovered rapidly to 45 cents per pound in 1983 and 59 cents per pound in 1984 as the economic recovery gained momentum. ^{1/} Prices, however, fell to 44 cents per pound during the first quarter of 1985 and remained low during the two following quarters. However, during the fourth quarter of 1985, a reduction in cattle slaughterings in the U.S. and an increase in import demand resulting from a weakening U.S. dollar caused prices to recover sharply to 60 cents per pound. Strong import demand, especially from Japan, Korea and Taiwan, and the prospect of marginally lower supplies, kept prices firm during the first three quarters of 1986 when they averaged 64 cents per pound.

In 1985 world supplies of cattle hides and calf skins are estimated to have been about the same as in 1984. Reductions in the United States and the EC were balanced by increases in Argentina and the U.S.S.R. Low beef prices and a fall in cattle numbers caused U.S. cattle slaughterings to decline by 3 percent in 1985. Similarly, excess supplies of beef and low prices since 1984 have caused cattle numbers and slaughterings in the EC to decline. On the other hand, reduced profitability reversed the herd rebuilding which was taking place in Argentina and slaughterings there are estimated to have increased by 12 percent in 1985, while a severe winter and feed shortages caused cattle slaughterings in the U.S.S.R. to increase.

The outlook is for a reduction in hide supplies in 1986. An expected increase in Australia is likely to be more than offset by reductions in Argentina, the EC and the United States. Slightly lower supplies and an increase in demand resulting from the prospect of a continuation of economic growth in the main leather consuming countries suggest that hide prices are likely to remain firm during the rest of 1986.

^{1/} Price quotations refer to the U.S. wholesale price for hides of packer's heavy native steers, over 53 pounds hides, Chicago, f.o.b. shipping point.

V. Metals

Metal prices continued to decline in 1985 as consumption fell by more than 1 percent in spite of an average growth in industrial production in the seven major industrial countries of over 3 percent (Table V.1). The annual rate of growth in consumption of metals has declined from an average of over 5 percent during the period 1966-73 to an average of 0.6 percent during 1974-85, while the rate of growth in industrial production declined from an average of 6.0 percent to an average of 2.0 percent. Technological innovation in the use of "new" materials such as plastics and alloys, has led to substitution for most of the metals discussed individually in this section. The trend toward downsizing and miniaturization has also depressed the demand for metals. For example, the change in the size distribution of automobiles in the United States from larger to smaller cars and the downsizing of all size categories, as well as the substitution of lightweight materials, resulted in a 25 percent decline in average vehicle weight over the period 1975-85. While the amount of aluminum is up from 86 to 140 pounds per car, the amount of steel used is down from 2,075 pounds to 1,470 pounds. Copper use declined from 32 pounds per car to 26 pounds. On a worldwide basis, the trend toward lighter cars alone is responsible for 10 percent of the decline in world steel consumption over the same period. In the face of these developments in the use of metals, part of the capacity which was built up to service growth in consumption demand for metals in the 1960s and early 1970s has become redundant as consumption growth slowed and subsequently, consumption has declined. Excess capacity continued to overhand the market in 1985.

In 1986, prices of metals have continued to decline (Chart 6 and Table V.2) as consumption generally languishes in a situation in which growth in industrial production in the major industrial countries is expected to fall to 1.1 percent compared with 3.1 percent in 1985 and 8.5 percent in 1984. The existence of substantial excess capacity in the industry should prevent any significant and sustained increase in real metal prices in the short term. The weak price outlook has forced many producers to reduce costs by closing unprofitable operations and further minimize costs at existing operations. Cost minimization may actually entail a buildup of production at some properties as producers attempt to minimize unit costs by increasing their scale of operation.

1. Copper

Despite reduction of the large stock overhang to the lowest level since 1980, after two and a half years of overall market deficits, and the steady depreciation of the exchange rate of the U.S. dollar since early 1985, the average level of copper prices in 1985 and the first three quarters of 1986 remained only slightly above the low level recorded in 1984. At 64 U.S. cents per pound, nominal prices in 1985 were still 35 percent lower than the average level in 1980, when average monthly prices peaked at 132 cents per pound in February. The continued depressed level of prices, as discussed below, is attributable to a

Table V.1. Prices of Metals and Selected Underlying Factors, 1970-86

(Annual percentage changes)

Year	Prices of Metals		Industrial Production in Seven Industrial Countries	GNP Deflator in Seven Industrial Countries		Supply of Metals 1/			
	Nominal (In U.S. dollars)	Real 2/		Unadjusted	In U.S. dollars	Index of production	Index of supply 3/	Index of closing stocks 4/	Index of Consumption of Metals 1/
1970	6.6	0.6	1.0	6.1	6.4	6.3	4.7	12.6	1.9
1971	-10.9	-15.2	2.0	6.0	7.2	1.4	2.2	2.7	2.5
1972	0.4	-7.3	7.1	5.4	9.5	4.8	4.3	2.4	8.3
1973	42.8	21.8	8.9	7.8	12.5	6.1	5.6	-18.1	10.8
1974	30.6	8.4	-1.0	11.7	9.3	6.1	2.3	14.5	-1.4
1975	-12.2	-22.5	-8.3	10.9	12.0	-4.7	-2.9	44.5	-13.2
1976	-1.5	-1.8	8.9	7.7	4.0	2.9	8.2	-4.4	15.9
1977	4.3	-4.1	5.3	7.6	9.1	2.5	0.5	1.7	3.2
1978	2.8	-10.8	4.8	7.3	15.4	0.9	0.5	-14.8	4.6
1979	29.9	14.5	4.9	8.2	9.9	3.9	0.8	-23.4	2.9
1980	9.5	-0.8	-0.2	9.3	9.4	1.5	-1.6	5.0	-3.6
1981	-15.2	-11.0	0.4	8.7	1.6	-0.9	-0.2	16.4	-1.9
1982	-11.8	-9.7	-4.0	6.8	-0.2	-6.5	-3.5	20.0	-3.6
1983	4.9	8.2	3.8	4.5	1.7	0.8	4.7	-1.4	3.4
1984	-5.5	-2.3	8.5	3.8	-0.1	5.2	4.6	-12.4	5.5
1985	-6.0	-6.9	3.1	3.6	2.3	-0.2	-1.4	-5.4	-1.6
1986 5/	-5.8	-19.8	1.1	3.1	18.2	-1.1	-1.4	-4.7	0.3

Sources: Commodities Division and Current Studies Division, IMF Research Department.

1/ Group indices constructed using same weights for indices of individual metals as in the group price index.

2/ Deflated by unit values of manufactured exports.

3/ Production plus beginning of year stocks.

4/ End of year stocks.

5/ Provisional estimates.

CHART 6

PRICES OF METALS, 1980-86

(In U.S. dollars, indices: 1980 = 100)

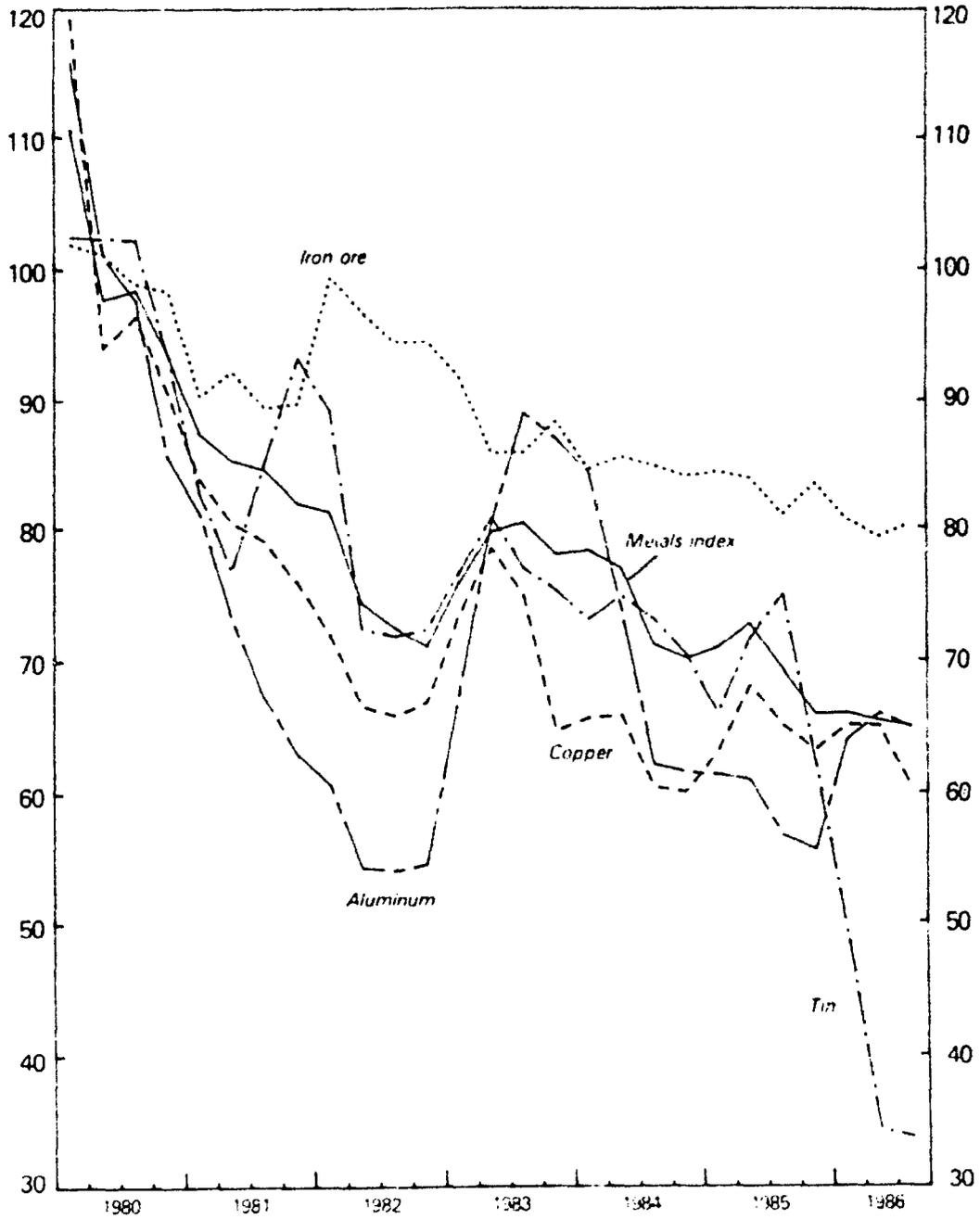


Table V.2: Prices of Metals and Phosphate Rock, 1960-86

(In U.S. cents a pound, unless otherwise indicated)

Year	Copper <u>1/</u>	Aluminum <u>2/</u>	Iron Ore (in U.S. dollars a ton) <u>3/</u>	Tin <u>4/</u>	Nickel <u>5/</u>	Zinc <u>6/</u>	Lead <u>7/</u>	Phosphate Rock (in U.S. dollars a ton) <u>8/</u>
1960-69	46.3	241.0	14.8	138	83	11.8	10.6	12.3
1970-79	66.6	41.0	18.7	352	188	29.3	23.7	29.7
1980-86	72.4	57.9	24.2	563	231	35.4	24.8	40.3
1970	64.0	27.9	15.0	167	128	13.4	13.8	11.0
1971	49.0	28.5	13.5	159	133	14.1	11.5	11.3
1972	48.6	26.8	12.8	170	140	17.1	13.7	11.5
1973	80.6	27.2	17.2	218	153	38.2	19.4	13.8
1974	93.2	34.7	19.0	371	174	56.1	26.8	52.8
1975	56.1	39.4	22.7	312	207	33.8	18.9	68.0
1976	63.6	40.4	22.2	344	225	32.3	20.2	35.8
1977	59.4	51.9	21.6	490	236	26.7	28.0	30.7
1978	61.9	60.1	19.6	584	209	26.9	30.0	29.0
1979	89.5	72.7	23.4	701	271	33.6	54.6	33.0
1980	99.1	80.5	27.2	761	296	34.5	41.1	46.7
1981	79.0	57.3	24.6	643	270	38.4	32.9	49.5
1982	67.2	45.0	26.2	582	219	33.8	24.8	42.4
1983	72.2	65.2	24.0	589	212	34.7	19.3	36.9
1984	62.5	56.8	23.1	555	216	40.6	20.0	38.3
1985	64.3	47.2	22.7	523	222	34.2	17.7	33.9
1986 <u>9/</u>	62.7	53.1	21.9	285	180	31.7	17.6	34.4
1984 I	65.1	68.0	22.1	557	213	45.3	19.0	37.5
II	65.3	59.5	23.3	570	219	44.5	21.4	38.5
III	59.9	50.1	23.1	557	213	37.1	20.6	38.5
IV	59.5	49.6	22.9	536	217	35.4	19.2	38.5
1985 I	62.5	49.4	23.0	502	230	39.1	17.2	35.2
II	67.5	49.1	22.8	546	252	37.4	17.4	33.5
III	64.4	45.6	22.1	570	220	32.6	18.4	33.5
IV	62.7	44.7	22.7	474	187	27.8	17.8	33.5
1986 I	64.5	51.5	22.0	374	184	27.0	16.6	33.5
II	64.5	53.1	22.0	261	185	29.7	17.6	34.4
III	59.8	52.3	21.9	256	173	35.5	17.8	34.8

Source: Commodities Division, IMF Research Department.

- 1/ London Metal Exchange (LME) price, c.i.f. U.K. ports.
- 2/ LME price, c.i.f. European ports.
- 3/ Brazilian ore, c.i.f. German ports.
- 4/ LME price, c.i.f. European ports.
- 5/ LME price, c.i.f. Northwest European ports.
- 6/ LME price, c.i.f. U.K. ports.
- 7/ LME price, c.i.f. U.K. ports.
- 8/ Moroccan rock, f.a.s. Casablanca.
- 9/ Includes projections for the final quarter of the year.

considerable deceleration in the growth of copper consumption and the resultant excess productive capacity in the world copper industry, with new capacity still coming on stream and some previously idled capacity expected to be reactivated in the near future.

International copper transactions generally take place at London Metal Exchange (LME) prices, or at prices based on LME prices. Copper's major end-uses are in cyclically sensitive industries, such as construction, electronics, and transportation. Consequently, copper prices are particularly sensitive to the business cycle and therefore can fluctuate significantly. Historically, this has been reflected in four to five year price cycles, with periods of high prices tending to last two years and periods of low prices persisting for up to about four years, depending upon changes in the underlying supply-demand situation. In addition to short-term cyclical changes in overall economic activity, however, the world copper market has been affected by long-term structural changes in copper consumption and production. Some of these changes also have contributed to maintaining prices in recent years at the most depressed levels in real terms in over three decades.

Whereas refined copper consumption increased rapidly over the period 1964-73, on average by 4.2 percent each year, the average annual rate of growth was only 1.2 percent in the period 1974-84. In 1985, consumption of refined copper declined by 4.3 percent and no increase is expected in the current year. The marked structural slowing down of copper consumption is attributable to the deceleration in the rate of growth in world industrial production (in an annual rate of 6 percent during 1964-73 to 1.8 percent annually in 1974-84) and the decline in the intensity of copper use. ^{1/} The latter partly reflects substitution of competing materials, such as aluminum (in power cables, automobile radiators, refrigerators, freezers, and air conditioning), fiber optics (in the telecommunications market), and plastics (in domestic plumbing), and reductions in the quantity of copper per manufactured unit, for example, in the downsizing of automobiles for greater fuel efficiency. Slower copper consumption also seems to reflect the changing composition of industry, as recent investments in "high technology" industries have increased demand for "new" materials, such as silicon, rather than for traditional metals, such as copper.

To accommodate the strong demand for copper during the 1960s and early 1970s, world mine capacity expanded significantly and production was close to capacity levels in nearly all years (95 percent of capacity on average). In contrast, during the period 1974-84 mine capacity expansion was modest (13 percent, compared with 46 percent from 1964 to 1973) and the average rate capacity utilization was lower (87 percent, on average), yet supply exceeded consumption in 7 out of 11 years. More recently, in 1985, supply fell short of consumption, but this is expected to be reversed in 1986. The rise in world stocks of refined copper

^{1/} The "intensity of use" is a ratio of the volume of consumption of copper to a unit of GNP, expressed in tons or kilos per unit of GNP.

during the 1981-82 recession was large, reaching 12.6 weeks of current consumption at end-1982, compared with a "normal" level of about eight weeks. In the years 1982-84, this significant stock overhang, the existence of unutilized productive capacity, changes in inflation expectations, and the emergence of high real rates of interest contributed to the persistent low level of copper prices. In former periods of high rates of inflation, apparent spillovers of speculative funds from precious metals' markets, seeking hedges against inflation, contributed to the sharp escalation of copper prices. However, in recent years, lower price expectations and positive real rates of interest have increased the attractiveness of financial assets over metals and other tangible assets. The depressing effect of these factors on copper prices was accentuated by the appreciation of the U.S. dollar in those years, which further depressed copper prices in U.S. dollars terms.

In 1985, the average annual price of copper remained low, increasing by only about 3 percent over the previous year's level to 64 cents per pound, and, in contrast to its traditional reputation for volatility, recorded relatively minor fluctuations in U.S. dollar terms. The variation in the average monthly price on the LME was only 13 percent between a low of about 61 cents per pound in January and a high of 69 cents per pound in May. The persistence of relatively low prices in 1985 was largely due to the decline in copper consumption, particularly in the United States and Japan, reflecting slower rates of growth and the perception of a ready availability of copper to meet consumer requirements, given the level of world stocks and the existence of unutilized productive capacity.

Although world copper consumption declined in 1985, world stocks of refined copper continued to fall, albeit modestly compared with 1984 (Table V.3). In 1984, a strong world economic recovery boosted copper consumption by about 11 percent; however, in 1985, the slowing but nevertheless continuing rise in economic growth was accompanied by a 4 percent decline in copper consumption. This decline amounted to over 300 thousand tons, of which Japan accounted for 43 percent and the United States 34 percent. This was associated with the decline in the rate of growth of industrial production (from 11 percent to 2 percent in the United States and from 11 percent to 5 percent in Japan) in these countries and also may have reflected further substitution of competing materials for copper, such as aluminum in radiators in the United States and fiber optics in the telecommunications market in Japan. World refined copper production continued to be restrained in 1985 as production rose by less than 1 percent and mine and smelter production increased by 1 percent each. As a result, the level of reported stocks of refined copper declined modestly from 8.2 weeks of current consumption at end-1984 to 7.8 weeks of current consumption at end-1985. This is about the level reported at end-1979 and end-1980, in terms of weeks of current consumption, when the average annual level of copper prices reached 90 cents per pound and 99 cents per pound, respectively. The stock level at end-1985 represents a substantial reduction of the stock overhang prevailing at end-1982 and end-1983,

Table V.3. Copper: World Commodity Balance, 1980-86

(In thousands of tons)

	Calendar Years						
	1980	1981	1982	1983	1984	1985	1986 ^{1/}
Mine production ^{2/}	6,042	6,484	6,235	6,280	6,391	6,475	6,540
Canada	716	691	613	653	722	724	740
Chile	1,068	1,081	1,242	1,258	1,291	1,356	1,387
United States	1,181	1,538	1,140	1,038	1,091	1,092	1,090
Zaire	460	505	503	502	501	513	506
Zambia	596	587	530	591	576	520	488
Other countries	2,021	2,082	2,207	2,238	2,210	2,270	2,329
Smelter production ^{2/}	6,147	6,561	6,447	6,533	6,717	6,815	6,891
Chile	953	954	1,047	1,059	1,098	1,089	1,111
Japan	929	980	1,046	1,062	929	933	932
United States	1,053	1,378	1,021	987	1,138	1,168	1,166
Zaire	426	468	466	466	464	477	473
Zambia	601	572	581	563	532	514	485
Other countries	2,185	2,209	2,286	2,396	2,556	2,634	2,724
Refined supply	7,113	7,411	7,207	7,125	7,189	7,181	7,254
Refined production ^{2/}	7,036	7,350	7,155	7,323	7,207	7,247	7,320
Chile	(811)	(776)	(853)	(834)	(880)	(884)	(902)
Japan	(1,014)	(1,050)	(1,075)	(1,092)	(935)	(936)	(929)
United States	(1,686)	(1,996)	(1,683)	(1,581)	(1,509)	(1,402)	(1,400)
Zaire	(144)	(151)	(175)	(227)	(225)	(227)	(225)
Zambia	(607)	(564)	(587)	(574)	(522)	(479)	(452)
Other countries	(2,774)	(2,813)	(2,782)	(3,015)	(3,136)	(3,319)	(3,412)
Net trade with China and CMEA countries	41	58	47	-198	-18	-66	-66
Strategic stockpile sales	36	3	5	--	--	--	--
Refined consumption ^{2/}	7,101	7,252	6,771	6,821	7,551	7,229	7,230
Germany, Fed. Rep. of	748	748	731	737	792	755	751
Japan	1,158	1,254	1,243	1,217	1,368	1,231	1,104
United States	1,868	2,030	1,664	1,775	2,036	1,918	1,915
Other countries	3,327	3,220	3,133	3,092	3,355	3,325	3,460
Refined balance (supply minus consumption) ^{2/}	12	159	436	304	-362	-48	24
Closing stocks of refined copper ^{2/3/}	1,035	1,133	1,640	1,667	1,191	1,043	1,067
United States	317	497	738	711	593	367	...
COMEX	(163)	(170)	(249)	(371)	(251)	(109)	(94) ^{4/}
Other U.S. stocks	(154)	(327)	(489)	(340)	(342)	(258)	...
Other countries	718	636	902	956	598	676	...
London Metal Exchange	(123)	(127)	(253)	(436)	(126)	(188)	(144) ^{4/}
Other country stocks	(595)	(509)	(649)	(520)	(472)	(488)	(...) ^{4/}

Sources: World Metal Statistics (London: World Bureau of Metal Statistics), various issues.

^{1/} Estimated by Commodities Division, IMF Research Department.

^{2/} Excludes China and Council for Mutual Economic Assistance (CMEA) countries.

^{3/} May not agree with production and consumption data because of differences in coverage.

^{4/} End-June level of stocks.

when, as noted above, the level of stocks reached about 12.6 weeks of current consumption in both years. In view of the level of stocks and persistent excess capacity in the industry (world mine capacity utilization reportedly is estimated at about 80 percent), actual and potential supply was considered as ample to cover copper required to meet the weak level of demand. With a slightly lower volume offset by a 3 percent rise in the average export price, the value of refined copper exports in 1985 is estimated to have remained virtually unchanged at the previous year's level (Table V.4).

During the first half of 1986, copper prices remained stable at an average monthly level of about 65 cents per pound, with a variation of less than 3 percent between the low and high average monthly prices. However, from late June through August prices fell, resulting in an average price in August of 59 cents per pound. The price decline is attributable to the stagnation of consumption, reflecting the slowdown in industrial production in major industrial countries; the failure of possible strike-related disruptions to production to materialize when the three-year labor contracts involving most of the U.S. copper industry expired in mid-year; and the seasonal downturn in copper consumption during the third quarter of the year. The new labor contracts, agreed with the U.S. copper industry in July, provide for significant cuts in nominal wages (\$3-4 per hour, or 20-25 percent, depending upon the company) and losses of other associated benefits, such as cost of living adjustments. However, most of the copper companies have agreed to partially restore wage reductions over the life of the contract or to grant wage increases, if copper prices improve. These wage and benefit concessions affect the supply side of the copper industry by helping to permit U.S. mining companies to continue operating in the face of persistent low prices and facilitating the possible resumption of production at previously idled facilities.

World copper consumption remained sluggish during the first half of 1986, falling slightly below the level achieved during the comparable period of the preceding year. However, the level of production in the first half of 1986 also fell slightly below that recorded in the first half of 1985. As a result, the level of inventories at end-June was lower than that at the end of 1985. Consumption fell sharply in Japan, and declines are estimated for the United States and some European countries, including the United Kingdom and Italy, although these are estimated to have been partly offset by increases in consumption elsewhere. The weak level of consumption in the first half of the year appears to be attributable to the slowdown the growth rate of industrial production in the major industrialized countries. During the remainder of the year, copper consumption is not expected to increase, but mined and refined copper production is expected to rise as a result of the start up of several projects, including the expansion of concentrate output from Mexico's Minería de Cananea mine and the country's new La Caridad smelter.

Table V.4. Copper: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984 ^{1/}	1985 ^{1/}	1986 ^{1/2/}
Market prices (in U.S. cents a pound) ^{3/}	<u>991</u>	<u>79.0</u>	<u>67.2</u>	<u>72.2</u>	<u>62.5</u>	<u>64.3</u>	<u>62.7</u>
Exports							
Copper ore							
Volumes ^{4/} (in thousands of tons)							
Industrial countries	<u>1,278</u>	<u>1,460</u>	<u>1,609</u>	<u>1,450</u>	<u>1,309</u>	<u>1,229</u>	<u>1,241</u>
Developing countries	<u>469</u>	<u>513</u>	<u>548</u>	<u>463</u>	<u>435</u>	<u>458</u>	<u>460</u>
Developing countries	<u>809</u>	<u>947</u>	<u>1,061</u>	<u>987</u>	<u>874</u>	<u>771</u>	<u>781</u>
Unit values (in U.S. cents a pound)							
Industrial countries	<u>82.9</u>	<u>65.4</u>	<u>51.8</u>	<u>54.8</u>	<u>47.8</u>	<u>49.2</u>	<u>47.9</u>
Developing countries	<u>77.9</u>	<u>62.6</u>	<u>47.8</u>	<u>49.0</u>	<u>43.4</u>	<u>44.7</u>	<u>43.4</u>
Developing countries	<u>85.8</u>	<u>66.9</u>	<u>53.8</u>	<u>57.4</u>	<u>50.0</u>	<u>51.9</u>	<u>50.5</u>
Earnings (in billions of U.S. dollars)							
Industrial countries	<u>2.34</u>	<u>2.11</u>	<u>1.84</u>	<u>1.75</u>	<u>1.38</u>	<u>1.33</u>	<u>1.31</u>
Developing countries	<u>0.81</u>	<u>0.71</u>	<u>0.58</u>	<u>0.50</u>	<u>0.42</u>	<u>0.45</u>	<u>0.44</u>
Developing countries	<u>1.53</u>	<u>1.40</u>	<u>1.26</u>	<u>1.25</u>	<u>0.96</u>	<u>0.88</u>	<u>0.87</u>
Copper blister							
Volumes (in thousands of tons)							
Industrial countries	<u>731</u>	<u>765</u>	<u>827</u>	<u>782</u>	<u>760</u>	<u>650</u>	<u>657</u>
Developing countries	<u>76</u>	<u>103</u>	<u>90</u>	<u>115</u>	<u>95</u>	<u>96</u>	<u>95</u>
Developing countries	<u>655</u>	<u>662</u>	<u>737</u>	<u>667</u>	<u>665</u>	<u>554</u>	<u>562</u>
Unit values (in U.S. cents a pound)							
Industrial countries	<u>74.6</u>	<u>63.0</u>	<u>57.1</u>	<u>61.0</u>	<u>53.0</u>	<u>54.7</u>	<u>53.3</u>
Developing countries	<u>122.6</u>	<u>107.0</u>	<u>91.8</u>	<u>98.2</u>	<u>85.0</u>	<u>87.4</u>	<u>85.2</u>
Developing countries	<u>69.0</u>	<u>56.0</u>	<u>53.1</u>	<u>54.6</u>	<u>48.4</u>	<u>49.0</u>	<u>47.8</u>
Earnings (in billions of U.S. dollars)							
Industrial countries	<u>1.20</u>	<u>1.06</u>	<u>1.04</u>	<u>1.05</u>	<u>0.89</u>	<u>0.78</u>	<u>0.77</u>
Developing countries	<u>0.21</u>	<u>0.24</u>	<u>0.18</u>	<u>0.25</u>	<u>0.18</u>	<u>0.18</u>	<u>0.18</u>
Developing countries	<u>0.99</u>	<u>0.82</u>	<u>0.86</u>	<u>0.80</u>	<u>0.71</u>	<u>0.60</u>	<u>0.59</u>
Refined copper							
Volumes (in thousands of tons)							
Industrial countries	<u>3,338</u>	<u>2,943</u>	<u>3,052</u>	<u>3,376</u>	<u>3,075</u>	<u>3,011</u>	<u>3,040</u>
Developing countries	<u>1,208</u>	<u>966</u>	<u>909</u>	<u>1,188</u>	<u>975</u>	<u>884</u>	<u>871</u>
Developing countries	<u>1,971</u>	<u>1,863</u>	<u>2,034</u>	<u>2,094</u>	<u>2,047</u>	<u>2,087</u>	<u>2,130</u>
Non-Fund members	<u>159</u>	<u>114</u>	<u>109</u>	<u>94</u>	<u>53</u>	<u>40</u>	<u>39</u>
Unit value (in U.S. cents a pound)							
Industrial countries	<u>98.5</u>	<u>81.1</u>	<u>69.1</u>	<u>73.6</u>	<u>64.0</u>	<u>65.8</u>	<u>64.2</u>
Developing countries	<u>101.2</u>	<u>81.0</u>	<u>68.7</u>	<u>72.6</u>	<u>63.4</u>	<u>65.1</u>	<u>63.5</u>
Developing countries	<u>96.6</u>	<u>81.1</u>	<u>69.3</u>	<u>74.1</u>	<u>64.3</u>	<u>66.1</u>	<u>64.5</u>
Non-Fund members	<u>100.3</u>	<u>81.3</u>	<u>69.5</u>	<u>74.3</u>	<u>64.6</u>	<u>66.4</u>	<u>64.8</u>
Earnings (in billions of U.S. dollars)							
Industrial countries	<u>7.25</u>	<u>5.26</u>	<u>4.65</u>	<u>5.47</u>	<u>4.34</u>	<u>4.37</u>	<u>4.30</u>
Developing countries	<u>2.70</u>	<u>1.73</u>	<u>1.38</u>	<u>1.90</u>	<u>1.36</u>	<u>1.27</u>	<u>1.21</u>
Developing countries	<u>4.20</u>	<u>3.33</u>	<u>3.11</u>	<u>3.42</u>	<u>2.90</u>	<u>3.04</u>	<u>3.03</u>
Non-Fund members	<u>0.35</u>	<u>0.20</u>	<u>0.16</u>	<u>0.15</u>	<u>0.08</u>	<u>0.06</u>	<u>0.06</u>

Source: Commodities Division, IMF Research Department for prices. UNCTAD, Yearbook of International Commodity Statistics, 1985, for exports.

- ^{1/} Data on exports are estimates of Commodities Division, IMF Research Department.
^{2/} Includes projections for the final quarter of the year.
^{3/} London Metal Exchange, spot delivery, higher grade cathodes, c.i.f., U.K. ports.
^{4/} Copper content.

In 1987, the projected strengthening of industrial production growth is expected to boost copper consumption. This is expected to be accompanied by increased production. Furthermore, with major producers continuing to reduce costs, previously idled capacity being reactivated, and the continued coming on stream of recently completed mining and smelting projects, excess capacity is expected to continue to overhang the industry. As a result, copper prices are not expected to rise significantly above the low levels recorded in recent years.

2. Aluminum

The price of aluminum in 1985 averaged 47 cents per pound, which, although marginally higher than at the end of the recession period in 1982, was 28 percent below the 1983 level and 41 percent below the 1980 level. ^{1/} In 1985, excess production capacity continued to overhang the market. The recycling of scrap remained at the high level of 1984 and served as an important source of aluminum and as a factor contributing to the weakening of the aluminum price. Preliminary indications are that the underlying market fundamentals for aluminum in 1986 are much stronger than in 1985, with modest growth in consumption and a decline in production. Prices are expected, however, to remain well below the high levels recorded in 1979-80.

Total world bauxite production in 1985 was near 90 million tons (Table V.5), of which about 85 million tons were used to refine alumina and the remainder was used for nonrefining purposes (refractories, abrasives, etc.). ^{2/} Australia, Brazil, Guinea, Jamaica and the U.S.S.R. are the world's largest producers of bauxite. The location of higher grade deposits in Australia, Brazil and Guinea has enabled these countries to expand their share of world production. Output in France, Jamaica and the United States has declined. The growth of production in newer areas has served to reduce the market share of the major transnational producers. However, bauxite production remains relatively concentrated since about two thirds of bauxite in recent years has moved within integrated company systems. Most of the remainder has traded under long-term contracts.

Production of alumina totaled 25.4 million tons in 1985 of which 2.3 million tons was for non-smelter uses (refractories, chemicals, etc.). As in recent years, the bulk (about two thirds) of alumina output was traded between refineries and smelters within integrated company systems amid a continued shift in the geographical sources of alumina supply from North America and the Caribbean to Australia, Brazil, and Venezuela.

^{1/} Price quotations refer to aluminum sold in the LME, cash for delivery on the following business day, 99.5 percent minimum aluminum content, in the form of T-bars or ingots, c.i.f. European ports.

^{2/} Bauxite is mined and refined into alumina, which then is smelted into aluminum ingots. It requires five tons of bauxite to produce two tons of alumina, and about two tons of alumina to produce a ton of aluminum.

In 1985, there was a significant closure of alumina refining capacity in Japan and the United States. However, this reduced industry capacity only marginally as the closure was largely matched by openings of new refineries in Australia, Brazil, Ireland, and Venezuela.

Total world primary aluminum production in 1985 declined by 3 percent to 15.4 million tons partly as a result of cutbacks in smelter operations in the traditional producing countries. Aluminum production in the U.S. fell by 17 percent. Thus, the trend of a shift in the geographical pattern of production from the traditional producers (North America, Europe, and Japan) to new areas where cheaper power is available (Latin America, Middle East, and Oceania) continued in 1985. The share of the traditional producers in world aluminum production was 68 percent in 1985 compared with 83 percent in 1979. With this shift in production, the United States and Japan became net importers of the metal from Australia and Latin America. Secondary production also fell slightly.

Aluminum is valued for its considerable conductive and structural properties relative to its weight, and is used mainly for vehicle panels, electric cables, residential siding, and packaging. Aluminum has more applications in consumer products than other metals, and consequently aluminum consumption and prices tend to be sensitive to changes in consumer spending. In 1985, world consumption of primary aluminum, at 16.1 million tons, was only marginally higher than in 1984. The combination of the decline in production with a marginal increase in the level of consumption resulted in a fall in total aluminum inventories of 0.4 million tons to 2.4 million tons by the year-end, equivalent to about nine weeks of consumption.

In 1986, the price of aluminum moved upwards to average 52 cents per pound in the first three quarters of the year, 11 percent above the average for 1985. A number of factors contributed to this increase. The decline in the value of the U.S. dollar appears to have produced upward pressure on dollar-denominated prices. In the early months of 1986, a sizable deficit of production of aluminum below consumption developed, and as a result, primary stocks fell by nearly one-half million tons to about 1.8 million tons by the end of June, the lowest level since mid-1980 and equivalent to less than eight weeks of consumption. LME stocks fell by 85 thousand tons from the end-1985 level of 223 thousand tons. An increase in demand in the United States, in response to the anticipated labor strikes toward the end of May, when labor contracts were to expire, also helped strengthen prices. About 15 thousand workers at Alcoa, the largest aluminum producer in the United States, went on strike in May and workers at Alcan, the largest producer in Canada, also went on strike in early June; the strikes were settled in early July. During January-July, aluminum production was about 1 1/2 percent lower than in the same period of 1985; U.S. production of aluminum was about 13 percent lower than in the same period a year earlier.



Table V.5. Aluminum: World Commodity Balance, 1980-86

(In millions of tons)

	Calendar Years						
	1980	1981	1982	1983	1984	1985	1986 ^{1/}
Mine production of bauxite	<u>93.1</u>	<u>88.6</u>	<u>78.9</u>	<u>78.3</u>	<u>92.5</u>	<u>88.1</u>	<u>88.0</u>
Australia	<u>27.2</u>	<u>25.4</u>	<u>23.6</u>	<u>24.4</u>	<u>32.2</u>	<u>31.2</u>	<u>31.2</u>
Brazil	4.2	4.7	4.2	5.2	6.3	5.8	5.8
Guinea	13.9	12.8	11.8	13.0	14.7	14.3	14.3
Jamaica	12.1	11.6	8.2	7.7	8.7	6.2	6.2
Suriname	4.9	4.1	3.1	2.8	3.4	3.7	3.7
U.S.S.R.	6.4	6.4	6.4	6.3	6.2	6.4	6.4
Yugoslavia	3.1	3.3	3.7	3.5	3.3	3.3	3.3
Other countries	21.3	20.3	17.9	15.4	17.7	17.2	17.1
Production of alumina	<u>28.1</u>	<u>26.6</u>	<u>22.2</u>	<u>23.4</u>	<u>27.1</u>	<u>25.4</u>	<u>25.2</u>
Aluminum							
Primary production	<u>16.0</u>	<u>15.7</u>	<u>14.0</u>	<u>14.3</u>	<u>15.9</u>	<u>15.4</u>	<u>15.1</u>
Australia	0.3	0.4	0.4	0.5	0.8	0.9	1.0
Canada	1.1	1.1	1.1	1.1	1.2	1.3	1.3
Germany	0.7	0.7	0.7	0.7	0.8	0.7	0.8
Japan	1.1	0.8	0.4	0.3	0.3	0.2	0.1
U.S.S.R.	2.4	2.4	2.4	2.4	2.3	2.3	2.4
United States	4.7	4.5	3.3	3.4	4.1	3.4	3.1
Other countries	5.7	5.8	5.7	5.9	6.4	6.6	6.4
Primary consumption	<u>15.3</u>	<u>14.5</u>	<u>14.1</u>	<u>15.4</u>	<u>15.9</u>	<u>16.1</u>	<u>16.4</u>
France	0.6	0.5	0.6	0.6	0.6	0.6	0.6
Germany	1.0	1.0	1.0	1.1	1.2	1.2	1.3
Japan	1.6	1.6	1.6	1.8	1.7	1.8	1.8
U.S.S.R.	1.9	1.9	1.9	1.9	1.8	1.9	1.9
United States	4.5	4.1	3.6	4.2	4.6	4.4	4.6
Other countries	5.7	5.4	5.4	5.8	6.0	6.2	6.2
Ending stocks ^{2/}	<u>2.1</u>	<u>3.3</u>	<u>3.2</u>	<u>2.2</u>	<u>2.8</u>	<u>2.4</u>	<u>1.8</u>
Metal exchanges	--	0.2	0.2	0.2	0.2	0.2	0.2
Producers	2.1	3.1	3.0	2.0	2.6	2.2	1.6
Secondary (scrap) production	<u>3.5</u>	<u>3.7</u>	<u>3.7</u>	<u>4.0</u>	<u>4.0</u>	<u>3.9</u>	<u>3.8</u>

Source: World Bureau of Metal Statistics, World Metal Statistics, various issues.

^{1/} Estimated by Commodities Division, IMF Research Department.

^{2/} May not agree with production and consumption data because of differences in coverage.



World consumption of aluminum in 1986 is expected to rise by about 2 percent above the level of 1985. World production of aluminum, in contrast, is expected to fall slightly from the level of 1985 due partly to the action of major producers to lower their smelter utilization rates. With some improvement in demand-supply balance, stocks are forecast to decline further in the second half of the year, and market prices for the year as a whole are expected to strengthen considerably over the level of 1985.

The trend toward greater local processing is seen in reductions in bauxite exports during the same period in which aluminum exports are rising. With the shift in aluminum production from the main centers of consumption to countries in which newer plants and lower-cost sources of energy and raw materials are located, the volume of exports increased in 1985 and is expected to increase again in 1986 (Table V.6). However, in 1985 the total earnings from exports of unwrought aluminum fell by about 10 percent from the 1984 level as the effects of the increase in volume were outweighed by the effects of the fall in unit values received. In 1986, with an increase in both volumes and unit values, export earnings are expected to increase by nearly 20 percent.

In 1987, the underlying growth of aluminum consumption is expected to continue, at a rate of about 2 percent. Production may also rise slightly, with an expansion in production in low cost areas more than offsetting a decline in production resulting from plant closures in high cost areas, particularly in the United States and Japan. Reflecting these developments, aluminum prices are forecast to post a modest rise during the year.

3. Iron Ore

The average import price of Brazilian iron ore at German ports in 1985 was \$22.70 per ton, a decline of about 2 percent from the level of 1984. Iron ore prices remained virtually unchanged during the year, averaging \$23.00 per ton in the first four months and then falling to \$22.00 per ton during July-August before making some recovery in the last four months. In the first three quarters of 1986, iron ore prices declined to an average of \$21.80 per ton. Ample supply of iron ore, relative to demand, has been the major factor underlying the weakening of iron ore prices during 1985-86.

Iron ore is used almost exclusively for the production of primary iron--pig iron and sponge iron--which is the basic input for crude steel production. Demand for iron ore, therefore, is a derived demand, depending on the demand for steel. In 1985, world output of pig iron totaled 494 million tons, an increase of less than 1 percent over the level of 1984 (Table V.7). World raw steel output rose by about 1 percent to nearly 720 million tons, still considerably below the level of 747 million tons reached in 1979. In 1985, significant increases in steel output were recorded in developing countries, particularly in Brazil and China.

Table V.6. Aluminum: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984 1/	1985 1/	1986 1/2/
Market prices 3/ (in U.S. cents a pound)	<u>80.5</u>	<u>57.3</u>	<u>45.0</u>	<u>65.2</u>	<u>56.8</u>	<u>47.2</u>	<u>53.1</u>
Exports							
Bauxite 4/							
Volumes (in millions of tons)	<u>38.6</u>	<u>34.3</u>	<u>30.2</u>	<u>28.9</u>	<u>28.0</u>	<u>27.0</u>	<u>26.0</u>
Industrial countries	<u>7.4</u>	<u>5.7</u>	<u>5.6</u>	<u>4.5</u>	<u>4.0</u>	<u>3.8</u>	<u>3.0</u>
Developing countries	<u>31.2</u>	<u>28.6</u>	<u>24.6</u>	<u>24.4</u>	<u>24.0</u>	<u>23.2</u>	<u>23.0</u>
Unit values (in U.S. cents a pound)	<u>1.31</u>	<u>1.42</u>	<u>1.34</u>	<u>1.31</u>	<u>1.30</u>	<u>1.30</u>	<u>1.30</u>
Industrial countries	<u>0.87</u>	<u>0.90</u>	<u>0.86</u>	<u>0.89</u>	<u>0.95</u>	<u>0.95</u>	<u>0.98</u>
Developing countries	<u>1.42</u>	<u>1.53</u>	<u>1.46</u>	<u>1.39</u>	<u>1.35</u>	<u>1.35</u>	<u>1.35</u>
Earnings (in billions of U.S. dollars)	<u>1.12</u>	<u>1.07</u>	<u>0.89</u>	<u>0.83</u>	<u>0.80</u>	<u>0.77</u>	<u>0.75</u>
Industrial countries	<u>0.14</u>	<u>0.11</u>	<u>0.10</u>	<u>0.09</u>	<u>0.08</u>	<u>0.08</u>	<u>0.07</u>
Developing countries	<u>0.98</u>	<u>0.96</u>	<u>0.79</u>	<u>0.74</u>	<u>0.72</u>	<u>0.69</u>	<u>0.68</u>
Alumina 4/							
Volumes (in millions of tons)	<u>7.9</u>	<u>7.4</u>	<u>6.3</u>	<u>6.8</u>	<u>6.6</u>	<u>6.4</u>	<u>6.3</u>
Industrial countries	<u>4.8</u>	<u>4.4</u>	<u>4.0</u>	<u>4.3</u>	<u>4.2</u>	<u>4.0</u>	<u>4.0</u>
Developing countries	<u>3.1</u>	<u>3.0</u>	<u>2.3</u>	<u>2.5</u>	<u>2.4</u>	<u>2.4</u>	<u>2.3</u>
Unit values 5/ (in U.S. cents a pound)	<u>18.0</u>	<u>19.8</u>	<u>19.4</u>	<u>17.4</u>	<u>15.1</u>	<u>12.6</u>	<u>14.4</u>
Industrial countries	<u>17.3</u>	<u>19.3</u>	<u>19.1</u>	<u>17.2</u>	<u>15.1</u>	<u>12.7</u>	<u>14.2</u>
Developing countries	<u>19.2</u>	<u>20.7</u>	<u>19.8</u>	<u>17.7</u>	<u>15.5</u>	<u>12.5</u>	<u>14.8</u>
Earnings (in billions of U.S. dollars)	<u>3.15</u>	<u>3.25</u>	<u>2.69</u>	<u>2.61</u>	<u>2.22</u>	<u>1.78</u>	<u>2.00</u>
Industrial countries	<u>1.83</u>	<u>1.86</u>	<u>1.67</u>	<u>1.64</u>	<u>1.40</u>	<u>1.12</u>	<u>1.25</u>
Developing countries	<u>1.32</u>	<u>1.39</u>	<u>1.02</u>	<u>0.97</u>	<u>0.82</u>	<u>0.66</u>	<u>0.75</u>
Unwrought aluminum							
Volumes (in millions of tons)	<u>4.9</u>	<u>4.8</u>	<u>5.3</u>	<u>6.0</u>	<u>5.6</u>	<u>6.1</u>	<u>6.5</u>
Industrial countries	<u>3.3</u>	<u>3.2</u>	<u>3.4</u>	<u>3.8</u>	<u>3.5</u>	<u>4.0</u>	<u>4.2</u>
Developing countries	<u>1.0</u>	<u>1.1</u>	<u>1.3</u>	<u>1.5</u>	<u>1.4</u>	<u>1.5</u>	<u>1.7</u>
Non-Fund members	<u>0.6</u>	<u>0.5</u>	<u>0.6</u>	<u>0.7</u>	<u>0.7</u>	<u>0.6</u>	<u>0.6</u>
Unit values (in U.S. cents a pound)	<u>74.2</u>	<u>65.3</u>	<u>53.8</u>	<u>59.4</u>	<u>61.9</u>	<u>51.4</u>	<u>57.8</u>
Industrial countries	<u>76.2</u>	<u>66.4</u>	<u>53.9</u>	<u>60.0</u>	<u>63.2</u>	<u>52.2</u>	<u>58.7</u>
Developing countries	<u>69.0</u>	<u>64.0</u>	<u>54.0</u>	<u>59.5</u>	<u>63.5</u>	<u>45.0</u>	<u>51.8</u>
Non-Fund members	<u>71.5</u>	<u>62.1</u>	<u>53.2</u>	<u>56.4</u>	<u>51.8</u>	<u>62.0</u>	<u>68.0</u>
Earnings (in billions of U.S. dollars)	<u>7.98</u>	<u>6.96</u>	<u>6.34</u>	<u>7.92</u>	<u>7.64</u>	<u>6.91</u>	<u>8.28</u>
Industrial countries	<u>5.61</u>	<u>4.63</u>	<u>4.05</u>	<u>5.02</u>	<u>4.88</u>	<u>4.60</u>	<u>5.44</u>
Developing countries	<u>1.45</u>	<u>1.56</u>	<u>1.54</u>	<u>2.02</u>	<u>1.96</u>	<u>1.49</u>	<u>1.94</u>
Non-Fund members	<u>0.92</u>	<u>0.77</u>	<u>0.75</u>	<u>0.88</u>	<u>0.80</u>	<u>0.82</u>	<u>0.90</u>

Source: Commodities Division, IMF Research Department for prices. UNCTAD, Year-book of International Commodity Statistics, 1985, for exports.

1/ Data on exports are estimates of Commodities Division, IMF Research Department.

2/ Includes projections for the final quarter of the year.

3/ London Metal Exchange, spot delivery, 99.5 percent aluminum, in the form of T-bars or ingots, c.i.f. European ports.

4/ Actual weight.

Table V.7. Iron Ore: World Commodity Balance Together with Production of Pig Iron and Steel, 1980-86

(In millions of tons)

	Calendar Years						
	1980	1981	1982	1983	1984	1985 ^{1/}	1986 ^{1/}
Commodity balance							
Production of iron ore	<u>891.7</u>	<u>851.4</u>	<u>776.0</u>	<u>735.0</u>	<u>813.0</u>	<u>829.0</u>	<u>835.0</u>
Australia	97.0	84.7	87.7	71.0	90.0	96.0	94.5
Brazil	97.2	97.9	93.1	92.1	97.0	104.0	110.0
China	72.0	70.0	71.0	72.0	77.0	82.1	84.0
United States	77.8	75.5	37.1	38.6	52.1	48.0	46.0
U.S.S.R.	249.0	242.0	244.0	245.0	247.0	248.6	250.0
Other countries	298.7	281.3	243.1	216.3	249.9	250.3	250.5
Apparent consumption							
of iron ore ^{2/}	<u>900.6</u>	<u>853.2</u>	<u>780.5</u>	<u>737.6</u>	<u>812.1</u>	<u>836.8</u>	<u>841.0</u>
Brazil	18.3	12.1	8.7	17.9	6.7	25.0	26.0
Germany	51.7	45.9	40.2	36.5	43.5	45.5	46.0
Japan	134.2	123.8	122.2	109.5	125.7	130.0	129.0
United States	97.5	98.7	48.8	48.3	64.4	59.3	59.0
U.S.S.R.	210.9	207.1	210.8	211.8	211.1	214.0	215.0
Other countries	388.0	365.6	349.8	313.6	360.7	363.1	366.0
Production of pig iron	<u>507.0</u>	<u>534.0</u>	<u>476.8</u>	<u>461.3</u>	<u>491.1</u>	<u>493.8</u>	<u>502.0</u>
Production of crude steel	<u>714.7</u>	<u>711.0</u>	<u>646.2</u>	<u>663.3</u>	<u>709.5</u>	<u>719.9</u>	<u>725.0</u>

Sources: Data for world commodity balance from U.S. Department of the Interior, Mineral Commodity Summaries, 1985 and APEF, Iron Ore Statistics, March 1985.

^{1/} Estimated by Commodities Division, IMF Research Department.

^{2/} Production minus exports plus imports.

In major industrial countries, steel output remained virtually unchanged, except in the United States where output fell by 4.3 percent. In the U.S.S.R., the increase was only 0.6 percent.

In 1985, world iron ore output rose by 2 percent, to 829 million tons, which was slightly higher than the rate of increase in crude steel output for the year. Australia, China and Brazil each raised their iron ore output by about 7 percent--to 96 million tons, 82 million tons and 104 million tons, respectively--while output in the U.S.S.R., the world's leading producer, rose only marginally to 249 million tons. U.S. iron ore output fell by 8 percent to 48 million tons. During the year, the iron ore industry remained plagued with excess capacity, although many new mine projects scheduled to come on stream during the year were either abandoned or scaled down. Brazil's Carajas mine was a notable exception with the commencement of its operation at an initial production capacity of 15 million tons per year brought forward to February 1985. World iron ore consumption rose by 3 percent in 1985, due almost entirely to a sharp growth in Brazil; without Brazil's growth, world consumption would have risen only marginally.

Exports of iron ore in 1985 rose by 3 percent to 372 million tons, about 45 percent of world iron ore production (Table V.8). While Australia, Brazil, India and Sweden all exported more last year, exports from Norway South Africa, and the U.S.S.R. declined. The rising trend in the share of iron ore exports in total production was sustained in 1985 as steel producers in Europe and North America continued to replace low grade domestic ore with higher grade imports. Brazil increased its iron ore exports by 4 percent in 1985, to 94 million tons, and thus consolidated its position as the world's leading exporter of the commodity. Australian exports reached 88 million tons, marginally higher than in 1984. The U.S.S.R. shipped 35 million tons.

In 1986, world's steel output is not expected to exceed 725 million tons, which would represent an increase of 1 percent over the level of 1985. While output in Japan is expected to fall and that in Europe and the United States to stagnate, continued growth in output is likely in the developing countries, particularly in South America. During January-May 1986, raw steel output in the thirty countries reporting to the International Iron and Steel Institute was down 1.3 percent from the same period a year earlier; output in Japan was down 6 percent, and that in the EC by 5 percent. In contrast, output in the United States rose by 1 percent. The lower steel output in Japan is due to declining purchases of steel by the shipbuilding and construction sectors, the two major users of steel in that country. Based on the expected slow growth in steel output, iron ore demand is estimated to rise by less than 1 percent in 1986.

Iron ore production is also expected to increase only marginally in 1986. Any growth in world iron ore production is expected to be attributable to Brazil, where the initial production capacity of 15 million tons per year at the Carajas mine was increased to 25 million tons by July

Table V.8. Iron Ore: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984	1985 <u>1/</u>	1986 <u>1/2/</u>
Market prices <u>3/</u> (in U.S. dollars a ton)	<u>27.2</u>	<u>24.6</u>	<u>26.2</u>	<u>24.0</u>	<u>23.1</u>	<u>22.6</u>	<u>21.9</u>
Exports							
Volumes (in millions of tons)	<u>377.2</u>	<u>360.6</u>	<u>323.3</u>	<u>304.6</u>	<u>359.6</u>	<u>372.0</u>	<u>373.0</u>
Industrial countries	<u>163.2</u>	<u>150.1</u>	<u>128.1</u>	<u>129.0</u>	<u>151.1</u>	<u>155.0</u>	<u>147.7</u>
Australia	(80.4)	(71.2)	(72.7)	(74.1)	(85.5)	(85.9)	(84.1)
Canada	(39.0)	(41.4)	(27.2)	(24.8)	(30.7)	(32.8)	(33.4)
Other	(43.8)	(37.5)	(28.2)	(30.1)	(34.9)	(36.3)	(30.2)
Developing countries	<u>175.9</u>	<u>175.4</u>	<u>162.0</u>	<u>142.3</u>	<u>172.6</u>	<u>182.4</u>	<u>190.0</u>
Brazil	(79.0)	(85.8)	(84.4)	(74.2)	(90.3)	(94.1)	(99.5)
Other	(96.9)	(89.6)	(77.6)	(68.1)	(82.3)	(88.3)	(90.5)
Non-Fund members	<u>38.1</u>	<u>35.0</u>	<u>33.2</u>	<u>33.3</u>	<u>35.9</u>	<u>34.6</u>	<u>35.3</u>
U.S.S.R.	(38.1)	(34.9)	(33.2)	(33.2)	(35.9)	(34.6)	(35.3)
Other	(--)	(0.1)	(--)	(0.1)	(--)	(--)	(--)
Unit values (in U.S. dollars a ton)	<u>18.9</u>	<u>20.4</u>	<u>21.3</u>	<u>20.5</u>	<u>18.5</u>	<u>18.1</u>	<u>17.7</u>
Industrial countries	<u>19.5</u>	<u>21.8</u>	<u>22.1</u>	<u>21.5</u>	<u>19.8</u>	<u>19.3</u>	<u>19.2</u>
Developing countries	<u>18.8</u>	<u>19.6</u>	<u>21.0</u>	<u>19.5</u>	<u>17.5</u>	<u>16.7</u>	<u>16.1</u>
Non-Fund members	<u>17.9</u>	<u>18.8</u>	<u>20.0</u>	<u>20.4</u>	<u>18.5</u>	<u>20.2</u>	<u>20.4</u>
Earnings (in billions of U.S. dollars)	<u>7.13</u>	<u>7.37</u>	<u>6.90</u>	<u>6.23</u>	<u>6.67</u>	<u>6.73</u>	<u>6.60</u>
Industrial countries	<u>3.18</u>	<u>3.28</u>	<u>2.83</u>	<u>2.77</u>	<u>2.99</u>	<u>2.99</u>	<u>2.83</u>
Developing countries	<u>3.30</u>	<u>3.43</u>	<u>3.41</u>	<u>2.78</u>	<u>3.02</u>	<u>3.04</u>	<u>3.05</u>
Non-Fund members	<u>0.65</u>	<u>0.66</u>	<u>0.66</u>	<u>0.68</u>	<u>0.66</u>	<u>0.70</u>	<u>0.72</u>

Source: Commodities Division, IMF Research Department for prices. UNCTAD, Fourth Preparatory Meeting on Iron Ore, "Statistical Issues, Statistics on Iron Ore," TD/B/IPC/Iron Ore/21, for exports.

1/ Data on exports are estimates of Commodities Division, IMF Research Department.

2/ Includes projections for the final quarter of the year.

3/ Brazilian ore prices, c.i.f. German ports.

1986 and is expected to increase further to 35 million tons by mid-1987. Reflecting these market fundamentals, in the annual contract between Brazilian ore producers and European steel producers, a 1 percent drop in iron ore prices for 1986 was agreed. The iron ore prices, at the agreed levels, are about 25 percent below the prices that prevailed in the early 1980s. With little change in the volume of world exports and lower market prices, earnings from the export of iron ore in 1986 are estimated to fall by 2 percent below the 1985 level.

It is unlikely that prices will change very much in 1987. Iron ore demand is expected to grow by about 1-2 percent at most. In contrast, the production of iron ore may increase considerably, with the additional capacity coming on stream in Brazil.

4. Tin

The course of events in the world tin market in 1985-86 was dominated by the effects of the collapse of price support operations by the International Tin Council (ITC) in October 1985. This marked the end of stabilization measures under six successive tin agreements which had commenced in July 1956.

The price of tin on the Kuala Lumpur Tin Market (KLTM), which is the indicator price for the Sixth International Tin Agreement, was maintained at or slightly above the floor price of the Agreement (MS29.15 per kg) from the beginning of 1984 until October 1985, except for a few days in April-May 1985. While this price was quite stable, the appreciation of the U.S. dollar against both the Malaysian ringgit and pound sterling led to a fall in the price of tin measured in U.S. dollars on the KLTM and the LME through February 1985. Thereafter, the depreciation of the U.S. dollar led to rising prices in terms of dollars in both markets, although sterling prices on the LME fell. A return to a situation of excess supplies of tin coming onto the world market also accentuated the decline of sterling prices on the LME price. As intervention by the Buffer Stock Manager of the ITC relied heavily on forward purchases made at prices prevailing on the LME and sales made at the price ruling at the time of delivery, generally three months later, the declining trend of sterling prices meant that losses were incurred through most of 1985. The financial position of the buffer stock deteriorated to the point where virtually all its tin was used as collateral for bank loans and some brokers on the LME had reached their limits of exposure to the Council. Unable to borrow further, the Buffer Stock Manager ceased operations on October 24, with gross indebtedness to banks and brokers of over £900 million. Trading in tin on the LME and KLTM was suspended on the same day.

In the absence of an organized market in tin, transactions in subsequent months were made largely through metals dealers in Rotterdam and New York, or directly between smelters and consumers. Quotations by New York dealers indicate that prices fell sharply at the onset of the crisis, from an average of US\$5.38 per pound in October 1985 to \$4.49 per pound in

November. Prices declined further to \$3.69 in January 1986 as banks and other holders shipped tin from southeast Asia to European warehouses to be readily available for delivery should the LME reopen. The KLTM was reopened at the beginning of February but as trading was limited to newly refined Malaysian tin and producers withheld supplies whenever prices weakened, its price quotations were not representative of world market conditions.

In the second half of February, prices in both New York and Kuala Lumpur rose strongly in anticipation that a negotiated settlement to the crisis would be reached. After prolonged negotiations a final proposal was presented to member governments of the ITC. Banks were to provide bridging finance to a new company which would complete the Council's contracts with LME brokers. The tin purchased from brokers and the tin held by banks would be sold off over a number of years to enable bank loans to be repaid. Member governments were to make a nonequity contribution to the company, and their liability for the Council's debts would be limited to this contribution. If the tin could not be sold off at an assumed average price of £6,000 per ton (equivalent to \$4.00 per pound), the banks would bear the additional losses. Tin prices in New York increased from an average of \$3.75 per pound in the first half of February to \$4.95 per pound in the second half.

In the first week of March, however, two major producing members rejected the proposal. In their view, it was too expensive and did not protect their long-term interest by ensuring that they could compete free of export restrictions with low cost nonmember producing countries. Following the failure of the negotiations, some banks sold off their tin and prices fell sharply, with the New York price averaging \$2.45 per pound in the second half of March. Malaysian producers refused to sell on the KLTM when the price fell to the equivalent of \$2.80 per pound on March 20, and there was no trading for the remainder of the month. In mid-March, the ITC decided that export controls on producing members would be terminated at the end of the month, and the potential release of stocks held in producing countries added to the downward pressure on prices. A small recovery of prices occurred in April and May as banks held onto most of their stocks, and as prospective cuts in production made it more likely that the large overhang of stocks on the world market would be reduced significantly during the remainder of the year. New York prices in April-September averaged \$2.59 per pound.

World production of tin metal exceeded world consumption each year from 1978 to 1983 as high prices, supported by ITC intervention, led to high production and induced the substitution of other materials for tin in the packaging industry. This situation was reversed in 1984 by a 7 percent increase in world consumption associated with the economic recovery in industrial countries (Table V.9). In 1985, both world production and consumption declined by 5 thousand tons to 156 thousand and 160 thousand tons, respectively. Production fell sharply in the final quarter following the tin market collapse, while the decline in consumption partly reflected the slowing of economic growth in the

Table V.9. Tin: World Commodity Balance, 1980-86

(In thousands of tons)

	Calendar Years						
	1980	1981	1982	1983	1984	1985	1986 ^{1/}
Production	199	197	181	159	161	156	131
Bolivia	18	20	19	14	16	12	10
Brazil	9	8	9	13	19	25	24
Indonesia	30	33	30	28	22	21	27
Malaysia	71	70	63	53	47	46	28
Thailand	35	33	25	18	20	18	16
Other countries	36	33	35	33	37	34	26
Consumption	175	163	154	154	165	160	162
EC	45	42	40	39	41	38	39
Japan	31	30	29	30	33	32	31
United States	44	40	33	34	38	37	38
Other countries	55	51	52	51	53	53	54
Closing stocks ^{2/}	33	43	70	77	63	87	56
Of which: ITC buffer stock	(—)	(2)	(53)	(55)	(62)	(...)	^{3/} (—)

Sources: International Tin Council.

^{1/} Estimates of Commodities Division, IMF Research Department.^{2/} Includes stocks known to be in London Metal Exchange, other European and Asian warehouses, and at smelters. Excludes other stocks with consumers and producers and holdings in the U.S. strategic stockpile. May not agree with production and consumption data because of differences in coverage.^{3/} When intervention was suspended on October 24, 1985, the ITC buffer stock held 52,540 tons.

industrial countries in the second half of the year. Reported stocks at end-1985 were about 87 thousand tons, and in addition, there were estimated to be about 15 thousand tons in the hands of producers and consumers, bringing total stocks to over 100 thousand tons or the equivalent of more than 60 percent of annual consumption. Also, largely reflecting the transfer of stocks from Southeast Asian countries to LME warehouses in November and December 1985, the volume of world tin metal exports is estimated to have increased by 17 percent in 1985 (Table V.10). Due to lower prices, however, export earnings from tin metal rose by only 11 percent. The combined export earnings from tin-in-concentrates and tin metal of all countries in 1985 is estimated to have increased by 6 percent to \$2.2 billion. This increase was in sharp contrast to the trend in export earnings from tin in previous years; the combined value of world exports of tin-in-concentrates and tin metal is estimated to have declined by 11 percent per year on average between 1980 and 1984. The impact of the fall in export earnings between 1980 and 1984, and of the recovery in 1985, was felt mainly in the developing countries, where tin production is concentrated.

The main determinant of export earnings in 1986 will be the low prices now prevailing. They will affect earnings both directly and indirectly as the closure of uneconomic mines in some countries will be reflected in lower export volumes. Production of tin metal in Bolivia, Malaysia, and Thailand will be cut significantly and despite an increase in Indonesian output, world output is projected to fall by 25 thousand tons, or 16 percent of 1985 output. World consumption of tin metal is expected to increase slightly in response to lower prices; consequently, stocks are forecast to decline by about 30 thousand tons during 1986. As stocks in Southeast Asian countries were reduced sharply toward the end of 1985, any decline in the production of these countries in 1986 will largely be reflected in lower export volume. The volume of world exports of tin-in-concentrates and tin metal is projected to fall by 23 percent in 1986, and assuming the New York dealer price averages \$2.85 per pound (export unit values will be somewhat lower), combined export earnings are projected to decline by 60 percent to about \$0.9 billion (Table V.10).

The New York dealer price is expected to remain in the range of \$2.40-2.80 per pound in the final quarter of 1986. Above this range, it is likely that stocks held by banks would be sold off more rapidly, and below it, consumers may be willing to enter into long-term supply contracts. Only a slight increase in prices is likely in 1987 as the overhang of stocks will still be extremely large.

As a result of the failure of a negotiated solution of the ITC's indebtedness, the Council and member states are faced with a number of lawsuits from banks and brokers claiming restitution of losses. The settlement of these actions is likely to be prolonged well beyond the expiration of the Sixth International Tin Agreement on June 30, 1987. This Agreement will not be replaced by a new agreement; however,



Table V.10. Tin: Market Prices and Exports, 1980-86

	Calendar Years						
	1980	1981	1982	1983	1984 ^{1/}	1985 ^{1/}	1986 ^{1/2/}
Market prices ^{3/} (in U.S. cents a pound)	<u>761</u>	<u>643</u>	<u>582</u>	<u>589</u>	<u>555</u>	<u>523</u>	<u>285</u>
Exports							
Tin-in-concentrates							
Volumes (tin content) (in thousands of tons)							
Industrial countries	<u>34</u>	<u>28</u>	<u>25</u>	<u>30</u>	<u>31</u>	<u>27</u>	<u>20</u>
Developing countries	<u>9</u>	<u>9</u>	<u>8</u>	<u>7</u>	<u>6</u>	<u>5</u>	<u>3</u>
Unit values (in U.S. cents a pound)							
Industrial countries	<u>25</u>	<u>19</u>	<u>17</u>	<u>23</u>	<u>25</u>	<u>22</u>	<u>17</u>
Developing countries	<u>609</u>	<u>483</u>	<u>475</u>	<u>498</u>	<u>462</u>	<u>435</u>	<u>236</u>
Industrial countries	<u>676</u>	<u>578</u>	<u>549</u>	<u>657</u>	<u>618</u>	<u>580</u>	<u>315</u>
Developing countries	<u>585</u>	<u>435</u>	<u>438</u>	<u>446</u>	<u>419</u>	<u>394</u>	<u>215</u>
Earnings (in billions of U.S. dollars)							
Industrial countries	<u>0.46</u>	<u>0.30</u>	<u>0.26</u>	<u>0.33</u>	<u>0.32</u>	<u>0.26</u>	<u>0.10</u>
Industrial countries	<u>0.14</u>	<u>0.12</u>	<u>0.10</u>	<u>0.11</u>	<u>0.09</u>	<u>0.06</u>	<u>0.02</u>
Developing countries	<u>0.32</u>	<u>0.18</u>	<u>0.16</u>	<u>0.22</u>	<u>0.23</u>	<u>0.20</u>	<u>0.08</u>
Tin metal							
Volumes (in thousands of tons)							
Industrial countries	<u>178</u>	<u>186</u>	<u>154</u>	<u>147</u>	<u>151</u>	<u>177</u>	<u>137</u>
Industrial countries	<u>20</u>	<u>22</u>	<u>21</u>	<u>17</u>	<u>20</u>	<u>22</u>	<u>14</u>
Developing countries	<u>158</u>	<u>164</u>	<u>133</u>	<u>130</u>	<u>131</u>	<u>155</u>	<u>123</u>
Unit values (in U.S. cents a pound)							
Industrial countries	<u>744</u>	<u>617</u>	<u>586</u>	<u>567</u>	<u>532</u>	<u>502</u>	<u>275</u>
Industrial countries	<u>712</u>	<u>589</u>	<u>581</u>	<u>497</u>	<u>475</u>	<u>447</u>	<u>244</u>
Developing countries	<u>748</u>	<u>621</u>	<u>587</u>	<u>576</u>	<u>541</u>	<u>510</u>	<u>278</u>
Earnings (in billions of U.S. dollars)							
Industrial countries	<u>2.92</u>	<u>2.53</u>	<u>1.99</u>	<u>1.84</u>	<u>1.77</u>	<u>1.96</u>	<u>0.83</u>
Industrial countries	<u>0.32</u>	<u>0.28</u>	<u>0.26</u>	<u>0.19</u>	<u>0.21</u>	<u>0.22</u>	<u>0.08</u>
Developing countries	<u>2.60</u>	<u>2.25</u>	<u>1.73</u>	<u>1.65</u>	<u>1.56</u>	<u>1.74</u>	<u>0.75</u>

Source: Commodities Division, IMF Research Department for prices. UNCTAD, Yearbook of International Commodity Statistics, 1985, for exports.

^{1/} Estimates of Commodities Division, IMF Research Department.

^{2/} Includes projections for the final quarter of the year.

^{3/} LME standard grade, spot delivery, c.i.f. European ports through October 1985; Metals Week New York dealer price thereafter.

producer-consumer cooperation is expected to be continued beyond this date by a tin study group to be formed separately from the ITC under United Nations auspices.

5. Other metals and phosphate rock

a. Nickel

After posting a modest recovery and a gradual consolidation in 1984, the price of nickel on the LME rose sharply in the first half of 1985 to average 252 cents per pound in the second quarter, compared with 217 cents in the final quarter of 1984. This increase reflected a concern over the adequacy of supply at a time when a seasonal upturn in demand coincided with low stocks and an absence of any indication that producers were about to increase production. The strong price recovery, however, induced the U.S.S.R. to place large amounts of its nickel on the LME and encouraged stainless steel producers to use scrap in increasing amounts, leading to the fall in prices in the second half of the year. Scrap was readily available in the United States and its stainless scrap exports to Europe, in particular to Germany, rose markedly. The price fell to 187 cents per pound in the final quarter of 1985 and, following a period of relative stability, fell further to 173 cents in the third quarter of 1986.

Nickel is used as alloying element for plating on other metals and in chemical processes. Typical uses include stainless steel, super alloys made of chromium, cobalt, molybdenum, and other alloys. In 1985, nickel consumption fell by about 6 percent, mostly as a result of a fall in the output of the stainless steel sector, which accounts for about 60 percent of total nickel consumption. Stainless steel output in Japan rose slightly, but fell by about 4 percent in the United States and Europe. Nickel output, in contrast, rose by slightly over 1 percent in 1985, with growth occurring mostly in the second half of the year in response to the high prices of the metal prevailing in the earlier months. End of calendar year stocks of nickel rose by about 12 thousand tons to 142 thousand tons, equivalent to about 14 weeks of consumption.

In 1986, nickel consumption is expected to decrease further on account of a decline in stainless steel production during the year. Therefore, any price increase over the present level would depend largely upon the willingness of producers to maintain their output below the level of 1985. Present indications are that nickel producers would find it difficult to do so, particularly the producers of lateritic ores. The processing of lateritic ores is energy-intensive and production costs are favorably affected by the lower prices of petroleum.



b. Zinc

The price of zinc remained at a relatively high level in the first half of 1985, averaging 38 cents per pound, but then collapsed in the second half to an average of 30 cents. ^{1/} While the price of zinc remained depressed in the first half of 1986, averaging only 28 cents, in the third quarter it increased considerably, to an average of almost 36 cents. This increase was largely on account of concern over supplies as a result of labor disputes in Australia and Canada.

The main producers of slab zinc are located in Europe, Japan, and North America, which are also the major markets. While the main use of zinc is for galvanizing iron and steel to prevent corrosion, zinc is also used in diecasting, brass products, paints, and in photocopying. In 1985, world consumption of zinc fell, although by less than one percent, to 6.4 million tons, in spite of a large purchase by China of about 270 thousand tons which helped maintain prices in the first half of the year. Zinc consumption fell in France, Germany and in the United States, particularly in the brass and diecasting sectors. Production of refined primary zinc stagnated in 1985 at around the level in 1984 of 6.6 million tons, with output growth from new smelters in Thailand and Italy being offset by output declines in Japan, the United States and France; secondary refined output, however, fell by 9 percent. Reflecting these developments in consumption and production, commercial inventories of refined zinc fell by 42 thousand tons in 1985 to about 584 thousand tons, equivalent to about five weeks of consumption.

In the first quarter of 1986, consumption is estimated to have risen by 5 percent over the same period of 1985 due largely to a resumption of Chinese purchases, while refined zinc output registered only a nominal increase aided in part by voluntary cutbacks and some production losses from labor disputes. In the first five months of 1986, zinc stocks were estimated to have increased by 9 thousand tons to 593 thousand tons.

Zinc prices could weaken in the aftermath of the settlement of the labor disputes in Australia and Canada that led to the price increase in the third quarter of 1986. However, the continued strengthening of the European currencies in relation to the U.S. dollar has raised the U.S. dollar costs of producing slab zinc in the major supply areas of Europe, and this factor could continue to exert upward pressure on the price of zinc. This pressure may be offset by an increase in refined zinc output as a result of the new capacities coming on stream in Peru and Mexico. Nevertheless, if there is strong growth in the automobile and construction sectors in developed countries and if the recent level of primary smelter cutbacks by existing refineries are maintained, the level of prices in 1987 could at least equal those recorded in the third quarter of 1986 and should supply tightness develop, the price of zinc could stage a further modest recovery.

^{1/} Price quotations refer to LME, cash for delivery on the following business day, zinc produced by distillation or electrolysis, minimum purity 98 percent (standard), c.i.f. U.K. ports.

c. Lead

After posting a relatively strong growth in 1984, the price of lead on the LME weakened substantially in 1985 due primarily to the emergence of a situation of excess supplies. The price in 1985 averaged below 18 cents per pound compared with 20 cents per pound in 1984. Lead prices fell below 17 cents in the first quarter of 1986, but recovered to around 18 cents in the following two quarters.

Following a growth in 1984 of almost 3 percent, world consumption of lead is estimated to have fallen by approximately 1 percent in 1985 to 5.4 million tons. Consumption in the United States, which accounts for 20 percent of the world total, fell by 2 percent. Lead metal is used mostly for storage batteries, which account for 60-70 percent of total consumption of lead in most developed countries. A relatively mild winter in much of the United States caused a drop in sales of replacement batteries, although lead demand for new batteries, remained steady. As a component of gasoline antiknock additive, lead is still important but its use has been declining. Demand for lead in Japan rose modestly until the latter part of the year, when growth slowed with lagging automobile exports to the United States.

In contrast to the faltering demand, world refined lead production rose by about 1 percent in 1985, to 5.4 million tons. Refined output in the United States rose by 8 percent, with most of the growth in production coming from those smelters that suffered from strikes in 1984. Other countries experiencing rapid growth in output included Mexico (17 percent), Peru (16 percent), and France (9 percent). Output, in contrast, declined in Canada (6 percent), and in Australia (3 percent). Secondary production, which accounts for about one-half of total refined lead supply, fell by 4 percent as secondary smelters made necessary cutbacks in the face of weak demand. The combination of a fall in demand and an increase in lead output resulted in a 14 percent rise in commercial lead inventories to 484 thousand tons, equivalent to about five weeks of consumption. LME stocks alone rose by 21 thousand tons to 61 thousand tons.

During the period January-March 1986, world consumption of lead is estimated to have fallen by about 2 percent compared with the same period of 1985, while refined output is estimated to have declined by about 1 percent, mostly in the United States and Australia. Excess supply provided the reason for a rise of about 29 thousand tons in world stocks during the period. Little change is expected in lead consumption over 1985. So far, there have been few signs of significant production restraint other than some mine shutdowns and cutbacks in smelter operations. Output in Australia is expected to increase on the strength of recent additions to capacity. U.S. output is forecast to run at high levels. Consequently, world refined output is likely to show a small increase in 1986. Although the anticipated buildups of stocks would suggest a further decline in lead prices, this is not expected to happen; the impact of low prices on the availability of supplies for both primary and secondary smelting is now being felt

by the industry, and any price fall for an extended period below the present range could trigger a round of major secondary plant closures, contributing to a tightening in lead supplies and to an eventual improvement in prices.

d. Phosphate rock

The world market for phosphate rock continues to be characterized by abundant supplies and weak demand mainly on account of sluggish growth in the farm sector, and consequently a weak demand for fertilizer, the main use of phosphate rock. Because of the depressed outlook for food prices in 1986-87, demand for phosphate rock is not expected to recover in the immediate future.

World production of rock increased by 9 percent over the period 1980 to 1985, from 139 million tons to 152 million tons, despite decreasing prices of phosphate rock and food commodities. Output in the United States--the largest producer and consumer of phosphate rock as well as the largest exporter of fertilizers--was 51 million tons in 1985, compared with 54 million tons in 1980. Output in 1985 was, nevertheless, much higher than in 1982. The recession in 1981-82 reduced demand, leading to a large build-up of stocks in 1981 and to a cut in output by 30 percent in 1982. U.S. production increased in 1983, in response to increased domestic demand. Production increased again in 1984, as a result of a surge in export demand for fertilizers; domestic use of rock to produce fertilizers for export rose by nearly 60 percent to 23 million tons. Nevertheless, in 1985 the U.S. market again was characterized by oversupply oversupply which was reflected in a 13 percent decline in use of rock for domestic and exported fertilizers and a 32 percent increase in stocks. Output in Morocco in the 1980s has remained fairly stable at about 20 million tons. Although Morocco remains the world's largest exporter of phosphate rock, its rock exports were increasingly replaced by exports of fertilizers and in 1985 Morocco's exports of both rock and fertilizer fell due to poor external demand. From 1980 to 1985, total output from countries other than the United States and Morocco increased by 25 percent, to 81 million tons, as new mine capacity in Brazil, Israel, Jordan, Senegal, Togo and Tunisia came on stream.

Phosphate rock prices are expected to remain depressed through 1987. The U.S. farm bill could directly reduce U.S. fertilizer consumption by an estimated 5-10 percent in 1986/87, as a result of a reduction in acreage devoted to food production. In addition, low food prices are expected, more indirectly to reduce fertilizer demand worldwide. During the rest of the decade some major adjustments in the phosphate rock industry are expected to occur, as high cost mines close down, and world trade shifts to more processing of rock in producing countries. Barring any shortfall in world food production which would lead to higher food prices and stimulate fertilizer demand, the world market for phosphate rock is expected to return to balance only gradually.

